INNOVATIVE RESEARCH SYMPOSIUM

A Celebration of Student and Faculty Scholarship, Collaboration, and Innovation

Thursday, April 22, 2021

Fairfield University

INNOVATIVE RESEARCH SYMPOSIUM

THURSDAY, APRIL 22, 2021
Online Schedule

All Day
Download the eBook and Engage with Students on Quip
Students, faculty, staff, and community members with a Fairfield NetID are invited to engage with students via Quip, browse projects, and leave comments for students to participate in online dialogues about their research.

10:00 a.m. – 12:00 p.m.
Join Live Faculty-Moderated Zoom Sessions Featuring:
Student Research Presentations from:

Egan School of Nursing and Health Studies – Public Health Capstones
School of Engineering
Community Engagement and Independent Projects

Students, faculty, staff, and community members with a Fairfield NetID are invited to watch students present their research and engage in faculty-moderated Q&A.

Access Morning Sessions

12:00 – 1:00 p.m.

Live Show Hosted by Patrick Setiadi ’20
Get a behind-the-scenes look at campus life from four student-researchers and their faculty mentors, and special guests.

1:00 – 2:00 p.m.
Environmental Sustainability, Social Justice, and Public Health:
A Conversation with Melody Serafino ’05
Join Assistant Professor of Physics Robert Nazarian, PhD, and a student panel for a virtual conversation with writer and media relations professional
Melody Serafino ’05

2:00 - 4:30 p.m.
Join Live Faculty-Moderated Zoom Sessions Featuring
Student Research Presentations from:

Sigma Xi
Egan School of Nursing and Health Studies – Nursing Capstones

Students, faculty, staff, and community members with a Fairfield NetID are invited to watch students present their research and engage in faculty-moderated Q&A.

Access Afternoon Sessions

4:30 - 5:00 p.m.
Performance by Pilobolus Dance Company and Concluding Conversation
Celebrate Earth Day with a performance of “Branches” by Pilobolus Dance Company followed by a conversation

with Pilobolus, “The Lost Bird Project” artist Todd McGrain, and students as they discuss innovation and the arts.

Following the Innovative Research Symposium join the Center for Social Impact Annual Showcase and Celebration of Excellence in Community-Engaged Teaching, Research, and Service

Welcome and Appreciation

Dear Colleagues, Students, and University Guests:

Welcome to the 2021 Innovative Research Symposium at Fairfield University! Innovation is a spark of imagination igniting the pursuit of answers to questions that drive our intellectual curiosity. Fairfield students collaborate with faculty mentors to develop creative research projects that extend from the classroom to the world. Whether examining cells under a microscope or documents in an archive, our student research contributes to the understanding necessary to address today's pressing societal issues. This year, environmental sustainability, public health, and racial justice came into focus as issues informing much of our academic community's research.

The Innovative Research Symposium showcases the rich diversity of student research from across academic disciplines. Capstone Nursing and Health Studies projects, research by our Sigma Xi students in the natural sciences, mathematics, engineering, and psychology, and community-based and independent projects are featured. We invite you to engage with the exciting scholarly endeavors of nearly 250 undergraduate and graduate students that spotlight the wide range of student-faculty research at the core of Fairfield's academic mission. Exploring these innovative projects joins us together in reaching for the *magis*, the more, to advance the common good through the pursuit of knowledge.

This year the Innovative Research Symposium is again online in response to our ongoing global context. In doing

so, we exhibit our community's continued capacity to turn challenges into opportunities. We use Quip, Zoom, and the eBook in tandem, a reflection of Fairfield University's firm grounding in the online environment. We continue to innovate, introducing a Live Show created in the new Media Center, a featured conversation with Melody Serafino '05, and a screening of Pilobolus' "Branches" filmed on campus amid Todd McGrain's "The Lost Bird Project." We host an entire day committed to the research carried out in our academic community at a time marked by challenge. The 2021 Innovative Research Symposium manifests our resiliency and unrelenting commitment to the pursuit of academic excellence. We do this as a community with bonds even stronger than ever as we forge ahead with hope into the future.

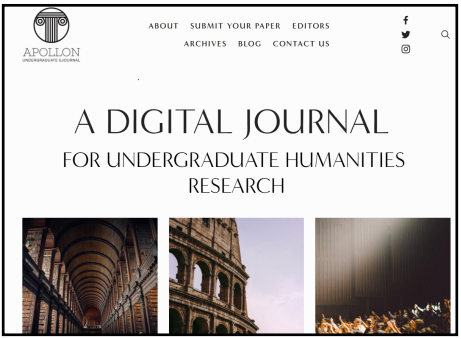
We are grateful for the generous support of so many from our Fairfield community who contributed to making this event such a success. We offer our appreciation to the many donors whose gifts enable Fairfield University students to pursue their academic goals and take advantage of opportunities arising from collaboration with our outstanding faculty. A special note of appreciation is extended to each faculty mentor who devoted their time and energy to our students. We deeply appreciate our Zoom session faculty moderators. This year, we offer particular gratitude to our faculty mentors in the Egan School of Nursing and Health Studies. Special recognition also goes to Kimberly Baer, Tasha Mehne, Kathy Nantz, Jay Rozgonyi, Debbie Whalley, Allison Wade, Casey Timmeny, Jasmine Blennau, Rob Bove, Nicolette Massaro, Jill Smith-Carpenter, Kraig Steffen, Robert Nazarian, Kim Doughty, Kathy Saracino, Rose Iannino-Renz, Melissa Quan, Nicole Marino, Dayna Cavanaugh,

Kathleen Freis, David Schmidt, Pilobolus, Todd McGrain, and Carey Weber, and all those who assisted in making this event possible. We also pause to remember Curtis Ebdon. Most especially, we thank the students who inspire us every day with their joy for learning.

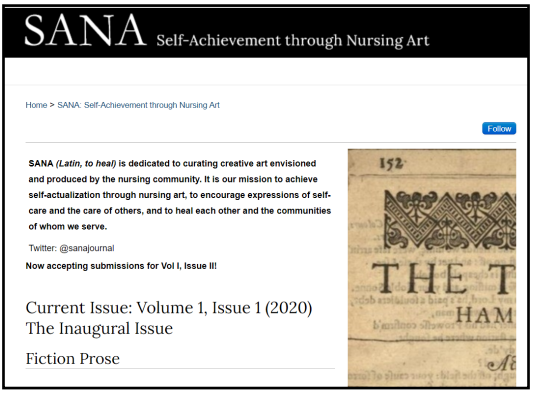
Congratulations to our student presenters and faculty mentors! Thank you for joining us on this day of academic celebration.

Jocelyn M. Boryczka, PhD
Associate Vice Provost for Scholarly, Creative, and Community Engagement

Fairfield University is proud to host three journals that publish student research and creative products:



[Current Issue — Apollon Digital Journal (apollonejournal.org)]



[Self-Achievement through Nursing Art: A creative space for nurses | Fairfield University]

[The Undergraduate Journal of Global Citizenship | Fairfield University]

Sigma Xi


SIGMA XI
THE SCIENTIFIC RESEARCH SOCIETY
Fairfield University

Association of Cognitive Reappraisal and Depression in Individuals with High or Low Socioeconomic Status

Ema Taglic, Erin Curtis
Faculty Mentor: Prof. Michael Andreychik

https://fairfield.quip.com/BHAtA0xoDjdm/Replication-of-Troy-et-al-2017-Association-of-Cognitive-Reappraisal-and-Depression-in-Individuals-with-High-or-Low-Socioeconomic-Status

Technical Abstract:
This project is a replication study as part of our supervised research course with Dr. Michael Andreychik. Participants will be recruited from Amazon Mechanical Turks (N=150) for the completion of our direct replication of Troy et al. (2017). We conduct this project as part of the Collaborative Replications and Education Project (CREP), an initiative that involves undergraduates in replications of recent high-impact studies in psychology. We will replicate a study by Troy et al. (2017) investigating the effects of socioeconomic status on the interplay between cognitive reappraisal ability (CRA) and psychological health. Because socioeconomic status deeply impacts the amount of control someone may have over their circumstances, the authors suggested that emotion regulation (or CRA) would be more beneficial for those in a lower socioeconomic status. To test this, the researchers asked a sample of adults to complete online questionnaire measures of socioeconomic status, cognitive reappraisal ability, life stress, and depression.

The authors found that CRA/effective emotion regulation strategies were beneficial in particular to participants with low socioeconomic status.

Background Studies for the Polarized Target Experiment with CLAS12

Brenna Petrelli

Faculty Mentor: Prof. Angela Biselli

https://fairfield.quip.com/5MiiAoYrZiBA/Background-Studies-for-the-Polarized-Target-Experiment-with-CLAS12

Technical Abstract:
Jefferson Laboratory is a particle physics facility in Virginia equipped with an underground electron accelerator and the CEBAF large acceptance spectrometer (CLAS12). Electrons are accelerated and scattered against targets to measure a variety of processes using the CLAS12 detector to study the structure of nucleons. A set of experiments using a polarized target is planned to run in 2022. The background of Moller electrons (electrons of the target that are knocked off the atom) is particularly high for these experiments due to the increased density of the target which overwhelms the drift chambers, impeding the measurement of good events. Furthermore the polarized target requires the beam to be rastered, causing an additional increase of Moller rates in the drift chambers. We use a C++ program developed at Jefferson Lab called GEMC to simulate the experimental conditions with the polarized target and rastered beam. After benchmarking the rates with the standard beamline, we performed various simulations with shield modifications to lower the

high Moller electron rates. Our studies led to our best final design, the "Elmo" shield, which showed reduced occupancy levels from 6.5% (results from CLAS12 shield FTOFF) to 3%. This shield was designed based on the available space in the chamber and the available materials convenient for construction. Based on our simulations, the lab is currently procuring the materials for the construction of the shield for the upcoming experiments. This research helped us study the detector's performance for specific physics processes and ultimately will support major experimental efforts to study the internal structure of protons and neutrons.

Catalytic Characterization of Self-Assembling Nucleopeptides

Sarah O'Neill

Faculty Mentor: Prof. Jillian Smith-Carpenter

https://fairfield.quip.com/PshnAIV2qk8c/Catalytic-Characterization-of-Self-Assembling-Nucleopeptides

Technical Abstract:

G-quartets are cyclic arrangements of four guanine residues capable of stacking to form a more complex G-quadruplex supramolecular structure. In recent studies and literature, the G-quadruplex structure has been utilized as a versatile scaffold for catalysis, displaying peroxidase-like behavior when formed by DNAzyme-hemin complexes. Previous studies of G-Quadruplex-hemin DNAzymes, under acidic aqueous conditions in the presence of peroxidase substrates, show the complexes can facilitate the polymerization of aniline. Polyaniline is a conductive polymer once synthesized, and polyaniline-based hydrogels are utilized for biosensing, tissue engineering, and drug delivery. The biocatalytic synthesis of polyaniline is an environmentally friendly process with the potential for production in high yield, without the flaws of traditional synthesis methods. The Smith-Carpenter lab has developed a system that combines the self-assembling properties of short peptides and the hydrogen bonding along the Hoogsteen face of guanosine to form self-assembling nucleopeptides capable of forming

different supramolecular structures depending on the C-terminus chemistry. The gs-GKFF-OH nucleopeptide sequence was characterized to self-assemble into nanofibers containing the G-quadruplex architecture. Studies are underway to assess the catalytic potential of the nucleopeptide-hemin complex towards the polymerization of aniline when in the presence of peroxidase substrates, much like a DNAzyme.

Changes in Heat Stress in the New England Region

Carissa Agostino

Faculty Mentor: Prof. Robert Nazarian
This Research Also Presented at 2021 Annual American Geophysical Union Fall Meeting

https://fairfield.quip.com/y8FBAYrsUudV/Regional-Changes-in-Heat-Stress

Technical Abstract:
The primary goal of my research is to investigate how heat stress is changing in a warming climate. Heat stress results from both an increased temperature and increased humidity that leads to bodily stress and discomfort. Heat stress is impactful because, as humidity increases, elevated moisture in the air limits the body's ability to perspire and cool itself down (Baldwin et al, 2019). Thus, the body is put in a vulnerable state as it is unable to dissipate metabolic heat (Dunne et al, 2013). In my research project, I use publicly-available, high-resolution climate model data to study how heat stress will change to the end of the century. Specifically, I used both the temperature and humidity fields from the NA-CORDEX output to project changes in heat stress, with a particular emphasis on heat stress in the New England region. So far, we have found that changes in relative humidity in a warming climate strongly impact the heat stress (to the same or greater degree as changes in temperature) and

thus relative humidity needs to be considered when projecting future climate and impacts on human health.

Clearing and Staining Specimen Techniques

Arion Mete, Lauren Olczak

Faculty Mentor: Prof. Shannon Gerry

https://fairfield.quip.com/0NA5AMNBhM35/Clearing-and-Staining-Specimen-Techniques

Technical Abstract:
Clearing and staining are two techniques used to visualize the skeletal characteristics of small fishes. These techniques can be useful for showing phylogenetic comparisons among related species. This study's purpose was to clear and stain multiple species of fish in order to observe various aspects of the fish skeleton. Each fish was skinned and the organs dissected before treatment in multiple solutions over a period of about three weeks (depending on the size of the fish). Alcian Blue was used to stain cartilage and Alizarin Red was used to stain bone. Final specimens were preserved in glycerin. Specimens will be used in upper division Biology courses and stored in the Biology Department's museum collection.

Coaching Your Emotions: Does Socioeconomic Status Influence the Efficacy of Emotion Regulation?

Kayla Yaverski, Taylor Lewis, Mary Curry

Faculty Mentor: Prof. Michael Andreychik

https://fairfield.quip.com/8ckaA2bZJFL7/Coaching-Your-Emotions-Does-Socioeconomic-Status-Influence-the-Efficacy-of-Emotion-Regulation

Technical Abstract:
This study replicates the findings of Troy et al. (2017), Study 1. With the assistance from the Collaborative Replications and Education Project (CREP), this study reproduced Study 1 by Troy et al. (2017), which examined the ability for socioeconomic status (SES) to moderate the relationship between cognitive reappraisal ability (CRA) and depression. It has been more recently theorized that emotion-regulation strategies, such as CRA, need to be examined within specific contexts. This study focused on CRA in the context of SES with the hypothesis that CRA will be a more effective emotion-regulation strategy for those in lower vs. higher SES contexts. This study did not replicate the findings of Troy et al. (2017). Rather, there is no evidence from the present study that demonstrates a stronger relationship between CRA and depression in lower vs. higher SES.

Cobalt(II) SNS Pincer Complex Based on a Bis-imidazole Moiety as an Electrocatalyst Precursor for the Reduction of Hydrogen Cations

Emma Mircovich, Natalia Bertolotti, Michael Corbett

Faculty Mentor: Prof. John Miecznikowski
Supported by: Vincent Rosivach Faculty Student Collaborative Research Fund

https://fairfield.quip.com/iNbSAa3NhIO7/CobaltII-SNS-pincer-complex-based-on-a-bis-imidazole-moiety-as-an-electrocatalyst-precursor-for-the-reduction-of-hydrogen-cations

Technical Abstract:
We developed and synthesized a series of tridentate pincer ligands, each possessing two sulfur- and one nitrogen-donor functionalities (SNS), based on bis-imidazole or bis-triazole precursors. The tridentate SNS ligands incorporate thione-substituted imidazole or triazole functionalities. We prepared somewhat rigid ligand systems (1a-c) through the use of 2,6-dibromopyridine as a ligand precursor. In addition, we prepared more flexible ligand systems by employing the starting material 2,6-(dibromomethyl)pyridine to introduce a methylene linker into the pincer ligand (2a-c, 3a-c). We metallated these ligand precursors to form zinc(II) complexes containing these tridentate ligands. We recently prepared cobalt(II) complexes that contain these ligand precursors. The analogous copper(I) complexes

participate as electrocatalysts for the reduction of carbon dioxide and the reduction of hydrogen cations. A detailed description of the syntheses, and characterization (ESI-Mass Spectrometry, UV-Visible Spectroscopy, EPR Spectroscopy, and single crystal structures) of the SNS cobalt(II) complex will be presented. The electrocatalytic activity of the cobalt(II) complex for the reduction of hydrogen cations will also be presented.

COVID-19 Impact on College Student Mental Health

Maya Kapur, Daniella DeBlasi, Gabrielle Diodati, Annie Tran, Leif Alino, Enaea Sahloul

Faculty Mentor: Prof. Margaret McClure

This Research Also Presented at Eastern Psychological Association 2022

https://fairfield.quip.com/LlAsAw1IqReZ/COVID-19-Impact-on-College-Student-Mental-Health

Technical Abstract:
Emerging research on the impact of the COVID-19 pandemic suggests that depression, anxiety, and stress have significantly increased in college students due to factors such as isolation, extreme fear, poor sleep, and relationship changes. The current study analyzed the impact of the COVID-19 pandemic and mental health of college students by using a COVID-19 assessment (CRISIS Survey), Beck Depression Inventory (BDI), and State-Trait Anxiety Inventory (STAXI). We hypothesized that students' moods and behaviors would be negatively impacted by the pandemic. Participants consisted of 86 undergraduates at Fairfield University in Connecticut. Scores on the BDI and STAXI were compared with a historical cohort of 384 Fairfield University students who took the survey during the five years prior to the pandemic. The 2020 cohort reported significantly higher levels of both depression and state anxiety than Fairfield

University students have historically. The use of humor as a coping mechanism appeared to positively impact mental health, while disruptions in non-family contacts and self-blame negatively impacted mental health. These results suggest that the COVID-19 pandemic results in negative impact and outcomes on mental health relating to college students, although humor and social connections may be protective.

Creation of a Monolayer Ferroelectric Using Substitutional Impurities

Nicholas Richardson

Faculty Mentor: Profs. Andrew O'Hara, Sokrates Pantelides

This Research Also Presented at 2020 SACNAS The National Diversity in STEM Virtual Conference; 2020 October 19-24; Virtual.2021 APS March Meeting; 2021 March 15-19; Virtual.

https://fairfield.quip.com/lFAXAWuAjo8M/Creation-of-a-Monolayer-Ferroelectric-Using-Substitutional-Impurities

Technical Abstract:
Two-dimensional materials, which are atomically thin materials, show great promise in recent years for applications in nanotechnology and electronics. One particular area of interest is ferroelectric materials because of their potential for use in computer memory and energy storage. Currently no monolayer ferroelectrics exist; the thinnest ferroelectrics are 3-5 atoms wide. The applications mentioned previously would greatly benefit if we create a monolayer ferroelectric. We aim to engineer the first truly monolayer ferroelectric using hexagonal boron nitride (h-BN). While h-BN is not naturally ferroelectric, we explore inducing ferroelectricity by incorporating isovalent substitutional impurities larger than the host atom that they replace. This disparity is expected to cause a buckling of the impurity, either up or

down, which amounts to a dipole with two equivalent but opposite direction orientations, ultimately creating a ferroelectric phase. To investigate this idea theoretically, we perform quantum mechanical calculations using density functional theory (DFT). We incorporate isovalent impurities (e.g. Al for B, P for N, etc.) and optimize the centrosymmetric and distorted structures. Using these structures, we calculate the magnitude of the dipole to determine if there is a net polarization, a characteristic necessary for ferroelectrics, along with the switching energy barrier to move the impurity from one side of the lattice to the other. For further calculation, we focus on impurities that have a small, yet not insignificant barrier. We perform additional calculations to study the strain-based tunability of the barrier and polarization for the impurities. We additionally calculate the impurities' tendency to cluster close to each other when multiple impurities are in the lattice concurrently. Finally, we stack the h-BN under a sheet of graphene to simulate a real ferroelectric device. Based on all of these tests, we have the best chance to create the first monolayer ferroelectric if we can limit the clustering of Al and Ga in the h-BN, otherwise P gives us the best chance.

Determining the Origin of Aggression and Cannibalism in Brook Trout Fingerlings

Tomas Di Leo, Jenna Couture

Faculty Mentor: Prof. Soyong Byun

This Research Also Presented at Association of Zoos and Aquariums (AZA)

https://fairfield.quip.com/HnqGA3F2YuhB/MINIMIZING-AGGRESSION-AND-CANNIBALISM-IN-BROOK-TROUT

Technical Abstract:
Brook trout (Salvelinus fontinalis) is indigenous to North America. However, beginning in the late 19th century, brook trout began to disappear from their native habitats due to land development, agriculture, and pollution. Today, efforts are underway to restore brook trout to waters within their native range. These efforts include raising and releasing brook trout fingerlings. At the Connecticut's Beardsley Zoo, a population of brook trout fingerlings are raised and released as part of an environmental education program. Because of the value of each fingerling in reestablishing brook trout populations in the Northeast, observations of significant intraspecific aggression and occasionally cannibalism has resulted in the need to better understand their behavior in captivity. To do this, we documented fingerling aggression on an individual basis by taking observations of single fingerlings. Through this, we developed a detailed list of titles and definitions for agonistic behaviors. We had originally planned to create a facial recognition software

that would aid us in identifying fish in the tank, but, unfortunately, our progress has been halted by Covid-19. Regardless, we continued to document aggression by performing experiments involving increased density, alteration of food type, effects of food availability, and the inclusion of refuge. Outcomes from each of these experiments helped us better understand what biotic and abiotic factors encourage or discourage aggressive and cannibalistic behaviors.

Dynein and MEL-28 Collaborate to Promote Oocyte Maturation in the Nematode Worm Caenorhabditis Elegans

Jay Gandhi

Faculty Mentor: Prof. Anita Fernandez

https://fairfield.quip.com/SEdcAakqSvrl/Dynein-and-MEL-28-collaborate-to-promote-occyte-maturation-in-Caenorhabditis-elegans

Technical Abstract:
To understand how multiple genes contribute to the same biological process, we have been simultaneously disrupting two genes and studying the resulting mutant phenotypes. These analyses showed that the minus-end-directed microtubule motor dynein acts in parallel with the nuclear-pore component MEL-28 to promote fertility in C. elegans. When the mel-28 and dhc-1 genes are disrupted together, there is a low brood size in these double mutants compared with each single mutant and the wild type. Reciprocal crosses revealed that this fertility defect is due to issues with the oocytes and not the sperm. To better characterize this defect, we used immunolocalizations to track maturity markers in the oogenic germline. We studied proximal gonads from dhc-1; mel-28 double mutants, mel-28 single mutants, dhc-1 single mutants, and wild-type animals The -1 oocyte, which is the oocyte located closest to the spermatheca, is the most mature and is always the next to be ovulated and fertilized. In the wild type, the -1

oocyte normally has phosphorylated histone H3, a chromatin marker, and lacks DAO5, a nucleolar marker. mel-28 and dhc-1 single mutants each showed the same pattern, but dhc-1;mel-28 double mutants often retained DAO5 while failing to accumulate phosphorylated histone H3 in the -1 oocyte. These results suggest a failure of the maturity program in the oogenic germline in C. elegans, and this could explain the low brood size of the dhc-1; mel-28 double mutants.

Effects of Radiation Incident on a Photomultiplier Tube

Benjamin Kebbell

Faculty Mentor: Prof. David Winn

https://fairfield.quip.com/GP88AfNvLsMz/Effects-of-Radiation-Incident-on-a-Photomultiplier-Tube

Technical Abstract:
This research studies the effects that gamma and beta radiation and muons have when interacting with a photomultiplier tube (PMT) with the photocathode both activated and deactivated. When the photocathode was not activated, I determined the measurability of radiation detection with the radiation strong dynodes. Additionally, I obtained information with the radiation sources located at different distances down the PMT. To gather the data, I used an oscilloscope and a Picoscope, which can determine the number of particles detected as a function of time. I gathered data for the background, gamma radiation and beta radiation, but only located next to the photocathode. As expected, the number of particles detected as time increases is directly proportional to each other. The number detected for gamma is also much higher than beta and the background as beta is more ionising than gamma and cannot penetrate the glass as efficiently. Also I found that as the radiation moves further from the photocathode fewer particles are being detected. This study reveals the efficiency of a PMT as a radiation detector, and how Cherenkov radiation plays a role in the PMT.

Electrochemical Characterization of Short Amyloid Peptides

Mikaylin Nogler, Vasiliki Bayiokos, Mohamed Kourdassi

Faculty Mentor: Profs. Amanda Harper-Leatherman, Jillian Smith-Carpenter

Supported by: Mancini Fund
This Research Also Presented at NCUR Spring 2021 Conference

https://fairfield.quip.com/CdL4Acppz714/Electrochemical-Characterization-of-Short-Amyloid-Peptides

Technical Abstract:
Peptide based materials are generally easy to synthesize and have been found to have various applications from the biomedical field to the area of nanoelectronics. There is still a need to continue to characterize the properties of newly designed peptide materials that may be found to have helpful applications. Our research involves using electrochemical methods to investigate the electrochemical properties of four self-assembling peptides when sensing for the analytes potassium ferricyanide and hexaammineruthenium (III) chloride. Comparison of the results of two self-assembling peptides showed that changing the peptide sequence to include tryptophan instead of phenylalanine led to increased signal when sensing for hexaammineruthenium

(III) chloride. The self-assembled structures of the four peptides varied as shown in transmission electron microscopy, Fourier transform infrared spectroscopy, and circular dichroism spectroscopy. The increased delocalization within tryptophan compared to phenylalanine may lead to the electrochemical result and could lead to new design considerations in the area of self-assembling peptides.

Empathizing with Members of Stigmatized Groups as a Strategy to Reduce Implicit Bias

Amanda Ekkers

Faculty Mentor: Prof. Michael Andreychik

https://fairfield.quip.com/VQFiA0hYUA58/Empathizing-with-Members-of-Stigmatized-Groups-as-a-Strategy-to-Reduce-Implicit-Bias

Technical Abstract:
This study investigates whether empathizing with members of stigmatized groups can reduce implicit bias toward those groups. Existing work focusing specifically on implicit attitudes has failed to find an effect of empathy on implicit bias. We will attempt to improve on the methodology of past work to conduct a more informative test of the idea that empathy training can reduce implicit bias. Subjects will participate in a remotely-administered empathy task followed by a measure of implicit bias. For the empathy task, participants will be involved in one of two conditions. Some will engage in the empathy intervention while others, as part of a control group, will not, in order to allow us to see if empathizing reduces implicit bias. The empathy task will involve the presentation of male and female African American faces displaying a number of different emotions. Participants will be instructed to identify the emotion that the person is feeling and select an appropriate reason why the person is feeling each emotion. After each selection of emotion and reason is made, participants will receive feedback, letting them know whether they were correct or incorrect

in their choice. Following this task, participants in the empathy condition will engage in a measure of implicit bias, the Implicit Association Test (IAT), which measures the strength of associations of race and evaluations. Participants in the control condition will do the IAT, without doing the empathy activity.

Estimation of Left Ventricular Mass in Post-mortem Hearts

Monica Gomes

Faculty Mentor: Profs. Geoffrey Church, Harold Sanchez

https://fairfield.quip.com/uTmSAaLzbUPL/Estimation-of-Left-Ventricular-Mass-in-Postmortem-Hearts

Technical Abstract:
For autopsy pathologists, the current standard for assessing left ventricular (LV) mass at autopsy is by measuring overall heart weight and thickness of the LV wall. Actual measurements of mass are not routinely performed. Cardiology literature shows the utility of measuring LV mass and LV geometry in calculating the risk of adverse events including sudden cardiac death. Cardiologists estimate left ventricular mass by taking two simple measurements, LV thickness and diameter, and plugging them into an equation. The current study proposed to compare LV mass estimated by that equation with actual LV mass, as measured in post-mortem tissue, by dissecting the left ventricle free of the rest of the heart. The preliminary phases of the study included animal hearts, of both pig and sheep, and then proceeded to human hearts obtained at autopsy at Yale New Haven Hospital. The hearts were from autopsy cases that had already been finalized and which were otherwise scheduled for disposal. A close correlation between the estimated and measured LV mass would allow autopsy pathologists to accurately estimate LV mass without the need to dissect the LV free of the heart. This could

provide valuable information in determining cause of death at autopsy.

"Food for Monkey Thoughts:" Exploring Ways that Black Handed Spider Monkeys Identify Food

Victoria Pellegatto, Brendan Smith, Jack Esposito
Faculty Mentor: Prof. Soyong Byun

Supported by Hardiman Scholars
This Research Also Presented at The Association of Zoos and Aquariums (AZA)

https://fairfield.quip.com/KCpTARXfw1HO/Food-for-Monkey-Thoughts-Exploring-ways-that-Black-Handed-Spider-Monkeys-identify-food

Technical Abstract:
Although the ability to identify food is essential to survival, how species distinguish between what is edible and inedible is not well understood. Last year, this research team made a curious and unexpected observation regarding a strong and unusual attraction of two black-handed spider monkeys at the Connecticut's Beardsley Zoo to a Dunkin' Donuts breakfast sandwich. Through experimentation, we hypothesized that the monkeys were attracted to the sandwich as a possible food source. This led us to question what aspects of the sandwich were responsible for the observed attraction. Our research seeks to identify the cues and criteria by which spider monkeys can identify food sources within their environment. This presentation summarizes some of the key findings and future avenues of research.

Glutamic Acid Decarboxylases 65/67 as Biomarkers of Anxiety

Matthew Little, Nicholas Colorito, Thomas Sheehan, Margaret Rzucidlo

Faculty Mentor: Prof. Aaron Van Dyke

Supported by Femia Science Endowment
This Research Also Presented at American Chemical Society's National Meeting in August 2021.

https://fairfield.quip.com/Nn41ApgAbwRQ/Glutamic-Acid-Decarboxylases-6567-as-Biomarkers-of-Anxiety

Technical Abstract:
Glutamic acid decarboxylases (GAD) 65 and 67 catalyze the decarboxylation of glutamic acid to y-aminobutyric acid (GABA), a potent inhibitory neurotransmitter. GABA regulates cognition, behavior, and physiological responses to stress. We hypothesized that GAD is a biomarker for anxiety in the brain and its levels reflect if a subject experienced social isolation. To test this hypothesis, Long-Evans rats were raised in group-housed and socially isolated conditions. The elevated plus maze and open-field tests were used to detect and measure anxiety. Western blots were used to quantify the GAD expression in prefrontal cortices and cerebella. Socially isolated, more anxious rats expressed lower quantities of GAD than group housed, less anxious rats in prefrontal cortices; lower levels of anxiety correlated with higher quantities of GAD. GAD expression did not correlate with anxiety in cerebella. When socially isolated rats were

treated with oxytocin, a hormone that promotes social bonding, levels of GAD expression did not vary. This project explores GAD as a biomarker of anxiety and elaborate our findings.

Hydrazone Condensation Reactions on Self Assembling Peptide Surfaces

Katie Eighmy, Philip Scali

Faculty Mentor: Prof. Jillian Smith-Carpenter

Supported by: Mancini Fund
This Research Also Presented at National Conferences on Undergraduate Research 2021

https://fairfield.quip.com/gXs1AXjvWhR3/Hydrazone-Condensation-Reactions-on-Self-Assembling-Peptide-Surfaces

Technical Abstract:
Foundational research in the field of supramolecular chemistry has established reliable bottom-up design strategies for creating various supramolecular peptide-assemblies. Our project specifically focuses on studying the reactivity of various dynamic covalent chemistries on the supramolecular surfaces to extend functional applications. Preliminary results from our lab involving a self-assembling peptide, Ac-KLVFFAL-NH2, have shown a hydrazone condensation reaction on the nanofiber surface. In this current study, we explore the aldehyde reactivity on the surface of self-assembled peptide structures to form a reversible hydrazone bond. Our study characterizes the reaction between a hydrazide dye and an aldehyde-modified peptide to create a fluorescent nanofiber. Optimization of the hydrazone condensation reaction by altering pH and reacting aldehydes will lead to a better understanding of the reactivity of supramolecular

surfaces. We will use HPLC analysis and MALDI-ToF mass spectrometry to characterize the supramolecular reactivity. Characterization of reactions on the surface of supramolecular structures will allow us to design further experiments in the biomaterials field.

Investigating Microfluidic Paper Analytical Device Experiments

Jessica Cowan, Caitlyn Collins

Faculty Mentor: Prof. Amanda Harper-Leatherman

Supported by: Mancini Fund
This Research Also Presented at National Conference on Undergraduate Research (NCUR)

https://fairfield.quip.com/A88mA4eZctZ5/Investigating-Microfluidic-Paper-Analytical-Device-Experiments

Technical Abstract:
Microfluidic paper analytical devices are based on technology that utilizes paper's extensive fibrous networks to hold reagents, run reactions, and test for analytes on the microscale. The microfluidic devices can be safely engineered making it possible to run experiments outside of the traditional laboratory. Besides microfluidic devices being very versatile, there are many other benefits to them including their low cost, ability for quantitative colorimetric data using camera-enabled cell phones, and fast experimental time. Microfluidic based lab experiments enable accessibility and flexibility for students using them in a laboratory course. Many different types of laboratory experiments have and can be developed using paper analytical devices. Students can quickly run a variety of trials, making it possible for students to easily design and implement experiments to get a more research-based experience in a teaching laboratory. Through the MICRO project, we explored

paper analytical device experiments for use in a teaching laboratory. We are working to design new experiments based on paper analytical devices that students can use in a laboratory or home-based setting to analyze for analytes such as chloride or nitrate. We discuss the results as they relate to applying these experiments for educational purposes.

Investigating the Impact of Egg Nutrients on Immune Cell Gene Expression

Julia Greco, Dominika Mis, Christa Palencia Esposito, Courtney Campbell, Allison Sloan

Faculty Mentor: Prof. Catherine Andersen

Supported by: Mancini Fund
This Research Also Presented at American Society for Nutrition

https://fairfield.quip.com/4v5LAN1AFXAF/Investigating-the-Impact-of-Egg-Nutrients-on-Immune-Cell-Gene-Expression

Technical Abstract:
Inflammation is an important metric of immune function. We investigate how daily consumption of whole egg (WE) vs. egg white (EW) vs. egg free (EF) diets, which contain different pro- and anti-inflammatory nutrients, impact the overall nutrient content of one's diet, and whether these dietary changes affect inflammatory gene expression in immune cells. Men and women (n = 26) participated in a randomized crossover intervention trial where they consumed an egg-free diet for 4 weeks, followed by diets of 3 whole eggs and 3 egg whites per day for 4 weeks. Dietary intake records and immune cell samples were collected at the end of each diet period. Nutritional composition significantly differed between diets. Pro-inflammatory nutrients including cholesterol, choline, sodium, animal protein, arachidonic acid and total fat were increased in the WE diet, as compared to the EF and

EW diets. Conversely, carbohydrate intake (% of energy) was highest in the EF diet. Anti-inflammatory nutrients including selenium and monounsaturated fat were increased in the WE diet as compared to the EF and EW diet, whereas polyunsaturated fat and antioxidant lutein and zeaxanthin were higher in the WE diet as compared to the EF diet. Anti-inflammatory vitamin D intake was also the highest in the WE diet. Analysis of pro- and anti-inflammatory gene expression in immune cells, and their relation to nutrients, is ongoing, and will help to elucidate the impact of diet on inflammation and health.

Maneuverability of Juvenile Bluegills

Lauren Olczak, Arion Mete

Faculty Mentor: Prof. Shannon Gerry

https://fairfield.quip.com/SQYpA62tyLyn/The-Maneuverability-of-Juvenile-Bluegills

Technical Abstract:
Bluegills are a typical freshwater fish found in lakes and ponds. Previous research shows that adult bluegills diverge in their body shape and swimming ability based on habitat. For example, littoral fish have deeper bodies with larger fins to aid in maneuverability while pelagic fish have more fusiform bodies for steady swimming. Adults of each body morph nest in the littoral zone, but it is not known what causes some juveniles to move to the pelagic habitat. This study's goal was to induce morphological divergence in juvenile bluegills by rearing fish in two habitats - simulated littoral and simulated pelagic. We hypothesize that juveniles reared in a littoral habitat would be better at maneuvering through an obstacle course, similar to the adults. Juveniles were reared for 6 months prior to testing. Sixteen high speed videos were recorded of seven littoral and nine pelagic bluegills. The fish's snout and center of mass (COM) were tracked frame by frame. Following tracking, the positions of the COM and snout were quantified in order to track the maximum, minimum, and average velocities, accelerations, angular velocity, and angular acceleration.

MLL-Rearranged Leukemia: Utilizing Molecular Techniques to Explore Transcriptional Regulation

Katherine Junkins

Faculty Mentor: Prof. Zibo Zhao

https://fairfield.quip.com/CeeOAxdQHsvP/MLL-Rearranged-Leukemia-Utilizing-Molecular-Techniques-to-Investigate-Transcriptional-Regulation

Technical Abstract:
Within eukaryotic transcriptional regulation, there are unique subsets of enzymatic complexes that are able to directly acetylate or methylate histones, controlling subsequent gene activation and repression. The COMPASS subunit, short for Complex of Proteins Associated with Set 1, transfers methyl groups to Histone 4 Lysine 2 (H4K2). MLL1, associated within the COMPASS subunit, when translocated, is responsible for 80% of pediatric leukemias. Through specific molecular analyses such as bacterial transformation, CRISPR-Cas9, Cell Assay, Miniprep, shRNA transfection, viral harvesting, chIP sequencing, and Western Blot, the mechanisms behind this translocation, and other epigenetic phenomena, are able to be analyzed. These methods help isolate mechanisms to be targeted with gene therapy in the future. Through this presentation, I display a comprehensive analysis of recent epigenetic discoveries of the Shilatifard Laboratory at Northwestern's Feinberg School of Medicine, where I directly assist Dr. Zibo Zhao

Ph.D. Additionally, I discuss how these molecular techniques are promising for the future of cancer research and potential treatments (Zhao, Shilatifard 2019).

Observing Life in the Slow Lane: Two-Toed Hoffman Sloths at the Beardsley Zoo

Shea McGuire, Jillian Ryan

Faculty Mentor: Prof. Soyong Byun

This Research Also Presented at Beardsley Zoo Lecture Series

https://fairfield.quip.com/J43vANVZmxKM/Observing-Life-in-the-Slow-Lane-Two-Toed-Hoffman-Sloths-and-their-Mating-Behaviors

Technical Abstract:
The purpose of this research is to document the activity levels and behaviors of two Two-Toed Hoffman Sloths, Hope (female) and Rhubarb (male), in the off chance that they would potentially mate. We have observed both sloths for roughly 28 hours collectively per week, documenting such activities including the frequency and duration of resting/sleeping, eating, and movements. For our observations, we designated times throughout the day in which we would each view the video feeds. Jillian checks the cameras during their feeding times between 8:30-10:30AM and 3:30-4:30PM and when they are expected to become active around 6:30PM. Shea checks the live feeds during their peak active times at night from 7:00PM-1:00AM. Once a week, Jillian would travel to the Beardsley Zoo and take observations in person. While documenting their activity during the observations, we break up the total amount of time into intervals of 10 minutes to maintain structure in our data collection.

Initially, we noticed that Hope was initiating interactions between her and Rhubarb. This led us to believe that she was in heat and ready for mating. Currently, the interactions have become more limited and they remain in their own areas of the enclosure. However, we have also seen that Rhubarb is now resting in areas closer to Hope. This now makes us question whether Rhubarb may not be ready for mating and Hope is no longer interested. Ultimately, if their mating is not observed or documented, we still have important data regarding an activity budget for the daily life of a Two-Toed Hoffman Sloth.

Ocean Biodiversity Due to Submarine Canyon Induced Ocean Mixing

James Vizzard

Faculty Mentor: Prof. Robert Nazarian

This Research Also Presented at Ocean Sciences Meeting 2022

https://fairfield.quip.com/SJJqAib7D7JL/Ocean-Biodiversity-Due-to-Submarine-Canyon-Induced-Mixing

Technical Abstract:
In oceans, sediment, organic material, and nutrients gravitationally settle near the sea floor where there is little life due to the lack of light, cold temperatures, and high salinity. Ocean mixing is a key process by which nutrients are transported from the seafloor to the upper levels of the ocean where organisms live and such mixing has been shown to support biodiversity. A particular region in which enhanced mixing exists is in submarine canyons. The uneven topography has been shown to induce an upwards transport of nutrients up to the photic zone where organisms dwell. To conduct a study on this ocean mixing and its potential effects on biodiversity, we use the Regional Ocean Modeling System (ROMS), which is frequently used for working with coastal oceanographic processes. We specifically use it to simulate internal waves in Veatch Canyon and analyze how the simulated mixing impacts the transport of sediment and nutrients in the vertical. Once the model simulations are complete, we will compare the mixing and subsequent transport of

nutrients from our simulation with observations from our collaborators at WHOI. Second, the vertical structure of mixing that we analyze in our simulations is of interest to the larger ocean modeling community, and may be useful for informing improvements in ocean models. We are currently conducting the simulations and look forward to sharing some of our exciting preliminary results at the Symposium.

Pedagogical Development and PHYS 3222L

Matthew Breton

Faculty Mentor: Profs. Jonathan Stott, Angela Biselli

https://fairfield.quip.com/vwZIAnKX0XII/Pedagogical-Development-and-PHY-3222L

Technical Abstract:
The goal of this research project is to develop a robust upper division optics labs manual, consistent with our existing manuals and sufficient to guide students through one semester in the optics lab at Fairfield University based on developments in contemporary physics pedagogy. Our method is to provide understanding and engagement with optical physics by allowing students to discover the physical relationships and laws for themselves, prior to their formal introduction in class. Unlike our other laboratory classes, this can be done in the Optics Lab because students at this level are already familiar with conducting experiments, producing lab reports, graphically representing their data, and interpreting their results. Experiment guides have been produced for 6 out of 8 experiments required for one semester with a consistent format related to our other physics lab manuals. They are being developed using a document preparation software for ease of formatting, editing, and sharing. This will allow for the physics department to easily use and edit the optics lab manual in the years to come.

Polymerization of Unique Activated Monomers

Brayan Elvir

Faculty Mentor: Prof. Matthew Kubasik

Supported by: Corrigan Scholars Fund

https://fairfield.quip.com/MbHAALb6rmZs/Polymerization-of-Unique-Activated-Monomers

Technical Abstract:
Polymers are large molecules made up of individual units called monomers. While some monomers require exogenous reagents to form polymers, other monomers are able to undergo a process known as self-polymerization. In the latter case, monomers bond to one another to create a polymer without any activating agents. We are preparing monomers with the capacity to self-polymerize. Through changes in synthetic conditions such as solvent, temperature, and reaction time, we will determine conditions for optimum yield and degree of polymerization. We will use the Department of Chemistry & Biochemistry's NMR and MALDI-ToF instruments, purchased with NSF funds, to characterize our polymers.

Quantifying Beta Turn Equilibrium in Oligomers of Aminoisobutyric Acid Using Experimental and Computational Techniques

Mark Korst, Etienne Chollet

Faculty Mentor: Prof. Matthew Kubasik

Supported by: Mancini Fund

https://fairfield.quip.com/bFI8AzZuY9pe

Technical Abstract:
Peptides containing aminoisobutyric acid (Aib) residues readily form 310 helices, a secondary structure composed of several successive beta turns characterized by a ten atom ring closed by intramolecular hydrogen bonds. We investigated the formation of beta turns by comparing analogous peptides containing Aib and glycine. Specifically, we monitored hydrogen bond formation that defines the beta turn structure in the two peptides. Experimental and computational techniques were used to quantify the strength of beta turns in the peptides. Fmoc-Gly-Aib-B-Ala-OMe and Fmoc-Aib2-B-Ala-OMe were synthesized. Aib is dialkylated, achiral, and highly helicogenic, while glycine is weakly helicogenic. The peptides were designed at lengths that form a single beta turn, with one hydrogen bond in each. Variable temperature (VT) 1H NMR spectroscopy was employed to monitor the formation of these hydrogen bonds and characterize the equilibrium of this intramolecular interaction. Furthermore, molecular dynamics simulations

(GROMACS) were used for computational modeling and statistical analysis of hydrogen bonding association-dissociation in the two peptides. Topologies were constructed with the OPLS-AA force field parameters, and temperatures identical to VT-NMR experiments were used. Initial conditions were varied for each temperature and the hydrogen bond proportions were calculated. Comparison between experimental and computational results provide a clear indication of beta turn formation.

Relationships Between Variability in Salivary Cortisol and Interleukin-1B to Dietary and Metabolic Factors

Thomas Karanian

Faculty Mentor: Prof. Catherine Andersen

Supported by: Vincent Rosivach Faculty Student Collaborative Research Fund

https://fairfield.quip.com/dcbdAOSJdQTq/Relationships-Between-Variability-in-Salivary-Cortisol-and-Interleukin-1B-to-Dietary-and-Metabolic-Factors

Technical Abstract:
Stress can negatively impact lifestyle practices and metabolic health, thereby increasing an individual's risk for chronic disease. We investigated the effects of salivary cortisol variability on nutritional, anthropometric, and inflammatory measures of disease risk. Body composition and blood pressure were assessed in adult men and women, and dietary intake was assessed over a 5-day period. Saliva samples were collected in the morning, afternoon, and evening to measure cortisol and interleukin-1Î2 (IL-1b) fluctuations. Subjects were then classified into high (n=10) and low (n=8) cortisol fluctuation groups based on standard deviation. Subjects with a greater weekly cortisol variability had significantly greater average salivary cortisol across all timepoints. Lower fluctuations in cortisol were associated with a healthy body mass index and younger metabolic age but

were not associated with fat or fat-free mass, waist circumference, or blood pressure. Subjects with lower fluctuations in cortisol reported a significantly greater dietary intake of linoleic acid and manganese, whereas those with high weekly cortisol fluctuations consumed greater levels of serine and artificial sugars. Similarly, subjects with greater awakening cortisol fluctuations had greater dietary intake of vitamin D, B6, B12, and percent of calories coming from alcohol. Awakening IL-1b variability was positively correlated with awakening morning cortisol variability. Awakening cortisol and IL-1b were positively correlated with BMI/metabolic rate, vitamin B12, total carb, omega-3 fatty acid intake. Our preliminary findings demonstrate a relationship between fatty acids, essential vitamins, and body composition with stress and inflammatory biomarkers.

Seeing Outgroups as "Bad" vs. "Badly Off": Do "Negative" Implicit Associations Toward Blacks Have Different Meanings for Black and White Respondents?

Tessa Lasser

Faculty Mentor: Prof. Michael Andreychik

https://fairfield.quip.com/TXROAvaKAYPD/Seeing-outgroups-as-Bad-vs-Badly-off-Do-negative-implicit-associations-toward-Blacks-have-different-meanings-for-Black-and-White-respondents

Technical Abstract:
This project builds on previous studies that show the flaws in the Implicit Association Test (IAT). Contrary to popular belief, past research has shown that an indication of implicit bias on a General IAT does not necessarily indicate prejudice. Instead, it can indicate implicit negativity in various forms such as associating a particular group with oppression, fear, disgust, etc. This was shown in Uhlmann, Brescoll, and Paluck (2006) where participants who showed stronger negative implicit attitudes towards Blacks on a General IAT also showed stronger implicit associations between Blacks and oppression on an Oppression IAT. Our study is based on these findings and the implication that if "negative" associations on the General IAT really can stem in part from associating Blacks with oppression, then it should follow that respondents who are more likely to associate Blacks with oppression should show a stronger

correlation between implicit "negativity" scores on a General IAT and implicit oppression scores on an Oppression IAT. One group that we expect to hold stronger associations between Blacks and Oppression is Blacks, a group understudied when it comes to understanding implicit racial attitudes. We thus expect that Black respondents will show a stronger correlation between implicit "negative" associations toward Blacks and implicit oppression associations toward Blacks than will White respondents. Such a result would indicate that the implicit "bias" scores tapped by the General IAT mean something different for Black and White respondents. In particular, such "negative" associations are likely to stem more from egalitarian negative associations among Black respondents than White respondents. To examine this issue, the present study will have 100 White participants and 100 Black participants take both a General IAT and an Oppression IAT to examine the difference in correlation between the scores across the two groups. It is hypothesized that Black participants will have a stronger correlation between their General IAT scores and their Oppression IAT scores than White participants. Additionally, we will be looking at the following exploratory variables; gender, age, political affiliation, dispositional sympathy, and social dominance orientation, to see how each impacts this correlation. Following the IAT tests, participants will be asked to respond to a number of questions relating to these exploratory variables and their explicit attitudes towards Blacks.

Sensation Abilities of Red Wolves (Canis lupus rufus): How Caregivers are Recognized

Anne Panos, Matthew Little, Alison Moran

Faculty Mentor: Prof. Soyong Byun

This Research Also Presented at Connecticut's Beardsley Zoo Evening Lecture Series

https://fairfield.quip.com/xNVWAU5yMIXc/Sensation-Abilities-of-Red-Wolves-Canis-lupus-rufus-How-Zoo-Staffers-are-Recognized

Technical Abstract:
Until recently the red wolf (Canis lupus rufus) was extinct in the wild. Though reintroduction campaigns were implemented, minimal specimens are available for study, and little is known about the wolves' behavior and physiology. Connecticut's Beardsley Zoo houses two red wolves; both exhibit behaviors indicative of anxiety and submission in the presence of their zookeepers. We sought to identify potential olfactory, visual, and auditory recognition cues that the red wolves use to identify humans with the ultimate goal of minimizing these particular behavioral responses. The wolves were exposed to scents, sounds, and sights associated with specific members of the zoo's staff to determine which cues were most likely used in human identification. Contrary to what was originally assumed, we found that the wolves did not respond to the zoo's uniform or even individual scent. The wolves did seem to recognize members of the staff based on personal presentation,

including voice, clothing, and hair color. Responses to stimuli are often positionally dependent, with greater behaviors of submission and anxiety occurring when sensations were provided in locations associated solely with zookeeper-specific activities. We believe that a combination of vision and audition influences the wolves' responses to their zookeepers. Zookeepers should alter their appearances to minimize stress in the wolves.

Studying the Cohabitational Compatibility Between Two Newly Introduced Goeldi's Marmosets at Connecticut's Beardsley Zoo

Kenneth Fernandez, Sabrina Chionchio

Faculty Mentor: Prof. Soyong Byun

https://fairfield.quip.com/WhrLA0WEk3gL/Studying-the-Cohabitational-Compatibility-Between-Two-Newly-Introduced-Goeldis-Marmosets-at-Connecticuts-Beardsley-Zoo

Technical Abstract:
We have been monitoring the behavior of Monty, a Goeldi's marmoset, at Connecticut's Beardsley Zoo (CBZ) since January 2019. In 2017, Monty's mother and sister passed away, resulting in stress and anxiety-associated behaviors, such as hyper self-grooming. These behaviors prompted the interspecies introduction of Monty and Zag, a female Golden Lion Tamarin, in January 2019. Our observations indicated that this pairing was successful in that it significantly reduced Monty's hypergrooming. Unfortunately, in September 2020, Zag passed away due to old age. The CBZ, in accordance with the New World Primate Taxon Advisory Group (NWPTAG) and the Species Survival Plan (SSP), introduced Monty to a new female Goeldi's marmoset, Jovi. Seven behaviors were monitored via in-person observation and over a live-feed camera: chirping, yelling, eating, self-grooming, social grooming, aggression, and scent marking. Based on our current observations, we conclude that Monty and Jovi

are behaviorally compatible due to the lack of aggression and scent marking and will be a potential mating pair, after observing social grooming as well as an instance of mating behavior.

Studying the Effects of Cell Viability, Apoptosis, and Cell Cycle Arrest on MCF-7 and MCF-10a Cells Treated With Punicic Acid

Hannah Klausner, Oluwafemi Gbayisomore

Faculty Mentor: Prof. Shelley Phelan

https://fairfield.quip.com/6bhXAXMlKYw0/Studying-the-Effects-of-Cell-Viability-Apoptosis-and-Cell-Cycle-Arrest-on-MCF-7-and-MCF-10a-Cells-Treated-With-Punicic-Acid

Technical Abstract:
Previous research has shown that pomegranate extracts can inhibit the growth of select cancers in vitro. One of the main components of pomegranate seed oil, punicic acid, is an omega-5 fatty acid capable of inhibiting breast cancer cell proliferation. In order to study the anticarcinogenic properties punicic acid has on cancer cells, three different experiments are being conducted to determine its effect on cell viability, apoptosis, and cell cycle arrest on two different human cell lines: MCF-7 breast cancer cells, and MCF-10a normal breast epithelial cells. An LDH release assay is being used to measure the cytotoxicity in each cell line after being treated with various concentrations of punicic acid. It is hypothesized that treatment with punicic acid will decrease the viability of MCF-7 cells, with no effect on MCF-10a cells. Similarly, it is hypothesized that treatment with punicic acid will increase apoptosis of MCF-7 cells, with no effect on

MCF-10a cells. Finally, it is hypothesized that treatment with punicic acid will lead to cell cycle arrest in one or more stages in MCF-7 cells, while it will have no effect on cell cycle arrest of MCF-10a cells. These studies are currently underway in the breast cancer line, with future studies planned for the MCF-10a cell line. This research has important implications in the field of cancer research by studying a holistic approach to treatment as opposed to conventional chemotherapy options.

Substrate Interactions with Insulin-Degrading Enzyme

Katherine Bacchi

Faculty Mentor: Prof. Jillian Smith-Carpenter

https://fairfield.quip.com/DvYPALuGca8N/Characterization-Insulin-Degrading-Enzyme-IDE-and-Ghrelin-Cleavage-Interactions

Technical Abstract:
Insulin-degrading enzyme (IDE) is a zinc metalloprotease that occurs naturally in the human body. While its main function is to degrade insulin by cleaving the peptide at specific residues, IDE has also shown an inclination to cleave glucagon, amylin, and the amyloid-beta (AÎ2) peptide. While a previous study in our laboratory characterized the importance of several hydrophobic residues in IDE's active site for proteolytical function, questions remain about how to enhance substrate selectivity. Our current research goal is to better characterize the molecular interactions between IDE and its broad range of target sequences. The research will be accomplished through a combination of molecular modeling and enzyme kinetic analysis using two novel quenched fluorogenic peptide substrates. As IDE degrades peptides associated with two of the most commonly diagnosed diseases, diabetes and Alzheimer's disease, fundamental research on substrate and enzyme interactions is vitally important.

Synthesis and Characterization of Novel Supramolecular Enzymes Using Thiol-yne Chemistry

Shauna Harney, Grace Dibileo, Haley Chang

Faculty Mentor: Prof. Jillian Smith-Carpenter

Supported by: Hardiman Scholars
This Research Also Presented at NCUR

https://fairfield.quip.com/c17pAmuSdEj9/Synthesis-and-Characterization-of-Novel-Supramolecular-Enzymes-Using-Thiol-yne-Chemistry

Technical Abstract:
DNA-based enzymes, DNAzymes, are a well-studied class of artificial enzymes. They consist of DNA oligonucleotides capable of performing specific chemical reactions. This project aims to functionalize self-assembled peptide nanofibers with DNAzymes to produce a novelclass of supramolecular catalysts. The self-assembling peptide, based on the nucleating core of the amyloid peptide associated with Alzheimer's Disease, is modified to yield a dithioesterterminated peptide, (SAc) 2 -KLVFFAE-NH 2. After the thioester-modified peptide is assembled, the surface of the peptide nanostructures is functionalized with an oligonucleotide sequence capable of forming a DNAzyme in a two-step process. First, a surface accessible thiol is revealed by a thiol-thioester exchange then followed by a thiol-alkyne reaction on the surface of thepeptide nanofiber. Current work is being

conducted to optimize the thiol-alkyne reaction conditions and are monitored through MALDI mass spectrometry and HPLC analysis. The ability to modify the peptide surface through thiol-thioester exchange reactions will allow for control over how much of the DNAzyme is added to the surface, yielding a range of catalyticallyactive structures. In the future, an ABTS assay will be used to characterize the catalytic ability of these assemblies.

The Associations and Gender Differences Among Conflict Resolution Styles and Love Languages

Julia Karnes

Faculty Mentor: Prof. Margaret McClure

https://fairfield.quip.com/vpPNAloahVTR/The-Associations-and-Gender-Differences-Among-Conflict-Resolution-Styles-and-Love-Languages

Technical Abstract:
This study examines biological sex differences among the performed use of Love Languages in relationships and associations among different Conflict Resolution Styles and Love Languages. 200 participants will be recruited from Amazon Mechanical Turk (MTurk), an online service for individuals compensated for their participation in research studies. Participants will be asked to complete the Conflict Resolution Styles Inventory for Adolescents in Dating Relationships, French Canadian Version (CRSI) and the Five Love Language Scale. An Analysis of Variance (ANOVA) will be run to determine any significant differences between biological sexes on their performed love language. An exploratory correlation analysis will also be run to determine any associations among the Conflict Resolution Styles and Love Languages within the entire sample. Findings may be useful for future research in identifying and helping individuals transition from difficult Conflict Resolution Styles to more favorable versions.

The Effect of Oleuropein on MCF7 Human Breast Cancer Cells

Noelle Prisco

Faculty Mentor: Prof. Shelley Phelan

https://fairfield.quip.com/3y6yAnKh0bBL/The-Effect-of-Oleuropein-on-MCF7-Human-Breast-Cancer-Cells

Technical Abstract:
Oleuropein is a polyphenolic compound originated from olive leaves. Multiple studies investigate the antioxidant properties of these polyphenols, and their effectiveness as an anti-cancer treatment. The MCF7 cell line is a human cell line that was the first hormone receptive breast cancer cell line. Previous studies show that Oleuropein inhibited cell proliferation and induced apoptosis in MCF7 cells through the mitochondrial pathway. Additionally, recent studies reveal elevations in the Peroxiredoxin (Prdx) protein levels in many cancers, suggesting a protective role for these proteins in cancer cell survival. This project investigated the effect of Oleuropein on cytotoxicity and Prdx expression in the MCF7 cells. MCF7 cells were treated with 200 ug/ml Oleuropein for 28, 48, and 72 hours, and subsequently a Lactate Dehydrogenase (LDH) release assay was used to quantify cell cytotoxicity. In order to examine the effect on Peroxiredoxin expression, MCF7 cells were treated with Oleuropein for 24 hours and a total protein was extracted followed by western blotting. Our research confirms that oleuropein induces significant cytotoxicity in MCF7 cells, and Peroxiredoxin expression studies are underway.

The Effect of Repeated Warnings of Misinformation on Mock Eyewitnesses

Maddison Mello

Faculty Mentor: Prof. Jessica Karanian

This Research Also Presented at Society for Applied Research in Memory and Cognition (SARMAC) and Psychonomics Society

https://fairfield.quip.com/mVBrAFvpmUDV/The-Effect-of-Repeated-Warnings-of-Misinformation-on-Mock-Eyewitnesses

Technical Abstract:
The criminal justice system relies heavily on accurate eyewitness testimonies. However, research shows that the quality of an eyewitness memory report can be impaired by the misinformation effect, or a distortion of one's memory following exposure to misleading details about a previously witnessed event. Previous research suggests that warnings about the threat of misinformation, either before or after exposure to it, significantly reduces the misinformation effect (e.g., Karanian et al., 2020). However, neither warning entirely eliminated the misinformation effect. The present study explores the effect of repeated warnings in the face of misleading information within an eyewitness memory paradigm. We hypothesized that warning participants both before and after exposure to misinformation (i.e., a double warning) may demonstrate an even greater reduction of the misinformation effect. However, other

research suggests that over-warned participants are susceptible to the tainted truth effect, in which one rejects correct event details in attempt to avoid intrusion of misinformation into their memory. Therefore, it is possible that double warnings may have unintended negative consequences. In the current study, we employed an eyewitness memory paradigm in order to test the effectiveness of a double warning on reducing the misinformation effect, as compared to participants given either a single warning (before or after misinformation exposure) or no warning at all.

The Effects of Social Isolation During Adolescence on Anxiety and Cognitive Behaviors in Male and Female Rats

Rebecca Belmonte, Manny Brito, Jordan Chicoski, Olivia Dumon

Faculty Mentor: Profs. Shannon Harding, Matthew LaClair

Supported by: McGuinness Mentorship Program
This Research Also Presented at NEURON and/or Society for Neuroscience

https://fairfield.quip.com/ClEEA8GcE8Eo/The-Effects-of-Social-Isolation-During-Adolescence-on-Anxiety-and-Cognitive-Behaviors-in-Male-and-Female-Rats

Technical Abstract:
In social animals, including rats and humans, long periods of isolation can result in heightened anxiety and learning and memory impairments (Campos, Fogaca, Aguiar, & Guimaraes, 2013), similar to the clinical condition post-traumatic stress disorder (PTSD) (Schoner, Heinz, Endres, Gertz, & Kroneneberg, 2017). The impact of isolation during the critical developmental period of adolescence on behavior has not been fully explored, and was the focus of this project. Thirty-two adolescent male and female Long Evans rats were assigned to groups housed (2-4 rats per cage) or socially isolated (1 rat per cage) conditions for 5 weeks beginning at postnatal day (P) 28. After 5 weeks, rats were tested on behavioral measures of anxiety using the open field test and elevated plus maze,

social interactions using a sociability test, and spatial memory using novel object location. Preliminary data analysis suggests that group housed females showed reduced anxiety-like behaviors compared to socially isolated female rats and male rats in both conditions. At the completion of behavioral studies, brain tissue will be isolated and shared with Dr. VanDyke's research team in Chemistry and Biochemistry to examine differences in protein expression in the hippocampus and prefrontal cortex. Given the recent Covid-19 pandemic and subsequent necessity of quarantine measures, understanding changes in brain and behavior following adolescent social isolation is of critical importance.

The First Cat Call: Reconstructing Ancestral Feline Vocalization

Rebecca Buonopane, Cris Navarro-Martinez, Brendan Smith

Faculty Mentor: Profs. Soyong Byun, Murray Patterson

https://fairfield.quip.com/2C2EAONRD3qH/The-First-Cat-Call-Reconstructing-Ancestral-Feline-Vocalization

Technical Abstract:
The cat family Felidae originated 10.8 million years ago in what is now Southeast Asia. Felids communicate through a wide range of vocalizations, including discrete calls such as the spit or hiss, in addition to graded calls such as the mew, main call, growl, or snarl. The main objective of our project is to reconstruct the calls of the first felid ancestor. In order to do so, we have developed algorithms based on Sankoff Parsimony. Using these algorithms, we determined that the felid ancestor from 10.8 million years ago produced the spit, hiss, growl, snarl, mew, and purr vocalizations. Important to note was the absence of the roar vocalization within this ancient vocal repertoire. This semester, we have focused our efforts on annotating felid vocalizations from the Animal Sound Archive (Museum fur Naturkunde Berlin) in order to characterize the acoustic features of each species' specific call. In addition, we developed a novel method using this parsimonious framework to determine which felid call traits and characteristics are correlated. Our next step will be to reconstruct these ancestral calls using acoustic features and rebuild these calls using musical engineering. By

recreating and understanding the calls of extinct felid species, this work can provide insight into other aspects of the lives of these ancestral carnivores, including socialization, habitat, and behavior patterns.

The Impact of the COVID-19 Pandemic on Psychological Well-Being of College Students

Grace LaCamera, Anna Silvia, Katherine Spinelli, Francesca Giannattasio

Faculty Mentor: Prof. Margaret McClure

This Research Also Presented at Eastern Psychological Association (EPA)

https://fairfield.quip.com/JYVkA6tiZ8Vq/The-Impact-of-the-COVID-19-Pandemic-on-Psychological-Well-Being-of-College-Students

Technical Abstract:
The novel Coronavirus (COVID-19) pandemic disrupted the lives of adolescents, which may impact psychological well-being of students. This study measured the anxiety and depression levels of first-year college students during the coronavirus pandemic in comparison to historical data from Fairfield University. Spielberger's State-Trait Anxiety Inventory (STAI-S) was used to measure anxiety and the Beck Depression Inventory (BDI-II) was used to measure depression. In total, 86 undergraduates completed measures for depression, anxiety, and COVID-19 impact in Fall 2020, using Qualtrics software. Both depression and state anxiety among college first-year students in 2020 were significantly higher than in the historical cohort. There was no significant difference between the current cohort and historical data for the trait anxiety. Elevated

levels of depression and anxiety suggest the negative impact of the coronavirus pandemic on psychological health of first-year college students. Interventions are warranted.

The Use of 3D-printed Polylactic Acid Scaffolds (PLA) as a Substrate for Growth of MCF7 Human Breast Cancer Cells

Brenna McAllister

Faculty Mentor: Prof. Shelley Phelan

This Research Also Presented at American Association for Cancer Research 2021 Annual Meeting

https://fairfield.quip.com/GocYAmTBLQxl/The-use-of-3D-printed-Polylactic-acid-scaffolds-PLA-as-a-substrate-for-growth-of-MCF7-human-breast-cancer-cells

Technical Abstract:
This study focuses on fabrication of large-scale tissue scaffolds from Polylactic acid (PLA) and their feasibility as a substrate for cell growth. The scaffolds were fabricated via combined additive manufacturing and microwave foaming. The benefit of this approach is the ability to generate scaffolds with specific architectures and controllable pore size and porosity. The resulting scaffolds have dual pore networks with porosity in excess of 80% which provide a pathway for both cell growth and circulation of culture media. We sought to determine the capability of these scaffolds to support attachment, growth and viability of the MCF7 human breast cancer cell line, and drug sensitivity. For these experiments, the PLA scaffolds were sterilized in 24-well plates and 1 x 105 MCF7 cells were seeded into each well and cultured for up to 7 days. Scaffolds were then used for SEM

imaging, hoescht-staining, or cell counting and viability measurements after trypsinization. Comparisons of cell numbers detached from the scaffolds vs. the remaining well suggest a proportionally small percentage of cells (less than 5%) attached to the PLA, which is not surprising since the scaffolds lack a solid bottom. However, our imaging data using hoescht-staining of PLA-attached cells pre- and post- trypsinization suggest that traditional trypsinization does not effectively detach cells from the PLA material, and, therefore, this method cannot be used to accurately determine the proportion of cells growing on the scaffolds. This also reveals a potential limitation for application. SEM imaging confirmed cell attachment, with cell growth in the form of sheets along the struts on the bottom layer, and clusters elsewhere with a size of around 50 micron. Analysis of viability using trypan blue exclusion shows no effect of the PLA material on cell viability. To determine the drug sensitivity of cells grown with the PLA material, we treated MCF7 cells grown in the presence or absence of oleuropein, the main phenolic compound found in olive leaves. Media was collected at 48 hours and 7 days and released LDH measured by a cytotoxicity assay. Our data showed that the PLA material itself did not increase cellular toxicity in the absence of oleuropein treatment. It also confirmed that treatment with 200 ug/ml oleuropein induces the expected cytotoxicity in MCF7 cells grown in the absence of PLA, with no significant difference in oleuropein-susceptibility for cells grown in the presence of PLA scaffolds. Together, our results suggest that PLA scaffolds can support MCF7 cell attachment and growth, with no effect on cell viability or drug-induced cytotoxicity. This provides support for the promise of PLA scaffolds for physiologically relevant cell and tissue culture work.

Unexpected Chaos in a Billiard with Focusing Boundaries

Camryn Colonna, Hailey Spinella

Faculty Mentor: Prof. Mark Demers

This Research Also Presented at Joint Mathematics MeetingsMathematics Continued Conference

https://fairfield.quip.com/EbHMA9xH69aV/Unexpected-Chaos-in-a-Billiard-with-Focusing-Boundaries

Technical Abstract:
Mathematical billiards are important models of dynamical systems from mathematical physics in which point particles collide elastically with fixed boundaries. Chaotic dynamics emerge when the boundary of the billiard table is dispersing or when it contains focusing arcs at sufficient distance to allow a defocusing effect to occur. This project studies a type of billiard known as an asymmetric lemon billiard, comprised of focusing boundaries which seem to violate the usual defocusing condition. Numerical evidence is obtained showing that chaotic dynamics nevertheless occur for a large range of parameter values, extending beyond the range to which analytic proofs apply. This work was completed at Fairfield University during Summer 2020, and was supported by a grant from the National Science Foundation.

Using Event-Related Potentials to Understand True and False Memories

Tal Nizan

Faculty Mentor: Profs. Jessica Karanian, Danushka Bandara

This Research Also Presented at Society for Neuroscience

https://fairfield.quip.com/ahc3A590gY4H/Recording-False-Memory-Components-in-Event-Related-Potentials

Technical Abstract:
Existing functional magnetic resonance imaging (fMRI) research reveals that different underpinning neural mechanisms are behind true and false memories. This study seeks to understand the time course of such processes by utilizing event-related potentials (ERP), a technique known for its high temporal resolution in comparison to other neural imaging methods. False memories were defined as confidently incorrect responses in a memory task. Our analysis compares the time course of component activity during false memories relative to true memories in visual and frontal regions. We hypothesize that both false memory and true memory activity will occur in the relatively early time period during which conscious recollection takes place, but true memory activity will occur earlier than false memory activity.

Using Papain in an Attempt to Chemoenzymatically Synthesize Peptides of the Amino Acid α Aminoisobutyric Acid

Karim Alveranga

Faculty Mentor: Prof. Matthew Kubasik

https://fairfield.quip.com/kY6xALeCeIX0

Technical Abstract:
Papain is an enzyme known for its ability to hydrolyze amide bonds in a non-specific manner. The non-specificity of papain makes it an ideal protease to use in attempting to form (condense) or break (hydrolyze) amide bonds with the unnatural amino acid, Î± aminoisobutyric acid (Aib). By adjusting the concentration of product and subtrate, the protease can be made to favor the condensation reaction based on Le Chatelier's Principle. Previous literature describes papain successfully polymerizing monomers of tripeptide ethyl esters containing Aib under specific conditions including pH, solvent, and temperature. These experiments were attempted and then run under modified conditions in hopes of success with other Aib containing ethyl and methyl ester monomers. MALDI TOF mass spectrometry was the primary method of analysis used.

Using the Two Factor Theory of Emotion to Better Understand the Nature of Implicit Attitudes

Eryiel Joyce Mascardo

Faculty Mentor: Prof. Michael Andreychik

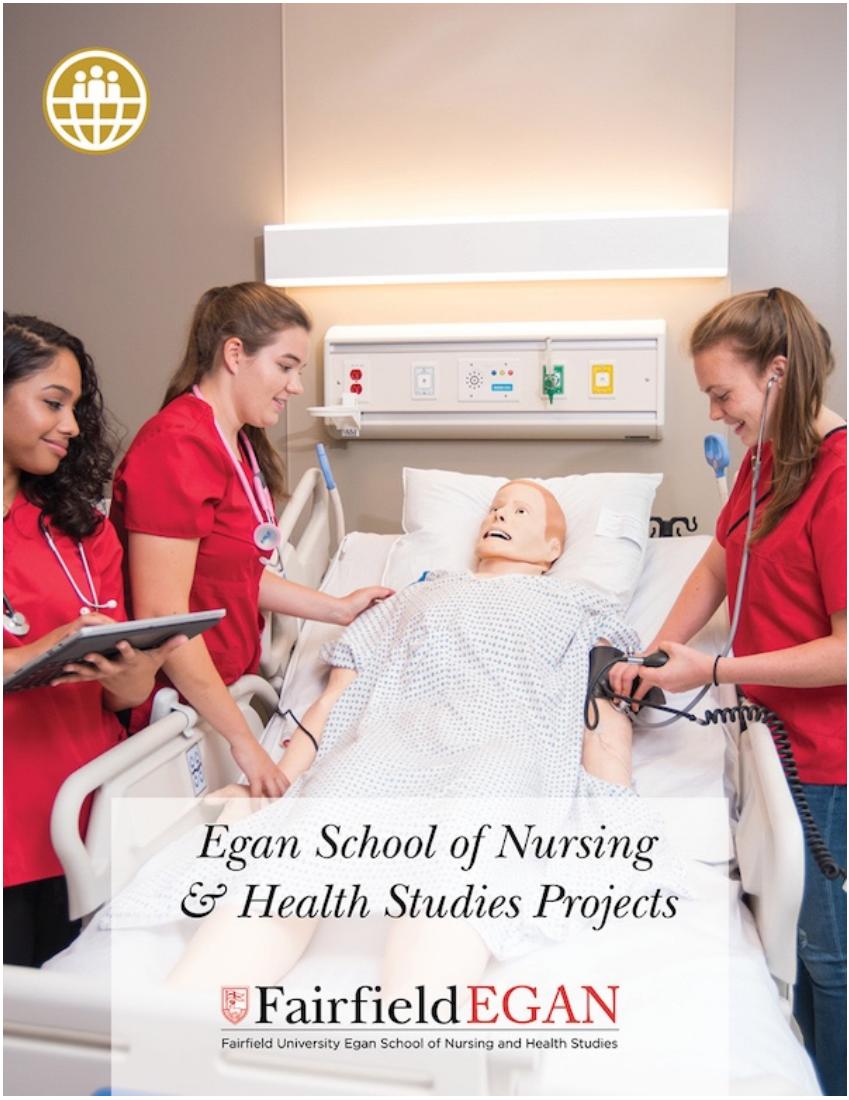
Supported by: Lawrence Family Fund

https://fairfield.quip.com/WMikAW5r8I5p/Using-the-Two-Factor-Theory-of-Emotion-to-Better-Understand-the-Nature-of-Implicit-Attitudes

Technical Abstract:
An implicit social attitude refers to a person's unconscious feelings or beliefs toward a social target. A classic Implicit Association Test (IAT) measures these implicit attitudes by asking participants to sort words into categories. The time the participant spends sorting the words reflects their associations with the group. Although IAT scores are typically thought to indicate a person's implicit prejudice towards other groups, some studies show that the test cannot identify the specific type of negativity a respondent feels. Specifically, the IAT uses more general "good and bad" words which cannot qualitatively distinguish between different types of negative associations such as hatred vs. sympathy. This study attempts to improve the precision of the IAT by integrating it with work on two-dimensional theories of emotion. According to these theories, emotions have two dimensions: valence (pleasing or displeasing) and arousal

(active or inactive). Each emotion has its own level of valence and arousal. Some have similar valence but different arousal. For example, excitement has a positive valence and high arousal, while calmness has the same valence but low arousal. The IAT only measures the valence of people's associations which is inadequate to determine their true association towards a group. This study tries to predict people's implicit attitudes by measuring both their valence and arousal towards a fictional group or person that would elicit specific emotions.

Public Health Capstones



Caffeine and Sleep

Kristen Boyle

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/cCqSAy0CUSUA/Public-Health-Capstone

Abstract:
This study surveyed Fairfield University undergraduate students on their caffeine consumption habits and sleeping patterns. Research shows that college is a time where many students increase their caffeine intake and sacrifice sleep for assignments and busy schedules. The purpose of the study was to determine if there was a correlation between daily caffeine consumption and nightly amounts of sleep in Fairfield University students. Students received a 21-question, anonymous, survey that included questions about the caffeine that respondents consumed, and the amount of sleep they get on a daily basis. Respondents were also asked questions about the likelihood of changing their caffeine consumption or sleeping habits when they have tests or assignments, and how their caffeine consumption has changed since starting college. The data collected was then analyzed to determine a correlation between caffeine consumption and sleeping patterns in Fairfield University undergraduate students.

Covid-19 Vaccine Hesitancy

Heidi Hohorst

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/fxxSAbq5bbiS/Covid-19-Vaccine-Hesitancy

Abstract:
The Covid-19 pandemic has been responsible for the deaths of over half a million people in the United States. As of February 2021, the Food and Drug Administration (FDA) approved three Covid-19 vaccines for emergency use in the United States. Vaccines have proven to be successful at preventing disease and creating herd immunity which is essential to reduce the spread of Covid-19. According to the Centers for Disease Control and Prevention (CDC), as of March 2021, almost 130 million Americans had been vaccinated. Despite the FDA's approval, there were still many Americans hesitant to receive the Covid-19 vaccine. This study's goal is to understand what those hesitancies were, specifically in adults (18 years and older) living in Connecticut. This study also aims to understand if willingness to receive the Covid-19 vaccine was related to age.

Effects of Intensive Aerobic Exercise on Immediate Cognitive Performance in Collegiate Swimmers

Arion Mete

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/bhNTA7LV0qFS/Effects-of-Intensive-Aerobic-Exercise-on-Immediate-Cognitive-Performance-in-Collegiate-Swimmers

Abstract:
This study's purpose is to determine the immediate cognitive effects of intensive aerobic exercise among Division I collegiate swimmers. While other studies have explored the correlation between aerobic exercise and cognitive performance, few studies address the effects of long duration intensive aerobic exercise. Thirty Division I collegiate swimmers from Fairfield University participated in this crossover study. First, 15 participants completed a visual reaction time test and a 2-minute mathematical calculation test without previously exercising while the other 15 completed their tests after a 90-minute swimming training session. After a 1-2 week buffer period, both groups were crossed over to the other condition and completed a second round of tests. In the exercise condition as compared to the control condition, participants improved, on average, 16 ms on their reaction time and 2.5 points on their math score. The difference in reaction time was statistically significant, whereas the difference in math score was not. Further

research can be done on other aspects of cognitive ability such as visuo-spatial perception and memory.

Food Access and Food Security During COVID-19 at Fairfield University

Michael Caruso

Faculty Mentor: Profs. Kimberly Doughty, Deborah List

https://fairfield.quip.com/ac18Atw923Kv/Food-Access-and-Food-Security-Among-Fairfield-University-Undergraduate-Students

Abstract:
Before the COVID-19 pandemic, food access and food security were a considerable problem within the United States. Food access and food security among college students has been understood as an unaddressed major issue. Since the start of the COVID-19 pandemic, lock downs, unemployment, and the closure of schools have caused an increase in food insecurity among Americans. A similar trend has been observed among college students. This study's purpose was to determine the extent to which the COVID-19 pandemic has affected undergraduate students' food security and access at Fairfield University. Participants of this study were recruited out of convenience and completed an online survey administered through Qualtrics. The survey used was based on the Food Access and Food Security During COVID-19 Survey Version 2.01 created by the University of Vermont and Johns Hopkins University. The survey data were analyzed using SPSS. Recommendations for helping such students on campus were explored.

Impact of COVID-19 on Healthful Food Options at Fairfield University's Dining Hall

Sarah Carway

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/fNTHAHYmaf9I/Impact-of-COVID-19-on-Healthful-Food-Options-at-Fairfield-Universitys-Dining-Hall

Abstract:
The nutritional quality of food on college campuses has been well studied in general, but few studies have yet to look at how COVID-19 has impacted the availability of nutritious food on college campuses. This study investigated the impact that COVID-19 has had on the number of healthful food choices at Fairfield University's Tully Dining Hall, specifically when operating in a solely "grab-and-go" system. Data on the availability of different types of food items was collected from published menus for a three-week period of September 2020 when the Tully operated as only "grab-and-go" and from the same three-week period of September 2019, when the Tully was operating normally, which served as a control. Food choices considered "healthful" for the purposes of this analysis included: fruits, (non-potato) vegetables, and items designated by Sodexo as a "mindful choice." Daily totals for the categories of fruits, vegetables, and "mindful choices" were calculated and averaged for each meal of the day for a total of 42 days. Overall, the findings from this study suggest that the move to grab-and-go dining

only in response to COVID-19 had a significant impact on the number of healthful food options available for students at Fairfield University.

Mobile Applications for Diabetes

Abby Peters

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/IW81AEImaTRT/An-Evaluation-of-A-Fact-Sheet-Summarizing-Mobile-Applications-For-Diabetics

Abstract:
Diabetes can negatively affect all parts of the body if it is not managed correctly. The disease is also very difficult to manage because many different physical and environmental factors affect blood glucose levels each day. Mobile applications with a blood sugar log, medication tracker, ability to share with friends and family, and a food log, are promising tools when it comes to diabetes management. These apps can help bridge the gap between endocrinologist visits. These apps are becoming more popular, but navigating the landscape of available diabetes apps can be overwhelming. To address the need for clear, easy-to-use information about mobile applications for diabetes management, I created a web-based fact sheet that summarizes the findings of a study that evaluated these applications. The fact sheet includes nine applications and a table illustrating the features of each. A link to a brief, anonymous survey was included at the end of the fact sheet to allow viewers to evaluate its utility.

People's Perspectives on Drug Addiction

Morgan Dow

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/CmbKAhu6t5xb/Peoples-Perspectives-on-Drug-Addiction

Abstract:
In 2017, President Donald Trump declared an opioid epidemic in the United States in response to a dramatic increase in the rate of overdose deaths due to opioids. In 2018, over 20 million Americans aged 12 or older (7.4% of the population) had a substance use disorder in the past year. Substance abuse is associated with many other health problems including HIV/AIDS, suicide, mental illness, and homelessness. This study explores U.S. adults' perspectives on drug addiction. A survey was administered to volunteers ages 18 years and older. The survey assessed demographic characteristics, whether respondents personally knew someone affected by drug addiction, and respondents' attitudes towards drug addiction, including whether they felt that substance abuse is a choice. A total of 184 respondents completed the survey. More than half of respondents were between 18 and 23 years of age and 62.5% were female. The vast majority of the respondents (87.5%) either knew someone with a drug addiction or had a family member with a drug addiction. Additionally, the majority of respondents sympathized with drug addicts and believed that substance abuse is a disease.

Perceptions of Shifting Mental Health Resources and Services from University Students During a Pandemic

Taylor Choe

Faculty Mentor: Prof. Jennifer Schindler-Ruwisch

This Research Also Presented at Society of Behavioral Medicine 42nd Annual Meeting and Scientific Sessions

https://fairfield.quip.com/7V5gADXzzkNH/Perceptions-of-Shifting-Mental-Health-Resources-and-Services-from-University-Students-During-a-Pandemic

Abstract:
Many daily, long-term and unique stressors can affect college students' mental health. Most colleges and universities offer mental health services for their students; however, there are various barriers that can hinder student utilization of these services. The original aim of this study was to assess student perceptions of mental health resources and their accessibility at Fairfield University. However, due to the COVID-19 pandemic, a secondary objective was added to assess the shifting perceptions, accessibility, and availability of mental health services during pandemic-related modified care models. An online survey at the beginning of the pandemic (March 2020) was distributed via e-mail and completed by 65 undergraduates. A follow-up survey was distributed in March 2022, one year into the pandemic, to ascertain

changes from the baseline in perceptions of mental health needs and accessibility.

Program Evaluation: COVID-19 Safety Protocol Fact Sheet for Small Businesses

Taylor Choe

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/0svOAbon5G4p/Program-Evaluation-COVID-19-Safety-Protocol-Fact-Sheet-for-Small-Businesses

Abstract:
In March 2020, Connecticut began experiencing the effects of the COVID-19 pandemic as Governor Lamont issued the "Stay Safe, Stay Home" initiative that closed non-essential businesses and restricted contact with people. When researching information for pandemic protocols for business, there were not many resources. The CDC has guidelines on its website, but there is nothing for Connecticut business owners specifically. With states allowed to handle the pandemic as they see fit, these general guidelines, while helpful, are not specific enough for CT business owners and are lengthy with a lot of information and not in one web location. The program's purpose is to survey small business owners and assess their thoughts about running a business according to the COVID-19 pandemic protocol. Then, an essential information fact sheet of COVID-19 protocols that will be compiled from CDC guidelines and the Connecticut COVID-19 Response website, to support local small businesses is created.

Race and Self-Doubt Among College Students

Micah Martin-Parchment

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/m0xYAuaDKQmc/Race-and-Self-Doubt-among-College-Students

Abstract:
This study's purpose is to determine whether experiences of impostor phenomenon vary by race among students enrolled at a predominantly White institution (PWI). A secondary aim is to determine whether experiences of imposter phenomenon among Black college students varies according to enrollment at a PWI (Fairfield University) or a more racially diverse institution (Southern Connecticut State University). The hypothesis is that Black students will experience IP to a greater extent than White students at a PWI and also that Black students at a PWI will experience IP to a greater extent than Black students at a more diverse institution. This is a cross-sectional study. An online survey that should take approximately 5-10-minutes was administered to eligible participants. The survey includes a validated 20-item scale measuring imposter phenomenon with 15 questions adapted from a validated everyday discrimination scale, and additional questions about race, ethnicity, gender, and first-generation college student status. All current undergraduate students enrolled at Fairfield University or Southern Connecticut State University were eligible to participate in the study.

Race, Ethnicity, and Trust in the U.S. Healthcare System

Tiara Wheeler

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/rEdqAqTB2YYo/Race-Ethnicity-and-Trust-in-the-US-Healthcare-System

Abstract:
Previous research shows that Black and Hispanic Americans are more distrustful of physicians than White Americans. Nearly 70% of Black Americans believe that patients are not treated equally based on race or ethnicity when seeking medical treatment. Observations of unequal healthcare have thus stained views of the COVID-19 vaccine with recent surveys reporting that Black Americans are the most hesitant and skeptical towards the vaccine. Some authors refer to this skepticism as the "Tuskegee effect," in that this distrust links to the Tuskegee Syphilis Study, a well-known example of medical mistreatment by researchers and physicians in America. The primary purpose of this cross-sectional study was to explore and compare the attitudes towards and experiences with the United States healthcare system between racial and ethnic groups. The secondary goal was to determine whether any difference between groups was related to awareness of the history of unethical treatment towards racial and ethnic minority groups by medical providers and researchers in the United States. A thirty-two question survey was administered through Qualtrics to adults ages 25 years and older to assess

demographic characteristics; personal experiences, perspectives, and overall satisfaction with the current healthcare system; knowledge of historical unethical medical experiments; and levels of vaccine hesitancy. A total of 203 participants completed the survey.

Self-Care Practices among Fairfield University Students during COVID-19

Destiny Mclellan

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/Fmr4AvaNvAEH/Self-Care-Practices-among-Fairfield-University-Students-during-COVID-19

Abstract:
This research project examines self-care practices among Fairfield University students. Based on prior research, the COVID-19 pandemic and the lockdown measures enforced to mitigate it, have been associated with adverse psychological impacts in the general population. Previous research described that different types of coping behaviors such as exercise, receiving family and social support, arranging a daily schedule, planning specific activities to complete, and creating new hobbies were associated with improved well-being among young adults during the pandemic. An anonymous online survey link was distributed to undergraduate students to assess their current stress levels related to COVID-19, the types of self-care practices they engaged in and their frequency, and their overall physical and mental well-being. Self-care practices assessed by the survey included: listening to music or podcasts, meditation, journaling or creating art, and exercise. This study's findings could inform future interventions and programs for Fairfield University students.

Social and Environmental Influences on Dietary Quality in Fairfield Students

Sarah Mellen

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/Ye0FALZuf4hV/Social-and-Environmental-Influences-on-Dietary-Quality-in-Fairfield-University-Undergraduate-Students

Abstract:
This study examines factors that influence dietary decisions of Fairfield University students. The three primary areas of focus in the study were the influence of nicotine and vaping devices on dietary decisions, influence of housing accommodations, and influence of class status.

The COVID-19 Pandemic and its Effects on Pregnancy in Hispanic Women

Vanessa Rubenstein

Faculty Mentor: Profs. Jennifer Schindler-Ruwisch, Kimberly Doughty

https://fairfield.quip.com/pCibAAcmApse/The-COVID-19-Pandemic-and-its-Effects-on-Pregnancy-in-Hispanic-Women

Abstract:
This study extends the research study "Sleeping Like a Baby," which examined the influence of the COVID-19 pandemic in the role of sleeping and breastfeeding intentions and practices among pregnant women. The survey was distributed to participants through the online service Qualtrics. In order to be eligible, participants needed to be older than 18 and currently pregnant. The study was originally limited to co-sleeping and breastfeeding, but when the COVID-19 pandemic began, questions about the effects of the pandemic were added to the survey. This data was then analyzed using the statistical analysis software SPSS. There have been many research studies in the past year focused on the effects of the COVID-19 pandemic on individuals, but most exclude pregnant women or focus on a particular ethnicity. Pregnancy is a sensitive time in a woman's life and it is important to understand the impact of the pandemic on this population. This study clarifies the relationship between adverse effects of the COVID-19 pandemic on

pregnancy in Hispanic women to determine the contributing factors to this relationship.

The Impact of COVID-19 Infection on Fairfield University Students

Isabella Bellini

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/YrdvAOO8cuqY/The-Impact-of-COVID-19-Infection-on-Fairfield-University-Students

Abstract:
To date, 704 students at Fairfield University have contracted COVID-19. Little information is known about the severity or the duration of COVID-19 symptoms in this population or whether infection with COVID-19 influences students' behaviors. The purpose of this study was to describe the experiences and behaviors of students who have had COVID-19 and determine whether there are any differences based on gender. To determine this, I administered an anonymous, online survey to undergraduate students at Fairfield University who reported receiving a positive PCR test for COVID-19 to determine their duration of illness, types of symptoms, symptom duration ,and symptom severity. The survey also assessed frequency of compliance with COVID directives before and after diagnosis.

Unused Prescription Medications

Abigail Briggs

Faculty Mentor: Prof. Kimberly Doughty

https://fairfield.quip.com/ux3UAdK4a2fi/Unused-Prescription-Medication-Symposium

Abstract:
Prescription overdoses and medication related injuries is a continuous problem in the United States. Many harm related incidences with medications are from households containing excess amounts of medication and children being able to access medicine cabinets. The purpose was to describe the prevalence of potential injuries related to unused prescription medications and to inform participants about drug disposals in a volunteer sample; and determine if these outcomes vary by age. Medications with the potential of being misused were defined as prescription pain medications, anti-anxiety medications, and ADHD medication. Data was collected using an anonymous online survey from volunteers 18 years and older to gather information on the quantity of specific medications in households and people's knowledge of drug disposals. Drug disposals are bins placed in local pharmacies and police stations that members of the community can access to safely dispose of their unused prescriptions to help reduce potential harm.

Vaccine Communication during a Public Health Crisis

Riley Finley

Faculty Mentor: Profs. Jennifer Schindler-Ruwisch, Kimberly Doughty

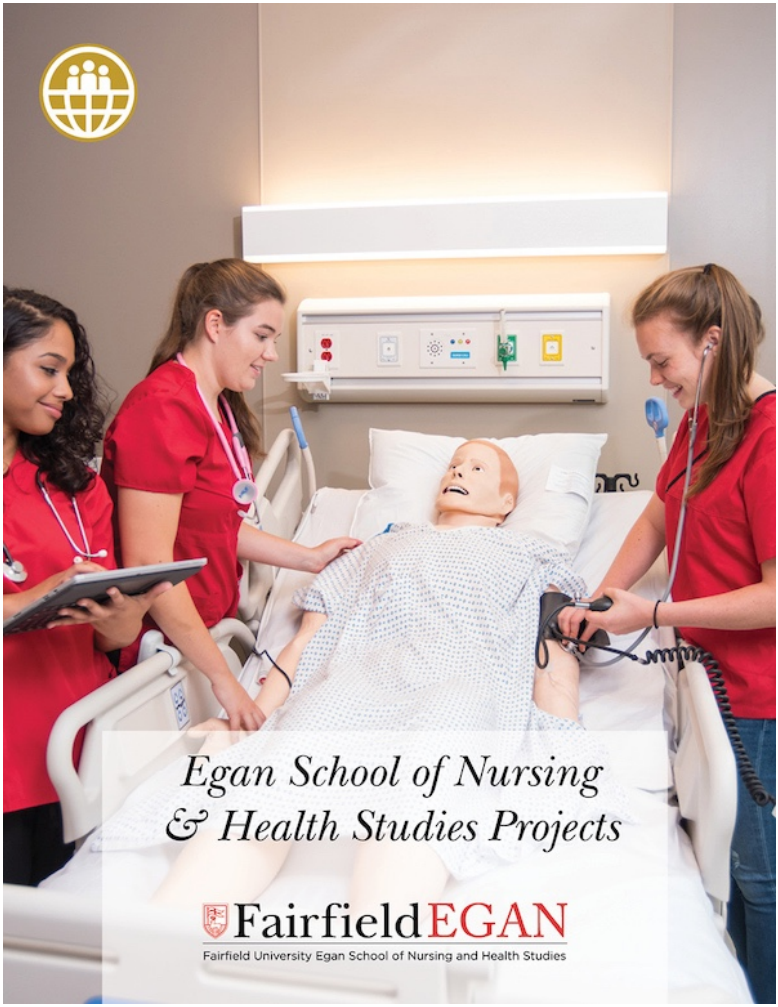
This Research Also Presented at Academy Health Data Palooza Conference

https://fairfield.quip.com/PxglAoYafUyX/Vaccine-Communication-during-a-Public-Health-Crisis

Abstract:
Health communication is incredibly important during a public health crises such as the COVID-19 pandemic. Messaging about vaccines from the country's leaders can have a significant impact on Americans' attitudes towards them. This research focuses on how the Surgeon General is communicating regarding the new vaccines on Twitter. Tweets were curated from the official Surgeon General Twitter account in 2 two-week periods, under Trump's administration and Biden's administration. A total of 65 Tweets pertained to vaccine information, which were coded using a content-analysis mixed methods thematic approach to categorize the nature of the tweet, purpose, framing, sentiment, emotional appeal, audience target, evidence-based recommendations, administration, and support. The results showed concerning trends of decreased social media attention to vaccines throughout the periods studied and across administrations. In particular, more Tweets had a gain frame, cognitive

sentiment, and did not align with evidence-based approaches to address vaccine hesitancy and improve vaccine uptake. Social media can be a beneficial tool for change and information if utilized correctly.

Nursing Capstones



Alarm Fatigue and the Impact on Patient Care

Katherine Horcher

Faculty Mentor: Profs. Suzanne Turner, Kathy Saracino

https://fairfield.quip.com/WrEZAz4CrGkr/Alarm-Fatigue-and-the-Impact-on-Patient-Care

Abstract:
Many hospital floors provide constant monitoring of their patients via alarms. Often times, these alarm systems malfunction and alert providers unnecessarily. These alarms can cause distress to patients and providers. The term alarm fatigue defines these overwhelming feelings felt by the nursing staff of desensitization and apathy. This research project focuses on reducing alarm fatigue which can cause harm to patients. On the medical surgical floor of 7-5 at Yale New Haven Hospital, nursing care constantly monitors their patients and, therefore, there are many frequent alarms. The nursing staff expresses that they would benefit from a way to decrease unnecessary alarms and improve patient care. The role of nursing staff is to keep patients safe during their stay in the hospital. Many floors though, struggle to find a balance between adequate and excessive alarms. This research project focuses on a specific intervention that is evidence-based and proven to decrease excessive alarms significantly. Staff members on the floor agreed that the issue of alarm fatigue should be addressed as a group via in-service in order to unite staff on the issue and provide them with a solution to the problem. An in-service learning program

and a poster provide nursing staff with the necessary information to lessen alarm fatigue on their floor. Nurses verbalized their enthusiasm and willingness to implement the interventions on the floor immediately. This education allows for nurses to keep their patients increasingly safer and respond appropriately to alarms.

And the Beat Goes On: Epicardial Pacer Settings

Sydney St. Pierre

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/5HnYAsNkyT1I/And-the-Beat-Goes-On-Epicardial-Pacer-Settings

Abstract:
Cardiac nurses need to be well-versed on many topics related to the heart, but they tend to fall short on knowledge surrounding epicardial pacemaker settings. According to Elmistekawy, E. et al. in 2016, "temporary epicardial pacemaker wires are routinely inserted in the vast majority of patients after cardiac surgery," which is also true on the cardiac surgical floor 5-3 at Yale New Haven Hospital. The evidence-based literature supports increasing nursing knowledge surrounding epicardial settings due to their prevalence in a cardiac nurse's day-to-day life on the floor. "Temporary epicardial pacemakers have become increasingly sophisticated over the years" (Batra, A.S., Balaji, S., 2008). Without the knowledge of how these devices work or how to treat patients with them, nurses may not be able to provide adequate care. Therefore, training and experience with epicardial pacemakers are necessary. Ultimately, nurses who feel more comfortable and knowledgeable about settings can provide competent nursing care and education to patients. A recently created brochure, detailing the different settings on epicardial pacers, will be useful for nurses to refer to if they have questions and to

reinforce their knowledge. It can also be used as a teaching tool for nurses to educate patients on the specific settings such as AOO, DDD, or others. The brochure helps reduce stress surrounding unfamiliarity with pacemaker settings and allows nurses to feel more confident about their knowledge and their ability to teach patients.

Art Therapy For Hospitalized Children

Kristina Bodner

Faculty Mentor: Prof. Ashley Antonucci

https://fairfield.quip.com/2W5IAfA6XHbb/Art-Therapy-for-Hospitalized-Children

Abstract:
When hospitalized, patient's everyday routines are interrupted, often leaving them feeling out of control and anxious. When hospitalization is prolonged, the combination of the actual physical illness and anxiety around how life is altered because of this illness can lead to the build-up of additional stress on the body. It is often difficult to express and properly cope with these emotions, which are only amplified in children who are generally less able to verbally express themselves. Art therapy can be a beneficial practice for hospitalized children for many purposes. It is an outlet where children can express their feelings using non-verbal methods such as drawing or painting. Also, by using a creative part of the brain, participating in art therapy provides a distraction and a diversional activity. It can provide day-to-day structure within the inpatient environment, which lacks typical socialization and structure for school aged and adolescent patients. Art therapy has proven to reduce reported depression and anxiety in children, as well as decrease occurrence of behavioral issues. This project details a standardized program for the provision of art therapy to children experiencing hospitalization greater than three days. This program equips the staff nurses to

implement art therapy in routine care, contributing to a more holistic standard of care for the well-being of the whole child.

Assessing the Learning Needs for Newborn Care

Hali Young

Faculty Mentor: Prof. Lindsay Collins

https://fairfield.quip.com/pRARAQES5biU/Assessing-the-Learning-Needs-for-Newborn-Care

Abstract:
This research project focuses on the necessity to improve family-centered care (FCC), specifically in a Labor, Delivery, Recovery, and Postpartum unit. FCC recognizes the family as an integral role in the patient's life and supports the parents in their role as caretakers (Smith, 2018). At St. Mary's Hospital, nurses tended not to educate second-time mothers about newborn care, despite learning deficits present such as a mother unable to properly latch her infant for breastfeeding. Evidence-based research addresses the large gap between the perception of necessary FCC activities and the current activities implemented on units. Despite the benefits of this method of care, including increased parent confidence, improved patient satisfaction, and decrease in parental stress, many barriers exist that inhibit the implementation of FCC. One piece of literature highlights the negative effect nursing burnout and rationing of care has on the execution of FCC. Based on the research conducted, an intervention was required in order to tackle the various barriers to FCC. Knowles' Theory of Adult Learning explains that adults are able to self-assess their specific learning needs. Therefore, an education

evaluation tool was developed to improve FCC by assessing parents' learning needs about newborn care. This intervention not only promotes patient independence but reminds nurses of the individualized patient teaching that families require.

Bedside Rounding Effects on Patient Outcomes

Kathleen Schofield

Faculty Mentor: Prof. Lauren Mitchell

https://fairfield.quip.com/DEpyAebPrGv3/Interdisciplinary-Bedside-Rounding-Effects-on-Patient-Outcomes

Abstract:
Daily bedside rounding is a tool for physicians, nurses, families, and healthcare members to discuss patient care plans. "Implementation of bedside rounds enhances communication and collaboration between physicians and nurses, resulting in improved clinical outcomes'' (Acal et al, 2018). Professional nurses on Yale New Haven Hospital's 5-2 Unit do not actively participate in daily bedside rounding, thus potentially leading to increased fragmented communication, longer hospital stays, and overall adverse patient events. Nurse leader-physician bedside rounding affects both nurses, patients, families and overall teamwork on the unit. Prior to implementation of Johnson and Conner's (2014) standardized patient communication tool and educational in-service including evidence-based research, nurses and physicians rounded and approached care individually with little communication unless a patient issue arose. With the implementation of the patient communication tool and knowledge from in-services, nurses and physicians can discuss patient care in a dynamic and structured way to

increase communication and collaboration improving patient outcomes.

Benefits of Enhanced Recovery After Surgery (ERAS) in Bariatric Surgery in Comparison to Traditional Treatment

Abby McCarthy

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/hb57Ag8yZbT3/The-Benefits-of-Enhanced-Recovery-After-Surgery-ERAS-in-Bariatric-Surgery-in-Comparison-to-Traditional-Treatment

Abstract:
This research project compares implementing an Enhanced Recovery After Surgery (ERAS) protocol to traditional perioperative treatment in bariatric surgery. Morbid obesity is a growing epidemic in the United States that is effectively treated through bariatric surgery. On the step down unit of West Tower 6 at Bridgeport Hospital, nurses are uninformed of the perioperative ERAS protocol for bariatric surgery patients. The nurse's job is to monitor the patient's progress throughout their hospital stay, and, therefore, understand the requirements for the ERAS protocol. Current evidence-based practice suggests that the ERAS protocol implements interventions throughout the preoperative, intraoperative, and postoperative phases of bariatric surgery to ensure patient safety while reducing surgical stress and recovery time. It has been proven that using the ERAS protocol for bariatric surgery reduces a patient's length of stay in the hospital, which parallels the decrease in total hospital cost per procedure. Evidence-based literature also suggests that the ERAS

protocol reduces readmission rates, and postoperative insulin resistance. Studies show that implementing an ERAS protocol in place of traditional perioperative care improves patient reported pain rates and reduces not only opioid use, but the overall potential for opioid addiction postoperatively. In addition to an educational in-service, an infographic was created to highlight the benefits of ERAS in bariatric surgery patients, and to act as a checklist for the ERAS protocol. Educating nurses on the benefits of implementing an ERAS protocol perioperatively is critical in order for patients to recover quickly after bariatric surgery.

Benefits of Enhanced Recovery After Surgery Protocol for Bariatric Surgery Patients

Julianne Abbatello

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/ZajhAh71sNZw/Benefits-of-the-Enhanced-Recovery-After-Surgery-Protocol-for-Bariatric-Surgery-Patients

Abstract:
This project focuses on the benefits for bariatric surgery patients if they follow the Enhanced Recovery After Surgery (ERAS) protocol. With bariatric surgeries constantly growing in popularity as an effective and safe solution to long-term weight loss, improving patient outcomes in the immediate postoperative period after surgery is also increasing in importance. ERAS involves a series of evidence-based interventions initially created for colorectal surgery and since adapted for use with other surgeries, with specific focus in this study on bariatric surgeries. There has been an implementation of the ERAS protocol in some hospitals. Without enough patient education on the guidelines they should be following and the benefits gained from following ERAS, patients will have lengthened hospital stays with potential for an increase in future hospitalizations or adverse events. Research shows that a quicker recovery is promoted by the patient's understanding of the surgery, walking early and often, eating and drinking early after surgery, and good pain relief with non-opioid medications (Yale New Haven Health, 2020). By increasing patient education

surrounding their recovery, using patient-centered care in the pathway for recovery, and utilizing the interdisciplinary healthcare team before, during, and after surgery, adherence to the ERAS protocol will ultimately increase among patients receiving bariatric surgeries. This will improve positive patient outcomes, reduce the length of hospital stays, and decrease postoperative hospitalizations or adverse events.

Benefits of Family Presence During Cardio-Pulmonary Resuscitation

Grace Rankin

Faculty Mentor: Profs. Lauren Mitchell, Kathy Saracino

https://fairfield.quip.com/O4qwA4PYq4c8/Benefits-of-Family-Presence-During-Cardiopulmonary-Resuscitation

Abstract:
Family Presence during Resuscitation (FPDR) has furthered progress in family-patient centered care, and improved family satisfaction in care, but is not widely integrated into health care professionals practice. On a 26 bed medical cardiac floor in an urban hospital, a lack of knowledge was identified regarding benefits of FPDR and the role of the family facilitator during the resuscitation. The majority of employees on this unit reported little to no experience with family presence during CPR and were interested in learning the benefits of integrating this into their practice. This project focused on educating nurses on the benefits of FPDR, defining the role of the family facilitator, and refuting misperceptions regarding possible negative repercussions. After identifying the unit's learning need, by collaborating with my preceptor, I researched scientific literature and peer-reviewed articles to provide the staff with the most up-to-date literature. A brief informational sheet regarding the benefits of family presence during CPR, and a breakdown on the role of the family facilitator were provided to the staff during an in-service. Staff were educated on the psychological benefits for family members who participated in FPDR,

including a decrease in signs and symptoms of PTSD, depression and traumatic grief (De Stefano et al, 2016). Concerns regarding potential ramifications were addressed. It was noted that hospitals with FPDR policies have similar ROSC (return of spontaneous circulation) scores as hospitals without a policy and there is no effect on patient outcomes, or an increase in medico legal claims (Zavotsky et al, 2014 & Goldberg et al, 2015). The unit was also informed about the role of the family facilitator, by discussing how to educate family members on resuscitation efforts and assessing their readiness to participate in FPDR (Bradley et al, 2018). Staff members demonstrated willingness to incorporate FPDR into their future practice, while following along with YNHH's policies.

Benefits of Implementing a Virtual Immersive Experience to Combat Social Isolation and Loneliness in Older Adults

Caroline Smith

Faculty Mentor: Profs. Majeda Basilio, Kathy Saracino

https://fairfield.quip.com/fVSUArUTnE0d/Benefits-of-Virtual-Immersive-Experience-to-Combat-Social-Isolation-and-Loneliness-in-Older-Adults

Abstract:
The COVID-19 pandemic notoriously targeted America's most vulnerable populations due to pre-existing systemic issues in the healthcare system. The pandemic exacerbates health aggravators of social isolation and loneliness through the implementation of social distancing and quarantine to limit the spread of the COVID-19 virus. Adults over the age of 65 are more at risk for social isolation and loneliness due to chronic illnesses, losing friends or family members, or living alone. According to the CDC, evidence suggests that older adults who are socially isolated have a 50% increased risk of dementia (CDC, 2020). Additionally, 26% of older adults have an increased risk of all-cause mortality (Wu, 2020). While observing the V4W unit at Yale-New Haven Hospital, patients feel more isolated due to protocols such as visiting restrictions. Virtual reality (VR) is a computer-generated simulation that allows people to interact with a three-dimensional environment such as a beach, museum, or city. The evidence-based literature addresses

the effects of using VR technology on older adults. Results show that VR immersive natural scenes reduce stress and provide relaxation (Anderson et a., 2017). Overall, VR had a positive effect on participants' social and emotional well-being. Participants reported feeling less socially isolated and more likely to feel positive emotions (Lin et al., 2018). In connection to the research presentation, a flyer was created for the Yale-New Haven V4W unit healthcare staff that includes information regarding VR and QR codes for easy access to VR environments for patients.

Benefits of Infant Massage in the NICU

Kathrine Vitiello

Faculty Mentor: Prof. Lindsay Collins

https://fairfield.quip.com/heUnA7T2cRhG/Benefits-of-Infant-Massage-in-the-NICU

Abstract:
This research project focuses on increasing the awareness of infant massaging and the benefits it promotes in the NICU. Less than half of the hospitals nationwide implement the practice of infant massaging. Increasing nursing and parental knowledge on this topic can improve the health and well-being of NICU patients. The evidence-based literature addresses four significant benefits of NICU massaging for the infants and parents. Participants in the studies were NICU mothers and nurses educated in infant massaging. The benefits include improving weight gain and growth, optimizing neurodevelopment, reducing painful stimuli and stresses, increasing nurse satisfaction on the care provided, and promoting maternal and infant bonding while decreasing anxieties in mothers. In addition, the literature offers techniques and tips on how to properly massage the infant for optimal results. The positive implications from infant massaging show significant promise that should not be overlooked. Implementing infant massaging can improve NICU nursing care across the board, help vulnerable infants become healthier and stronger, and relieve mothers' anxieties.

Benefits of Palliative and Hospice Care for Healthcare Providers and Their Patients

Lauren Casieri

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/1V4sAtKothXO/Benefits-of-Palliative-and-Hospice-Care-to-Healthcare-Professionals-and-Their-Clients

Abstract:
This research project focuses on the benefits of Palliative and Hospice care for healthcare providers and their patients by improving patient and family outcomes and experiences, as well as decreasing overall healthcare costs. Despite ample information on the benefits of Palliative and Hospice care, both types of care remain underutilized due to misconceptions of these services and lack of education from healthcare providers to patients about these services (Shalev et al., 2018). Aggressive medical care at the end of life can have a detrimental effect on both patients and family members and cause an increase in hospital death rates and healthcare costs (Schneiter et al. 2019). Palliative care focuses on anticipating, preventing, and treating pain and suffering in patients with serious illness as well as optimizing patient and family quality of life with patient centered care as the focal point. Hospice care retains the goal of delivering Palliative care services to patients with a prognosis of six months or less to live (Wexler & Mertz, 2020). Palliative care utilization has resulted in increased advance care planning, in addition to ensuring patients' wishes are

thoroughly communicated, it is crucial that healthcare professionals are educated on Palliative and Hospice care to allow them to inform patients about their options for these services and ultimately improve patient and family experiences for those diagnosed with life-threatening illness. For the methodology, a handout was created with information on Palliative and Hospice care for patients and family members as a resource to clearly communicate aspects of these services. It can be used to assist healthcare professionals educate their clients about these services and sent home as a learning tool.

Benefits of Palliative Care Consultations Upon Admission

Jessica Vaughn

Faculty Mentor: Prof. Mary Murphy

https://fairfield.quip.com/2LKAAPp6HUme/The-Benefits-of-Palliative-Care-Consultations-Upon-Admission

Abstract:
Palliative care is specialized support that focuses on providing patients relief from pain and other symptoms of a serious illness, no matter the diagnosis or stage of disease. Palliative care is a specialty commonly overlooked, underused, and misunderstood within the in-patient care setting. Past research demonstrates a significant delay in obtaining a Palliative care consultation within our healthcare system. Earlier consultation is associated with improving patient satisfaction and outcomes.

Benefits of Palliative Care for Heart Failure Patients

Gretchen Heisler

Faculty Mentor: Prof. Lauren Mitchell

https://fairfield.quip.com/oPieAn1obsXH/Benefits-of-Palliative-Care-for-Heart-Failure-Patients

Abstract:
There is a lack of knowledge surrounding palliative care. Clients with chronic cardiovascular disorders who are able to receive palliative care often do not due to the misconception that palliative care is for terminally ill clients. Those with chronic cardiac conditions, such as heart failure, experience symptoms related to the disease as well as decreased quality of life, depression, and emotional distress related to the burden of a chronic disease. These psychological symptoms are often not addressed in the acute care setting. On a cardiac care unit at Yale New Haven Hospital, many patients displayed emotional distress related to their condition with little knowledge about how palliative care could benefit them. After researching peer-reviewed scientific literature, a conclusion has been made that in conjunction with care as usual, cardiac palliative care significantly improves quality of life, depression, and spiritual well-being. With this information, a fact sheet has been made for distribution to those with a chronic cardiovascular disease, in any stage, outlining what palliative care is and how it is specifically beneficial to those with heart failure. Appropriate education about cardiac palliative care along

with its benefits will allow clients to make an informed decision regarding their treatment and management of their symptoms that best fits their needs.

Bridging the Communication Gap Between Non-English Speaking Patients and Nurses

Gabriella Corbo

Faculty Mentor: Prof. Barbara Jeudi

https://fairfield.quip.com/LO6YAFEg1PWM/Bridging-the-Communication-Gap-Between-Non-English-Speaking-Patients-and-Nurses

Abstract:
Language barriers and the issues that they present are becoming more prevalent in hospitals, such as Bridgeport Hospital specifically on the West Tower 7 medical unit. An increasing number of patients in the United States are categorized as having limited English proficiency (ELP), leading to language barriers that make patient-centered care more difficult to perform. Without this direct focus on patient-centered care, the nurse's role cannot be totally fulfilled. The evidence-based research implemented in this project presents the multitude of negative outcomes that occur because of language barriers and the lack of usage of international language services (ILS) available to the staff in order to limit language barriers. Of these negative outcomes, the most relevant are medical errors, delays in treatment, issues with informed consent, increased hospital length of stays, increased readmissions within a short period of time, and physical harm to patients. The literature supports the use of ILS and translation devices available to nurses such as the Translate app found on the Mobile Heartbeat phone that each nurse at Bridgeport Hospital carries. In tandem with the research

presentation, a flyer was created with a simple step-by-step breakdown of how to use the translation app in order to avoid these negative outcomes and optimize patient-centered care.

Bridging the Communication Gap Between Patients, Families, and Nurses Regarding Comfort Measures and End of Life Care

Sydney Lavoie

Faculty Mentor: Prof. Krystin Onacilla

https://fairfield.quip.com/qY6SA3FUfw0y/BRIDGING-THE-COMMUNICATION-GAP-BETWEEN-PATIENTS-FAMILIES-AND-NURSES-REGARDING-COMFORT-MEASURES-AND-END-OF-LIFE-CARE

Abstract:
When a patient is at the end of life, with days left to live, nurses and families commonly discuss options of end of life care. This causes heartache for family members and how the nurses teach them about the care being provided either eases or escalates this pain. This project explores end of life care and the interventions nurses have to take in order to provide proper care and teaching to both the patient and family at the bedside. On the Medical Oncology Unit at Greenwich Hospital, an abundance of patients were put on comfort measures due to their terminal illness progressing to a point where they no longer had any quality of life. On the floor, many new graduate nurses admitted to not being familiar with teaching and addressing patients and families about comfort measures and end of life care. A major role as an oncology nurse is to educate and address patients and families questions and concerns. Due to the abundance of many new nurses, there was a need for teaching how

to address families about comfort measures by using therapeutic communication and addressing which medications they will receive and why. To help these new graduate nurses, a pamphlet is used to help them address families regarding comfort measures and end of life care.

Bringing Peace to Children with Eating Disorders

Kimberly Fried

Faculty Mentor: Prof. Ashley Antonucci

https://fairfield.quip.com/i5fZABaQVHNM/Bringing-Peace

Abstract:
Since the beginning of the Coronavirus pandemic, there has been a rapid increase in pediatric hospitalization related to exacerbations in eating disorders. This increase can be attributed to "feelings of confusion, emotional isolation, insecurity, and stigma" (Khosravi, 2020). As nurses, we adapt to the ever-changing environment in which we provide care. In this research project, I sought to create a care kit backed up by thorough research. I found cost-effective tools, such as bright light therapy and lavender aromatherapy that can be used to lessen the impact of concurrent disorders such as anxiety and depression. I hope that this care kit will make the acute care stay for this population more tolerable. It will also strengthen the bond between the nurse and patient.

Central Line Acquired Blood Stream Infection Prevention Tool

Ethan Englert

Faculty Mentor: Prof. Danielle Jimenez

https://fairfield.quip.com/8FhMAuoo8ZX2/Central-Line-Acquired-Blood-Stream-Infection-Prevention-Tool

Abstract:
This project focuses on the creation of a simple and easy-to-use tool for central line care and CLABSI prevention for nursing staff and patients alike. There are 250,000 catheter acquired infections in the US on a yearly basis (CDC). These infections attribute to a 2.27% increase in patient mortality (Patient Safety Monitor Journal) and this increase puts patients at risk of increased hospital stays and hospital costs. The goal of this tool is to have something easily copied and distributed to simplify central line care and keep hospital staff, as well as patients accountable for proper care of central line catheters. This study took the form of a literature review focusing on articles that related to the nursing and patient roles in taking care of central lines and preventing infection. Through a study done focusing on patient empowerment in their care, they reduced CLABSI by 43% by giving the patients the tools to understand what proper care and maintenance of their catheter looks like (Sheth et al. 2017). By creating a basic and simplified tool for nurses and patients, the hope is to reduce confusion on infection prevention for central lines and increase

understanding of the proper care and maintenance for these specific types of lines.

Check Yourself At The Door: The Impact of Racial Disparities and Implicit Bias on the Cardiovascular Care of Black Americans

Iris Johnson

Faculty Mentor: Profs. Lauren Mitchell, Rose Iannino-Renz

https://fairfield.quip.com/KNqnAZV1oKfT/Check-Yourself-At-the-Door-The-Impact-of-Racial-Disparities-and-Implicit-Bias-on-the-Cardiovascular-Care-of-Black-Americans

Abstract:
In the United States, racial disparities in healthcare are not an unfamiliar reality for Black Americans. Specifically, cardiovascular care is in need of improvement in response to the persistent high mortality rate of Black Americans (Youmans et al., 2019). Furthermore, in the United States, Black adults consistently demonstrate higher rates of cardiovascular disease (CVD) mortality, despite the mortality rates declining over the past several decades (Tajeu et al., 2020). The factors influencing these outcomes range from socioeconomic status, psychosocial factors, CVD risk factors (e.g., hypertension, hyperlipidemia, obesity, etc.), and that the prevalence of equitable access to healthcare does not equate to equitable care (Youmans et al., 2019). Therefore, I recognized the educational need of the nurses on Yale New Haven Health's 5-2 due to the prevalence of Black adults on the unit. The nurse's duty is to care, educate,

and advocate for their patients in order to eradicate racial biases and disparities in healthcare. Additionally, this stresses the need for all healthcare professionals to address the racial disparities in cardiovascular care of Black Americans, the importance of representation and diversity among healthcare professionals, and the necessity of implicit bias awareness to minimize healthcare behaviors enabling the current state of disparities (Youmans et al., 2019). To address this pertinent need, an in-service was provided to the nurses on the cardiac unit to inform and encourage them to acknowledge the harm of implicit bias and how it contributes to the disparities in cardiovascular care of Black Americans.

Chlorhexidine Baths for Central Line Patients

Anna Jussel

Faculty Mentor: Prof. Kathleen Piqueira

https://fairfield.quip.com/hiyYAGWgN76J/Chlorhexidine-Baths-for-Central-Line-Patients

Abstract:
Patients with central line catheters are at an increased risk for acquiring bloodstream infections. The use of full-body chlorhexidine gluconate (CHG) baths for patients with central line is a preventative measure taken to decrease the risk of infection (Lin, et al., 2017). On 6 W at Bridgeport Hospital, there are often multiple patients on the unit with central lines placed. Although it is standard practice to perform CHG baths for these patients, it is a step that is not prioritized and in some instances forgotten. A need for learning is present among nurses and nursing assistants to increase adherence of this aspect of care in order to increase safety and positive outcomes (Conley, et al., 2017). Nurses on the unit agreed that CHG baths are an important element of care for certain patients, but due to limited time and distraction or forgetfulness, they were not always completed. After the identification of this area of improvement for the unit, research on the effectiveness of CHG baths was performed. Research confirmed that the practice of full-body CHG baths on patients with central line resulted in fewer bloodstream infections and found lack of staff adherence and patient refusal as primary obstacles (Jusino-Leon, et al., 2019). Reeducation on the reasoning

for CHG baths is necessary but may not have a lasting impact. The implementation of reminder signs in appropriate patient rooms, placed near bathing equipment, will increase adherence by serving as a visual indicator for nurses and nursing assistants to prepare CHG baths for these patients.

Compassion Fatigue and Burnout in Oncology Nurses

Lauren Jamieson

Faculty Mentor: Prof. Krystin Onacilla

https://fairfield.quip.com/aa3tAlHSGGdM/Compassion-Fatigue-and-Burnout-in-Oncology-Nurses

Abstract:
This capstone project focuses on compassion fatigue and burnout in oncology nurses at Greenwich Hospital and what interventions can be implemented in the clinical setting to help combat these feelings. Research indicates that because of close and constant contact with patients in severe pain, distress and approaching death, along with difficult patient and family situations, these healthcare professionals are at a greater risk to experience job dissatisfaction, stress, and burnout. The evidence-based literature included in this project strives to address the impact of these emotions on patient care and tools that can be utilized in order to preserve the longevity of nurses, while still providing safe and efficient care. With these tools, oncology nurses can reflect on their emotions and learn to develop self-care strategies to maintain resilience during challenging times. Simple interventions that require little time commitment to combat burnout and compassion fatigue have shown to be effective for the nurses and in the end, nurses are able to provide optimal patient care. In connection to the capstone presentation, a survey will be implemented to gauge compassion fatigue and burnout for the nurses on

the unit and a pocket card provided that reminds staff of exercises that they can do to maintain resilience when they have a difficult patient assignment, creating actions of self-care in such a self-less profession.

COVID-19 Transmission in the Hospital Setting

Jessica Scanlon

Faculty Mentor: Profs. Mary Murphy, Kathy Saracino

https://fairfield.quip.com/dIY3AsnassxA/Covid-19-Transmission-in-the-Hospital-Setting

Abstract:
This capstone project's purpose is to summarize recent literature on the unique challenges surrounding an episode of testing positive for COVID-19 as an inpatient during an extended hospitalization. The association between hospitalization and possible sources of exposure to the virus is described. Investigations will determine if exposure to asymptomatic health care workers impact hospital-acquired outcomes. Challenges to actions in place to limit transmission of the virus are investigated. Procedures of surveillance practices are described. Review of COVID-19 testing of patients is reviewed. Established plans to maintain adequate patient care with proper use of personal protective equipment are listed. Episodes of testing positive for COVID-19 as an inpatient after initial testing was negative for the virus are concerning. The literature is reviewed for possible contributors to the conversion. Challenges to patient and personnel safety are investigated. This capstone project involves realistic challenges faced by nurses and patients during the COVID-19 pandemic. The addition of a presentation and informational flyer created for staff nurses in the acute care setting outlines the literature on

the evidence and best practices to limit transmission of the virus. The flyer is organized to communicate a clear message that reflects a deeper investigation of the literature on a relevant nurse topic that updates nurse knowledge, impacts practices, and improve outcomes.

Culturally Competent Care for Gender Minority Patients

Renee Babin

Faculty Mentor: Prof. Lisa Guardino

https://fairfield.quip.com/9sM5AXwyOUy0/Culturally-Competent-Care-for-Gender-Minority-Patients

Abstract:
Many healthcare settings are not prepared to provide comprehensive culturally competent care for transgender and gender minority patients, individuals whose gender identity or gender expression is different from the sex they were assigned at birth. Providers, including nurses, often lack knowledge and information about this patient population and wrongfully make assumptions of non-LGTBQ+ identities, which has led to low-quality, restricted care. This patient population requires specialized care, but often faces unique barriers in healthcare, including limited access to healthcare providers who possess knowledge about treating individuals who identify as a gender minority. Research studies show how this occurrence has led to an increased rate of health disparities that affect this unique population, including a higher rate of mental illness as well as other chronic diseases and health conditions. In addition to an educational in-service, a gender inclusive patient intake form was created for nurses to have their patients complete in order to gain a better understanding of their patients' gender identities and to ensure they provide them with high-quality, comprehensive, culturally

competent care. It is important to acknowledge these patient experiences and address the health disparities that they face in order to implement the interventions needed to provide this specific population with equal access to quality care and to increase the comfort and satisfaction of gender minorities, ultimately improving their overall health outcomes.

Decreasing CAUTI Incidence with Implementing Use of the PureWick

Lucy Marshall

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/VJQOA0ESYtZk/Decreasing-CAUTI-Incidence-with-PureWick-Implementation

Abstract:
Catheter-Associated Urinary Tract Infections are a major problem in the inpatient healthcare setting. As a result of their prevalence, Medicare and Medicaid Service have stopped funding CAUTIs and now forces hospital facilities to pay for all CAUTI cases because they are considered a preventable illness. This lack of reimbursement is an incentive to find ways to prevent CAUTI cases. The PureWick, an external female urinary catheter, could be a reasonable alternative to an indwelling catheter when appropriate. On surgical units, PureWicks have been used for urinary management, particularly with patients undergoing joint replacement surgeries as these patients have limited movement. The evidence-based literature include case studies and quality improvement projects in various hospitals conducted in efforts to determine if The PureWick is an appropriate alternative to indwelling catheters. Further, these studies examined whether or not implementing the use of The PureWick decreased the incidence of CAUTI cases. The population in all of the literature were female patients admitted to the hospital that required urinary management. The literature concluded that implementing the utilization of PureWicks

does in fact lowers the incidence of CAUTI cases, and decreases the overall usage of indwelling catheters. Creating a reference tool for nursing staffs prior to an implementation period increased the staff's understanding and confidence in using the product, and their likelihood to comply with the protocols.

Decreasing NV-HAP through Oral Care and the "Four E" Change Model

Olivia Michienzi

Faculty Mentor: Prof. Rebecca Lamberti

https://fairfield.quip.com/05ECAuNXC4O9/Decreasing-NV-HAP-Through-Oral-Care-The-Four-E-Change-Model

Abstract:
Twice daily tooth brushing is recommended by the American Dental Association in order to reduce plaque formation, inflammation, and bleeding (Pritts et al., 2020). When individuals adhere to this advice, they reduce their risk of developing harmful infections such as pneumonia. Pneumonia is an extremely contagious and highly prevalent illness within hospital facilities due to close living corners and the patients' weakened immune systems. As a result, many non-intubated patients develop pneumonia during their hospital stay. The development of this serious and avoidable illness is referred to by healthcare workers as non-ventilated hospital acquired pneumonia (NV-HAP). Although studies show that NV-HAP can lead to severe respiratory complications, including respiratory failure, pleural effusions, septic shock, and renal failure, in approximately 50% of patients (Kalil et al., 2016), many nurses are unaware of the correlation between oral care and NV-HAP and often overlook their patients' oral hygiene needs. After discussing this issue with staff on a Medical Inpatient Unit, evidence-based research regarding the phenomenon between inpatient oral hygiene practices

and NV-HAP was collected and analyzed. This in-service focuses on educating staff nurses on the importance of providing adequate oral care twice a day to every patient. By presenting case studies and utilizing the "Four E" Change Model, this in-service gives nurses insight on the importance of providing patients with oral care and further grants them a better understanding on how to implement effective change about proper oral care techniques into their future practice.

Dementia or Delirium?

Meghan Fahey

Faculty Mentor: Profs. Majeda Basilio, Kathy Saracino

https://fairfield.quip.com/kxdWAlBBFnWp/Dementia-or-Delirium

Abstract:
Dementia is "a chronic or persistent disorder of the mental processes caused by brain disease or injury and marked by memory disorders, personality changes, and impaired reasoning" (Oxford). On the other hand, delirium is "an acutely disturbed state of mind that occurs in fever, intoxication, and other disorders and is characterized by restlessness, illusions, and incoherence of thought and speech" (Oxford). It can be difficult to distinguish between delirium and dementia because they share many of the same clinical features. Early recognition of delirium is critical to identifying the cause, starting treatment, and improving outcomes (Bull et al. 2019). The interplay between delirium and dementia has been studied thoroughly and should be brought to light in order to educate caregivers. On Verdi 4 West, a geriatric unit, the majority of the patients suffer from dementia while presenting with acute illnesses. Providers feel that most of these patients could have been brought into the hospital sooner for treatment if the caregiver was better educated on the signs of delirium. Nursing staff reports their patients to show signs of delirium due to UTI, metabolic imbalances, or other secondary diagnoses. Nurses on the unit have also identified the need for caregiver education.

Caregiver education will allow for a more accurate diagnosis, treatment, and better patient outcomes. An easy-to-read, large print brochure will be distributed along with a QR code for a video. The brochure and video will discuss delirium and dementia, the mental and cognitive changes, causes, strategies to help prevent delirium, and when to seek medical attention.

Dementia Patient Management Using Non-Pharmacological Methods

Erin Kueny

Faculty Mentor: Profs. Rebecca Lamberti, Rose Iannino-Renz

https://fairfield.quip.com/L4OxABWQfURX/Dementia-Patient-Management-Using-Non-Pharmacological-Methods

Abstract:
Dementia is a chronic disorder of the brain characterized by memory loss, personality changes, depression, agitation, and impaired reasoning that interferes with daily living. Dementia is increasing in the elderly population, and unfortunately, no medication will completely cure the side effects of dementia. Since there is no medical cure, it is important to implement non-pharmacological interventions as soon as possible in order to alleviate symptoms like depression, anxiety, agitation, and memory loss. On the General Medicine Floor at Yale New Haven Hospital, numerous patients have dementia and are on cholinesterase inhibitors. However, I have not seen any patients receive non-pharmacological interventions like music therapy, animal therapy, reminiscence therapy, acupuncture, or cognitive stimulation therapy, which are scientifically proven to improve memory and decrease feelings of depression and anxiety. A role of the RN is to strengthen the minds of dementia patients in any way that they can. Even something as simple as doing a crossword puzzle with a dementia patient can work wonders. Various

staff members agreed that this was an issue that should be addressed on the unit. I created a brochure containing evidence-based research as a tool to better educate the RN about the benefits of non-pharmacological interventions in dementia patients. During an in-service learning session on the unit, non-pharmacological interventions were discussed, and the RNs demonstrated their willingness to incorporate these interventions into their everyday practice. Interventions like music therapy, animal therapy, reminiscence therapy, acupuncture, and cognitive stimulation therapy significantly improve dementia patients' quality of life. These interventions actively exercise the brain and improve memory.

Diabetes: The Silent Killer in the Time of COVID-19

Emily Goryeb

Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/jafcATvayC09/Diabetes-The-Silent-Killer-in-the-Time-of-COVID-19

Abstract:
The intensive care unit has a wide range of patients, many diagnosed with COVID-19. There have been reports showing an increasing mortality rate associated with patients who have diabetes mellitus and COVID-19. Many of these patients are also developing diabetic ketoacidosis (DKA). With the hyperglycemia and decreased insulin secretion in their bodies, there is an increased need for high doses of insulin. The demand for insulin pumps has potential to lead to shortages in availability. This required clinicians to develop guidelines on the management of DKA using subcutaneous insulin. The regimen includes monitoring fluid replacement and oxygen saturations. This information will be used to create a simple outline for staff nurses in the Stamford Hospital intensive care unit to refer to when treating a patient diagnosed with both COVID-19 and diabetes. The fast facts sheet will be a quick way for nurses to ensure that they are providing adequate care and treatment for their patients with these diagnoses.

Don't Trip Up On Fall Prevention

Katrina Balzotti

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/yCorAqgkpU0x/Dont-Trip-Up-On-Fall-Prevention

Abstract:
Falls have consistently been a major issue in the hospital setting. They create more expenses, can leave hospitals legally liable, increase morbidity, cause injuries, and prolong hospital stays (Center for Disease Control and Prevention, 2017). Due to COVID-19, the stress in the hospital setting has increased. During this time, 6W at Norwalk Hospital noticed an increase in falls on their floor. Falls may predominantly affect those who score on the MORSE scale, however, all patients should be perceived as a fall risk. Given the result of this score, patients are deemed either a low or high fall risk, both of which come with their own interventions. While it is hard to create a plan or a model that provides interventions for every patient, as every patient's relationship with falls and fall risk is unique, it may be helpful to create an organized tool to guide nurses and other staff in the right direction. The evidence-based literature illustrates certain interventions that work best for patients who score on the MORSE scale and are a fall risk. For instance, providing patients with fall education, the use of bed alarms, continuing with mobility and strength exercises, keeping beds at the lowest setting, and video surveillance in severe fall risk cases, have all had a positive impact

regarding fall reduction (Rimlan et al., 2016). A flyer was created in order to provide nurses with an easy and convenient outline of fall interventions. This benefits all stakeholders involved in patient care by reducing injury, expenses, legal liability, morbidity, and hospital stay related to falls, while also improving patient outcomes.

Educating New Graduate Registered Nurses on End-of-Life Communication with Oncologic Patients

Emily Paul

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/Zgw0Aa0x9a98/Educating-New-Graduate-Registered-Nurses-on-End-of-Life-Communication-with-Oncologic-Patients

Abstract:
As newly graduated oncological registered nurses navigate through their first year working and transition from student to a fully certified nurse, multiple studies show that they encounter hardships when attempting to effectively communicate with their terminal patients and their families. Some of these obstacles that interfere with these necessary exchanges include the emotional burden of conveying and discussing dismal outcomes, lack of experience discussing such sensitive matters, and the absence of institutional training focusing on end-of-life (EOL) communication. The evidence-based literature addresses the implementation of specific EOL modules in the newly graduated nurse's orientation to oncology nursing, creation and requirement of attending workshops on EOL communication throughout their first year, and importance of pairing them with carefully selected preceptors and mentors with adequate oncological experience. In connection to the research presentation, a reference flyer was created for the Norwalk Hospital

Oncology Floor (6E) nursing staff to serve as quick guide to facilitating beneficial conversations with this particular patient population and their loved ones. Learning and applying the information in this quick guide will ensure new nurses feel confident in initiating the difficult conversations with their terminal patients.

Education for Patients Discharged with PICC Lines

Elisa DiLuca

Faculty Mentor: Prof. Lisa Guardino

https://fairfield.quip.com/BhyPALYv3AGn/Education-for-Patients-Discharged-with-PICC-Lines

Abstract:
When patients are discharged with peripherally inserted central catheter (PICC) lines, education on proper care is necessary. It is often difficult for patients to understand everything that they are told while in the hospital. With this, it is important that they are provided with clear information, along with resources accessible and easy to use. At Norwalk Hospital, on 7E, many patients have PICC lines inserted for long term treatment, and are sent home with them. While many patients have home care nurses that will take care of the PICC lines, it is necessary that the patients are also educated. Many patients admit that they feel uneducated in regards to their PICC line, and the care provided for it. Nurses are the most valuable resource for patients in the hospital. It is crucial that nurses provide patients with all the information that they will need after being discharged home. Patients should be aware of why the care of their PICC line is vital for preventing central line associated bloodstream infections (CLABSI). They should also feel confident in knowing that the care being provided, either by a nurse or caregiver at home, is consistent with evidence-based practices. A checklist was created to ensure that all the steps in caring

for a PICC line are followed and done correctly. The checklist uses everyday language easy for patients to understand and follow.

Education on the Prevention of Foot Ulcers in Diabetic Patients

Stephanie McClure

Faculty Mentor: Prof. Suzanne Turner

https://fairfield.quip.com/jvpsAbazLkzQ/Education-on-the-Prevention-of-Foot-Ulcers-in-Diabetic-Patients

Abstract:
This research project focuses on the topic of education for the prevention of foot ulcers in diabetic patients using a check-off sheet. Most research for diabetic foot ulcers focuses more on the treatment interventions as opposed to prevention. The evidence-based literature addresses the importance of daily foot inspection, proper footwear, blood sugar control, and tobacco cessation to improve the prevention of a foot ulcer in diabetics. The diabetic foot ulcer is the most common and neglected complication of diabetes. A study showed that patients with foot ulcers had a mortality rate of 12.1%; however, those without foot ulcers had a mortality rate of 5.1%. In addition, the International Working Group on the Diabetic Foot Prevention reports that the average one-year cost is $44,200 for a patient with a diabetic foot ulceration (Rothenberg, 2019). Therefore, educating patients with diabetic foot ulceration can not only prevent unnecessary mortality rates, but also be more cost- effective. Teaching a patient how to use a check-off sheet is crucial so that the patient can prevent a foot ulcer and find a potential problem as early as possible. Raising awareness through check-off sheets and educating patients reduces the risk

of foot ulcers and ultimately improves the patient's overall quality of life.

Effects of Hourly Rounding on Call Bell Usage and Patient Safety

Mariel Staffier

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/P0yNAtgUMJTb/Effects-of-Hourly-Rounding-on-Call-Bell-Usage-and-Patient-Safety

Abstract:
This research investigates the impact of hourly rounding on patient safety and satisfaction and the effectiveness of a structured rounding tool in the medical surgical acute care setting. Emphasis on patient safety and satisfaction has become increasingly important in the healthcare setting. However, many barriers often prevent the success of current quality and safety improvement interventions, such as a structured hourly rounding tool. Lack of understanding or education on the importance of such interventions, unwillingness to participate, and nonadherence all limit possible patient safety and satisfaction improvements. This research's goal is to understand the benefit of hourly rounding in order to develop an educational tool to improve purposeful hourly rounding. The literature addresses the proven evidence-based practice of purposeful hourly rounding as the most effective intervention to meet patient care needs routinely and ensure patient safety, reduce call bell usage and falls, and increase patient satisfaction and staff perception of care. Educating nursing staff on the benefits of properly carrying out and adhering to purposeful hourly rounding and effective use of a standardized rounding tool is

crucial to addressing the perceived need for improving fall prevention and decreasing call bells on this medical surgical unit. As part of the research presentation, two hourly rounding tools were created for the Bridgeport Hospital West Tower 6 Medical Surgical Unit to enhance hourly rounding performance among staff.

Enhancing Discharge Medication Education

Emily Briggs

Faculty Mentor: Prof. Lisa Guardino

https://fairfield.quip.com/OhKpAyPPU1Un/Enhancing-Discharge-Medication-Education

Abstract:
As patients heal and prepare for their return to the community, medication education at discharge and prior to it are essential to ensure a smooth transition out of the hospital setting. Specifically, a need for enhanced discharge medication education was identified through observation and participation in discharge teaching on the seventh floor medical surgical unit of Norwalk Hospital. Patients expressed worry about keeping track of new or altered medication schedules while preparing for discharge. The patients communicated their concern that they would not be able to manage their medication regime because they did not feel adequately educated. In certain circumstances, patients conveyed that they did not know where their pharmacies were located or how to retrieve their medications. The evidence-based research explored that relates to the experiential data collected, proved that there is a trend of insufficient medication education that leads to increased rates of hospital readmission. In response, a simplified medication scheduling document was created to supplement the complex, lengthy discharge paperwork. The document is color-coded indicating morning, mid-day, and night dosages of medication. The scheduling tool targets older

adults because this population is most vulnerable to polypharmacy and multimorbidity. Improved and more thorough discharge medication education will promote patient safety, decrease medication related harm, and lessen the rate of hospital readmission.

External Pacing Education

Michaela Riegler

Faculty Mentor: Profs. Ericka Rivera, Kathy Saracino

https://fairfield.quip.com/usi4AHG1Pm7g/External-Pacing-Education

Abstract:
Many non-cardiac ICU nurses have not worked with complex external pacers used in postoperative cardiac patients to prevent common postoperative arrhythmias such as atrial fibrillation and transient heart block. A nurse's understanding of how an external pacemaker works increases patient safety and confidence in patient care, especially if anything goes wrong. On the step-down unit of West Tower 6 at Bridgeport Hospital, many nurses do not understand how an external pacer box is used to manage a patient's rhythm as these patients are rare outside of the ICU. However, it is crucial to understand the indications and workings of an external pacer box if assigned a patient with one. The literature review details not only how to program and manage the pacerbox, but also how the heart is temporarily paced. This is especially important if a pacer box malfunctions so that patient care can be managed accordingly. The three methods of external pacing are explained including transcutaneous, transvenous, and epicardial, which is the most common form. An educational brochure was made for the nurses on the unit and an in-service was provided to answer questions and to allow for the nurses to manipulate an external pacer box. These multiple modalities of learning

helped ensure competency and nurses of all preferred learning styles to comprehend the information.

Fall Prevention Education for Patients

Katherine Dunlap

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/W3n9An0hN0oO/Fall-Risk-Prevention-Education-for-Patients

Abstract:
Research conducted in this project focused on fall prevention education for patients. The idea stemmed from Stamford Hospital 6th floor and their emphasis on fall prevention. Several preventative measures already take place on the unit such as orange fall risk socks, bed alarms, and a fall risk assessment tool at the time of admission. However, patients often seem unaware that they are considered a fall risk while in hospital care. The goal of my research was to design a fast facts tool for educating patients on why they may be considered a fall risk to their healthcare team.

Fall Prevention in the Hospital

Jessica DiChiro

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/NF2fApHIwXna/Fall-Prevention-in-the-Hospital-Setting-Patient-Teaching

Abstract:
While patients are in the hospital, the main goal is to treat disease and promote safety. Unfortunately, many patients will experience at least one fall while in the hospital. Falls are the most common safety issue reported on inpatient units in the hospital. Falls are also one of the costliest incidents for hospitals due to the fact that they are not covered by insurance. The majority of patients who experience falls are part of the elderly population. West Tower 7, an oncology unit at Bridgeport Hospital, lies in the top three units with the highest fall incidence rates within the medical units at Bridgeport Hospital. Evidence-based practice shows that patient education and involvement reduce the rates of falls in hospitals. Techniques such as the fall prevention TIPS board, medication education, and a multidisciplinary team approach can help reduce the rates of falls. By educating our patients about their fall risks and ways to promote their safety, we can help them advocate for their own safety and prevent falls.

Family-Centered Care in the Adult Setting

Ariana Vitorino

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/4Yk0Amrtbogi/Family-Centered-Care-in-the-Adult-Setting

Abstract:
To prevent patient exposure to COVID-19, many hospitals restrict family visitation. Loved ones can no longer sit at the bedside and are often not present for many important conversations regarding care. This change has led to increased frustration for patients, families, and nurses, who must now educate patients and then repeat this education to families on the phone. This difficult situation inspired this research project, which focuses on assessing the need for implementing family-centered care, which allows family members to be active participants in care in the adult care setting. Literature defining family-centered care discusses its benefits for families and staff, and offers suggestions on how to implement this care model in the hospital. The literature reveals that family-centered care should begin with the initial admission, where important family members or caregivers should be identified. Additionally, a plan that outlines communication between the care team and identified family members should be established and referenced throughout the care process. The benefits of family-centered care include improved caregiver satisfaction, improved quality of care, and better education for patients and family members. These findings were then compiled into a pamphlet which

highlights the benefits and provides strategies for implementing this care model in the adult care setting.

Fast Facts Posted at the Patient Bedside

Julia Channing

Faculty Mentor: Prof. Mary Murphy

https://fairfield.quip.com/rBEkAgL2haHz/Fast-Facts-Posted-at-the-Patient-Bedside

Abstract:
This project's aim is to improve interdisciplinary communication on the inpatient medical-surgical telemetry unit of the VA Medical Center in West Haven, Connecticut. A single patient is supported by an interdisciplinary team of care providers consisting of physicians, nurses, and specialists for respiratory therapy, pharmacy, diet, physical therapy, social work, and chaplain service. With an increased number of care providers in the hospital setting, care becomes more complex and with that complexity there can sometimes be a lack of communication. Barriers to communication can be detrimental to patient safety and can result in adverse hospital events and in some cases, patient harm. The evidence-based literature addresses the methods and benefits to effective team communication in the hospital. Additionally, the evidence-based research outlines various tools for communication and how they are implemented in the clinical setting. This project focuses on the development and utilization of a communication tool that provides members of the care team with a quick summary of the patient status. The goal of this project is to promote patient safety and comfort with the creation of a small whiteboard with the patient's

'Fast Facts.' In collaboration with the staff on the unit and my clinical instructor, a board that included crucial aspects of a patient's status was created.

Filling in the Blanks of Pediatric Patient Education

Casey Chu

Faculty Mentor: Profs. Ashley Antonucci, Kathy Saracino

https://fairfield.quip.com/BPvNAExAlkv8/Filling-in-the-Blanks-of-Pediatric-Patient-Education

Abstract:
When providers prescribe new medications to patients, the nurse is responsible for ensuring that the patient has proper teaching before discharge. Research shows that nearly half of medical information given to patients is forgotten immediately or retained incorrectly. On the pediatric unit of 7-3 at Yale New Haven Hospital, there is a consistent flow of admissions and discharges. In the pediatric population specifically, it is imperative to properly educate parents or the pediatric patients of appropriate age to ensure medication adherence and reduce readmissions. The evidence-based literature incorporated in this project emphasizes the teach-back method as an effective technique to improve comprehension and increase empowerment in patients or caregivers in managing disease processes. Many nurses are cognizant of the teach-back method, but are unaware of the effectiveness and impact on overall patient care. In addition to an educational in-service, a handout was created for nurses to use as a supplement to their standard discharge instruction packets. This medication education tool uses the teach-back process to provide closed loop, thorough communication and involves

pediatric patients and their parents in their care. To ensure medication safety, comprehension, and overall health, this education tool aids in filling in the blanks of pediatric patient education.

Fluid Intake Monitoring Tool for Hemodialysis Patients

Tess Selby

Faculty Mentor: Prof. Suzanne Turner

https://fairfield.quip.com/SL53AUwfLW8R/Fluid-Intake-Monitoring-Tool-for-Hemodialysis-Patients

Abstract:
Fluid intake monitoring is vital for patients receiving hemodialysis treatments. Due to failing kidneys, these patients need to restrict the amount of total intake. Fluid restriction is a vital component in renal disease, but not all patients fully understand its importance. Yale New Haven Hospital floor 7-5 is a designated unit for clients with renal insufficiency, and often hemodialysis. Including patients in their plan of care can increase compliance with treatment plans and improve overall outlook of their condition. Studies have found that simple tools used in addition to patient education help to improve patient health outcomes. With this in mind, a fluid intake chart containing pictures of different products along with the amount of fluid each contains was created. This tool will ease and simplify fluid intake monitoring. This tool also allows patients to be included in their care during and after the education process as it gives a tangible understanding of different fluids, and they can mark the amount of fluids they consume. These findings were presented to the staff of 7-5 along with the fluid intake chart to be utilized in patient rooms.

Highlights of the Clostridium Difficile Algorithm

Sara Ostensen

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/gdRhAh5YDDAX/Highlights-of-the-Clostridium-difficile-Algorithm

Abstract:
Clostridium difficile (C.diff) is one of the most common hospital-acquired infections, leading to morbidity and mortality, throughout the United States. Early identification and correct diagnosis are critical in the management of this disease. In many institutions, the increasing rates of hospital-acquired C.diff infections relate to unnecessary testing and misdiagnosing of patients. In response to the increasing rates of infection, Yale-New Haven Health developed a C.diff testing algorithm to determine appropriate testing of patient specimens. The multi-step algorithm guides nurses to review if a patient has had certain circumstances that would lead them to become ineligible for a C.diff test. Evidence-based literature proves that using a C.diff algorithm decreased the rates of hospital-acquired C.diff infections. In response to nurses' lack of education on the algorithm, a research project was designed to provide education to nurses on the steps associated with ordering a C.diff test. In connection to the research presentation, a flyer was created for Bridgeport Hospital West Tower 7, including guidelines for nurses to implement the C.diff

algorithm in their daily nursing care. Increased education and policy will lead to better patient outcomes.

Identifying Implicit Bias to Reduce Racial Disparities in Maternal Health

Lauren Hoving

Faculty Mentor: Profs. Lindsay Collins, Kathy Saracino

https://fairfield.quip.com/aLsoAa6k2XFO/Identifying-Implicit-Bias-to-Reduce-Racial-Disparities-in-Maternal-Health

Abstract:
In the United States, Black women are 3 to 4 times more likely to experience a pregnancy-related death compared to white women, and up to half of those deaths are preventable (CDC, 2019). Saint Mary's Hospital in Waterbury, CT serves a high percentage of Black patients, and a learning need was identified on the Women and Infants unit to address racial disparities in intrapartum and postpartum nursing care. One contributing factor to racial health disparities is implicit bias, which modifies nurse-patient relationships by decreasing trust and communication. A review of literature was conducted to identify how to best combat implicit biases in RNs, and findings identify recognizing and exploring one's own implicit biases as a successful method to reduce disparities. Evidence-based research indicates that this is most effectively accomplished through educational in-service sessions that focus on mitigation strategies such as practicing mindfulness and completing Implicit Association Tests (IATs) (Narayan, 2019). The literature also reveals adults learn best when learning is goal-oriented, self-directed, and based on experiential

learning, so an interactive in-service which includes these strategies will be conducted. Implicit biases are difficult to eliminate, but this training can help ensure nurses do not let their own biases adversely affect patient care.

Identifying Staffing Needs Using a Patient Acuity Tool

Elizabeth Johnson

Faculty Mentor: Prof. Suzanne Turner

https://fairfield.quip.com/1MATAOaZLFDK/Identifying-Staffing-Needs-Using-a-Patient-Acuity-Tool

Abstract:
This research project focuses on patient acuity in relation to staffing needs and nurses' workload when creating assignments on a unit. Throughout the COVID-19 pandemic, hospitals saw a dramatic increase in patients and patient acuity without seeing an increase in resources. The effect of this on the renal floor, East Pavilion 7-5, of Yale New Haven Hospital is still seen as the patient population has diversified beyond that of renal needs. This issue leads to nurse dissatisfaction; thus, this research project aims to increase staff satisfaction by ensuring that patient acuity is taken into account when determining the needs of the unit. The evidence-based literature outlined throughout this project illuminates the need for patient acuity tools to be implemented in practice to aid nurse managers when creating assignments and determining staffing needs. These tools are important in creating equal patient assignments in order to provide high quality patient care while maintaining that care is cost effective. Use of a patient acuity tool also improves nurse satisfaction, productivity levels, turnover rates, and work stress. From this, a nurse manger can use the information from these patient acuity

tools to ensure sufficient staff is available according to the patient care needs of the unit. From the research done on this topic, a patient acuity tool was developed for Yale New Haven Hospital that addresses patient care needs which might affect the workload of the staff. Use of a patient acuity tool enables the nursing team to advocate for fair assignments and sufficient staffing in order to provide safe, quality care while avoiding adverse events.

Implementation of Non-pharmacological Pain Interventions on a Med-Surg Unit

Mia Stebbins

Faculty Mentor: Prof. Kathleen Piqueira

https://fairfield.quip.com/Ttb4A8NNou7m/Implementation-of-Non-pharmacological-Pain-Interventions-on-a-Med-Surg-Unit

Abstract:
Pain is the fifth vital sign. Complaints of pain by patients, specifically post-operatively, are complaints deemed both serious and important to the healthcare team. In an effort to reduce pain levels, providers are quick to prescribe pain-killers and nurses are quick to give them. This leads to an absence in complete pain reduction and pain management care planning, and contributes to the current worsening opioid epidemic, where we see increased rates of abuse, addiction, and deaths. With these details considered, one recognizes the importance of educating nurses on the implementation of various non-pharmacological interventions for pain reduction and management, especially nurses on a med-surg floor due to the increased incidence of pain medication prescriptions. There is a need for education of nurses who claim to feel unknowledgeable or uncomfortable with the topic, leading to barriers in implementing interventions into their care. Evidence-based practice discusses the many benefits of non-pharmacological forms of pain management, which can be implemented alternatively or complementary to pharmaceuticals. By educating nurses

on the research linked to non-pharmacological pain management, nurses can work towards implementing it into care and evaluating the results individually for each patient. With proper education, nurses have a stronger likelihood of increasing proper pain management, increasing patient quality of care, and increasing satisfaction with care, while simultaneously reducing medication dosages, the risk of adverse effects, and the risk of addiction/reliance. Non-pharmacological interventions for pain offer the nurse an opportunity to provide patient-centered, holistic care.

Implementing a Patient-Centered Fall Prevention Toolkit

Cristina Acuna

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/96znAnlrkPaO/Implementing-a-Patient-Centered-Fall-Prevention-Toolkit

Abstract:
Inpatient falls are preventable adverse events that continue to occur despite numerous fall prevention strategies, precautions, and interventions in place for all patients. Inpatient falls delay progress towards recovery, prolong length of hospitalization stay, increase hospital costs, and increase the risk for further falls. This project's aim is to reduce the number of inpatient falls by implementing a patient-centered fall prevention toolkit in a Medical-Surgical unit that noticed a significant increase of inpatient falls with serious fall-related injuries during the last 12 months. Barriers to effective fall prevention strategies include poor communication between care team members, lack of patient/family involvement in care, and the use of generalized standard precautions. The Fall TIPS (Tailoring Interventions for Patient Safety) Toolkit was developed as a tailored and personalized fall prevention plan that can be used by the whole health care team and identifies evidence-based interventions directly related to patient-specific risk factors (Dykes et al, 2018). The goal of this fall reduction is for the nursing staff learn, review, and effectively implement the Fall TIPS prevention toolkit laminated poster in order to raise awareness of the need

to prevent falls and provide a safe and individualized environment for all patients. Implementation of this new approach will increase the potential for reduction of inpatient falls and improve the quality of care.

Implementing Bereavement and Palliative Care in End-of-Life Education for Emergency Department Nursing

Sarah Uwazany

Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/zUPaABErwYkP/Implementing-Bereavement-and-Palliative-Care-in-End-of-Life-Education-for-Emergency-Department-Nursing

Abstract:
In the emergency department (ED), the healthcare team is trained to treat critically ill patients and rapidly diagnose, stabilize, and discharge a patient to the appropriate providers, while also preventing potentially lethal complications of a disease process. While emergency medicine is most often lifesaving, there are certainly instances in which individuals arrive too late into the department's care to be able to be saved. Through witnessing how the healthcare team at the Stamford Hospital ED deals with patients and their families who pass in the department, the nurse's importance in such a situation is extremely vital. They provide the treatments used during the end-of-life (EOL) and care for the patient in the last moments of life. Conversations with patients and their families regarding EOL care are extremely sensitive, especially in an area of medicine where saving lives is the priority. Several recent studies found that a large percentage of ED nurses felt that the ED was not an appropriate place for death to occur and EOL

conversations with families were difficult due to the environment of the unit (Decker et al, 2015, Gerace et al, 2020). Nurses in the ED must become more prepared to conduct these conversations, as death is not unknown in this area of medicine. Developing education and training on EOL, death, and bereavement for ED nurses would benefit the staff and clients of the ED. In consultation with a funeral home bereavement specialist, a talking points reference tool was created for ED nurses at Stamford Hospital to utilize when approaching such conversations with families following the death of a loved one. The tool is brief and offers unique therapeutic communication techniques that will optimize the experience of patients and their families. As more nurses become more educated on approaching these conversations, death in the emergency room, if unpreventable, would become less stigmatized and more holistic for those involved.

Implementing Fall TIPS Toolkit: Education for Nurses on Fall Prevention

Victoria Marsillo

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/8GFOAbHSRHM1/Implementing-Fall-TIPS-toolkit-Education-for-nurses-on-fall-prevention

Abstract:
This research project focuses on the importance of educating nursing staff to adequately implement the Fall TIPS protocol to keep patients safe and prevent falls. Inpatient falls are the leading cause of death related injuries for adult patients over 65 years of age (Yale New Haven, 2020). At Bridgeport Hospital, the West Tower 7 unit has one of the highest rates of all falls out of all the medical units (Burdick, K. et al, 2020). The data shows West Tower 7 had 22 patient falls from October 2019 to June 2020 (Yale New Haven, 2020). The Fall TIPS (Tailoring Interventions for Patient Safety) tool kit allows for nurses to provide patient and family-centered care by educating them in identifying risk factors and the proper interventions for their care. The evidence-based literature addresses the importance for nurses to implement the Fall TIPS tool kit into their daily nursing care. Nurses have the ability to educate and teach their patients in understanding their fall risk factors. Tailoring nursing care to have a patient-centered approach enables the patients to actively engage in developing their own plan of care with their nurse. Additionally, the evidence-based

literature explains how fall rates significantly decreased when comparing pre-education to post-education regarding risk factors and interventions. In order to decrease the occurrence of falls and practice better preventative care, it is essential that the nursing staff is committed to utilizing the fall plan. It is crucial that the plan is implemented routinely every shift, with proper documentation that is updated as the patient's condition changes.

Importance of Ambulation and Venous-Thromboembolism (VTE) Prophylaxis in Preventing Hospital-Acquired Conditions (HACs)

Kelly Buckley

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/RZpIAJLP2GV9/Importance-of-Ambulation-and-Venous-Thromboembolism-VTE-Prophylaxis-in-Preventing-Hospital-Acquired-Conditions-HACs

Abstract:
When a patient is admitted to the hospital, the previous freedom of ambulating decreases as they become confined to a new environment. On a Medical-Surgical floor at Yale New Haven Hospital, patients state that they are too tired to ambulate. Independent patients express desire to ambulate during the day, but never do. Patients refuse their VTE prophylaxis insisting they will be out of bed that day, however few to none ambulate in the hall. Refusal of medication is documented and patients state that they understand the consequence, but we never fully explain the long-term effects of medication refusal and immobility. Evidence-based research explains that 65% of older adults who enter the hospital able to ambulate will lose the ability to walk by discharge (Arthur et al, 2020). Increased immobility for the general population during COVID-19 pandemic from strict quarantine has increased DVT in hospitalized patients (Akay et al, 2021). It is crucial

that the nurse enforces ordered daily ambulation. A simple, non-invasive intervention for VTE is ambulation. The phrase, "Sun's Up, I'm Up" was created to remind nurses of the importance of encouraging ambulation at the first morning interaction with independent patients. Stickers were provided to staff members for badges, handoff sheets and patients who satisfy the criteria. Patient education and reminders to ambulate can decrease hospital-acquired complications, decrease length of stay, and increase quality of life (Arthur et al, 2020).

Importance of Bedside Report

Olivia Haba

Faculty Mentor: Prof. Laura Conklin

https://fairfield.quip.com/AxmIAbu0mIbw/The-Importance-of-Bedside-Report

Abstract:
In a hospital setting at Veteran's Affairs Medical Step Down Unit, nurses begin each shift by giving a handoff report. This handoff report is done to give the following nurse accurate and important information so the new nurse can continue with the patient's care. In the past, patient handoff was usually done outside the patient's room or near a nurses station. Now, evidence-based research shows that giving this report at the patient's bedside is more beneficial. Bedside reports can decrease errors, improve nurse-patient relationships, involve the patient and family in care, and hold nurses accountable. The patient and family will be able to ask questions so there are no misconceptions about their care. During the report, the two nurses can verify that medications on I.V. pumps are accurate, and check the patient's appearance and any wound sites (Ofori-Atta et al., 2015). Literature reviews also explain critical steps in bedside report that nurses should follow to help maintain patient safety (Ofori-Atta et al., 2015). During an inservice to the unit nurses, the importance of bedside nursing and critical details to include in a report will be discussed.

Importance of Bedside Report for Patient Centered Care

Samantha Altomare

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/s1vxABW2hVfe/Importance-of-Bedside-Report-for-Patient-centered-Care

Abstract:
This teaching project promotes the importance of bedside report for both the patient's physical and emotional well being. When bedside nurses give report without the patient present, the patient has less autonomy and there is a higher chance of inconsistencies or confusion within report. Additionally, using the research, a visual reminder was developed to remind nurses to complete report at the patient's bedside. The literature reviewed to develop this research was compiled from five peer-reviewed journals sourced from the Ovid Nursing and EBSCO databases. When analyzing the research, major themes from the journals pointed to bedside report positively affecting care. The compilation of research lends to bedside report decreasing patient anxiety, increasing patient centered care, and increasing the patient's comfort level. The major barriers addressed when discussing implementing bedside report include nursing staff resistance to change, possible confidentiality concerns, and nurses becoming distracted by patient care during report.

Importance of Turning and Repositioning Patients

Anna Comerford

Faculty Mentor: Prof. Suzanne Turner

https://fairfield.quip.com/6nKQArUQ5ysE/The-Importance-of-Turning-and-Repositioning-Patients

Abstract:
When a patient is bound to their hospital bed, negative outcomes from the lack of movement and repositioning are easy to overlook. The nursing staff of any hospital unit are required to complete an immense amount of care in a single given shift, and therefore, tasks such as turning and repositioning are oftentimes neglected. Limited repositioning can result in pressure injuries and incontinence associated dermatitis, which can account for prolonged stays, and contribute to increased hospital liability and budget costs. According to evidence-based literature, there is a strong link between pressure injuries and immobility as well as a lack of documentation compliance by nurses for turning and repositioning. Studies show that when plans are implemented by floors to increase auditing of documentation there was an increase in compliance from nurses and, therefore, a decrease in acquired pressure ulcers and incontinence associated dermatitis. In survey findings, it was noted that nurses found that "silent factors" of care create obstacles for repositioning clients such as prioritization, understaffed units, and physical burdens of turning. When brought to the attention of management, these issues can

be worked through in order to achieve better patient outcomes as well as staff efficiency and cooperation for pressure ulcer prevention. In an attempt to facilitate efficient turning and repositioning, a check-off sheet was created as a tool for RNs to document repositioning times and record the condition of skin.

Improved Methods Promoting Medication Adherence in Cardiac Patients

Brooke Robistow

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/rHwpADXVFahx/Improved-Methods-Promoting-Medication-Adherence-in-Cardiac-Patients

Abstract:
Medication adherence is defined as, "the extent to which patients take medication as prescribed by their doctors. This involves factors such as getting prescriptions filled, remembering to take medication on time, and understanding the directions" (FDA, 2009). One of the most common and influential barriers to adhering to a medication regime is the lack of patient education and patient understanding of the importance of taking their medication. Many patients, especially those with cardiovascular disease, may be on five or more medications at one time. Due to these factors, the rate of medication non-adherence is suboptimal leading to poor health outcomes, a high rate of hospital re-admittance, and increasing health care costs (Conn et al., 2016). Medication adherence is a notable issue noticed throughout my clinical experience. On the cardiac unit at YNHH, many of the patients are on five or more drugs at one time and are unaware of what drugs they are taking and for what reasons. During discharge teaching, nurses discuss medications using a packet of papers with information about each medication. However, each of

these packets contain 4 pages of information per medication. The packets have a lot of words and look intimidating, leading me to believe that many of the patients do not read them. As a result, I made new information sheets that are less wordy, using simpler terms to emphasize the importance of adhering to their prescribed medication regimes. These updated sheets of information on medications would be given to the patient when the new medication is prescribed and again at discharge to reinforce the importance of taking the medication and what could happen if they abruptly stop use.

Improving Communication about Showering Protocol Post Surgery

Anna Komer

Faculty Mentor: Profs. Susan Bartos, Kathy Saracino

https://fairfield.quip.com/uFxeA7Ms3mjt/Improving-Communication-about-Showering-Protocol-Post-Surgery

Abstract:
On a 28 bed major surgery unit, a miscommunication was discovered between nurses, patient care technicians, and patients about the post operative shower protocol. On the unit, PCTs did not know which patients needed a bed bath or were able to shower. This caused safety issues and confusion for the patient. The National Institute for Health and Care Excellence guidelines to prevent and treat surgical site infections recommends the "use of sterile saline for wound cleansing up to 48 hours after surgery (and advises) patients that they may shower safely 48 hours after surgery" (NICE, 2020). The goal was to find a way to improve communication about these protocols from the nurse to the PCT and the patient. Whiteboards in patient rooms that highlight fall risk, goals of care, names of healthcare professionals, telephone numbers, etc. have been an evidence-based practice that improves patient outcomes. Based on this knowledge, a similar visual was created that can be placed on the shower door and updated daily by the nurse with an expo marker. This visual keeps the PCT informed and reminds the patient of what hygiene should be done post operatively. The goal of this visual is to increase

communication, patient education, and hygiene while decreasing surgical site infection.

Improving Communication and Care Between Healthcare Providers and Patients with Intellectual and Developmental Disabilities

Victoria Fanelli

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/4PbHAiEkn4fm/Improving-Care-and-Communication-Between-Healthcare-Providers-and-Patients-with-IntellectualDevelopmental-Disabilities

Abstract:
Intellectual and developmental disabilities (I/DDs) are disorders typically present at birth that negatively affect the trajectory of the individual's physical, intellectual, and/or emotional development. I/DDs are commonly overlooked in regard to care, effective communication, and patient education. These disconnects result in increased patient and family anxiety, and an increased feeling of exclusion in their care. Non-effective communication in patient care was found in low-staffed environments with a lack of time for in-depth teaching, resulting in discriminatory staff attitudes which precipitate rapid discharges and early readmission rates. This research project focuses on increasing awareness of effective communication between the healthcare team and patients with I/DDs by decreasing patient and family anxiety to create an environment that counters social exclusion and improves individualized patient care.

Improving Compliance and Retention of Discharge Teaching for Patients with Type II Diabetes

Madison Barber

Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/SbK2AiwBaOCx/Improving-Compliance-and-Retention-of-Discharge-Teaching-for-Patients-with-Type-II-Diabetes

Abstract:
On the eighth floor of Stamford Hospital, the dialysis and stroke unit is home to a large patient population with uncontrolled type II diabetes. RNs on the eight floor are required to teach every diabetic patient about diabetes care management and prevention prior to discharge. Diabetes teaching can be both time-consuming and overwhelming to nurses and patients. So, the nursing staff developed the "Diabetes Education Booklet." This booklet is used hospital-wide and contains information pertinent to Type II diabetes. Nurses report that their problem with this booklet is that it is very long and usually left behind by patients, meaning that patients will likely not retain any of their discharge teaching. The goal of this capstone project is to develop a patient pocket card or a tool that patients can carry with them at all times to help remind them of the "need to know" information from the booklet. I created a checklist to remind type II diabetic patients what they should check daily to prevent any complications, such as chronic kidney disease. The

nurses on the eighth floor also talked about how many Type II diabetics fail to recognize the signs and symptoms of hypoglycemia. To address this issue, there is a list of common hypoglycemic symptoms and how to treat it on the back of the checklist. Improving patient compliance and retention of diabetes education will not only improve the patient's quality of life, but decrease readmission rates and ultimately, the workload of the nursing staff at Stamford Hospital.

Improving Morale Among Staff Nurses

Hannah Ardito

Faculty Mentor: Prof. Majeda Basilio

https://fairfield.quip.com/v6waAc4wamw3/Improving-Morale-Among-Staff-Nurses

Abstract:
This project focuses on creating a reward system to improve morale among staff nurses. This past year, nurses on Verdi 4W at YNHH St. Raphael's campus have experienced the largest pandemic in over 100 years. This virus has generated a public health crisis that led to many challenges for nurses, with the biggest complication being burnout (a stress response prompted by extended stress in the workplace). Evidence-based research shows that low morale caused by burnout decreases productivity and cooperation among the nursing staff and increasing work errors and absenteeism (Hills, 2014). By improving staff morale and increasing nurses' job satisfaction, the literature shows that it can improve patients' perceptions of the quality of care they are receiving and warrant an adequate nursing staff. A nursing staff's commitment to the unit, job satisfaction rate, and overall morale are associated by rewards (Seitovirta et al, 2017). Based on a study, rewards tend to attract and motivate staff. Nurses reported that the following are most important to them when it comes to rewards: being appreciated, complimented by superiors, and respected among nurses. The behavior-based reward system developed in connection to the research is called "Shining Stars."

From prior assessment of reported awards, the criteria for receiving a "star" is distinguished by a staff nurse whose behaviors and efforts go above their expected job functions and responsibilities, aligning with YNHH values (Phillips et al, 2017). The stars received will contain inspirational and motivational messages. Use of encouraging language and acknowledgment of a job well done gives nurses a boost of confidence, raises morale, increases productivity, and promotes teamwork and retention. Depending on how many stars a nurse has at the end of the month, they will be eligible to exchange them for a prize in the nurse manager's "bucket." Based on studies, meaningful rewards are those that recognize nurses and support leadership.

Improving Patient Communication Through the Use of Whiteboards

Klaudia Hanus

Faculty Mentor: Prof. Lisa Guardino

https://fairfield.quip.com/JtUmAgaXruv6/Improving-Patient-Communication-Through-the-Use-of-Whiteboards

Abstract:
When patients are in the hospital, they are given a great amount of information that may change from day to day, such as diet or activity level. For this reason, whiteboards are beneficial in providing patients with an opportunity to view crucial information regarding their health status and plan of care at all times. On the medical surgical floor of 7 East at Norwalk Hospital, education on the importance of patient whiteboards has been provided in the past. However, patient whiteboards are oftentimes left blank. Therefore, reeducation is necessary in order to reinforce the importance of filling out patient whiteboards. Visual tools, specifically whiteboards, are beneficial as they improve patient-provider communication and involve patients in their plan of care. Whiteboards also allow for better communication within the healthcare team, which can improve patient satisfaction. In connection to the research presentation, a handout was created for the nursing staff on 7 East at Norwalk Hospital that can be used to facilitate the completion of patient whiteboards. In addition to the handout, a flyer was created for distribution throughout the unit as a reminder to keep up with daily updates to the whiteboards.

Improving the Communication Gap Between Health Care Workers and Tracheostomy Patients

Bridget Griffin

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/MZHCARzLpBL2/Improving-the-Communication-Gap-Between-Health-Care-Workers-and-Tracheostomy-Patients

Abstract:
This research focuses on the communication barriers between tracheostomy patients and healthcare workers. As seen on the 5-5 medical surgical unit at Yale New Haven Hospital, communication between nurses and tracheostomy patients can be difficult. When a patient receives a tracheostomy, due to the nature of the procedure, verbal communication may not be an option for the patient initially. This makes it difficult for patients and nurses to communicate with one another. Lack of communication can lead to patient frustration, increased risk in patient safety, and decreased patient satisfaction. It is the role of the registered nurse to investigate alternative forms of communication in order to ensure their patients receive the best possible care. The evidence-based literature included in this project outlines how to care for tracheostomy patients by using alternative ways to communicate which can relieve their anxiety. Using an in-service educational session and tracheostomy communication kit check list, nurses will be better

prepared on how to communicatee with their tracheostomy patients. The tracheostomy communication kit includes: a white board, white board marker, and a nonverbal communication card. With these alternative forms of communication, and the in-service educational session, the hope is that the communication between nurses and tracheostomy patients will improve.

Improving Twice-Daily Oral Care Adherence in the Acute Setting

Gabrielle Roy

Faculty Mentor: Prof. Kathleen Piqueira

https://fairfield.quip.com/p7dwAuO4zblN/Improving-Twice-Daily-Oral-Care-Adherence-in-the-Acute-Setting

Abstract:
It is recommended to brush one's teeth twice a day for two minutes. While completing my Transition to Professional Nursing Practice clinical at Bridgeport Hospital, I noticed inconsistencies within patients' daily oral care habits. The patients of West Tower 6 require an acute, intermediate level care. Though many also require assistance during mobility, few are considered dependent, or even moderate to maximum assists. Despite the majority of patients being capable of brushing their own teeth, most do not. Evidence-based literature addresses consequential negative patient outcomes as a result of inconsistent oral care, including but not limited to hospital-acquired pneumonia. Every computer at Bridgeport Hospital displays a screensaver that shuffles through multiple slides throughout shifts. Slides consist of friendly reminders, upcoming events, etc. all targeted at employees and providers. In an effort to prevent negative patient outcomes, nursing staff will be educated, via a screensaver slide, of the importance of patient oral care.

Increasing Awareness of Early Mobilization for Postoperative Patients in Registered Nurses

Pauline Kaczynski

Faculty Mentor: Prof. Laura Conklin

https://fairfield.quip.com/6rF8AiYgaabs/Increasing-Awareness-of-Early-Mobilization-for-Postoperative-Patients-in-Registered-Nurses

Abstract:
For patients after surgery, early ambulation needs to be initiated to decrease postoperative complications. A delay in mobility results in unfavorable outcomes, such as thromboembolism, pressure injury, and muscle weakness (Talec, et al., 2016). Post procedure, patients are usually directed to the Medical Step Down floor and herein lies the opportunity. During this post procedure time, a time gap can be used for specific physical rehabilitation efforts. Patients and staff express that there is a delay in initiating early ambulation due to deferring the role to physical therapy or physicians. Research has found that some registered nurses rely on physical therapists to ambulate patients despite knowledge of the patient's ability to ambulate (Sepulveda-Pacsi et al., 2016). The time invested into patients by physical therapists during one session is typically a mere fraction of the time that registered nurses expend. There is an incredible opportunity window being disregarded and if patient health is truly the primary concern, registered nurses

should take advantage of the time that they have. The major role of registered nurses is to advocate for patient health outcomes, so it is imperative that nurses take responsibility to initiate mobility interventions early on. An infographic tool was provided to the unit for nurses and patients to ensure that all the required interventions are utilized to prevent postoperative complications. The implementation of a mobility tool strengthens nurse autonomy and motivates patients to take control of their recovery (Rupich, et al., 2018).

Increasing Awareness of the Benefits of Non-Pharmacological Interventions for Infants with Neonatal Abstinence Syndrome

Katherine Knapik

Faculty Mentor: Profs. Lindsay Collins, Kathy Saracino

https://fairfield.quip.com/wabsA0aqFhcm/Increasing-Awareness-of-the-Benefits-of-Non-Pharmacological-Interventions-for-Infants-with-Neonatal-Abstinence-Syndrome

Abstract:
Due to the ever-worsening opioid epidemic in the United States, newborns are diagnosed with neonatal abstinence syndrome (NAS) at alarming rates. Infants suffering from NAS can experience a wide spectrum of symptoms, many of which can contribute to adverse health outcomes. An ample amount of information exists regarding the use of pharmacological means to aid in the symptom management of these infants. However, a gap in both research and education exists as it relates to the implementation of non-pharmacological interventions in infants with NAS, especially for those experiencing milder symptoms. This project's purpose is to provide an in-service training to educate the LDRP nurses at St. Mary's Hospital in Waterbury, CT on the types and benefits of non-pharmacological methods of symptom relief for this condition. This educational intervention will provide the nursing staff with the knowledge to better recognize the signs and symptoms of NAS in neonates in the immediate

postpartum period and consequently adapt the goals of care to include non-pharmacological forms of relief as appropriate. As the rate of prenatal and perinatal substance use continues to grow in our nation, healthcare teams must be properly educated so that they can effectively advocate for this unique population of infants. With an increased awareness of the potential impacts of non-pharmacological interventions on the health of babies with NAS, nurses will be better equipped to meet the needs of some of their most vulnerable patients.

Increasing Education to Advocate for Palliative Care in Patients with Heart Failure

Elizabeth Dumas

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/tocDAGbVvazh/Increasing-Education-to-Advocate-for-Palliative-Care-in-Patients-with-Heart-Failure

Abstract:
Contradictory to common perception, palliative care is applicable to anyone with a serious illness, not limited to patients with cancer. Palliative care is specialized medical care which provides additional support for patients and families focused on providing relief from symptoms and the stress of illness, with the ultimate goal of improving quality of life. Palliative care can be introduced at any time, is appropriate for any age, and can be provided alongside curative treatment. Patients with heart failure are the largest cohort of patients eligible to receive palliative care, however only a small percentage actually do. Despite advances in cardiac therapy, heart failure remains progressive, highly symptomatic, and is characterized by high morbidity and mortality. A review of the evidence-based literature describing palliative care for patients with heart failure was reviewed for inclusion in the development of an educational pamphlet for patients about the benefits/value of palliative care. The evidence indicates that palliative care consistently has greater benefits in improving quality of life, reducing anxiety and depression, and enhancing spiritual well-being compared

to conventional treatment alone. It is recommended that due to the unpredictability of heart disease, palliative care be introduced at the point of diagnosis and patient involvement should be encouraged for long term disease management and promotion of quality of life.

Increasing the Implementation of Palliative Care in Oncology Patients

Erin Grueneberg

Faculty Mentor: Prof. Krystin Onacilla

https://fairfield.quip.com/y7xeAZopSUOX/Increasing-the-Implementation-of-Palliative-Care-in-Oncology-Patients

Abstract:
Oncology patients represent a large majority of chronically ill patients who experience considerable morbidity and mortality. Consequently, integrating palliative care concomitantly with standard oncologic care in patients with advanced cancer results in better outcomes in quality of life, symptom relief, mood, and survival. On the Oncology floor at Greenwich Hospital, patients and family members continue to have little knowledge about what Palliative care is and how it is implemented in their care. As I observed the way the unit was run and organized, I noticed that the nurses were very receptive to information sheets about certain topics and often read them aloud during staff meetings. This capstone project focuses on creating a one-page information sheet that concisely explains what palliative care is, how it will benefit oncology patients, and the role of the registered nurse in order to increase the proper implementation of palliative care on this unit.

Interdisciplinary Communication Between Registered Nurses and Physical Therapists

Korey Roman

Faculty Mentor: Prof. Danielle Jimenez

https://fairfield.quip.com/6BzaAVIfHEQb/Interdisciplinary-Communication-Between-Registered-Nurses-and-Physical-Therapists

Abstract:
This research project has a goal of improving interdisciplinary communication to decrease missed or postponed physical therapy, and increase the effectiveness of therapy overall. After directly observing issues with therapy timing and interviewing nurses and physical therapists on East Tower 7 (ET7) at Bridgeport Hospital, there is a lack of communication or a standard form of communication between the two parties. Patients on ET7 often refuse or postpone therapy because a schedule was not communicated to them or pain medications were not received before the therapist arrives. Evidence-based research shows that interdisciplinary communication and organizational tools of care significantly improve communication between parties, allow for better time management, increase the effectiveness of therapy, and increase patient participation in therapy. Due to the current lack of communication and therapy involvement from patients, ET7 would certainly benefit from the implementation of the communication tool and whiteboard plan.

Interventions to Improve Patient Handoff Between Registered Nurses

Olivia Varga

Faculty Mentor: Prof. Lauren Mitchell

https://fairfield.quip.com/sbHtAxHYapPl/Interventions-to-Improve-Patient-Handoff-Between-Registered-Nurses

Abstract:
Transfer of patient information and responsibility between Registered Nurses is a routine but crucial part of a nurse's job. An effective handoff supports the transition of important information and provides continuity of care. Research shows that poor patient handoff has the potential to seriously jeopardize patient safety. On 5-2 at Yale New Haven Hospital, a cardiac telemetry unit, change of shift was observed numerous times between Registered Nurses. 5-2 does not currently possess a readily available standard tool for patient handoff. Registered Nurses expressed that they at times missed key information from the last nurse, which had the potential to impact patient care. Registered Nurses on the unit agreed that patient handoff could be improved overall, and that the implementation of a standard tool for patient handoff would be beneficial. The learning tool created for the purposes of this capstone project is a standard tool for patient handoff using SBAR methodology. SBAR is an acronym for situation, background, assessment, recommendation, and it is a technique used to facilitate communication between healthcare providers regarding patients. "The absence of

a handoff tool created variability and more time spent on organizing work. Therefore, priority was given to the implementation of a standardized handoff tool that has been shown to help expedite communication, provide consistent guidelines, and generate shared mental models" (Ayala, W.L, 2017). If this tool was implemented on 5-2 at Yale New Haven Hospital, it would allow nurses to receive a more comprehensive patient handoff, improve communication, and enhance patient safety.

Interventions to Prevent Central Line Associated Bloodstream Infections in Oncology Patients with Port-A-Caths

Julia Delhome

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/MSfkAADYRjD9/Prevention-of-CLABSIs-in-Oncology-Patients

Abstract:
This research project focuses on the prevalence of central line-associated bloodstream infections in oncology patients with a central line. In an immunocompromised patient, a CLABSI can be incredibly harmful and cause significant deterioration of their condition. The evidence-based literature included in this research project discusses the importance of central line bundle care, meticulous maintenance of central lines, and the warning signs of a CLABSI in oncology patients. Education of all staff is essential for the prevention of any nosocomial infection but especially important on a floor where the majority of patients are under neutropenic precautions. In response to a recent CLABSI on the floor, a learning need was identified in an attempt to standardize the care of central lines and prevent any future CLABSIs. In addition to an informational presentation to the healthcare team, a checklist was created for the nursing team on the 6th floor at Stamford Hospital to ensure that all necessary steps are taken while maintaining an oncology patient's central line to prevent any future infection.

Ketamine Administration in the Postoperative Patient

Clare Cagney

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/CwkWA8bZhbQn/Ketamine-Administration-in-the-Postoperative-Patient

Abstract:
Medication safety is an important nursing role, especially when administering intravenous infusions. Infusion therapies are associated with a high risk of harm, which can affect patient morbidity and mortality, cause prolonged hospital stays, and have psychological impacts on patients (Fekadu et al., 2017). When administering intravenous infusions, it is crucial for Registered Nurses to understand the safety measures in place to protect their patients, including dosages, potential side effects, and nursing interventions, in order to prevent medication administration errors. On the surgical floor at Greenwich Hospital, ketamine is often ordered by surgeons as a postoperative analgesic medication, primarily in patients who undergo spinal surgeries. This research focuses on increasing nursing knowledge of the action of ketamine, the benefits of ketamine, appropriate dosages and infusion rates, safety measures, side effects, and the nursing implications of this medication. The information was made available to the nurses on the unit using a one page fact sheet which includes critical information involving ketamine administration, such as the vital signs, lab values, and symptoms to be monitored as well as the

nursing interventions involved. The fact sheet is accessible on the electronic medical record and the nurses' stations on the unit. This evidence-based research will allow nurses to administer ketamine safely, decreasing medication administration errors while providing effective pain management, and improving long-term patient outcomes.

Let the Kids Play!

Samantha Merino

Faculty Mentor: Profs. Ashley Antonucci, Kathy Saracino

https://fairfield.quip.com/djEJABhVwCW0/Let-the-Kids-Play

Abstract:
Before COVID-19, pediatric patients were able to freely play in the unit's playroom with other patients. However, the pandemic has closed the playrooms to limit the spread of infection. On the Neuroscience Pediatric floor of 7-3 at Yale New Haven Hospital, there was a high prevalence of school-age children, ages 6 to 12, that lacked stimulation from physical toys and solely laid in bed with their tablets. Major findings of this research portrayed how imperative it is to promote play since it aids in development, facilitates caregiver-child interactions, limits screen-time of electronic devices, and eases anxiety of hospitalized children. Pediatric nurses have an important role of implementing the importance that toys serve a vital, supportive role in enhancing a child's social development and language. Play aids in creating and maintaining a therapeutic environment (Li et al., 2016). It is crucial for nurses to facilitate the integration of play into routine care for hospitalized children. In an educational in-service, the nurses were reminded and acknowledged how play is an important contributor to a child's healing and should be continued despite the challenges of COVID-19. In addition, a goodie-bag welcome packet, filled with developmentally

appropriate toys, was created to give to the child once on the unit. This helps avoid a potential barrier of promoting play since the goodie-bag will be kept by the child limiting the potential spread of infection of shared toys (Healey & Mendelson, 2019). A handout of the items on the Amazon wish-list was given to the nurses and Child Life team to promote further donations.

Medication Reconciliation

Hannah Cahill

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/bkUdAPkRyv9H/Medication-Reconciliation

Abstract:
This research project focuses on the common discrepancies and risk factors for these discrepancies within the medication reconciliation process. These inconsistencies pose serious safety risks for patients of all ages, any discrepancy puts a patient at risk for adverse drug effects. Surgery A and B at Greenwich Hospital are always at full capacity, and many patients are being prescribed new medications that they will need to manage when it is time for their discharge. These same patients are already taking a handful of medications regularly, and these new prescriptions add to this burden. The evidence-based literature included in this research project shows that there are factors that put patients at higher risk for discrepancies between their prescribed medications and those that they actually take. These include age above 65 (Hias et. al., 2017), female gender (Rappaport et. al., 2017), longer hospital stays and those with 9 or more prescriptions (Dei Tos et. al., 2020). The most common type of discrepancy was found to be an omission of a medication. It is crucial that staff understand the importance of medication reconciliation and are aware of the latest research, as this understanding can significantly reduce errors which in

turn improves patient safety. For this reason a presentation was created to reinforce this importance.

Minimizing the Risk of Hospital Acquired Infections

Elliot Garcia

Faculty Mentor: Prof. Rebecca Lamberti

https://fairfield.quip.com/xwaXAYRBy3o9/Minimizing-the-Risk-of-Hospital-Acquired-Infections

Abstract:
Hospital acquired infections have plagued hospitals for years. Although it is nearly impossible to totally prevent them, there are many ways to reduce them. Research shows that these infections can be very costly since they can lead to extended hospital visits, financial penalties, and overall poor outcomes which can include death. Hospitals are aware of these issues, yet many have had trouble attempting to significantly reduce them. Hospital acquired infections will always be prevalent and research indicates that it may be impossible to completely prevent. However, any resource that can have an impact on reducing these infections is necessary, especially, if it can provide better patient outcomes in the future. Research reveals that resources and education have a goal to reduce hospital acquired infections and have had an overall positive impact on the hospital units. With a pocket-guide, related to infection prevention methods and tips, staff will be able to conveniently view this guide at any point in their day. This guide will remind staff members of the various ways to prevent infections. Although many believe hand-washing is a simple skill, research shows that reminders and education on hand-

washing have done wonders in the workplace. The pocket guide will remind workers not only how to hand-wash and when, but also, will go beyond that and focus on overall precautionary measures which include gloves, facial protection, and isolation precautions. With these extra reminders and tips, the goal is not for staff to view the pocket guide right before they enter a patient's room, but rather right before the shift. This will ensure that they are reminded of a variety of areas that can aid in infection prevention. I will present the first draft of my pocket guide in hopes that they will implement it on the unit.

Non-Pharmacologic Interventions for Alcohol Withdrawal Patients

Allison Grover

Faculty Mentor: Prof. Laura Conklin

https://fairfield.quip.com/2uORAi6ozzGC/Non-Pharmacologic-Interventions-for-Alcohol-Withdrawal-Patients

Abstract:
Among our nation's military veterans, substance use disorders, and more specifically alcohol abuse disorder, is a significant problem. Alcohol Withdrawal Syndrome (AWS) also known as Discontinuation Syndrome, occurs in individuals who have developed a physiological dependence on alcohol and who discontinue or reduce their use of it. Symptoms of AWS can vary widely in severity, and span between two hours to four days after cessation of alcohol use. Our veterans deserve to have the best treatment possible. One way this can be accomplished is to provide them with comfort and quality care during their battle with alcohol withdrawal. Most provider orders for patients experiencing AWS include various drug administrations including benzodiazepines, barbiturates, alpha2-agonists, beta blockers, neuroleptics, and antiemetics. Often this results in relying too heavily on a medicine-based plan of action, as opposed to utilizing supportive care measures. The literature addressed in this research project focuses on the different non-pharmacological interventions that can assist in the treatment of patients with AWS. Certain

interventions noted include decreasing excessive stimuli in the patient's room, reorienting patients to reality, cognitive behavioral therapy, the use of acupuncture to reduce anxiety, and providing nutritional care for nutrient deficiencies and imbalances.

Non-Pharmacological Interventions for Minimizing Delirium in Geriatric Patients

Nicole Dixon

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/GXmbAnJZRrdQ/Non-Pharmacological-Interventions-for-Minimizing-Delirium-in-Geriatric-Patients

Abstract:
Delirium is defined as an acute decline in attention and cognition that is common and potentially life-threatening. This misunderstood condition effects up to 50% of hospitalized elderly patients and is associated with increased morbidity and mortality. The impact extends post-discharge. Delirium is costly to the healthcare system, representing $11 billion annually. Up to 40% of delirium cases in geriatric patients are considered preventable. Delirium is underdiagnosed and often misdiagnosed. Research reveals approximately one-third of physicians and nurses recognize delirium in their patients. From a nursing perspective, the same interventions can be applied to both prevent and treat delirium. Prevention and early intervention are key to minimizing the effects of delirium. The medical oncology unit at Stamford Hospital cares for many patients at high risk for delirium. This project focuses on providing education to all care team members about non-pharmacological methods to prevent and treat delirium in the geriatric population. A literature review and an interview with a geriatric clinical specialist, indicate that

non-pharmacological delirium interventions are tremendously effective. Measures to reduce risk factors include promoting adequate sleep, and incorporating family involvement that improve outcomes and minimize the number of falls in the hospital. Inpatient programs designed to prevent the development of delirium have been effectively utilized in some facilities. Educating staff to implement measures to minimize the prevalence of delirium in hospitalized geriatric patients can decrease the incidence, and significantly improve patient outcomes.

Non-Pharmacological Methods for Pain Management in Postoperative Patients

Emily Federici

Faculty Mentor: Prof. Susan Bartos

https://fairfield.quip.com/CPy2AdpvBgfS/Non-Pharmacological-Methods-for-Pain-Management-in-Postoperative-Patients

Abstract:
When a patient is post-operative, they usually receive around-the-clock pain medications. Whether the doctor prescribes opioids and/or non-opioids, they are to be administered every few hours in hopes of combatting their pain. Many patients on West Tower 6 at Bridgeport Hospital are post-operative and report to their nurses being in agony between their scheduled doses of pain medication. They ask their nurse if there is anything else they can have to relieve their discomfort. Studies show that incorporating non-pharmacological methods for pain management can help with break through pain. There are various types of methods that are inexpensive, convenient, and accessible for all. Nurses can incorporate passively applied methods (massage, heat, or cold packs), physical activities (walking, deep breathing), psychological and spiritual (imagery, meditation, praying, presence), and distractions (watching television, talking to people, listening to music) (Komann et al., 2019). The nurse can collaborate with the patient and find out which method works best to provide relief until their next dose of pain medication. Evidence-based practice shows that

the use of certain methods, specifically cold packs, meditation, and music, decrease pain-related processing in the brain while improving relaxation (Zeidan et al., 2011).

Nurse Overload Leading to Nurse Burnout

Kaitlin Novak

Faculty Mentor: Prof. Barbara Jeudi

https://fairfield.quip.com/Og2aAqAry7wG/Nurse-Overload-Leading-to-Nurse-Burnout

Abstract:
Between a nursing shortage and the COVID-19 pandemic, nurses are assigned and overloaded with more patients for whom they care. This research project focuses on how nurses experience burn-out younger and faster because of the overwhelming amount of work that they are expected to accomplish. Evidence-based research states that nurses being overloaded causes them more stress, job dissatisfaction, and can ultimately lead to them leaving the profession. Nurses are not the only ones being affected by the overload- patients are too. With more patients, nurses have less time to spend with each one which puts the patient's safety at risk. Evidence-based research explains that a shorter amount of time spent with a patient leads to care being rushed, medication errors, and a lack of communication between the nurse and patient. In addition to the research presentation, a flyer with a list of free apps was created and handed out to Bridgeport Hospital's 7 Northwest nurses and managers. The apps on the flyer include the topics of mindfulness, exercise, sleep, emotions, and self-care which are all affected when nurses are burned out. By bringing awareness to various apps offered and encouraging nurses to use them, nurses will improve their overall

satisfaction with their life and career. With rested and healthy nurses, patients will receive safer and more effective care.

Nursing Education on the Proper Use of Incentive Spirometers

Samuel Stubblebine

Faculty Mentor: Prof. Kathleen Piqueira

https://fairfield.quip.com/N6l5AOQVQKRx/Nursing-Education-on-the-Proper-use-of-Incentive-Spirometers

Abstract:
Incentive spirometers are a tool commonly used to help with lung inflation through the promotion of deep breathing exercises in order to prevent various respiratory complications. After speaking with a few nurses and witnessing patients fail to properly use their incentive spirometers, I found that reeducation regarding the importance and the evidence-based practice associated with the use of incentive spirometers was needed for the staff on West Tower 6 at Bridgeport Hospital. The biggest issue with achieving the benefits associated with incentive spirometer use is getting patients to adhere to the prescribed regimen. By having nurses and providers remind and reeducate clients on the use of incentive spirometers throughout their stay, patients are more likely to comply and use the incentive spirometer properly (Eltorai et al., 2019). During an in-service on the unit, the staff members' role in incentive spirometer compliance will be discussed along with the evidence-based practice that supports reeducation and preoperative education in order to achieve shorter hospital stays and fewer pulmonary complications (Billyy et al., 2020).

Nutrition Documentation and Patient Care

Marykate O'Malley

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/hw1IAUaasnOa/Nutrition-Documentation-and-Patient-Care

Abstract:
This capstone project focuses on the importance of healthy nutrition, nutrition documentation, and educational awareness for the nurses on floor 6 West, a high acuity Medical Surgical Unit at Norwalk Hospital. Many patients are homeless and struggle with addictive behaviors, therefore, nutrition documentation is important, but often overlooked. Issues surround ineffective nutrition documentation, inadequate nutrition, missed meals, and disruptions during meal times in the hospital. These may lead to further health complications and increase hospital readmissions over time. The registered nurse's role is to advocate for patients to consume the majority of their meals. Studies show that when 75% of the meal is consumed, there is a reduced fall rate and incidence of pressure ulcers. It is also proven that there are less cognitive decline and weight loss in the hospital. This nutrition chart hangs in each patient's room to record the percentage of intake per meal. By providing RNs with this improved documentation chart, the nurse will be reminded to assess the patient's consumption and be able to assess the patient's caloric intake over time. Educating and implementing nursing staff on this nutrition chart received little to no pushback from nurses working

on the floor at Norwalk Hospital. After consultation, nurses and patients reported satisfaction with the new documentation system. In conclusion, patients found the chart to be motivating and nurses found it helpful in assisting with nutrition documentation.

Overlooked Oral Care in Hospitalized Patients

Alexis Dumais

Faculty Mentor: Prof. Barbara Jeudi

https://fairfield.quip.com/3KmwAoeyPhDE/Overlooked-Oral-Care-in-Hospitalized-Patients

Abstract:
This research project focuses on the issue of how oral care is neglected in routine care for hospitalized patients. Unfortunately, the majority of nursing staff find that they have limited time in their day to provide oral care to their patients. In addition, nurses believe that depending on their assigned patient, providing oral care can be challenging given specific patient behaviors. Studies have shown that normal saline, gauze, and sponges are not effective in decreasing plaque, inflammation, and oral bacteria residing in the oral cavity. Other possible issues that arise with poor oral care is hypertension, respiratory infections, risk for aspiration, and lack of nutritional intake leading to malnutrition. Therefore, education on proper oral care procedure and supplies will reduce potential infection rates and poor patient outcomes. As a result of nurses' resistance and lack of proper oral care knowledge, a patient specific checklist tool was created pertaining to those difficulties. The tool was inclusive for all patients. This resource was provided to educate the patient and healthcare team of proper oral care procedure to increase the prevalence of oral care occurring in the hospitalized setting while decreasing infection rates.

Palliative Care in Oncology Nursing

Molly Hilliard

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/qvKRAQC26Ubr/Palliative-Care-in-Oncology-Nursing

Abstract:
Palliative care is an area of healthcare which uses an interdisciplinary team approach to ensure that patient treatment is not only medicine-based but addresses the subsequent issues that a serious illness can cause. Palliative care addresses topics that may have been minimized or ignored otherwise, such as emotional distress, caregiver strain, symptom management, and ensuring sufficient education. On an oncology unit, patients with advanced cancer are forced to make difficult decisions and cope with both emotional and physical side effects beginning the day of their diagnosis. This is a patient population that would certainly benefit from increased palliative care. There are multiple levels of palliative care, beginning with primary care supplied from the oncology team ranging to tertiary care, which is an acute palliative care unit. Due to the existing issues with access to palliative care specialists and low patient knowledge around palliative care, the oncology team is put in a position to be the main advocator for palliative care. With the recent pandemic, there is a lack of interactions with the patient's care givers and less bonding with patients as floors can be understaffed. This can result in less focus on palliative care as part of the

care plan. This can be seen at Norwalk Hospital, where therapeutic conversations can be forgotten with all the chaos in our new pandemic world. This research project focuses on reinforcing education on palliative care in oncology for incoming nurses.

Patient Education on Prevention of Diabetic Foot Complications: Empowering Patients with the Tools for Success

Julia Murphy

Faculty Mentor: Prof. Barbara Jeudi

https://fairfield.quip.com/AksxA6wvg3bJ/Patient-Education-on-Prevention-of-Diabetic-Foot-Complications-Empowering-Patients-with-the-Tools-for-Success

Abstract:
This research project addresses foot care education in the diabetic population on North West 7 at Bridgeport Hospital. Throughout my time on this unit, I noticed how often patients with diabetes have feet that are completely neglected. Oftentimes, these patients are relatively immobile and physically observing their own feet can be difficult. The literature reviewed focused primarily on the efficacy of foot care education in patients with diabetes mellitus. I designed an educational pamphlet for these patients and a diabetic foot care goodie bag. The goodie bag will include things such as a small mirror with an extended handle so that patients can visualize their own feet, toenail clippers, a sock remover tool, etc. Providing patients with the education and tools that they need to manage their own foot care, empowers them to take control of their own health outcomes.

Patient Experience and Satisfaction in Relation to Discharge Education

Kelly Gilmartin

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/K5hPAu3q2bgW/Patient-Experience-Satisfaction-in-Relation-to-Discharge-Education

Abstract:
The nurse's main role while discharging a patient is to educate the patient on the diagnosis made while they were admitted and the medications that they will be taking at home. If a nurse fails to fully educate the patient on the medications, side effects, and possible adverse events, the patient may begin to feel overwhelmed at home. This can result in patients reporting low satisfaction scores when the hospital surveys them on their stay. On the medical unit of 6 East at Norwalk Hospital, the staff noticed a decrease in patient satisfaction scores and experience in relation to medication education. The patients score their hospital experiences based on different items, but medication explanation and medication side effects are areas that need improvement. Proper discharge education on medications improves patient safety by possibly eliminating adverse events, decreases the rate of readmission, and improves patient compliance with medications. Along with the research presentation, a discharge education tool was made for the 6 East nurses to use during discharge education. The tool was created to make sure that the nurses explain all

aspects of the medication in hopes of increasing patient satisfaction scores and patient safety.

Patient Involvement in Care

Bryn Fleischer

Faculty Mentor: Prof. Rebecca Lamberti

https://fairfield.quip.com/gJWaABWN9Lpi/Patient-Involvement-in-Treatment

Abstract:
This research project focuses on the importance of involving patients in decisions about their treatment and the treatment methods that will be used for their care. This is an important topic especially in patients who have chronic illnesses with multiple treatment regimens and members of the healthcare team. Many patients have questions about their diagnosis or treatment that go unanswered that could lead to errors in their care. It is important for patients to understand why they take certain medications, why certain dressings or interventions are used, and what their diagnosis is. This knowledge can reduce medication errors, improve patient satisfaction, improve patient compliance to the treatment regimens, and prevent rehospitalization. Awareness of the problem and how it can be fixed is the first step to implementing a change in the communication between patients and the healthcare team, especially nurses. Educating healthcare professionals on this topic can help initiate a change in behavior and prioritization. Research has shown that increased communication and prioritizing patient education can prevent negative health outcomes while in the hospital. In addition to education, a handout has been

created to provide a reminder and guidance on the importance of patient involvement in care.

Pediatric Pathway to Discharge

Kelsey Kacsmar

Faculty Mentor: Prof. Ashley Antonucci

https://fairfield.quip.com/Tyf5AmJOubQF/Pediatric-Pathway-to-Discharge

Abstract:
Throughout the course of a hospital stay, a frequently asked question by pediatric patients at Yale New Haven Children's Hospital is "when am I going to get to go home?" This project was developed to provide patients with a "pathway to home" which ensures the family, patient, and healthcare team are all on the same page regarding what outcomes must be met before a safe discharge can happen. The pathway to discharge teaching tool handout also provides patients with written information that they can use as a reference sheet during their learning in the hospital and once they transition to caring for themselves at home. A literature review of evidence-based practice supports that early discharge planning and education empowers caregivers while reducing complications and hospital readmission rates.

Post-Stroke? Don't Choke! A Family Member's Guide to Proper Post-Stroke Diet Management

Samantha Lien
Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/d9QiAkJrxGFh/Post-Stroke-Dont-Choke

Abstract:
This capstone teaching project focuses on educating family members about post-stroke diet management in order to prevent life-threatening complications such as choking and aspiration. On a general medicine inpatient unit at Stamford Hospital, it was found that the floor received numerous stroke patients and family members lacked understanding about their loved one's diet plan and the restrictions involved. As a result, a handout was created detailing each level of the dysphagia diet which includes examples of foods and drinks that fall under each category, and what to avoid. A literature review yielded six articles from various nursing journals which limited research to the last five years. Many of these articles emphasized the importance of family education so as to eliminate risks. Specifically, those caring for the patient need to be informed of the reasoning for specific dietary and fluid recommendations in order to understand the potential consequences if the diet plan is to be improperly followed. A study also promoted the use of patient information handouts to improve knowledge and adherence to prescribed treatments. Nursing staff were

very receptive to this project and supported the creation of the handout. The handout will be presented to staff in hopes of being implemented on the floor.

Pressure Injuries Associated With Inpatient Hospital Stay

Sarah Marquis

Faculty Mentor: Prof. Lauren Mitchell

https://fairfield.quip.com/5a57AgXBFoI3/Pressure-Injuries-Associated-With-Inpatient-Hospital-Stay

Abstract:
Patients with cardiac events and cardiac disease processes are at risk for impaired skin integrity while inpatient. A patient specific chart/table prototype can be implemented to organize and further monitor skin protection and integrity of patients (Kahn & Jonusas, 2019). This will allow for further education of the nurses and each patient while also implementing this simple method of protecting skin integrity. An inservice will be provided to the unit nurses and nursing staff, as well as a powerpoint sent to the floor to allow for further education. A problem was identified and research was completed to further develop a prototype tool for the staff nurses on the floor.

Preventing Compassion Fatigue in Medical-Surgical Nursing

Cara McPherson

Faculty Mentor: Profs. Lisa Guardino, Kathy Saracino

https://fairfield.quip.com/Xc7tAAfs8IbW/Preventing-Compassion-Fatigue-in-Medical-Surgical-Nursing

Abstract:
This research project focuses on educating nurses on compassion fatigue, its effect on nurses, significance to patient care, and preventative measures. Compassion fatigue results from becoming emotionally overwhelmed by providing care to patients. Caring for patients who are suffering can be emotionally distressing, especially with the current state of healthcare facilities due to the COVID-19 pandemic. With some units still not allowing visitors, nurses take on the role of not only caregiver, but support system for patients. The scientific literature addresses the negative outcomes associated with the emotional exhaustion that can result from providing care. A lack of set boundaries, self-care priorities, or other preventative measures can lead to loss of focus, patient errors, poor professional quality of life, and loss of pride and satisfaction in the nursing profession (Steinheiser, et. al, 2020). The research found that preventing compassion fatigue could improve patient outcomes, staff retention, and the quality of life of nurses (Dreher, et. Al, 2019). An educational in-service was created, and a flyer for unit 7 East at Norwalk Hospital detailing causes, symptoms, and prevention strategies in an effort to reduce the risk of

developing compassion fatigue. It is crucial, now more than ever, to address personal vulnerabilities and raise awareness in order to safely provide proper patient care.

Preventing Delirium in Older Adults During the COVID-19 Pandemic

Christian Ciaburro

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/ja16Ag4NPrcN/Preventing-Delirium-in-Older-Adults-During-the-COVID-19-Pandemic

Abstract:
Incidences of hospital acquired delirium have increased drastically over the past year, a phenomena largely attributed to the COVID-19 pandemic. The increased incidence of delirium has caused an increase in the length of stay for patients, total patient cost, and the stress put on healthcare workers. Both patients infected with COVID-19 and those not infected, on average, developed delirium faster and more frequently than usual over the past year. Recent research shows that delirium is a common side effect of COVID-19 in older adults, a symptom of the virus not listed in the CDC guidelines. Some people infected with COVID-19 develop delirium as their only symptom (Inouye, 2021). Preventable measures can be taken to reduce the incidence of hospital acquired delirium during the pandemic, a practice not commonly implemented by hospital staff. This research project focuses on the use of care pathways to prevent the incidence and duration of hospital acquired delirium during the COVID-19 pandemic. The created teaching tool will be posted in the nurses station to remind nurses of ways to prevent delirium in the cardiac unit at Yale New Haven Hospital. This teaching tool will, hopefully, create a

census of more alert and oriented patients, allowing for overall more satisfactory experiences for both the patients and hospital staff.

Preventing Malnutrition in Oncology Patients

Sarah McGough

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/TbctAvImI1lk/Preventing-Malnutrition-in-Oncology-Patients

Abstract:
This research project focuses on prevention of malnutrition in oncology patients. Malnutrition is a large issue in the oncology patient population, and is often a secondary diagnosis to cancer. It can be caused by physiological changes that come with the diagnosis, along with side effects of chemotherapy. Malnutrition puts patients at a higher rate of morbidity and mortality, along with worsening side effects of chemotherapy and increasing risk of infection. On West Tower 7 at Bridgeport Hospital, some oncology patients are malnourished or require proper education on ways to prevent malnutrition. Evidence-based literature and other studies were observed to gather the best ways to prevent malnutrition. Education is imperative in the prevention of malnutrition. A brochure was created to give to patients following their hospital stays to ensure that patients are able to refer back to the nutritional information given at their diagnosis or discharge.

Preventing Pressure Injuries During a Patient's Hospital Stay

Olivia Sarantopoulos

Faculty Mentor: Prof. Danielle Jimenez

https://fairfield.quip.com/7tuNA88kOyfu/Preventing-Pressure-Injuries-During-a-Patients-Hospital-Stay

Abstract:
After several weeks at Bridgeport Hospital on NE7 a medical surgical floor, it was very clear that pressure injuries were something that affected many patients on the unit. Pressure injuries are defined by the NCBI as localized damage to the skin and underlying soft tissue which are commonly found on bony prominences or as a result of continuous pressure in one location from a medical device. Pressure injuries affect 1 to 3 million people in the United States every year making them one of the most common hospital-acquired injuries. It has become increasingly evident that frequent skin checks/ assessments are essential to preventing skin damage and breakdown to protect against further issues, such as infection, which can result in a longer hospital stay. Implementing a two nurse skin check once per day has been shown to improve the outcome of a patient's skin during their hospitalization. Assessing for redness, color, temperature, texture, edema, etc. each day results in a decrease in hospital acquired pressure injuries, leading to overall safer care of the patient. I will present an educational powerpoint to explain my research.

Prevention of Hospital-Acquired Pneumonia

Haley Denis

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/amSuAwsLEL3u/Prevention-of-Hospital-Acquired-Pneumonia

Abstract:
As patients arrive in the hospital, they often hope to fix their current health problems, not acquiring additional ones that keep them away from home. Hospital acquired pneumonia (HAP) is one of the most prevalent nosocomial infections in the world. Pneumonia causes increased morbidity and mortality rates, as well as increased hospital stays that cost both the patient and hospital money. RNs have a duty to recognize patients at risk for pneumonia and implement prevention methods as a result. On the 5-5 unit at Yale New Haven Hospital, several patients developed pneumonia after arriving on the unit with a different chief complaint. Through evidence-based practice and literature, simple techniques can be used throughout a nurse's shift to significantly reduce the risk of pneumonia. Techniques such as increased hand hygiene, oral care, early mobilization, elevation of the head of the bed, and incentive spirometry can be implemented into standard care to reduce risk of HAP by creating awareness among healthcare professionals about simple additions care, positive patient outcomes increase. A flyer was created to showcase the small tasks that can drastically decrease a patient's chance of developing pneumonia. Education of hospital

staff can reduce not only pneumonia, but promote healthy living, healing, and increased physical function.

Prevention Strategies: Decreasing Central Line Associated Bloodstream Infections In Oncology Patients

Julia Kane

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/iObvAnYaybaG/Prevention-Strategies-Decreasing-Central-Line-Associated-Bloodstream-Infections-In-Oncology-Patients

Abstract:
This capstone project focuses on a variety of different prevention strategies that can be used in order to decrease the rate of central line-associated bloodstream infections, known as CLABSI. There is an increase in the volume of central lines seen in oncology patients who are immunocompromised, making them high-risk patients extremely susceptible to infection. CLABI is a problem that exists within hospitals all over the world. Simple measures can be taken in order to prevent this hospital acquired infection from developing and having negative impacts on patient outcomes. The evidence-based practice included in this project addresses different prevention measures that proved to be effective in decreasing CLABSI rates, including the implementation of enhanced bundle care, hand hygiene, antimicrobial catheters, locks, and caps, and finally education programs. Furthermore, this evidence-based practice is also a representation of greater patient outcomes, decreased cost of care, and decreased length of hospital

stay, directly as a result of the decreased CLABSI rates. Providing a variety of different prevention strategies and re-educating the healthcare staff of the increased risk of infection is crucial in lowering the rates of CLABSI on the oncology unit, and improving the quality of care. As a result of this research, a reference card was created for a community hospital, which can be attached to the badges of healthcare providers, reminding staff of CLABSI prevention strategies.

Proning for Patients with COVID-19

Sarah Zebick

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/ZYXkAe4ayA2W/Proning-for-COVID-19-Patients

Abstract:
This research project focuses on the use of prone positioning to improve outcomes among intubated COVID-19 patients with ARDS. Acute respiratory distress syndrome (ARDS) is a condition characterized by poor gas exchange and excess fluid in the lungs that prevents oxygen from reaching vital organs. It can occur for many reasons including pneumonia, aspiration, sepsis, SARS, and most recently COVID-19. ARDS is a very serious condition responsible for nearly 10% of all ICU admissions worldwide and has a mortality rate that varies between 30-45%. In hospitalized patients with COVID-19, 42% developed ARDS, and those patients had a mortality rate of approximately 52% (Wiggerman, 2020). The Progressive Care Unit of 6 West at Norwalk Hospital frequently receives patients under investigation for COVID-19, and those that are COVID-19 positive often require intubation and transfer to the Intensive Care Unit. The goal of this capstone project is to educate nursing staff about the use of proning as a promising intervention to improve outcomes in patients with ARDS and demonstrate the process for proning a patient. Proning is the process of turning a patient from the supine position, lying on their back, to the prone position, lying on their

stomach. The evidence-based literature shows that lying in the prone position for at least 12 hours each day improves ARDS outcomes by allowing gravity to aid in mobilizing lung secretions, decreasing pressure on soft lung tissues, and increasing ventilation in the posterior lung fields.

Proper Utilization of Medical Interpreter Services

Sadie Webb-Johnson

Faculty Mentor: Profs. Susan Bartos, Kathy Saracino

https://fairfield.quip.com/eAaSAbpVynUf/Proper-Utilization-of-Medical-Interpreter-Services

Abstract:
This project focuses on medical interpreter services and ensuring nursing staff have knowledge of the standards of practice involved when using these services. Over 25 million persons living within the US have limited English proficiency (LEP) (Lopez-Bushnell, 2020). Language barriers between patients with LEP and healthcare providers (HCPs) often result in longer hospital stays, reduced understanding of medical conditions and treatment plans, and poor health outcomes (Lopez-Bushnell, 2020). The evidence-based literature addresses the proper use of medical interpreter services and its impact on patient care. The research also indicates the importance of adhering to existing guidelines when using medical interpreter services in order to facilitate better communication between HCPs and patients with LEP to improve their health outcomes. Education on the correct use of interpreter services is essential to ensure that these services are used appropriately and effectively. In connection to the research reviewed, a reference sheet was created for the West Tower 6 nursing staff at Bridgeport Hospital that includes some of the most important rules and standards of practice, and an

educational in-service for re-educating staff on the use of medical interpreter services.

Purposeful Rounding as Fall Prevention

Elena Dapkus

Faculty Mentor: Prof. Susan Bartos

https://fairfield.quip.com/pl0tAaiitEZK/Purposeful-Rounding-as-Fall-Prevention

Abstract:
Patient safety should always be at the forefront for any healthcare professional. Registered nurses must be especially committed to providing not only safe and effective patient care, but also advocating for patients by addressing their needs and concerns. One major concern of hospitalized patients is an increased risk of falls, and the implications that a fall can have on a patient's outcomes. At this point in time, patient falls are a leading cause of injury in the United States resulting in between 700,000 and 1,000,000 preventable injuries every year, according to the Agency of Healthcare Research and Quality (2018) (Grillo et al, 2019). Like many hospital units throughout the country, Bridgeport Hospital's West Tower 6 can benefit from interventions to improve prevention of patient falls. More often than not, injuries that result from falls occur accidently, proving to be preventable through planning and intervention, as well as a collaborative, team-based approach to patient care. Evidence-based literature shows that a multicomponent fall strategy using an interprofessional team, staff/patient education redesign, hourly rounding redesign, and metric transparency has been effective in reducing falls and falls with injury (Rohm et al, 2020). Further evidence shows

that a nursing-driven approach to reducing patient falls through the use of a purposeful hourly rounding system has a positive impact on reducing falls, improving call bell response times, and, in turn, more satisfied patient results (Kelley et al, 2017). Therefore, for this teaching project, education was provided to the staff nurses of West Tower 6 through a quick in-service during morning rounds on the importance of hourly rounding, and a rounding tool was produced and distributed to help better organize and track the use of a purposeful hourly rounding system as a method of fall prevention.

Reducing Feelings of Isolation and Loneliness for Pediatric Patients during the COVID-19 Pandemic

Francoise Hultin

Faculty Mentor: Prof. Ashley Antonucci

https://fairfield.quip.com/GAVIAIDiDAbf/Reducing-Feelings-of-Isolation-Loneliness-for-Pediatric-Patients-during-the-COVID-19-Pandemic

Abstract:
There has been a profound impact on children, a vulnerable population, due to the prolonged isolation and social distancing, as a result of the COVID-19 pandemic. Children have faced disproportionate effects, as there have been sudden lifestyle disruptions, increased stress, and lack of routines. On the 7-3 Pediatric Neuro and Med Specialties Unit at Yale New Haven Hospital, many patients are alone in rooms due to the restricted visitation rules and COVID-19 precautions. Patients are confined to their rooms and do not leave unless they are working with physical therapy or walking with another staff member. The usual area for children to play together is closed, preventing any socialization with other patients. The evidence-based literature addresses the important role that pediatric nurses play in caring for these patients, assessing for early signs of mental and behavioral health issues, in addition to acknowledging the life disruptions and providing resources for children and families. Maintaining routines including practicing sleep hygiene, is

one example of how pediatric patients can be supported. Research also shows that there needs to be increased communication and collaboration, in order to reduce feelings of loneliness and uncertainty. Healthcare workers have the opportunity to address these feelings of isolation by facilitating conversations with patients in order to connect and build rapport. The forms created based on evidence-based research will encourage this engagement between staff and their patients. Through these relationships, further patient needs can be communicated and patients will be cared for holistically, reducing negative long term health impacts resulting from the pandemic.

Reduction of Pressure Ulcers with the Implementation of a Turn Clock

Krista DeTulio

Faculty Mentor: Prof. Majeda Basilio

https://fairfield.quip.com/6L3sAizFiXeA/Reduction-of-Pressure-Ulcers-with-the-Implementation-of-a-Turn-Clock

Abstract:
Pressure ulcers are a major concern in hospitals each year and highly overlooked. At Yale-New Haven St. Raphael's campus, pressure ulcers are a prevelant issue on the V4W unit. Millions of patients, acquire pressure ulcers within the hospital, creating longer lengths in stay and high costs to manage and treat them. It was found that each year, 60,000 deaths are associated with pressure ulcer injuries. The population most susceptible to developing them are those over the age of 65. Research says that due to changes in the aging process, older adults become high-risk candidates for developing and forming pressure ulcers. About two-thirds of the pressure ulcers reported are in elderly people between ages 60-80 years of age. These changes in aging can include a limited ability to move, loss of fat and muscle mass, incontinence, restlessness, and an inability to communicate that they want to move around. With a visual tool put in place, such as a turn clock, pressure ulcers on the geriatric unit at St. Raphael's Campus at Yale-New Haven can significantly decline. Turn clocks are a tool used in other institutions to decline the number of pressure ulcers. This tool helps to decrease the number of

pressure ulcers by having two-hour time intervals and positions that a patient should be turned to every two hours to prevent ulcers from forming. A turn clock would be initiated for a patient on the unit that has a BRADEN score of over 18. This clock should be placed on the outside of patient rooms to alert nurses of the turn schedule. This tool would greatly reduce the number of at-risk patients for developing ulcers, reduce costs, and lessen the length of stay in hospitals for patients. I will present the first draft of my tool to the V4W unit in hopes that they can implement this in the future.

Rock 'n' Walk: Early Ambulation in Postoperative Patients

Shannon Ostenby

Faculty Mentor: Prof. Kathleen Piqueira

https://fairfield.quip.com/xX6yAe4xyfYx/Rock-N-Walk-The-Importance-of-Early-Ambulation-in-Postoperative-Patients

Abstract:
After surgery, patients often feel exhausted, in pain, and overwhelmed with instructions for recovery. Although important, many patients are reluctant to subject themselves to exercise when they believe that bed rest is the best path towards healing and discharge. On the medical-surgical floor of West Tower 6 at Bridgeport Hospital, the rooms are filled with patients told that they need to walk around the halls but do not understand the rationale behind these trips. Patients express that walking in the hallways can be disorienting because "everything looks the same." Nurses strive to build rapport with their patients, but express that conversation can be difficult on a busy day. The registered nurse's role is to provide patient-centered care. It is important to see patients as not a room number and diagnosis, a person with interests, memories, and a need for connection. A poster collection entitled "Rock 'n' Walk" was created as a way to travel through 100 years of iconic music while learning about the benefits of early ambulation in the postoperative phase of recovery. This project was designed to educate and motivate patients to keep

walking down the hallways, engage the auditory cortex and hippocampus in music reminiscence, connect with staff in shared interests, and assist with accurate documentation for distance traveled.

Safe Maintenance of a Nasogastric Tube

Olivia Calnan

Faculty Mentor: Prof. Mary Murphy

https://fairfield.quip.com/Iax6AXMXEOXj/Safe-Maintenance-of-a-Nasogastric-Tube

Abstract:
This capstone project's purpose is to summarize the recent literature on the unique challenges identified for safely maintaining an indwelling nasogastric tube (NGT). Common reasons for the hospitalized patient to require an NGT include decompression of stomach contents, enteral nutrition, and administration of drugs. Investigation is made to determine and report the unique challenges for safe maintenance of NGTs. It is not difficult for an NGT to be inserted into the gastric space. Appropriate placement is confirmed by X-ray or litmus paper readings of less than 4 on the pH scale. Anchoring devices to maintain placement are intentionally designed to be temporary. However, there is a high rate of patients spontaneously removing their NGT. The primary challenge to self-removal of an NGT is delay of administration of essential medications and nutrition and may impact the hydration status of the patient. Safe maintenance of an indwelling NGT is a nurse's responsibility. Research shows that if a patient is properly informed on the essential aspects of an NGT, they are less likely to remove it. Supportive signage for patients may serve as a beneficial reminder to maintain NGT placement. Creation of a sign posted bedside as a visual reminder to the patient to not remove

the NGT may contribute to safe maintenance. This sign reminds patients of why they have the tube in place and what to do if agitated by it, including: contacting the nurse, taking a deep breath, and distracting themselves until the nurse is available to address the discomfort.

Self-Care or Patient Harm? How Nails, Nail Polish, and Nail Hygiene Can Affect Inpatient Care

Kalyn Hicks

Faculty Mentor: Prof. Barbara Jeudi

https://fairfield.quip.com/YhOfAaUh8Kar/Self-Care-or-Pt-Harm-How-Nails-Nail-Polish-and-Nail-Hygiene-can-affect-inpatient-care

Abstract:
Nail care and hygiene is a dress code policy that is always emphasized and enforced. During our clinicals for nursing school, there are guidelines on how our nails should be groomed, so naturally we would see similar standards being upheld within professional nursing practice. Therefore, this research project centers upon how nails, nail polish, and nail hygiene can affect patient care. Longer nails and artificial nails compared to natural and short nails have been shown to harbor more bacteria, hence this topic is important especially for nurses as we use our hands while in direct daily contact with patients. The first day on our unit, our clinical instructor informed us about the nail guidelines that the nurse manager enforces. Our conversation then prompted me to find Yale New Haven Hospital System's (YNHHS) policy on nail hygiene through their website. In addition to this capstone teaching project, a brochure was created for the nurses and other healthcare professional staff to grab and read on the go. It serves as a small refresher or reinforcement

of teaching for what the YNHHS policy has in place in regards to nail hygiene to prevent infections, reminders on proper nail care within the hospital as healthcare professionals, and a qr code leading to a video explaining hand hygiene in a simplified manner.

Social Isolation and the Effects on Hospitalized Patients

Rachel Landry

Faculty Mentor: Prof. Laura Conklin

https://fairfield.quip.com/0M0jAeo5vNRX/Social-Isolation-and-the-Effects-on-Hospitalized-Patients

Abstract:
This project examines the effects of social isolation and lack of visitors among hospitalized patients. With the pandemic occurring throughout our health systems around the country, it is important to educate about social isolation and the detrimental effects on patients and ways in which it can be avoided.

Teaching Nurses to Use NIH Stroke Scale on All Units

Fiona McNulty

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/tm27AieztWUd/Teaching-Nurses-to-Use-NIH-Stroke-Scale-on-All-Units

Abstract:
Nurses may care for stroke patients regardless of the unit on which they work. With this being said, units with low stroke-volume have a lack of education and exposure to proper stroke care. Nursing stroke care needs to be precise, frequent, and timely as full-recovery is time-sensitive and the patient is at risk for another stroke. Therefore, NIH stroke scale education should be implemented on all floors in the hospital. Evidence-based literature rate NIHSS as the best scale for stoke care. Additionally, the evidence-based research explains that each point of the stroke scale accurately predicts the likelihood of the patient's condition to worsen or improve. In conclusion, NIHSS training should be provided for all units with the addition of pocket card scales for all nurses. However, if low-stroke volume units are lacking in stroke knowledge, then they can use the NIHSS-PE (Plain English) scale. The NIHSS-PE accumulates the same scoring system as NIHSS, but with simple language. Pocket cards allow the nurse easy access to the stroke scale, as it should be with them the whole shift. Overall with the use and training of NIHSS, better nursing care for

stroke patients should increase and stroke complications should decrease.

The ABCs of ECGs: The Essential Skill of Accurate ECG Interpretation

Julia Knobloch

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/EaaLAb4KxUD1/The-ABCs-of-ECGs-The-Essential-Skill-of-Accurate-ECG-Interpretation

Abstract:
Electrocardiograms remain the first diagnostic intervention to assess electrical and muscular activity in the heart. Despite serving as one of the most used diagnostic tests in the healthcare setting, the ECG is also one of the most misinterpreted. Research identifies that registered nurses lack ECG rhythm recognition, interpretation, and management skills. A nurse's ability to interpret ECG strips accurately is vital in initiating appropriate interventions and key to patient safety. Errors in ECG interpretation can compromise patient outcomes (Sharma et al., 2020). There are no clear, universal guidelines as to how competent a registered nurse should be in ECG interpretation, an evident obstacle in this study. This research project's goal is to ensure a safer level of practice within the Medical Surgical unit at Greenwich Hospital by closing the knowledge gap and increasing confidence and competency of ECG interpretation. The workshop-based format has been statistically proven to be successful given a significant association between knowledge gain and workshop attendance (Mahler et al., 2011). Therefore, this project was presented to the staff as an outline of an in-service workshop that

accommodates different learning styles. This learning method allows for small group activities and hands-on learning. In conclusion, competency standards for ECG interpretation must be clearly defined so that a standard can be upheld and enforced. Newly acquired ECG interpretation skills should be continually reinforced for learning to be effectively applied into clinical practice.

The Advantages of Prone Positioning

Patricia Fynan

Faculty Mentor: Prof. Laura Conklin

https://fairfield.quip.com/YRycAD7rhG5y/The-Advantage-of-Prone-Positioning

Abstract:
This research emphasizes the benefits of prone positioning for patients with respiratory related issues. The medical surgical step-down unit at the VA in West Haven consists of many patients with respiratory complications or chronic respiratory conditions who could significantly benefit from prone positioning. Notably, during the pandemic of Covid-19, the need for interventions that can improve oxygenation, such as prone positioning, is growing. A knowledge deficit is apparent among staff members because there are several misconceptions about barriers to prone positioning and, therefore, the technique is not often put to use. These barriers include a lack of confidence, concerns about the risk of adverse outcomes, and a lack of competent training (Montanaro, 2021). The duty of the RN is to carry out interventions proven, through evidence-based practice, to improve patients' conditions when they fit the proper criteria. The evidence-based resources utilized in this project thoroughly identify the advantages of prone positioning which can improve patient outcomes, while clarifying the criteria and execution. In addition to providing staff with an in-service education day, an

informational card will be provided as a resource to highlight the benefits and criteria for prone positioning.

The Benefit of Bedside Shift Report

Zaira Ramirez Jimenez

Faculty Mentor: Prof. Danielle Jimenez

https://fairfield.quip.com/wNjWANR2giOH/The-Benefit-of-Bedside-Shift-Report-Among-Nurses

Abstract:
This project focuses on the benefits of bedside shift report among the nursing staff at Bridgeport Hospital. Currently, the method of giving hand-off report typically happens while huddling around the nurses' station or outside a random patient's room. According to research, there are many benefits of bedside shift report, such as the following: it allows patients to be more interactive with their care by giving them an opportunity to ask questions, decreases the risk of falls and medication errors, and creates a positive nursing experience. In order to implement this new method within the nursing staff, we need to educate about the most recent evidence-based research that supports bedside shift reports. The Everett Rogers five-step approach includes: knowledge, persuasion, decision, implementation, and confirmation. These five steps will help with the new implementation on the unit because we want to assess the nurse's adherence to the new approach, and make modifications as needed based on their attitudes and suggestions.

The Effect of Artificial Nails/Gel Nail Polish on the Hand Hygiene of Health Care Professionals

Annika Alexander

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/TIgqAVjewaJa/The-Effect-of-Artificial-NailsGel-Nail-Polish-on-the-Hand-Hygiene-of-Health-Care-Professionals

Abstract:
According to the World Health Organization (2009), health care-associated infections (HCAI) effect 5-15% of hospitalized patients and contribute to an average of 135,000 deaths per year. While a variety of interventions have been implemented in order to decrease the burden of HCAIs, by far the most effective method is proper hand hygiene. The techniques for proper hand hygiene have been drilled into the minds of health care workers through education, training programs, and auditing, but some barriers have arisen. One relatively new major barrier is the use of artificial nails and gel nail polish. Multiple studies show the presence of pathological micro-organisms on the hands of health care workers donning artificial or gel nails, even after proper hand hygiene is performed. Epidemiological evidence reveals that artificial nails and gel nail polish can harbor harmful bacteria and organisms that can lead to an increase of HCAIs, especially when caring for high risk patient populations. It is essential for heath care workers to keep short,

unpainted nails in order to perform effective hand hygiene and prevent the spread of infection.

The Effectiveness of Weighted Blankets to Treat Anxiety in Oncology Patients

Lucy Milauskas

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/lzJ7AczGp8gn/The-Effectiveness-of-Weighted-Blankets-To-Treat-Anxiety-in-Oncology-Patients

Abstract:
Stamford Hospital's 6th floor oncology unit consists of adult patients confronted with a variety of cancer diagnoses. These patients experience varying degrees of anxiety based on the severity of their illness, the symptoms they experience, and how they cope with this altered state of life. Currently, the COVID-19 pandemic exacerbates the anxiety of oncology patients, as visitor restrictions have left them isolated and unable to have physical contact with loved ones. The use of weighted blankets and deep touch pressure has been studied in people with autism and those with psychiatric diagnoses, but its psychological and physiological effects can also benefit those experiencing anxiety due to cancer. The weighted blanket regulates the autonomic nervous system by deep touch pressure through decreasing sympathetic activity and increasing the parasympathetic response. This physiological change results in the patient feeling a sense of comfort, relaxation, and safety, similar to that of a hug. This project educates the nursing staff of the 6th floor oncology unit about how to non-pharmacologically treat anxiety in their patient population

through the use of weighted blankets. Through the application of a simple tool I created, nurses can assess whether a weighted blanket is a beneficial addition to their patient's care plan and safely implement its use.

The Importance of Bedside Report and Hourly Rounding to Decrease Falls

Beatrice Erika Relucio

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/2PPxAQpxe8M9/The-Importance-of-Bedside-Report-and-Hourly-Rounding-to-Decrease-Falls

Abstract:
As a patient fights to remain abstinent from their alcohol or drug addiction, they face withdrawal and detox side effects including: insomnia, disorientation, hallucinations, anxiety, confusion, and irritability that lead to an increased number of falls on this unit (Galbicsek, 2021). The progressive care unit of 6-West at Norwalk Hospital cares for a majority of withdrawal and detox patients. In the time of COVID-19, nursing staff on 6-West expressed that their focus on the importance of hourly rounding and bedside report to avoid falls were overlooked due to increased stress levels and burnout secondary to the pandemic (Restauri, 2020). Studies state that bedside report and hourly rounds result in positive effects on patients as it promoted patient safety and enhanced communication among patients and their health care providers. Providing education to nurses and aides is vital as research showed that patients preferred shift of change reports at the bedside to share input in their plan of care and ask for clarification. Moreover, studies showed that hourly rounding allotted time for staff to assess safety of the environment of detox/withdrawal

patients, and their comfort and pain levels. Failing to perceive the importance of basic practices to ensure patient safety is possible in the time of a pandemic, which is why nurses and aides need a refresher, educational in-service. To reiterate the key points of the in-service, a checklist was curated for 6-West staff to promote patient safety and help reduce the number of falls in the unit.

The Importance of Breastfeeding: Educating Nurses and Patients

Alyssa Townsend

Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/zrFRAVJEzsGo/The-Importance-of-Breastfeeding-Educating-Nurses-Patients

Abstract:
This research project discusses the importance of breastfeeding with a focus on educating nurses and patients. Ultimately, a lack of understanding exists about the benefits of breastfeeding for the majority of mothers in the United States, causing them not to breastfeed properly, or to veer away from breastfeeding altogether. Unfortunately, the clinical setting revealed that this incomprehension was partially preventable as many patients did not receive adequate education from their healthcare professionals such as nurses, lactation consultants, and physicians. In addition, evidence-based practice guidelines were not in place as skin-to-skin contact was not immediately initiated after birth. The project includes a study discussing why many women choose not to breastfeed. Many of these barriers include a lack of hospital breastfeeding support, realistic information given on the experience, and time constraints in regard to going back to work. The literature review emphasizes the health benefits for mother and child and suggests the proper duration that mothers should be breastfeeding in order to achieve those benefits. One of the most crucial findings proposes that breastfeeding can

actually protect children against coronaviruses such as SARS-CoV-2 and indirectly, COVID-19. As primary patient advocates, it is important for nurses to be aware of this information so that they can create a more informed society which will hopefully result in a healthier population. In connection to the research presentation, a fact sheet handout was designed for St. Mary's Hospital which includes information regarding the benefits of breastfeeding, serving as an educational tool for both patients and healthcare professionals.

The Importance of Discharge Education for Cancer Patients on Neutropenic Precautions

Joshua MacLeod

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/7S0hAutlbauN/The-Importance-of-Discharge-Education-for-Cancer-Patients-on-Neutropenic-Precautions

Abstract:
This research project focuses on the importance of discharge education for cancer patients with neutropenia following chemotherapy. Neutropenia-related complications are a burden to the current healthcare system accounting for a total of $2.3 billion in costs in 2012 with the average inpatient hospitalization tallying between $7,100-$19,100 (Bagcivan et al., 2015). In the hospital setting, nurses are challenged in teaching their patients large amounts of information in a short period of time. After conducting a literature review of current evidence-based practice, the findings support effective discharge education in decreasing hospital readmissions and mitigating the financial burden cancer treatment can have on a family. Implementation of a standardized discharge education tool has been found to improve patient knowledge and reduce emotional stress related to their illness. Furthermore, evidence-based practice supports the need for a methodical discharge education for both the patient and the caregiver, followed by an assessment of their understanding of the teaching. Effectively educating this population on neutropenic

precautions is a cost-effective intervention in preventing complications with treatment and improving patient outcomes. As an extension of the research, a poster was created as an informational tool for staff on the 6th floor Stamford Hospital oncology unit to help facilitate effective discharge teaching to patients on neutropenic precautions.

The Importance of Early Ambulation in Cardiac Patients

Devyn O'Brien

Faculty Mentor: Prof. Majeda Basilio

https://fairfield.quip.com/BeRuAhipoaOt/The-Importance-of-Early-Ambulation-in-Cardiac-Patients

Abstract:
Implementation of early ambulation of patients in the hospital is critical, particularly for those admitted for cardiovascular complications. Ambulation is necessary to prevent prolonged hospital stays, improve hemodynamics and respiratory function, and aid in the patient's ability to function independently once discharged from the hospital. Nurses play a vital role in encouraging and ensuring that patients begin ambulation as early as possible. Doing so decreases the risk of further complications and can aid in the management of pain. Unnecessary bedrest leads to the deterioration of patients and loss of function, putting them at risk for being unable to return to their level of activity that they had before hospitalization. Maintaining perfusion is a main goal in cardiac patients in the hospital (Ahmed, 2019). Immobility is something that many patients suffer with following lengthy hospital stays and it is more difficult for them to regain this strength than it is to maintain it. Barriers related to implementing the ambulation process include patient refusal, cognition problems, lack of staff available to assist, and lack of knowledge of both patient and staff (Miwa et al, 2017). It is the nurse's role to educate and encourage patients who

are safely able to ambulate to do so in order to improve their health outcomes. Studies show a correlation between the implementation of an early ambulation program and decreased length of stay, reduced complications, and promotion of independence. Educating both patients and nurses on the importance of ambulation will improve patient outcomes.

The Importance of Early Mobility in Hospitalized Patients

Sofia Eschmann

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/gmX1AN1urYRd/The-Importance-of-Early-Mobility-in-Hospitalized-Patients

Abstract:
This research project focuses on the importance of early mobilization of the hospitalized patient, particularly those on a Medical Surgical Unit. Often times when a patient is admitted to the hospital from the Emergency Department to recover from illness/disease or to heal after a procedure, the patient spends most of their day, if not all of it, in bed. Periods of prolonged lying or sitting can have various negative effects on the body such as creating risk for pressure ulcers, deep vein thrombosis, and respiratory illness. The importance of early mobility is crucial for a recovering patient. There are many positive outcomes that early ambulation can have on a patient; however, there has been a lack of nurses participating in early mobility protocols due to various barriers. The evidence-based literature included in this project addresses the barriers that prevent early mobilization that can lead to negative or worsening patient outcomes. The barriers that exist include uncertainty about when to start mobilizing, staffing and equipment needs, limited nursing time, lack of knowledge, and negative nurses' attitudes (Dirkes & Kozlowski, 2019). Furthermore, the evidence-based research explains some nurses dismissed the priority of

early mobilization and deferred the responsibility to promote mobility to other disciplines (Dermody & Kovach, 2017). Implementation of early mobility requires interdisciplinary collaboration, commitment, and tools that will allow the best care for the patient and an increase of positive outcomes. Educating healthcare professionals on the benefits and importance of early mobility is a crucial step to ensure positive patient outcomes; therefore, an educational tool was created for nurses and healthcare professionals to use about what barriers can prevent early mobility so that these barriers can be avoided and adequate care can be given.

The Importance of Hourly Rounding in Acute Care Settings

Morgan Paules

Faculty Mentor: Prof. Rebecca Lamberti

https://fairfield.quip.com/2YfSAtpckJdA/The-Importance-of-Hourly-Rounding-in-Acute-Care-Settings

Abstract:
This research project focuses on the importance of hourly rounding in acute care settings. "Purposeful and timely rounding is a best practice intervention to routinely meet patient care needs, ensure patient safety, decrease the occurrence of patient preventable events, and proactively address problems before they occur" (Daniels 2016). This is an essential aspect of patient care within the acute care setting. Evidence-based research suggests that hourly rounding done by nursing and PCA staff decreased the risk of falls in patients, decreased stress and anxiety associated with hospitalizations, and increased overall patient satisfaction. By increasing patient-nursing contact, communication between the nurse and patient is subsequently more effective which allows the patient to express their questions, concerns, or requests. This learning need is essential for this unit since there are several patients on the unit that I saw decline very quickly to the point where their condition becomes critical. Therefore, hourly rounding is an essential component of nursing care in order to keep these patients safe. My way of educating the unit on this essential topic is through the use of powerpoint presentation, and suggesting

incorporating the use of a movable hand clock where the RN and PCA can adjust the hands of the clock to display when they expect to return to the patient's bedside. This tool can be hung outside of all patient's doors as a reminder for the staff to complete their hourly rounding in a timely manner.

The Importance of Monitoring Trough Vancomycin Levels

Caitlan Shaughnessy

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/8QabAMi3DmRO/The-Importance-of-Monitoring-Vancomycin-Trough-Levels

Abstract:
When a patient is diagnosed with an infection and is prescribed Vancomycin, it is important for nurses and patient care technicians to understand their roles while providing patient care. This research project focuses on the critical need for nurses and patient care technicians to draw Vancomycin trough levels at the appropriate time in order to prevent adverse effects. On the post-operative unit of West Tower 6 at Bridgeport Hospital, Vancomycin is a commonly prescribed antibiotic. The importance of checking the trough level of Vancomycin at the correct time was determined to be a critical learning need on the unit. The evidence-based literature describes the negative impacts of checking Vancomycin trough levels at inappropriate times, such as inaccurate dosing changes, longer hospital stays, increased medical costs, and the need for further nursing education. In addition to an educational presentation, a learning tool was created for West Tower 6 that included the most crucial, need to know facts surrounding Vancomycin therapy.

The Importance of Proper Education and Usage of Incentive Spirometry

Jordan Kania

Faculty Mentor: Prof. Hannah Nofsinger

https://fairfield.quip.com/vJwZAE38b5UG/The-Importance-of-Proper-Education-and-Usage-of-Incentive-Spirometry

Abstract:
This project focuses on patient understanding and usage of incentive spirometry. For many patients who undergo surgery, they are given an incentive spirometer after the procedure and briefly told how often to perform the appropriate technique when using the device. Evidence-based research focuses on the need for incentive spirometry and the benefits of proper use. It also addresses the need for proper education on appropriate technique. A study done in 2017 researched the importance of a planned teaching program on the use and effectiveness of incentive spirometry, opposed to a brief description, and found that the planned teaching program resulted in fewer post-op pulmonary complications (Jerin & Binutha, 2017). At Yale New Haven Hospital on floor 5-5, a medical surgical unit, there are many patients with an incentive spirometer in their room, placed out of their reach and seemingly unused. A pamphlet was created that describes the purpose and importance of incentive spirometry. It also includes picture references that can be used as an explanation on the proper technique as a visual aid.

The Importance of Reducing Nursing Interruptions

Minasdine Rene

Faculty Mentor: Prof. Jessica Marraffa

https://fairfield.quip.com/FE15AYexM0VN/The-Importance-of-Reducing-Nursing-Interruptions

Abstract:
Nursing interruptions have been perceived as a threat to patient safety. At Stamford Hospital, the healthcare team uses a device called Vocera for patient-related communication. While this device allows faster and more effective communication, it also increases the number of interruptions nurses get while at the bedside or the medication room. On the 6th floor oncology/medical-surgical unit, patients use the call bell incorrectly and the clinical assistants (CAs) call the nurse per patient's request without knowing the reasoning behind the calls. As a result, nurses constantly receive non-urgent calls when occupied with a patient. While the nurse's role is to safely care for patients, the increase in interruptions puts patient's safety at risk and decreases the quality of care patients receive. This research focuses on the impact of nursing interruptions on nurse and patient safety. Evidence-based literature addresses the effect of interruption such as medication or documentation errors and cognitive failures in attention, memory, or perception. It reveals the need to reduce interruptions by triaging and screening patient calls. To reduce nursing interruptions at the bedside or medication room, a flyer was created for

the Oncology/Medical Surgical Unit staff to serve as a tool for the CAs to educate and screen patient calls from the call bell before calling the nurse. This tool will reduce interruptions for nurses while providing direct care to patients which will improve safety and quality of care for all patients.

The Importance of Sequential Compression Devices Post Surgery

Olivia Femia

Faculty Mentor: Profs. Kathleen Piqueira, Kathy Saracino

https://fairfield.quip.com/88KJAKnwF6pt/The-Importance-of-Sequential-Compression-Devices-Post-Surgery

Abstract:
The post-surgical period is an important and pivotal time for many patients as they are susceptible to many varied, and sometimes life-threatening, adverse effects. One of the most common negative outcomes is a deep vein thromboembolism, or DVT, which can quickly develop into an often life-threatening pulmonary embolus, or PE. In fact, major trauma patients have up to a 58% higher incidence of deep venous thromboembolism during the total duration of care, including surgical intervention (Grabo et al, 2018). Being placed on a surgical floor for my final clinical placement has allowed me to observe just how often the use of preventative measures for complications post-surgery are overlooked, including that of sequential compression devices, or SCDs, for prevention of DVT. I focused my research on the efficacy of using SCDs for the prevention of DVTs in post-surgical, and often sedentary, patients. I found that the use of SCDs is preferred over the use of anticoagulants prophylactically due to less of a risk for spontaneous bleeding and a low failure rate of 3-8% (Spain et al, 1998). After witnessing many patients complain of discomfort

using SCDs, or simply not being educated properly on the reasons for use, I developed a method of teaching for nurses to appropriately convey important information about the use of SCDs for prevention of DVT. This not only will improve the patient-nurse relationship, but allow patients to feel empowered and motivated to use preventative measures during the oftentimes difficult post-operative period. Not only do SCDs positively impact patient outcomes, but they have been shown to be a cost-effective alternative to other DVT prophylaxis methods (Green & Bernhofer, 2018).

The Importance of Skin Care and Prevention of Pressure Injuries

Alexa Battaglino

Faculty Mentor: Prof. Patricia Lamb

https://fairfield.quip.com/k0AuA7jfsa7g/The-Importance-of-Skin-Care-and-Prevention-of-Pressure-Injuries

Abstract:
Greenwich Hospital's third floor Medical/Surgical unit consists of adult post-operative patients from various surgeries alongside patients faced with diverse medical diagnoses. These patients are often in great deals of pain, and their lengths of stay vary from a few days to possibly a few months. Although some patients get out of bed to use the bathroom, and others go for walks with Physical Therapy, many are immobile or unable to provide independent care for themselves. With a strong focus on the current disease process and well-known, vital organs of the body, the skin can often be overlooked and at the bottom of the list of worries. As the largest organ in the body, the skin engages in many essential roles including physical and immunological protection, excretion and preservation of water balance, temperature regulation, insulation, energy stores, and psychosocial function (Andrews, 2012). Failure to properly cleanse and care for the skin can lead to a variety of skin injuries, most notably pressure ulcers. Pressure ulcers are injuries to the skin and underlying tissue when blood supply is diminished as a result of prolonged pressure (Mitchell et. al, 2018), and are easily preventable. First-line assessment,

identification of risk factors and early injury, and frequent checks with performance of proper care by nurses, is a way to avoid hospital-acquired injuries, prolonged hospital stays, poor prognoses, premature mortality, and increased hospital costs. This project aims to educate the nursing staff of the third floor Medical/Surgical unit about the interventions and means of preventative care to promote and maintain skin health for their patients. It is also designed to educate patients and their caregivers about the importance of skin health and ways to protect their skin. Through the application of a handout and a badge card that I created, nurses will easily educate patients and caregivers, and be reminded to always implement measures to prevent and care for skin injuries.

The Importance of Suicide Screening Upon Hospital Admission

Grace Bianco

Faculty Mentor: Prof. Lisa Guardino

https://fairfield.quip.com/EvKWAvCB1AuR/The-Importance-of-Suicide-Screening-Upon-Hospital-Admission

Abstract:
While mental health makes up a significant part of the healthcare system, it is often overpowered by one's physical medical condition. As a result, this notion is a factor that has led to an estimate that one million people die by suicide every year (Turecki et al, 2015). Evidence-based literaure supports the idea that part of this statistic could be due to the lack of effective suicide screening tools used within hospitals. This research project focuses on the importance of implementing a logical and thorough suicide screening tool within hospitals such as the Columbia Suicide Severity Rating Scale (C-SSRS). On the surgical unit 7E at Norwalk Hospital, several elderly patients take medications for depression and anxiety. Therefore, it is crucial to have a sufficient and effective suicide screening tool as part of the hospitals admission process as patients with depression and anxiety are more likely to committ suicide compared to those without. However, after looking deeper into Norwalk Hospital's electronic admission system, there is an insuffiecient amount of suicide screening questions in order to assess a patient's current risk for suicide. While Norwalk Hospital

does use certain parts of the C-SSRS, they do not provide enough accurate information about the patient's suicidal ideation and behavior. The C-SSRS helps predict and assess a patient's risk for suicide by focusing on a checklist of all the risks and protecting factors that may apply (Gipson et al, 2015).

The Use of A "Busy Box" in Patients with Dementia

Lauren Beaulieu

Faculty Mentor: Profs. Majeda Basilio, Kathy Saracino

https://fairfield.quip.com/jdc2AtZKOa8M/The-Use-of-A-Busy-Box-in-Patients-with-Dementia

Abstract:
This research project focuses on dependable resources, used with a focused setting of a geriatric population, specifically dementia patients. Dementia patients often experience vast memory problems and a lack of motivation to complete simple tasks. Certain activities are considered to be of no value, unlike before this disease. Repeated difficulties with completing a task, or lack of activities to occupy may be an indication of the progression of the disease. The evidence-based literature states that those with dementia should be engaged in mind and sensory stimulation. Sensory, such as touch, plays a huge role in enhancing mind stimulation, brain function, and improving overall mood. Research proves that these activities lift people's spirits and can prevent them from developing depression, anxiety, and other mental health issues. In connection to the research presentation, a "busy box" was created for the Yale New Haven St. Raphael's geriatric healthcare staff to provide to dementia patients. This prototype will be shared with the nurses and staff to be implemented on their unit.

Turning and Repositioning for Skin Integrity

Hannah Murphy

Faculty Mentor: Prof. Michelle Saglimbene

https://fairfield.quip.com/TsSRAzdjSDnA/Turning-and-Repositioning-for-Skin-Integrity

Abstract:
This project's purpose is to teach nurses and CNAs the importance of turning/repositioning patients to promote skin integrity and avoid pressure injuries related to immobility. After observing a unit at Stamford Hospital, it became apparent that reinforcement was needed regarding the frequency of repositioning patients based on the number of pressure injuries present on the floor. Research was done on the impact of repositioning on pressure ulcer incidence and the various teaching tools that could be used to implement change. The literature review revealed that the more frequently a patient is repositioned, the lower the risk of pressure injuries. It also revealed that tools such as turning charts and clocks proved to reduce the incidence of pressure injuries when implemented. A sample turning chart, promoting documentation of the time, position, and condition of the skin, was created to assist nurses and CNAs on the unit in consistently repositioning and assessing skin.

Urinary Tract Infection Prevention with Indwelling Foley Catheters

Alyssa Arena

Faculty Mentor: Prof. Rebecca Lamberti

https://fairfield.quip.com/Nv9NAU5RreP2/Urinary-Tract-Infection-Prevention-with-Indwelling-Foley-Catheters

Abstract:
This research project focuses on the prevention of urinary tract infections due to foley catheters which is a significantly negative outcome in healthcare settings. The evidence-based literature included in this project addresses the negative patient outcomes that exist due to the use of foley indwelling catheters. This can cause distress for both the patient and family, as this can lead to morbidity and mortality. This can also lead to an increased length of stay in the hospital, which, in turn, increases healthcare costs. Studies show that alternative methods of indwelling catheters, such as intermittent straight catheterizations and external catheters prove to significantly decrease the number of hospital-acquired and catheter-associated urinary tract infections. Educating healthcare professionals on the benefits of proper technique when using foley catheters is crucial for patient care and should be incorporated into their practice. It is eminent that registered nurses follow the standards of patient care by performing preventative measures such as handwashing, and providing sterility by the use of barrier precautions such as sterile gloves, drapes, sponges, antiseptic solution, and single-use

packets of sterile lubricant. The most important risk factor for developing a catheter-associated urinary tract infection (CAUTI) is prolonged use of an indwelling catheter. Within this research project, the Yale-New Haven Health indwelling catheter algorithm is reinforced by requiring that registered nurses carry a pocket card in order to continuously incorporate an indwelling catheter assessment and advocate for their patients to have the urinary catheter removed when it is no longer necessary.

Use of Daily Goals Tool on ICU Floor to Enhance Communication Between Nurses and Doctors

Emily Pepe

Faculty Mentor: Profs. Michele Lecardo, Rose Iannino-Renz

https://fairfield.quip.com/Pk20AddmcWv7/Use-of-Daily-Goals-Tool-on-ICU-Floor-to-Enhance-Communication-Between-Doctors-and-Nurses

Abstract:
Clear team communication between the nurses and the physicians is key on an ICU floor. If communication is not clear, "failures can lead to increased patient harm, length of stay, resource use, and caregiver dissatisfaction and turnover" (Pronovost, 2003). During multi-disciplinary rounds, staff discuss each patient's case in depth and identify goals of care. On the ICU floor at Norwalk Hospital, the team recently implemented the use of a daily goals of care rounding tool to establish explicit goals for the patient and communicate these goals to the nurses and providers. The focus of this research is to educate the ICU floor staff on the importance of effective communication of these goals during rounds. This daily goals tool includes specific interventions related to meeting these daily goals. Implementation of this tool "can improve communication of the current plan of care and provide an opportunity for clinicians to ask questions" (Perry, 2016). Part of this project included

observing rounds on this floor to see how this tool was being used. Based on these findings, it was established that further teaching was necessary to effectively implement this tool to improve communication. Evidence-based practice shows that accomplishing the interventions set forth on the daily goals sheet helps to improve patient outcomes and promote patient safety. An in-service learning session was developed to educate the staff on the tool and answer any questions regarding the practice of these daily goal sheets.

Use of Structured RN to PCA Communication Sheets for Patient Safety and Quality Improvement

Fionna Greeley Scamby

Faculty Mentor: Prof. Danielle Pittala

https://fairfield.quip.com/WQQFAIqcorud/USE-OF-STRUCTURED-RN-TO-PCA

Abstract:
For quality improvement, the goal of this project is to develop RN to PCA communication handoff sheets. There is an issue of a lack of communication between change of shift and RN to PCA report. During this time, there is a time constraint for blood sugars, weights, and vital signs as well as morning medications. Quite regularly, PCAs have to go into a patient's room without ever receiving an RN to PCA report. PCA staff may not necessarily have time to go in and read in every patient's electronic medical record prior to completing these tasks. This time between change of shift and giving RN to PCA handoff and report (say around 0900) leaves a critical gap of time when PCAs are more at risk for error in judgment, and patients have an increased risk of safety issues during this time. Research supports this observation, as it reflects an opening for patient safety issues to occur. Also, research shows that utilization of a team approach has been shown to improve patient quality of care and improve patient outcomes. The outcome of utilizing RN to PCA sheets will be positive in that it promotes patient

safety, quality improvement, and unit communication and teamwork overall.

Using the Push-Pause Technique to Flush a Central Line

Caitlyn Nichols

Faculty Mentor: Prof. Susan Bartos

https://fairfield.quip.com/RQojAraPWalh/Using-the-Push-Pause-Technique-to-Flush-a-Central-Line

Abstract:
This research project focuses on education related to the evidence-based "push-pause" or "pulsatile" flushing technique for central venous catheters (CVCs) and its role in preventing catheter occlusion. CVCs are a fundamental and essential part of healthcare delivery within the acute care setting. For vascular access to be a safe and effective tool for intravenous therapy, optimal catheter functioning is imperative. CVC occlusions have been associated with poor patient outcomes, prolonged hospital stays, treatment delays, costly thrombotic therapy, device removal and reinsertion, and increased organizational costs (Boord, 2019; Cullinane, 2019; Goossens, 2015). Bridgeport Hospital's West Tower 6 surgical patient population often requires central venous access for TPN administration, which increases the patient's risk for catheter occlusion (Ast et al., 2014). Although CVC occlusions can occur for various reasons, poor technique, especially failure to flush the line properly, is a primary cause. Clinically applicable to any unit with patients requiring central venous access, the pulsatile flushing technique is a crucial intervention that aids in preventing catheter patency and function by creating

turbulence within the catheter lumen (Boord, 2019; Cullinane, 2019; Goossens, 2015). The literature supports that occlusions can be minimized, if not prevented, by strict compliance with the pulsatile flushing protocol (Cullinane, 2019).

Using Video Monitoring to Prevent Falls

Sabrina Sgobba

Faculty Mentor: Profs. Danielle Jimenez, Kathy Saracino

https://fairfield.quip.com/Ai3JAbDxRtcv/Fall-Prevention-By-Utilizing-Video-Monitoring

Abstract:
While on a neurology unit for my transition clinical, I noticed multiple patient falls. I reviewed the Enhance Clinical Services handout on the unit, which focuses on decreasing patient falls. The unit had an increase of falls from two to three from the months of October 2020 to January 2021. I created this research project about how video monitoring is an intervention for fall prevention. When finding research about video monitoring, I used peer reviewed articles and qualitative and quantitative studies that focused on evidence-based practice. These studies show that video monitoring would be an alternative method to using one-to-one sitters and would also be more cost effective in the future. Video monitoring allows for multiple ways of contacting the nursing staff on the floor such as sounding alarms, overhead paging, and directly calling the nurse and technician working with that patient. It has been statistically proven that patients on video monitoring decrease their risk for falls and save the hospital millions of dollars in lawsuits and nonintentional injuries. In correlation with the research presentation, an educational in-service will take place at Bridgeport Hospital.

Utilizing Disposable Blood Pressure Cuffs to Reduce the Spread of Infection

Sage Russell

Faculty Mentor: Prof. Ericka Rivera

https://fairfield.quip.com/5jtvANbJfij6/Utilizing-Disposable-Blood-Pressure-Cuffs-to-Reduce-the-Spread-of-Infection

Abstract:
The previous standard for taking blood pressures on each patient was to utilize reusable cuffs and sanitize them between each patient. However, this may go undone as nursing assistants have many patients that they need to take vital signs on each morning, and some of whom are located in the same room. Studies show that blood pressure cuffs are a potential vector in spreading hospital acquired infections, especially if sanitization between patient use fails. Utilizing disposable blood pressure cuffs for each patient would be more cost effective than treating a nosocomial infection. On average, a hospital acquired infection (HAI) costs $23,226 per patient, while a disposable blood pressure cuff only costs $3. Studies show that it is recommended to use disposable blood pressure cuffs in order to prevent the spread of infection. Reducing the spread of HAIs would not only reduce hospital expenditure on HAIs, but also decrease patient stay lengths and potentially reduce patient dissatisfaction rates. I will provide an in-service to educate the unit staff on the benefits of utilizing disposable blood pressure cuffs on each patient.

Venous Insufficiency and Its Effect on Wounds

Amanda Quinn

Faculty Mentor: Prof. Michele Lecardo

https://fairfield.quip.com/xEWaAbzVu9tr/Venous-Insufficiency-and-Its-Effects-on-Wounds

Abstract:
This research project focuses on the importance of early diagnosing of venous insufficiency in order to prevent complications. Chronic venous insufficiency affects up to 50% of the adult population (Moore, 2017) and many times it goes undetected. This can lead to chronic venous leg ulcers (VLU). These wounds often come back after they heal and are costly to treat. Difficult to heal VLUs cost about $4500/patient and after healing up to 70% of VLUs may recur (Smith et al, 2018). Dealing with a chronic illness such as this one carries a lot of burden for the patients. These wounds can be easily prevented when patients have more knowledge about venous insufficiency and its signs to allow for early intervention. A learning need was established after seeing patients seek delayed treatment for chronic venous leg ulcers. The Progressive Care Unit (6West) at Norwalk Hospital is a unit of detoxers with poor wound healing and venous insufficiency. To address the need for more education, a flyer was made that outlines what to look for in terms of venous insufficiency, what happens when it is not treated, and how important prevention of wounds is. Providing education on venous insufficiency before discharge can

help aid the wound prevention process. The flyer can also be taken home to be referred back to in case signs were to develop at a later time.

Violence in the Workplace

Kelsie Griffiths

Faculty Mentor: Prof. Danielle Jimenez

https://fairfield.quip.com/H0cjAmWzdlJo/Violence-in-the-Workplace

Abstract:
The United States health care system has been experiencing a nursing shortage for decades. Not only are nurses leaving the profession, but fewer people are entering. Although the reason behind this is unclear, nursing is one of the most dangerous occupations in the world. Protection from this unsafe work environment is necessary to increase retention rates and decrease nursing burnout. Workplace violence is a problem affecting all healthcare professionals throughout the world. Personally, I observed plenty of aggressive and violent patients on Bridgeport's Orthopedics and Neurology unit during my transition clinical. With the implementation of mandatory de-escalation trainings and thorough assessments done to determine the risk of violence using patient flagging, we can hopefully begin to provide a safe and pleasurable work environment for health care providers. The application of these interventions has proved to increase nurses' confidence in dangerous scenarios and overall decreased violence in the workplace.

Vitamin-D Supplements and COVID-19

Fiona Coffey

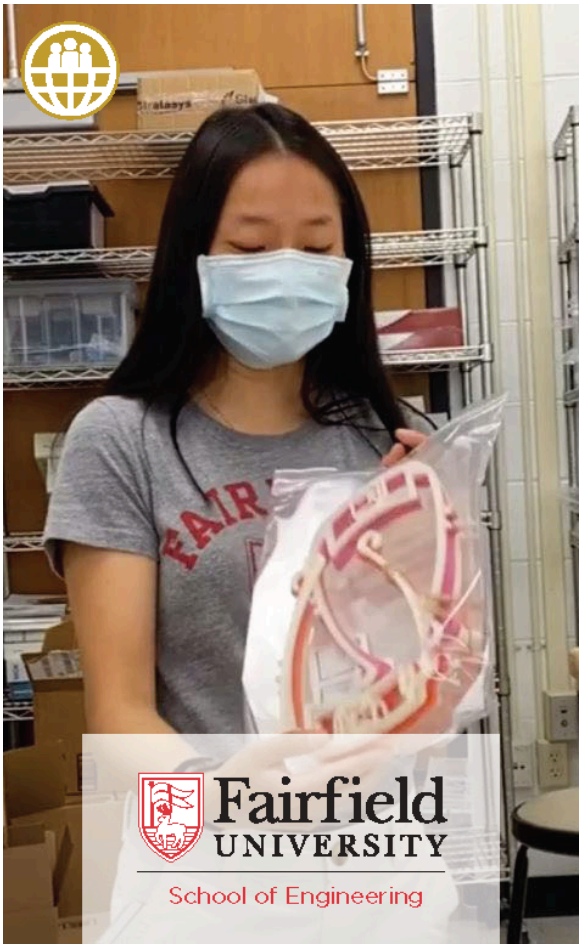
Faculty Mentor: Prof. Mary Murphy

https://fairfield.quip.com/nUFHACSGzbq9/Vitamin-D-Supplements-and-Covid-19

Abstract:
Due to health uncertainty of the COVID-19 pandemic, individuals focus on how they can provide their body with ultimate protection. My patients sought additional protections against COVID-19 besides social distancing and wearing a mask. I investigated the question, "Is there evidence to suggest that Vitamin D is beneficial in the combat against COVID-19?" This capstone project's purpose is to summarize recent literature on the impact of Vitamin D supplements to support immunity during the COVID-19 pandemic. The association between Vitamin D deficiency and its impact on measures of disease severity is described. Investigation was made to determine if adequate levels of Vitamin D are associated with less severe patient outcomes. The literature shows that high proportions of hospitalized patients with COVID-19 had Vitamin D deficiency. Those requiring critical care admission to manage moderate to severe cases of COVID-19 were also associated with a high incidence of Vitamin D deficiency. This project involves realistic challenges faced by the community during the COVID-19 pandemic. A handout outlines the evidence-based literature that low Vitamin D levels factor into negative and disproportionate outcomes for individuals with COVID-19.

In addition, a presentation will communicate the investigation of the literature on this relevant nurse topic, update nurses' knowledge, educate patients about the evidence, administer prescribed Vitamin D supplements to the hospitalized patient, and improve outcomes.

School of Engineering



A Synopsis of Modern Techniques in Natural Language Processing: BERT, Data Annotation, and Model Debugging

Ryan Toner, Kyle Riccardi, Hailey Spinella, Nadav Zarmi, Harrison Gordon (Senior at Wooster School, Danbury, CT)

Faculty Mentor: Prof. Amalia Rusu

Supported by: Hardiman Scholars
This Research Also Presented at ASEE conference at Villanova

https://fairfield.quip.com/GcDIAkkQrnm0/A-Synopsis-of-Modern-Techniques-in-Natural-Language-Processing-BERT-Data-Annotation-and-Model-Debugging

Technical Abstract:
Natural language processing (NLP) has emerged as a prominent technology in the domain of artificial intelligence. The impetus to parse, analyze, and evaluate textual information quickly has multi-disciplinary applications for industry and research alike. Recent advances in NLP, including bidirectional encoder representation from transformers (BERT), demonstrate better capability to understand contextual information compared to models like long short-term memory (LSTM). BERT's effectiveness will be analyzed by interpreting its embedding process and testing its ability to retain information from longer contexts compared to LSTM. A key problem for researchers in NLP is data annotation/

labeling when constructing datasets; therefore, it is of high interest to expedite the tedious process of data annotation. This project evaluates a human in-the-loop method for automatic annotation that facilitates more efficient and more accurate annotation on large datasets by constructing an iterative annotation model. Inappropriate tensor shapes and misalignment are a common source of error when constructing NLP models. Consequently, to mitigate error potential, technologies such as tensor-sensor have emerged to visualize the tensor layout, dimensionality, and inter-layer matrix operations. This project also evaluates the efficacy of these tools for model "debugging" purposes, and proposes novel approaches to ameliorate these tensor mismatch errors.

Affordable Biosensor Kit for Educational Use

Meghan Stevens, Alexandra Maltbie, Salena Hingorani, Othneil Calixte

Faculty Mentor: Prof. Susan Freudzon

Supported by: Hardiman Scholars
This Research Also Presented at American Society for Engineering Education Conference

https://fairfield.quip.com/aiBsAEa55ADp/Affordable-Biomedical-Sensor-Kit-for-Educational-Use

Technical Abstract:
During the COVID-19 pandemic, people all around the world suffered from lack of basic medical equipment to monitor their daily health. There was a severe scarcity of these basic necessities and the prices skyrocketed. Individuals infected with COVID-19 wanted a way to monitor their health and symptoms prior to visiting the hospital. In addition to the shortage of home health equipment, educational labs had to be completed through Zoom or online learning platforms which took away from the hands-on experience crucial for labs. One way to avoid this disruption from happening again is to develop affordable biomedical sensors that can be used by patients and students in their home. Even though some at-home lab kits already exist, they can cost as much as $500 per student, and institutions cannot afford to buy them for every student. Through developing a more affordable at-home biomedical lab kit, a wider audience of students and schools will have access to this equipment.

This project involves assembling inexpensive electronic components and writing code to display relevant medical information and graphs. Arduino is an open-source electronics platform well-suited for this project. The affordable electrodes, wires, and sensors will be used to acquire accurate EKG (heart), EMG (muscle) and EEG (brain) signals. These variables can be measured for home use and in an educational setting. An Arduino and its corresponding code in MATLAB will be used to organize, analyze, and present the relevant data. The kits will include easy-to-follow instructions to help people begin to collect their medical data.

BoatFix, The Marina Management System

Andre Hernandez, Adrian Gallant, Andrew Caplan

Faculty Mentor: Prof. Jonathan Wilson

Supported by: Hardiman Scholars

https://fairfield.quip.com/rdNsATV9PhGE/Boatfix-the-Marina-Management-System

Technical Abstract:
The BoatFix application will streamline the vessel repair process, by allowing users to submit routine and repair maintenance requests directly to marinas. The system will allow marinas to approve repair requests, manage work orders, create invoices, and receive payment directly through the application. Marinas can configure various pricing models (ex. per engine, per foot, per battery, etc.) for each task. Tasks can be grouped into various collections (ex. Spring Commissioning, Winterizing). The marina dashboard will provide a high-level marina wide view. Marinas can also run various reports to extract fine grained data for their review. Marina customers can create a profile to store contact, vessel, and payment information. The stored vessel details can be used to view estimated costs when submitting a new repair request. Customers can then track the progress of their request, be notified when the status of their request changes, and receive an invoice when work is complete.

Cognitive Benchmarking Testbed for Virtual Reality

Prathna Pel, Sony Somedi, Alexander Freedman

Faculty Mentor: Prof. Danushka Bandara

https://fairfield.quip.com/tYrbAeBhJrQn/Cognitive-Benchmarking-Testbed-for-Virtual-Reality

Technical Abstract:
Human-machine interactions enable operators to increase productivity by offloading tasks to machines. In order to operate these machines, humans are required to utilize different types of mental workloads. The major issue with these interactions is that people have a limited amount of cognitive resources. When a person is required to perform multiple tasks using the same cognitive resources, the performances drop. If these events can be correctly identified, they can help improve performances by offloading tasks to other users. It can also help improve productivity and keep users functioning at an optimal state. To evaluate these events, various benchmark tasks will be used to monitor users' performances. With the data collected from cognitive benchmarking tasks, machine learning models can be trained to detect the likelihood when an increase in mental workload results in a performance drop. Virtual Reality is an emerging area of human-computer interaction. Ranging from video games to military research, the platform offers many implications for human research. Utilizing natural gesture control systems, and field of vision isolation, user mental workload can be experimented on in a controlled

environment. This project intends to aid in this research by porting human computer interaction (HCI) benchmark experiments into a VR environment using the Unity 3D development framework. Using C# language in the unity framework, the testbed will be designed in an object-oriented way. This enables extensibility and maintenance of the project and provides useful interfaces for experiment design and saves data in a format digestible by data science tools. The benchmarking experiments being tested in this project are Gono-Go, Visual Search, Pursuit Rotor, N-back, Trail Making, and Situational Awareness. These experiments are already used to research human computer interaction using regular computer interfaces. Bringing these experiments to Virtual Reality enables baselining and calibration of user states for cognitive and emotional requirements.

Computational Approach for Understanding Interactions between Gabapentin and LAT1

Chizimuzo Chibuko

Faculty Mentor: Prof. Isaac Macwan

This Research Also Presented at BMES (Biomedical Engineering Society) Conference, ASEE (American Society for Engineering Education) Spring Conference, ACS(American Chemical Society) Spring 2021 Conference

https://fairfield.quip.com/odj0AHdG8m0X/Computational-Approach-for-Understanding-the-Interactions-between-Gabapentin-and-LAT1

Technical Abstract:
Our research project focuses on LAT1 protein and its interaction with a drug called Gabapentin. LAT1 is a key regulator in metabolism, immune pathways and gestation due to its role in amino acid, hormone, and drug transfer across the cell membrane. It has been hypothesized that LAT1 transporters tend to share a general mechanism of action-alternative access transport. However, there has not been sufficient research on the real-time permeability of metabolites and drugs through LAT1. From previous research, it has been determined that LAT1 protein may act as a channel through which Gabapentin, a neurological drug commonly used for the treatment of neuropathic pain and epilepsy, passes through to enter the cell membrane. However, there is insufficient research on the mechanism and process by which Gabapentin passes through LAT1. Our research project analyzes

interactions at the interface of LAT1 and Gabapentin. We visualize and study the conformational changes of the LAT1 protein using Visual Molecular Dynamics (VMD) and Nanoscale Molecular Dynamics (NAMD). In our analysis, we also use different measures such as RMSD (Root Mean Square Deviation), hydrogen bonds, salt bridges, and interaction energies in the form of electrostatic and Van der Waals forces, to determine the energy and stability of the interactions between LAT1 and Gabapentin. Our results illustrate how interactive forces help convey substrates through LAT1 providing for essential transport of amino acids and drugs through the blood brain barrier. This would provide more insight into the treatment of neurological diseases such as Parkinson's disease.

Continuum of Care

Matthew Wojslaw, Nicholas Costanzo, Benjamin Glover, Eric Connolly

Faculty Mentor: Prof. Jonathan Wilson

This Research Also Presented at American Society for Engineering Education

https://fairfield.quip.com/9ahdAZKGbvsY/Continuum-of-Care

Technical Abstract:
Data warehouse and on-line analytical processing (OLAP) systems have become an essential predictive, descriptive, and strategic enterprise management tool. Day-to-day operational data and departmental service outcomes curated to a data warehouse architecture offer executives, management, and employees a 360-degree view of the scope of their organization's data. This, in turn, gives organizations the ability to visually see and measure their own business goals, outcomes, and merits using dynamic reporting. A well-constructed data warehouse architecture can offer solutions and insight into difficult questions and decisions that an organization might face. We examine the data warehouse architecture which we engineered for a local non-government organization (NGO). Within the data warehouse, patient data will be aggregated with new data to cluster patients based on mental, behavioral and neurodevelopmental disorders. Using ICD-10 Coding standards, patients of the same codes will be amalgamated and compared. The comparative metrics

are Race, Religion, Living situation, Marital Status, Ethnicity, Employment status, and Military Service. Once the data is analyzed, the organization's executives and management teams will have the ability to examine solitary trends that are found. During this process, there will be testing on the data warehouse to see how it evaluates and reports on patient assessments and outcomes. By compiling data from multiple sources such as existing databases and historic reports via CSV files, we will be able to perform reconstruction of data points through forensic analysis techniques. Once the data has been transformed into the data warehouse from these data sources using SQL Server Integration Services (SSIS), we are able to display trends visually through graphs and charts using PowerBI and Excel. These graphical illustrations will present our findings in a very comprehensive manner which is considered very user friendly. With the results of these processes, communities in which these patients reside will benefit from the opportunity to make proactive and informed decisions to provide better care to the patients in need.

DLP Projection to Eliminate Stray Light Reflection

Christian Chasse, Alex Berardino, Ben Breton, August Feliciano

Faculty Mentor: Prof. Ryan Munden

Supported by: Hardiman Scholars

https://fairfield.quip.com/1hoNAOMf59de/DLP-Projection-to-Prevent-Stray-Light-Reflection

Technical Abstract:
Photolithography is used in microfabrication to pattern parts onto a film or substrate. An application of photolithography is mass production of computer chips through one master reticle transferred onto several hundred wafer copies. To produce this volume of copied chips, reticles are exposed using ultraviolet light, and must be copied in a way that produces exact replica chips. Any defects or contamination present on the reticle will affect these copies. In order to detect micron-sized particles on semi-transparent reflective surfaces, a scatterometry based system is used to illuminate particles over a black background. The major problem that hinders the ability to detect micron-sized particles on semi-transparent reflective surfaces is the presence of unwanted stray light reflections from the edges of the surface. A DMD (Digital Micromirror Device) is capable of quickly turning pixels from on to off and will allow for precise control of where exactly the surface is illuminated,

which ideally would exclude surface edges. For our project's purposes, a DMD projection system will be implemented to avoid creation of stray light and allow for more efficient detection of micron-sized particles on a semi-transparent reflective surface. By taking advantage of precise light projection control enabled through the use of a DLP projector fitted with a DMD chip, we can control the exact areas that light is projected on any given surface. This will prevent light from shining into beveled edges and effectively eliminate the issue of stray light scattering, which will greatly increase the efficiency of identifying usable reticles and ultimately has the ability to save ASML lithography machines from millions of dollars of repairs. In this report, we will examine the best light projection method for the purposes of our project, discuss information on how the implemented techniques will function in solving the stray light problem, and identify a working solution to move forward with the research.

Enhanced Reticle Simulation Package

Daniel Wilson, Hemant Maheshwari, Christian Hakim, Jorge Chiluisa

Faculty Mentor: Prof. Amalia Rusu

Supported by: Hardiman Scholars
This Research Also Presented at ASEE

https://fairfield.quip.com/g9zAA0igpryL/Enhanced-Reticle-Simulation-Package

Technical Abstract:
This research project improves the performance of the robots that move reticles in the machines that imprint silicon chips in silicon chip manufacturing through a reticle motion simulator. The simulation is based on real time data and accessible to various platforms. Our software system can be effectively utilized by engineers in the field and end customers. The simulation software will take advantage of different forms of data input. Using data visualization techniques, the team seeks to take raw data logs from the simulator and provide the end user with comprehensive information and tools to make effective solutions. Some important information that the user could receive includes times of certain reticles entering or leaving certain stations and errors that could occur during the process. Planned features of the program are anticipating and visualizing errors: this includes real-time simulation, multiple reticles handling through multi-threading, and verification with each of the robot's movements. The simulation program is also going

to include measures that will allow the system to recover from errors faster. Some action plans that could be taken include: marking reticles that are faulty, allowing the local user to make changes in the reticle schedule, adding an alert feature to trigger error handling procedures and error control procedures. The software will be used as a tool for faster troubleshooting. Further upgrades that would enhance our program include: allowing retracing of paths to determine error locations for real time simulations, sending a log every time a successful cycle or checkpoint is reached, use round robin time handling, and saving errors as an object to categorize occurrences based on specific problems.

EUV Photolithography Demonstrator

Christopher Lafky, Raj Guthikonda, Jordan Rahurahu, Michael Leahy, Ali Al Rawendoozi

Faculty Mentor: Prof. Andy Judge

Supported by: Hardiman Scholars
This Research Also Presented at ASEE Mid-Atlantic Spring Conference

https://fairfield.quip.com/b3uMANDPulxV/EUV-Photolithography-Demonstrator

Technical Abstract:
Photolithography is a process in which light beams are used to expose nanoscopic details on semiconductor wafers through a reticle. Semiconductor photolithography systems have had perhaps the greatest impact of all in the last decade of any technology, with the latest development being the use of extreme-ultraviolet (EUV) to achieve a node length of 7nm. In this study, our team highlights the most important aspects of the newest machines in the field. We have been designing and constructing a Mechatronic system to demonstrate the subsystems of a complex photolithography machine in a simplified manner. The parts of the model machine are as faithful as possible to the original system. Our team has been modeling, constructing and documenting this robotic system that consists of a combined 13 degrees of freedom between 5 different robotic subsystems inside an aluminum frame. This type of hands-on teaching machine

is something new that has never been available for education.

Guided Learning of Chemical Compounds Through a Mobile Platform

Jianing Xu, Yoshua Carrera, Ersin Kaan Aygun, Amaris Sneed

Faculty Mentor: Prof. Mirco Speretta

https://fairfield.quip.com/HYLmAQaBC1qb/Guided-learning-of-chemical-compounds-through-a-mobile-platform

Technical Abstract:
Organic chemistry is based on chemical compounds and the process of learning these compounds involves the graphical representation of structures. Students are required to recognize these types of structures and distinguish the relative constitutional isomers (i.e., molecules with the same number of atoms but differing in the unique arrangement of those atoms). The challenge of a chemistry instructor is to find ways to help students memorizing hundreds of similar drawings. Mobile devices rapidly integrate into STEM as tools to poll students during lectures, analyze laboratory samples, and replace laboratory notebooks. National surveys of college students identify that over 95% own a smartphone and yet fewer than half of college students own a tablet. While access to styli is becoming increasingly affordable, students do not always have access to a device compatible or optimized for a stylus. Styli are also not as widespread as needed if someone misplaces their own. Consequently, designing apps that can effectively transform and analyze students' pen and pencil strokes

as if they were marks by a stylus, bridge this new digital accessory divide and brings the power of digital learning to classical pen and paper. Using this technology, users can capture processes and draw images. We believe that students of organic chemistry could greatly take advantage of these tools, along with their touch-based interfaces to interact with different chemical structures. We propose to develop a proof of concept for a multi-platform phone application that uses a learning algorithm to recognize digital hand-drawn chemical compounds by breaking the structure down into specific components (such as links) and eventually considers their size and relative position to each other to predict what isomer has been drawn on the phone canvas by the user. The long-term goal is to create a user-friendly mobile application for an educational environment to bridge the use of technology with more classical schooling, in a way that allows for a more immersive learning experience by providing a hands-on relationship between apprentices and class material.

Inspection System: Analysis and Trends

Samantha Lloyds, Khalid Alodaynan, Alexander DeGeorge, Emmanuel Noi, Srirahul Sunkara

Faculty Mentor: Prof. Amalia Rusu

https://fairfield.quip.com/Le9VAzJa52Ed/INSPECTION-SYSTEM-DATA-ANALYSIS-AND-TRENDS

Technical Abstract:
This Fairfield University capstone team partnered with Servo-Robot, a leading manufacturer of 3D robot-vision systems and software dedicated to real-time intelligent control and monitoring of industrial robots for welding data mining in order to improve the quality of welding. In an effort to expand customer services, the inspection vision system data that reflects errors resulting from changes made can be used to perform statistical analysis and understand abnormal process variations. This project outlines a system architecture that includes building a pipeline system that gathers data from the tracking vision system and inspection vision system, stores data either in a local or remote server, or alternatively in the cloud, and performs statistical tests on the data to determine whether conditions prior to welding caused errors that occurred during the welding process. If a customer observes certain welding defects, the data generated from the statistical analysis can help determine possible causes and provide the customer with actionable data. A Web HMI that allows the customer to interact with this data and data generated from their welding processes can assist in better understanding the data evolution and

identifying trends. To accommodate all customers, including those with very little statistical knowledge, the Web HMI and statistical tools must be user-friendly, easy to learn, and ensure that the data is searchable and visualized efficiently.

Integration of an Automated Jewelry Unpacking Machine in Production

Thiago Silva, Paul du'Toit, Cole Hansen, Samuel Dorman

Faculty Mentor: Prof. Michael Zabinski

This Research Also Presented at Middle Atlantic ASEE Spring 2021 Conference

https://fairfield.quip.com/wnc5AHzCymgI/Integration-of-an-Automated-Jewelry-Unpacking-Machine-In-Production

Technical Abstract:
Our group worked with Biomerics/Northeast Laser and Electropolishing to design a fully automated machine responsible for extracting charms from the protective film within which the jewelry is packaged, thus preparing the charms for laser engraving. Our task is to integrate a delivery system which feeds charm bags into the systems developed over the last few years by previous teams, as well as an exit system which sorts the charms. Previous teams developed a system that produces a singular flow of charms using a rotating singulating vacuum which places charm bags on a conveyor belt where the bag is cut open by a CO 2 laser. Once cut open, the charm and bag enters an air separation system which separates the charm from the bag, in addition to the tag inside of the bag, and ultimately disposes of the bag and tag while the charm drops into a collection tank. We must integrate an exit system which transports the charm from the

collection tank and sorts each individual charm into an empty cavity within a plastic charm sorting tray. Our design must be fully automated, possess the ability to control the flow of several hundred charm bags entering the system, and ultimately sort the charms within the plastic trays. The system must also be capable of automatically dispensing an empty tray on top of the full tray once a tray has been filled, thus allowing the charms to be easily moved to the next step in the engraving process.

Interactions Between Graphene Oxide and Pyrrole Towards Understanding the Electro-Polymerized Substrates: A Molecular Dynamics Study

Todd Richards

Faculty Mentor: Prof. Isaac Macwan

Supported by: Hardiman Scholars
This Research Also Presented at The Materials Research Society (MRS) Fall 2020 conference

https://fairfield.quip.com/HZMcAbpNvz7X/Interactions-Between-Graphene-Oxide-and-Pyrrole-Towards-Understanding-the-Electro-Polymerized-Substrates-A-Molecular-Dynamics-Study-copy

Technical Abstract:
Graphene Oxide, an oxidized form of graphene, a carbon allotrope, has many applications including the formation of conductive films for use in flexible electronics and chemical sensors, nanofiltration membranes, and even as a replacement for tin-oxide in batteries. One of the pressing issues with carbon allotropes in general and graphene oxide in particular, however, is that they cannot form freestanding films on their own, instead they rely on a secondary reactant to help aid in the synthesis of such films. To synthesize such nanocomposite substrates, cyclic voltammetry is a very commonly used technique, where an electrolyte containing a monomer to be electro – polymerized is used along with the nanoparticles. Electro-

polymerized substrates consisting of GO and Polypyrrole (Ppy), an organic polymer created by polymerizing pyrrole, have drawn much attention owing to their applications in solid state supercapacitors, biosensing, tissue engineering, and artificial muscle studies. It has been proven theoretically and experimentally that Ppy and GO do interact and exhibit improvement in conductivity and thermal stability compared to pure Ppy and GO, but there is still very little information on the interactions at the molecular level between GO and pyrrole monomers especially during the synthesis of such nanocomposites. This work deals with the study of interactions at the interface of GO and pyrrole in order to better understand the evolution of polypyrrole over the surface of graphene oxide during the formation of these films. The system is modeled using Visual Molecular Dynamics (VMD) and all – atom simulations are carried out using Nanoscale Molecular Dynamics (NAMD) at ten different temperatures based on the peak currents and scan – rate through the Randles – Sevcik equation. Each simulation is carried out for 100ns, thereby looking into a total of one microsecond long window of interactions between GO and 50 pyrrole monomers as the polypyrrole film is evolved over the surface of GO. Stability of the GO/ Ppy nanocomposite is quantified through RMSD (Root Mean Square Deviation), conformational energies and center of mass deviations. Interaction energies are calculated to understand the role of non – bonding interactions such as Van der Waals and electrostatics between the monomers and between monomers and GO. It is anticipated that pyrrole monomers form dimers in the bulk of the solution, trimers when near the surface of GO, and tetramers when adsorbed on the surface of the GO. Based on these results, a potential mechanism is proposed on the way

monomers interact with the nanoparticles during electro – polymerization and the role of such interactions in synthesizing carbon – based free – standing films.

Interactions between PVA (Poly Vinyl Alcohol) and Graphene Oxide Towards an Antimicrobial Non-Toxic Substrate

Ferris Makhlouf, Morgan Connell, Ahmed Shubber, Todd Richards

Faculty Mentor: Prof. Isaac Macwan

Supported by: Hardiman Scholars
This Research Also Presented at ACS and ASEE

https://fairfield.quip.com/ZPsSAcraFMqQ/Interactions-between-Poly-Vinyl-Alcohol-and-Graphene-Oxide

Technical Abstract:
Graphene Oxide (GO), an oxidized form of the carbon allotrope Graphene, is a substance with many beneficial qualities including excellent water solubility, cell adhesion promotion, and it even exhibits antimicrobial properties to both gram positive and gram negative bacteria. There are, however, some issues with GO. It cannot form free standing films on its own that can be used to produce a stable substrate. To circumvent this, GO can be electrospun with a polymer to synthesize nanofibrous porous substrates, which are very suitable for cell culture. The other issue with GO is that it is cytotoxic to mammalian cells. Both of these issues may be solvable by electrospinning the polymer Polyvinyl Alcohol (PVA) with GO. PVA is already commonly used to create nanofibrous porous substrates with high surface to volume ratios, so, therefore, its viability in electrospinning

has already been proven. This project models both PVA and GO molecules from using the correct structure files. By using realistic time, temperature, and pressure simulation, these molecules will be solvated in water and other ions. The interactions between PVA and GO will be studied at the molecular level with a biophysics approach via a molecular graphics program called Visual Molecular Dynamics (VMD) and Nanoscale Molecular Dynamics (NAMD). The nature of the interactions between PVA and GO will be analyzed using a simulation for 100ns and the resulting trajectory file. Electrostatics, Van der Waals, and other types of conformational energies will be analyzed in order to compare GO in both the presence and absence of PVA. The purpose of introducing these additional conformational energies is to observe the importance of PVA in forming free-standing GO films. Using built-in VMD plug-ins and external TCL scripts, more stability criteria such as root mean square division (RMSD), hydrogen bonds, center of mass deviations, and the contributions of nearby water molecules will be studied. The final goal being to assimilate both molecules into a final model and determine the level of success for a stable substrate that has bioengineering applications.

Lightweight Method to Assure Authenticity of NFC Payment Transactions

Guillem Perez

Faculty Mentor: Prof. Peter Kootsookos

Supported by: Hardiman Scholars

https://fairfield.quip.com/6tERANWSkovF/Lightweight-method-to-assure-the-authenticity-of-NFC-payment-transactions

Technical Abstract:
Credit card payment transactions are becoming increasingly more secure. The increased security brought to the EMV scene by the progressive inclusion of Chip + PIN transactions served a crucial role in improving authentication of transactions. With the appearance and quick spread of contactless transactions, the promise of transaction speed generally excludes PIN verification. With the application of a secure element that generates a pseudo-randomly generated number: "n," we can then require the initiator to receive "n" full reads before processing the transaction, we add a layer of authenticity to the transaction. This number is only partially known to the initiator and fully known by the target of the transaction. This increases the security of contactless transactions.

Machine Learning for Feline Classification

Karen Exantus, Nicholas Furey, Rohindraj Kandasamy, Sai Greeshma Saladi, Tianyu Yang

Faculty Mentor: Profs. Mallika Arachchilage Danushka Bandara, Xiaojiang Wu

https://fairfield.quip.com/Udo2A0fFcSyF/Machine-Learning-for-Feline-Classification

Technical Abstract:
Usually, humans are easily able to distinguish different sounds from one another, but this becomes increasingly difficult when these sounds pertain to relatively similar sounds coming from like sources, such as a growl from two related cat species. In these instances, we would need an objective way of distinguishing these sounds from one another. One such method is through machine learning. Machine learning uses algorithms that allow for the grouping, classification, and prediction of new data by using existing data samples. A machine learning algorithm could help distinguish sounds that to the human ear might sound nearly identical. Machine learning algorithms are able to accomplish this by looking at an assortment of different variables in an audio sample such as wavelength and frequency. The algorithm then uses these attributes to find an underlying structure to the data that allows for classification of the sounds or grouping of similar sounds. Our project will employ these machine learning techniques to differentiate various cat vocalizations using annotated data from various cat species. Furthermore, it will identify which cat made the sound. This could range

from a household cat's meow all the way to a leopard or lion's growl. These audio files will have their features extracted and the machine learning algorithm will be trained on these features to give us a model that will allow for accurate predictions on new data.

Micro Bioreactor for Tissue Scaffolds

Nwachukwu Ibekwe, Stephanie Prado, Sean Feeney, Clarissa Rotonto

Faculty Mentor: Prof. Sriharsha Srinivas Sundarram

This Research Also Presented at International Mechanical Engineering Congress and Exposition (IMECE)

https://fairfield.quip.com/XNs2AWfKwAio/Microbioreactor-for-Tissue-Scaffolds

Technical Abstract:
In this research project, we model the most efficient bioreactor design for 3D- cellular growth analysis and the right scaffold preparation treatment parameters for optimum cell culturing in the bioreactor. The bioreactor will be optimally designed to feature a compartment that will be utilized for cellular solution treatment in a scaffold. The bioreactor model will be able to allow the flow of solutions through the 3D growing compartment selectively for versatility in analysis. The bioreactor will be 3D printed using a bio printer and testing conducted to verify flow. The scaffold will be modelled from PLA plastic via 3D printing and will undergo solid state foaming under different conditions to generate the porous structure. The solid state foaming will be performed with varying temperatures of 85°C, 90°C, and 95°C; power levels of 150W, 175W, and 200W; and foaming times of 10s, 15s, and 20s using a Design of Experiments approach. The foamed samples will be analyzed for pore size, porosity, surface roughness, and compressive strength to identify

the best surface qualities for cellular growth and analysis. The end product is a bio reactor array capable of holistic drug testing.

Microwave Irradiation Tissue Processing Device

Victoria Savarino, Nicolas Black, Nicole Tyc, Ryan Ruff

Faculty Mentor: Prof. Naser Haghbin

Supported by: Hardiman Scholars

https://fairfield.quip.com/R2HfALuYtlaN/Microwave-Irradiation-Tissue-Processing-Device

Technical Abstract:
Tissue processing is used for research and diagnosis of various diseases (e.g. breast cancer). This process includes taking the tissue from fixation (i.e. preservation of a tissue from decay using chemical reagents) to the end state, where the specimen is stained and infiltrated with histological wax. When done correctly, there is no tissue decay, minimal shrinkage and the tissue can be sectioned as small as three micrometers. These factors are necessary for a clear microscopic image of the cells and an accurate diagnosis. The conventional method can be slow and lead to inaccurate processing, which would result in a tissue sample that cannot be sectioned and viewed for medical evaluation and research. In some cases there is no "spare" tissue and incorrect processing means no diagnosis. Microwave irradiation allows for temperature control of the tissue which provides faster preparation while still holding a high quality end result. Preliminary studies show that total processing time can be reduced as much as fourteen and a half hours with the microwave method. Quicker turnaround time leads to

faster diagnosis of possible life-threatening diseases. Moreover, the microwave method provides an overall better microscopic image which includes cellular outline and nuclear details. This fixation and staining allows pathologists to better differentiate between specific types of diseases based on their color and shape. A process chamber will be used to produce and mix special chemical reagents while utilizing microwave irradiation. There are two phases for developing the microwave tissue processing setup. This project will be the first phase of creating a complete microwave irradiation tissue processing device. The main focus of this phase is the design and sizing of the piping, motors and chemical storage chambers. Along with the overall process, the steps included are: transfer of liquid from the storage chambers to the main chamber with the use of a centrifugal pump, uniform mixing of the fluid within the main chamber, heating of the fluid within the main chamber, and finally drainage. This process will be fully automated with the use of control systems which will include level sensors, temperature sensors, and solenoid valves. For this phase, water will be used as the working fluid and a local heating element as the heat source. This will allow for an accurate base design which can then be completed in the next phase, with the inclusion of special chemical reagents and the microwave irradiation gun.

Missile Tracking in the Presence of Infrared Decoys

Stephanie Brij-Raj, Christopher Adiletta, Aubrey Hoover, Dylan Weber

Faculty Mentor: Prof. Djedjiga Belfadel

Supported by: Hardiman Scholars
This Research Also Presented At Middle Atlantic American Society for Engineering Education (ASEE) Section Spring 2021 Conference

https://fairfield.quip.com/cT8EAdByo2Rx/Missile-Tracking-in-the-Presence-of-Infrared-Decoys

Technical Abstract:
Missile Defense Systems (MDS) are designed to detect, track, intercept, and destroy attacking missiles. A common countermeasure that attacking parties use to reduce the efficacy of the MDS is the release of decoys (small lightweight devices attached to the missile to fool the interceptor sensors by making many targets available in an instant), which prevent interceptors from accurately identifying the warhead. This forces the MDS to attempt to destroy all incoming projectiles and masks the true attacking missile and thus lets it slip by the defense system. One of the key requirements for a successful missile defense system is the ability to adequately differentiate between true targets and false targets using space-based imaging sensors. The goal of this project is to develop an image recognition algorithm to measure the size of the Infrared (IR) signals detected by the imaging

sensors in MATLAB. The IR signals will then be used to calculate the speed of the true and decoy objects seen by the imaging sensors. The lightweight objects that are slowing down rapidly will be identified as decoys. This approach will be validated by processing simulated scenarios that include missiles and decoys using the Satellite Toolkit (STK).

Plastic Bottle Recycler

Julia Kiefer, Phonsavanh Keophannga, Matthew Sideris, Dawn Kubik

Faculty Mentor: Prof. Sriharsha Srinivas Sundarram

Supported by: Hardiman Scholars
This Research Also Presented at Middle Atlantic ASEE Conference

https://fairfield.quip.com/CsEaA1ROi1lt/Plastic-Bottle-Recycler

Technical Abstract:
The high durability and low cost in manufacturing polyethylene terephthalate (PET) plastics has increased production of plastic bottles and an increase in plastic bottles ending up in landfills and natural habitats, posing a threat to the environment as space in landfills becomes more scarce. The goal of this project is to engineer an automated desktop plastic bottle recycler that incorporates cutting bottles into filaments and a heating mechanism that presses the cut plastic filament into rolls. The steps in the process are cutting the ends of a bottle followed by feeding the cut bottle into an orifice containing an angled blade to obtain the filament. Subsequently, the heating mechanism will be used to press together the free ends of the cut filament to create a continuous strip that is wound onto the spool. The automation process will focus on motor operation to control three blades, feed the bottle into the cutter, control the heating process, and wind the plastic filament onto

the spool. The output, these spools of filament, can then be easily used to make superior quality rope, which could be further manufactured into baskets, brooms, durable furniture enhancements, or furniture itself.

PPI Analysis Using Siamese Network

Hemant Maheshwari, Kyle Riccardi, Aarushi Vijay

Faculty Mentor: Prof. Haishuai Wang

Supported by: Corrigan Scholars Fund

https://fairfield.quip.com/1tqkAiX2RKDQ/PPI-Analysis-Using-Siamese-Network

Technical Abstract:
Using protein to protein networks(PPI) a graph convolutional neural network can be used along side a siamese network. This process will create a connection between the edges of each graph to which the model can predict the outcome of protein interaction. Using this model, allows for an efficient and accurate way to measure PPI networks.

Pressure Assisted Toilets

Anne Nebbia, Kevin Bodell, Joseph Resca, Edward McCabe

Faculty Mentor: Prof. Mehdi Safari

Supported by: Hardiman Scholars

https://fairfield.quip.com/v2oLAx28WOTy/Pressure-Assisted-Toilet

Technical Abstract:
The pressure assisted toilet is an alternative to the typical gravity flushing toilet which is weaker, uses more water, and the tank sweats. The pressure assisted toilet is a toilet design that utilizes pressurized water to flush and reduce water consumption in each flush. Regular gravity flush toilets use 2-5 gallons of water. As the water crisis deepens, there is a need to minimize household water consumption. The pressure assisted toilet can flush harder, while consuming less water and avoiding tank condensation. This toilet works by using a foot pump to pressurize the tank that is filled with a small amount of water. Once the tank is pressurized a modified diaphragm type valve is used to release the pressure which initiates the flush of the toilet. When the flush is initiated the water rushes through the valve and into the toilet. This project focuses on improving the pressure assisted toilet design. We will decrease water consumption and increase adaptability, all while maintaining or improving upon flush effectiveness. Minimizing water consumption will provide the market with a greener model while striving for

adaptability can make this product a better candidate for common domestic use. Additionally, reduced sewage will make our design compatible for space exploration, camping, healthcare, and more. The project will conclude with a working model of a pressure assisted toilet.

Robotic Arm for Wheelchair Users

Phuc Nguyen, Giles Ruck, Alan Kristie, Ohsafa Harding

Faculty Mentor: Prof. Uma Balaji

Supported by: Hardiman Scholars
This Research Also Presented at Middle Atlantic ASEE (American Society for Engineering Education) Section-Spring 2021 Conference

https://fairfield.quip.com/EcduAy1ur1jS/Robotic-Arm-for-Wheelchair-Users

Technical Abstract:
Current advances in the development of medical prosthetics for the physically impaired are insufficient in addressing the needs of wheelchair users who have inherently restricted mobility due to the use of their mobility aid. Most technologies for wheelchair users focus on the inability to walk or use one's legs, and fail to address the immobility of the rest of the body, especially arms and hands. The "Robotic Arm for Wheelchair Users" will address the mobility loss faced by wheelchair users by assisting with everyday tasks such as opening doors and picking up and holding small objects such as coffee mugs, water bottles, and books. The goal is to create a low-cost solution with a motion similar to a human arm and an intuitive interface for the user. This has been accomplished using a 3D printed structure with 5 degrees of freedom and a repurposed user interface such as a game console controller. With a universal mounting

bracket supplied for mounting to a range of wheelchairs, our robotic arm will provide a safe and friendly solution to address the needs of wheelchair users whose arms may be occupied while operating the mobility aid.

Sand Ingestion in Aircraft Combustor Liner

Robert Merlino, Justin Touve, Michael Kayal, Maxwell Vazquez, Cristian Zuniga

Faculty Mentor: Prof. Shahrokh Etemad

Supported by: Hardiman Scholars
This Research Also Presented at ASEE

https://fairfield.quip.com/id70APZ6aTai/Studying-Sand-Ingestion-in-Aircraft-Combustion-Liners

Technical Abstract:
Aircraft gas turbines may operate in environments with debris and results in sand, dirt and other debris being ingested into combustor liner small effusion cooling holes. This results in deterioration and inefficiency within the gas turbine. Developing an effective bench scale test rig will be necessary to examine the performance of new cooling hole designs. This project will enhance the operation of an existing bench scale test rig. Test rig flow passages will be modified for flow uniformity. Baseline effusion cooling holes coupons will be fabricated and examined in the test rig to calibrate the test rig operation. These holes will be manually drilled, laser drilled, and EDM drilled onto plates of Aluminum or steel. A new sand feeder will be designed and integrated to allow for an even distribution of sand within the flow of air, granting accurate data. Laser particle tracking will be used to measure the particle flow distribution. Computational Fluid Dynamics, FLUENT-ANSYS, will be used to study the effect of different operating parameters to better understand of sand

particle tracking. The project concludes by evaluating the results from the new designs of the cooling holes and comparing it to test results researched.

StealADate

Daniel Mansilla, Panit Nakajitti, Adam Davis, Rosanna Corvino-Rosa

Faculty Mentor: Prof. Peter Kootsookos

https://fairfield.quip.com/gHefAECg8rGQ/StealADate-Fairfield-Capstone

Technical Abstract:
2020 and 2021 thus far have been a great burden on many. Covid-19, and the new lifestyle ruled by pandemic guidelines has had effects on our physical and mental well-being. As mental health has increasingly declined across the world due to pandemic fatigue and sickness, we will create a platform to live socially again in a post pandemic world. Given the success of vaccines and as vaccination rates increase, restrictions will significantly loosen for the first time in over a year. While things may never fully return to normal, we propose to build an application that will bring people together by offering a database of suggested "experiences" in a designated area. These experiences can be thought of as uploaded itineraries with money, time, location, and theme among other filters entered by users of the application. The database will grow as the application gains more users willing to upload their experiences to be shared with other users. In order to combat mental health decline, we need to build a world that promotes hopefulness. Our application will promote activities that will encourage people to see what other people are already doing, and then go out and enjoy those experiences themselves.

After the application is built, we hope to see increasing growth in users. More importantly, we hope this growth is followed by positive reviews as people become acclimated to returning to their happier lives.

Subscription Services Management Application

Khalela Stevens, Aaron Banson, Logan Pensa, Cesar Gavilano

Faculty Mentor: Prof. Peter Kootsookos

Supported by: Hardiman Scholars
This Research Also Presented at American Society of Engineering Education Conference

https://fairfield.quip.com/7RblAfGyfgpf/Streaming-Services-Subscription-Management

Technical Abstract:
Our team developed a mobile application that streamlines the process of choosing which streaming service subscription an individual may decide to subscribe to, all depending on what channels they want to see. The market for subscription based television services has only increased in recent years as substitutes to the packages offered by cable companies due to ease of access and the lower cost that streaming services offer customers. Due to the significant amount of streaming services now offered, which will only increase as the popularity of this service grows, the switch to streaming services can be daunting. For many individuals, finding the appropriate channels that they want in these services, which can be spread across multiple providers with differing pricing tiers and options, can be a challenge compared to bundled cable packages. Really, no two services are completely alike, and the age of individuals who use

streaming services often covers a broad range. Not everyone is adept at technology to review multiple pages for multiple services in order to enter sensitive information such as their credit card details. Through this application, it will be easier for individuals to pick and choose exactly what channels they want to watch, see what subscription service offers these channels, and how much it will cost in total to subscribe to those services. This system will consist of a web service to manage data, and offer a way for subscription service channel offerings to be updated as they are changed by the provider. As a mobile application, our plans for distribution of this application include publication on the Apple and Google Play stores. Our team wants to make this an easier, more streamlined process that eliminates the hurdles that come with subscribing to streaming services for individuals of all ages.

Understanding the Interactions Between a Human Mismatch Repair Protein, Mutsbeta, and a Mismatched DNA

Jenna Madigan, Jack Devlin

Faculty Mentor: Prof. Isaac Macwan

Supported by: Corrigan Scholars Fund
This Research Also Presented at American Society for Engineering Education, April 2021 Middle Atlantic ConferenceAmerican Chemical Society, Macromolecular Chemistry: The Second Century Conference, April 2021

https://fairfield.quip.com/VeiYAOv0JXIC/Understanding-the-Interactions-between-a-human-mismatch-repair-protein-MutSbeta-and-a-mismatched-DNA

Technical Abstract:
Deficiency of the MutSbeta protein is a proven cause of Lynch Syndrome or HNPCC, that leads to hereditary colon cancer. Absence of this protein or the energy source would result in a failure to detect DNA base pairing error and inhibits the signaling for the mismatch repair pathway. To examine the role of MutSbeta and the initial interaction between MutSbeta and a mismatched DNA strand, three sets of molecular dynamics simulations are performed on the MutSbeta and mismatched DNA controls and on a system containing MutSbeta and mismatched DNA. Interactions at the onset of detection are analyzed and the stability of the complex was quantified through examination of RMSD, hydrogen

bonds, salt bridges, center of mass, secondary structure of MutSbeta, and non-bonding energies of the complex as the MutSbeta scanned the DNA strand for the missing base. In the first 100 ns, the outermost domain of MutSbeta holds the DNA, and the trajectory indicates that the inner domains prepare to scan the DNA strand in the next 100 ns. RMSD of the protein and mismatched DNA complex of 3-6.5Ã…, number of salt bridges and the center of mass analysis indicate that starting ~75ns, the MutSbeta initiates the scanning of the mismatched DNA as evidenced by the reduction in the distance between the two by 16Ã…. The non â€“ bonding Van der Waals energies show increased attraction of 25 kCal/mol starting ~86ns, which increases up to ~40 kCal/mol.

Community Engagement & Independent Projects

A Bilingual Child's Use of Code-Switching and Parents' Attitudes Towards Their Linguistic Ability

Brenda Linares

Faculty Mentor: Profs. Sergio Adrada Rafael, Jerelyn Johnson

Supported by: Corrigan Scholars Fund

https://fairfield.quip.com/XPybAbYYldLe/A-Bilingual-Childs-Use-of-Code-Switching-and-Parents-Attitudes-Towards-Their-Linguistic-Ability

Abstract:
This research, which involves two bilingual four-year-old girls, seeks to identify what types of code switching are used by children of their age when trying to communicate in a language (either English or Spanish). The findings suggest that a 4-year-old will code-switch but only when she/he is trying to communicate in their secondary language, the language they use the least in their day-to-day lives. Additionally, although both 4-year-olds were able to alternate and formulate coherent sentences, they frequently made grammatical errors. The grammatical errors were, however, not too significant to the extent that the output was not comprehendible. A separate interview is also conducted with the girls' mothers to comprehend how they feel toward their daughter's code-switching given that this is not always looked upon with positive eyes. If children feel that their linguistic ability is viewed

negatively, they will stop to please those that they (the children) interact with on a daily basis.

America's New Conspiracy: Public Opinion on QAnon

Joe Friezo

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/7tPgAJ3bTjA9/Americas-New-Conspiracy-Public-Opinion-on-QAnon

This research examines public opinion of American adults about QAnon and their familiarity with the conspiracy. I conducted a survey, using a convenience sample of adults over 18 years old. The 42-question survey was distributed online via google forms. I believe that the results will show that familiarity with QAnon will depend heavily on one's social media use. I contend that the poll results will show that knowledge of QAnon will be surprisingly high given the recent surge of notoriety for the group following the Capitol Riot and condemnation of Congresswoman Marjorie Taylor Greene. The poll also asks questions that connect to the broad issues that QAnon focuses on including government corruption and trust in the media. The research is important as it will show people's familiarity and attitudes towards this new conspiracy theory, while also providing a look into how the cult was able to hook so many people.

Are Fairfield University Students Healthy?

Brooke Lathe

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/BO7FA3wULVXC/Are-Fairfield-Students-Healthy

Abstract:
This research examines the physical health of Fairfield University students. I surveyed Fairfield students. I recruited participants through various techniques including, social media posts, group messaging, and flyers handed out in the busiest campus spots. I contend that Fairfield students are taking the correct precautions needed to be considered 'healthy' regarding exercise, medical help, eating habits, and so forth. This is encouraging since the pandemic took a toll on students' health overall.

Asian Palm Oil: The Negative Effects of the Palm Oil Industry on Labor and the Environment

Michael Salvo, Mary Driscoll, Miles West

Faculty Mentor: Prof. Mousumi Bhattacharya

https://fairfield.quip.com/tkR1AY4yyNSe/Asian-Palm-Oil-The-Negative-effects-the-Palm-Oil-Industry-has-on-Labor-and-the-Environment

Abstract:
The main issues revolve around this industry's use of labor and its environmental impact. Our research reveals that Asian palm oil producers use child labor, slave labor, and other exploitative practices such as sexual abuse of workers. Due to the high demand of labor, the workers are often trafficked away from their homes and sent around their nation to be subjugated by the highest bidder. Moreover, these workers are typically taken from the most vulnerable groups in society and are much easier to take advantage of. Another major issue is the negative effects this crop has on the environment. Palm oil is essentially a form of vegetable oil, and its production is extremely harmful to rainforests. It is so widely sought after due to its high abundance and low cost. Production of palm oil drives many species of animals to extinction and has the potential to cause forest fires. The scary part of it is, there is a strong possibility that many of the products in your own home contain palm oil as one of its ingredients.

Christian Ideology and Presidential Election Outcomes

Diana Bustillo

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/UxVnAWxAjA02/Christian-Ideology-and-Presidential-Election-Outcomes

Abstract:
My project examines the last two presidential election outcomes and how voters adhered to their religious views as the basis for their vote.

Co-opting Byzantium: Interpreting a Frankish Helmet from Late Antiquity

Jon Chiluisa

Faculty Mentor: Prof. Marice Rose

https://fairfield.quip.com/4kmsAcGPwCX3/Co-opting-Byzantium-Interpreting-a-Frankish-Helmet-from-Late-Antiquity

Abstract:
Arms and armor served an important role in defining an empire's place in the world both militarily and often stylistically. In this sense, the Byzantine Empire and "barbarian" kingdoms that succeeded the fall of the Roman Empire are no exceptions. One particular helmet currently on display in the Metropolitan Museum of Art, a spangenhelm-type helmet with the accession number 42.50.1, provides a unique opportunity to showcase how and when the Franks specifically co-opted Byzantine armor patterns. In this project, I identify the origins of this helmet by conducting a close study of foreign politics between the Byzantine and Frankish Empire and a visual study of the helmet itself. I assert that this piece is a Frankish helmet made in an Eastern style, and it showcases the willingness of the Franks to co-opt Imperial styles as a means of legitimizing their rule in their own Kingdom.

Digital Publishing: Apollon Issue XI

Devin Johnson, Sheila McCombs, Devon DeNoto, Jessica Colloca, Brandon Robles

Faculty Mentor: Prof. Shannon Kelley

https://fairfield.quip.com/kgDKAtUbyaCQ/Apollon-Digital-Journal-Issue-XI

Abstract:
Apollon is an undergraduate research journal housed at Fairfield University. Students in the Publishing Practicum review and edit research submissions from writers around the globe. After careful consideration by our team of editors and the faculty-led supervisor, we selected the papers best fit for the journal based on a variety of criteria such as writing style, research quality, and innovation in their respective fields. Each student was then paired with a manuscript author for the line editing process. Issue XI contained 6 research pieces ranging from a wide variety of humanities topics including Shakespeare, Classical Music, Film Studies, the Publishing Industry, Domestic Violence, and History. Alongside our published work, the editors revamped the digital landscape of the academic journal. Through our study and implementation of SEO strategies, Google Analytics, social media marketing, and website design, we set out to grow, diversify, and create a cohesive brand.

Discrimination of the Romani in the Workplace

Victoria Krivitsky, Elizabeth Berkoff, Mateen Khawaja, Matt McGlinchey

Faculty Mentor: Prof. Mousumi Bhattacharya

Supported by: Vincent Rosivach Faculty Student Collaborative Research Fund

https://fairfield.quip.com/o3LHAH6pYtsU/Discrimination-of-the-Romani-in-the-Workplace

Abstract:
This research finds that the Roma migrated from India to Europe in the 10th century and have since been facing discrimination around the world. One in four Roma claimed to face persecution in a single year. They hold the place of Europe's largest ethnic minority with over 12 million members living across the continent. Around 80% of the Romani People live below the poverty line and have an inaccurate reputation as drug addicts and heavy drinkers. Only one in four Romani adults in Europe claim to work; one third of men compared to only 16% of women. This project analyzes the following questions: How are the Romani people discriminated against in the workplace and why? What is the social justice impact of this prejudice? What are the differences and/or similarities between the treatment of the Romani people in the U.S. versus Europe?

Does Power Have a Price Tag?: The Effect of Expenditures on a U.S. Senate Candidate's Success

John Stalzer

Faculty Mentor: Prof. Anna-Maria Aksan

https://fairfield.quip.com/vmubAp4Tzuzb/Does-Power-Have-a-Price-Tag-The-Effect-of-Expenditures-on-a-US-Senate-Candidates-Success

Abstract:
This research project is an econometric analysis of how a Senate candidate's campaign expenditures effect that candidate's success, as measured by the share of the vote that he or she received relative to their rival candidate. This relationship is a pressing issue in contemporary American politics, as the question of campaign finance reform has started to pervade political discussions across the U.S. This project provides data and analysis helpful in determining what kinds of reforms should be enacted. Ordinary Least Squares will be used to estimate the impact of a candidate's campaign expenditures on the share of votes that he or she received using data from five Senate elections (2010-2018). This estimate will be made as accurately as possible by controlling for a candidate's party affiliation, if they are affiliated with the same party as the president or not, their status as an incumbent or not, the economic conditions at the time of the election, and state effects.

Does Study in Place Do Its Job?:A Survey of Student Opinions on the University's Efforts to Lower COVID-19 Transmission

Delaney Hall

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/QdBlA1Zvdauh/Does-Study-in-Place-Do-Its-Job-A-Survey-of-Student-Opinions-on-the-Universitys-Efforts-to-Lower-COVID-19-Transmission

Abstract:
This research poll investigates Fairfield University students and their opinions on the Study in Place period implemented by the University from January 23 to February 10, 2021. This survey was shared electronically through emailing and other forms of messaging to Fairfield students who live on the University's campus. It focuses mainly on the mandated on-campus quarantine that Fairfield students were required to abide by, which meant that students could not leave campus. I expect the results to show that students were unhappy with being required to remain on campus for a prolonged period of time, but understood the advantages that it had for the rest of the semester. Knowing this, the University could adjust move-in protocols to be more student-friendly, as students voice their concerns. Having this form of communication between those who have authority and those whom it affects can lead to a better relationship between the two groups so future policies can benefit all parties equally.

Examining Attitudes Towards the United States Electoral Process

Daniel Messier

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/UmK5A5DLObJo/Analyzing-Attitudes-Towards-the-United-States-Electoral-Process

Abstract:
This project creates and analyzes a poll that gauges the attitudes of U.S. citizens towards the American electoral process. The project consists of an overview of the questions that I will ask and my rationale for how the poll was created, an analysis of the results of the poll, and a discussion about the methodology and accuracy of the poll. Respondents will be asked to give answers about institutions such as the Electoral College and the two-party system, and questions regarding what is most important to them about a candidate when they vote. I hope this sheds light on and helps contextualize conversations about changes to our electoral system and the potential costs and benefits of doing so.

Fairfield Slavery Project: Examination of Runaway Slave Ads and Free Black Heads of Household

Matteo Risicato, Alex Nargizian

Faculty Mentor: Prof. Cecelia Bucki

https://fairfield.quip.com/K2YSAXmG4G8n/Fairfield-Slavery-Project-Examination-of-Runaway-Slave-Ads-and-Free-Black-Heads-of-Household

Abstract:
This project was undertaken for Dr. Cecelia Bucki's HIST 3350: Introduction to Public History in Fall 2020 and was meant to continue and add to the Rosivach Fairfield Slavery Database. Previously unexamined primary document collections, such as runaway slave ads and the 1790 U.S. Census of Free African Heads of Households, were searched for new information to add to the Rosivach database. The research for the runaway slave ads was undertaken to understand the occurrences of runaway slaves before and after the Gradual Emancipation Act in Connecticut, and to examine the frequency with which it occurred before. The Gradual Emancipation Act of Connecticut was passed in 1784, which freed any child born to a slave woman after March 1, 1784, but not until the child reached the age of 25. Laws would eventually be passed that lowered the age of freedom under the Gradual Emancipation Act.

Formation of Cultural Identities Among Heritage Speakers in the United States: Latinos versus Asian-Americans

Melissa Navarro

Faculty Mentor: Prof. Sergio Adrada Rafael

https://fairfield.quip.com/GOaLApEG3uZI/The-Formation-of-Cultural-Identities-Among-Heritage-Speakers-in-the-United-States-Latinos-versus-Asian-Americans

Abstract:
This research studies the differences in the formation of cultural identities among Latinos and Asian-Americans in the United States based on their ability to speak their heritage language. The differences between these two ethnic groups are observed through a survey where the participants volunteered to answer questions about their fluency in their heritage language and how their fluency (or lack of) influenced the formation of their cultural identity. The results are explained through scholarly works published by experts in the field of linguistics. Finally, I discuss the implications of this study and how it should be considered in future studies about cultural identity among these two ethnic groups in our society.

Greenwich United Way Needs Assessment

Reinaldo Gonzalez, Michael Gurge

Faculty Mentor: Jonathan Delgado, Prof. Mehmet Cansoy

https://fairfield.quip.com/LHq2ATqNF4s0/Greenwich-United-Way-Needs-Assessment-Center-For-Social-Impact

Abstract:
The Greenwich United Way engaged the Center for Social Impact at Fairfield University to complete this 2020 Needs Assessment (NA2020). The purpose of this community-wide assessment of human service needs and community assets is to support non-profits, philanthropy, leaders, and the community at large in making data-informed actions for the public good. Both organizations had as a priority to produce a transparent and easy-to-use dashboard that focused on the town and neighborhoods of Greenwich. Surveys of local residents and interviews of local professionals were conducted to inform the data collection and analysis. Neighborhoods were created by joining census boundaries in QGIS to reflect local political districts and census data was aggregated to match. Using Tableau, individual dashboards were then designed to display neighborhood data as well as national, state, county, and peer town comparisons.

Higher Education, Including Access: Creating Accessible and Inclusive Environments on Campuses through Accommodation, Universal Design Learning, and Student Self-Advocacy

Margaret Moore

Faculty Mentor: Prof. Robert Epstein

Supported by: Hardiman Scholars Fund

https://fairfield.quip.com/P6FNAJCurQjI/Higher-Education-Including-Access

Abstract:
This research project focuses on disability access and accommodation in higher education. It examines legislation and policies for the implementation of inclusive practices on college campuses. In addition, it features responses from Fairfield University faculty members who participated in a survey about the process of implementation of accommodations. By incorporating research, professor perspectives, and my own perspective as a student with a disability, I create a more comprehensive view of the accommodation process, how it works, and how it can be improved.

Indigenous People of Peru and Issues of Inclusion and Discrimination

Drew Westford, Steven Kinnally, Trey Mcloughlin

Faculty Mentor: Prof. Mousumi Bhattacharya

https://fairfield.quip.com/GH6qAZNeZ71m/Indigenous-People-of-Peru-and-the-Issues-of-Inclusion-and-Discrimination

Abstract:
How does Peru's culture of discrimination against its indigenous people effect the workplace environment? Peru's indigenous people comprise 45% of the population but, there has been a historical lack of a 'national' indigenous movement within the country. Thus, another contributing fact is that Peru is considered one of the most socially and economically unequal nations in Latin America. In turn, the country faces many inclusion issues within the workplace. People of indigenous descent in Peru that speak a unique language are very prone to facing racism. Growing up, many indigenous people who live in Latin America are forced to learn to speak different languages because their native languages are not socially accepted. Indigenous people will not speak their native language in certain areas to avoid discrimination. It is imperative for a successful and accepting organization to create a positive nature of inclusion within their company. Factors such as equal treatment, belongingness, and uniqueness are uniformly in question amongst the Peruvian workforce. The harsh marginalization of indigenous people that exists in Peru

plagues their workforce and is a captivating topic of study.

Is China Using Job Training to Disguise Their 21st Century Concentration Camps?

Natalie LoRusso, Michael Fitzgerald, Kelsey McMillan

Faculty Mentor: Prof. Mousumi Bhattacharya

https://fairfield.quip.com/7oY1AhFMBuaG/Is-China-Using-Job-Training-to-Disguise-Their-21st-Century-Concentration-Camps

Abstract:
When reading articles and research on the injustices against the Uighur people, the similarities to the Holocaust are outstanding. The Chinese government disguise this genocide as job training camps where the Uighur people are forced to pick cotton, face harsh abuse, and live under strict conditions and restrictions. Women in these "job training facilities" have also been subject to forced birth control as the Chinese try to curb the demographics of Muslims in their country. The United Nations has also reported on forced organ harvesting so the government can turn them into commodities for sale, especially in the Middle East where individuals practicing similar Muslim values only will have "clean" transplanted organs. These issues and the extreme injustices against the Uighur people in China need to be discussed more, as it has somehow not been widely discussed in mainstream media, before history repeats itself.

Is it Cool to Care?: Political Activism at Fairfield

Noelle Guerrera

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/pliyA41VtSca/Is-it-cool-to-care-Political-activism-at-Fairfield-University

Abstract:
This research explores Fairfield University undergraduate students' political attitudes and willingness to engage in political activism. I conducted a survey of Fairfield University undergraduate students using an online survey platform. The survey was sent to students from all class years via text message and email. I plan to find results that describe students' level of willingness to engage in political activism on Fairfield's campus and in their communities. This research will provide a greater understanding of what issues matter most to Fairfield students, how far are they willing to publicly advocate for issues, and their history of political activism. These findings are essential to understand how to engage undergraduate students in advocating on internal institutional concerns as well as local and national political issues.

Los Elementos Lingüísticos en la Lucha Latinx para Recibir Buena Asistencia Médica (The Linguistic Elements in the Latinx Struggle to Receive Quality Medical Assistance)

Andrew Murphy

Faculty Mentor: Prof. Sergio Adrada Rafael

https://fairfield.quip.com/wROkAFgwC7qr

Abstract:
This project analyzes how and why Latinx people in the United States receive inadequate health care treatment. It heavily focuses on the role of language in this disparity and the broader social elements that contribute to this inequity. Various linguistic capacities, citizenship statuses, and racial appearances contribute to the wide-ranging Latinx experiences in the United States, especially through interactions with the medical system. The independent research which I conducted through a series of both qualitative and quantitative questions was distributed and collected through a digital survey format.

Should Public Schools Receive More Funding in Taxpayer Dollars?

Nicholas Brunetti

Faculty Mentor: Prof. Gayle Alberda

https://fairfield.quip.com/QVjjAywXpHMt/Should-public-schools-receive-more-funding-in-taxpayer-dollars-and-how-should-this-money-be-used-or-applied

Abstract:
This research project examines the results of my poll which targets the question of whether or not public schools should receive more funding in taxpayer dollars, and how should this money be used or applied?

Spatial Visualization of Traffic Around the Beardsley Zoo

Michael Gurge, Reinaldo Gonzalez, Teresa Nguyen, Yao Guo

Faculty Mentor: Profs. Mirco Speretta, Soyong Byun

https://fairfield.quip.com/Ke6tAANzqxYP/Beardsley-Zoo-Visualization

Abstract:
The Beardsley Zoo is located on 1875 Noble Avenue in Bridgeport, Connecticut near CT-8 or Connecticut's Route 8. This route is a heavily trafficked highway that starts in the city of Bridgeport. We are working with the Biology department and the Beardsley Zoo to locate which areas surrounding the zoo are heavily trafficked. The desired outcome of this project would be to provide the zoo with a visualization that displays traffic flow and intensity. We strive to design and develop a heat map to identify and pinpoint spatially which animal enclosures are affected by noise generated from the highways and local streets. Once the visualizations are generated, they will be presented to the project advisors and zoo researchers to provide insight on which animal enclosures experience the highest amount of traffic related noise.

Stress and Burnout Influence Decision-making to Implement Family-centered Care: An International Survey

Hali Young

Faculty Mentor: Prof. Dorothy Vittner

Supported by: Corrigan Scholars Fund
This Research Also Presented at Gravens Conference and Eastern Nursing Research Symposium

https://fairfield.quip.com/dE7DAB0oj1yl/Stress-and-burnout-influence-decision-making-to-implement-family-centered-care-An-international-survey

Abstract:
Healthcare professionals (HCP) communication influences participation in infant care activities. This descriptive study examined NICU HCP beliefs about family-centered care (FCC) and factors that influence decision-making for FCC delivery. The sample of 263 multidisciplinary HCP working in NICUs around the world reported low FCC beliefs, high perceived stress, and moderate burnout.

Telling Stories and Constituting Democracy: The Supreme Court and American Democracy

Vincent Gritzuk

Faculty Mentor: Prof. Gwendoline Alphonso

Supported by: Vincent Rosivach Faculty Student Collaborative Research Fund

https://fairfield.quip.com/TglzA8pPrTl0/Telling-Stories-and-Constituting-Democracy-The-Supreme-Court-and-American-Democracy-2000-2020

Abstract:
This project considers the unique role of the Supreme Court, how the judiciary quells, modifies, or reflects any of four major democratic threats. Focusing on the modern era, 2000 to the present, the project seeks to examine the role of the Supreme Court, as the ultimate political institutional arbiter of the Constitution, during times of heightened democratic threats and asks the research questions: how does the Court, through (a) its choice of cases and (b) construction of judicial doctrine and discourse, shape political discourse on democracy. In particular, the project asks: what kinds of "constitutive stories" does the Court tell regarding pivotal features of American democracy: (i) political parties, (ii) powers of the Presidency, and (iii) inclusive citizenship and how do these constitutive stories shape the stream of public norms and discourse on democracy?

The Dalit: The Untouchables of the Past and Present

Matthew Romano, Britney Galloza, Patrick Boyle, Calvin Peters

Faculty Mentor: Prof. Mousumi Bhattacharya

https://fairfield.quip.com/VWBaAuUB3BTq/The-Dalit-The-Untouchables-of-the-Past-and-Present

Abstract:
The Dalits or Harijan are a society oppressed by the caste system deemed unworthy or broken because of a hierarchical class system based on traditional roles. The Dalits are the lowest of this caste. To this day, the Dalits are still an oppressed and broken society working to create a movement for change and the eradication of the centuries-old oppression under the caste system. This being said, why are the Dalits still referenced today as Harijan even after the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act in 1989 and the Untouchability of Offense Act 1955 have been passed? Why is the private sector of the workforce not abiding by this act, and treating Dalits as a low class workforce?

The Effect of the Use of a Minority Language and the Actualization of the Pygmalion Effect

Erin Foxx

Faculty Mentor: Prof. Sergio Adrada Rafael

https://fairfield.quip.com/JEsjAazLTRYq/The-Effect-of-the-Use-of-a-Minority-Language-and-the-Actualization-of-the-Pygmalion-Effect

Abstract:
Stereotypes serve as a vehicle for the discrimination of ethnic groups such as the Latinx community. These negative beliefs can cause society to behave in such a way that is consistent with these negative thoughts. Many times, this happens subconsciously, however it can also be done deliberately. This research project recruited six students from Fairfield University to participate in a survey about their experiences with doctors and teachers that speak a language different from the subject's preferred language. Additionally, the research project analyzes an interview with J. Smith, MD, and a teacher A. Greene, to obtain another perspective about the treatment of others who speak a minority language. This project investigates how race and preferred language can affect the treatment of these minority groups and how it can affect their treatment in settings such as a medical office or a school.

The Golden Fourteen

Jerri Bell

Faculty Mentor: Prof. Eugenia Kim

https://fairfield.quip.com/qkDNAKWrdUgW/The-Golden-Fourteen-The-First-African-American-Women-to-Serve-Officially-in-the-US-Armed-Forces

Abstract:
The Golden Fourteen is a nonfiction book under contract to the University of Nebraska Press. It tells the story of the first African American women to serve officially and "openly as Black women" in the U.S. armed forces. To enlist as Navy yeomen during World War I, the women defied a white supremacist Secretary of the Navy, Josephus Daniels, a North Carolina newspaper editor who was one of the primary instigators of the Wilmington Massacre of 1898. Earlier historians found almost no record of the women's military service, and thought their story lost. But an extensive analysis of their military personnel files, recently made available for public review; genealogical data; and other contemporary records reveals how they were able to overcome Jim Crow recruiting policies to serve their country in wartime and why the story of their service was deliberately suppressed.

The Impact of COVID-19 on Food Pantries across Fairfield County, CT

Morgan Dow, Michael Caruso

Faculty Mentor: Prof. Deborah List, Melissa Quan

https://fairfield.quip.com/rH1wAqep83gn/The-Impact-of-COVID-19-on-Food-Pantries-across-Fairfield-County-CT

Abstract:
Before the onset of COVID-19, food security was a prevalent issue within the United States. As a result, many individuals and families relied on food pantries to obtain the food that they need to survive. An interdisciplinary team at Fairfield, funded by a CDC/AACN grant, has looked at these issues since 2018 and explored ways to partner with the community in addressing pressing concerns. During the COVID-19 pandemic, unemployment within the United States increased, which, in turn, caused more individuals to look to different resources to feed their families. Likewise, the closure of schools due to lockdown increased the possibility of children losing access to food, particularly those who rely on free school meals. Moreover, because of the national stimulus check, families considered in poverty were no longer eligible for certain food benefits, causing them to look for other resources for food. This study examines the effects of the COVID-19 pandemic on food pantries in Fairfield County, Connecticut, specifically Norwalk and Bridgeport. Data is collected through face-to-face interviews via Zoom with food pantry managers. The data collection tool was developed in collaboration with the

interdisciplinary team, national work on the issue of food insecurity, and data regarding local needs. The data collected from these interviews is transcribed and analyzed to identify themes related to the difficulties that food pantries faced, and successful resilience strategies that they employed, throughout this time. Following the data collection process, conclusions and future recommendations regarding the emergency response system will be proposed.

The Punitive Escalation in United States Society: From a Welfare to Penal State

Dominique Trucchio

Faculty Mentor: Prof. Gwendoline Alphonso

Supported by: Corrigan Scholars Fund
This Research Also Presented at Pi Sigma Alpha Research Conference

https://fairfield.quip.com/b4G0A2fgLXi1/The-Punitive-Escalation-in-United-States-Society-From-a-Welfare-to-Penal-State

Abstract:
In the late 20th century, along with the increased acceptance of neoliberalism and retrenchment of the social safety net, American policy perception of crime and punishment was drastically altered. Using personal interviews, ethnographic methods and observations, and drawing upon multiple primary and secondary sources, my research assembles and extends this argument linking neoliberal welfare and criminal justice, by (a) identifying solitary confinement, as a specific practice illustrative of this concurrent, interrelated, move away from a welfare to penal state; (b) connecting the work performed by non-state non-governmental actors, in mitigating this move; and (c) relating the concurrence of the neoliberal move to penal governance and social welfare retrenchment to shifting political ideologies of crime and punishment, specifically the shift away from rehabilitation, and towards

an individualized, more punitive deterrence model of punishment.

The Theoretical Analysis of the Aftermath of Colonialism for Filipino Americans Today

Eula Valdez

Faculty Mentor: Prof. Aaron Weinstein

Supported by: McGualey Family Faculty Student Research Fund

https://fairfield.quip.com/esrAAbewWPwm/The-Theoretical-Analysis-of-the-Aftermath-of-Colonialism-in-Filipino-Americans-Today

Abstract:
The Philippines has experienced a lengthy history of colonialism, involving over three hundred years under Spanish rule and forty-eight years under American rule. Seventy-four years after Philippine independence, the lasting effects of colonialism still seep through the everyday lives of Filipinos and, subsequently, Filipino Americans in the present-day. This project examines the outcomes of colonialism still evident for Filipino Americans through their religion, values, employment, and consequently, their voting patterns.

Transitions in South Sudanese Development: Exploring the Recent Past to Identify Opportunities

Matthew Little

Faculty Mentor: Prof. Anna-Maria Aksan

https://fairfield.quip.com/58XbAAC494Uj/Transitions-in-South-Sudanese-Development-Exploring-the-Recent-Past-to-Identify-Opportunities

Abstract:
The world's newest nation, South Sudan is among the least developed with an HDI of 0.433. Decimated by a series of conflicts and failures, as of 2017, 25% of the population had access to electricity, 41% had access to at least basic drinking water, and 85% were at least moderately food insecure. Many areas within South Sudan remain in a Malthusian-like poverty trap. A civil war ensued from 2013 to 2020, contributing to the decrease in GDP per-capita (adjusted for purchasing power parity) from USD $2911 in 2008 to USD $1235 in 2015. With the civil war's recent end, opportunities for South Sudanese development exist in physical capital, human capital, and productivity. This project explores the recent decreases in South Sudan's development and identify opportunities for improvement. Much of the presented information was obtained through a service-learning course partnered with the Catholic Medical Mission Board for synthesis into the orientation of international field workers.