

2020-2021 ANNUAL REPORT

Department of Medicine - Quality & Patient Safety Program

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Department of Medicine
SCHOOL OF MEDICINE
UNIVERSITY OF COLORADO
ANSCHUTZ MEDICAL CAMPUS

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DOM Quality & Patient Safety Program Annual Report 2020-2021

I. Executive Summary

For academic year 2020-2021, the DOM Quality & Patient Safety (QPS) team continued its work as a campus leader in the domains of safety, quality, value, and education. Through our monthly systems-oriented morbidity and mortality (M&M) case review process, we provide a team-based review and analysis of clinical events with system-oriented solutions implemented with our health-systems partners. The DOM QPS team is also a campus leader in supporting, mentoring and promoting process and quality improvement (P/QI) efforts through a variety of events over the year. These events are held in partnership with SOM programs and Departments to promote P/QI work being done by our faculty, trainees and staff across the various clinical sites of the DOM. The DOM QPS team supported many P/QI efforts through increased visibility, data support, analytics development and by providing dashboards to track outcomes and progress on quality metrics. Finally, we graduated our first class and welcomed our second class of Leadership, Informatics, Quality and Systems (LInQS) Fellows. Many of our programs were transitioned to an online format for AY20-21 and will continue to be a hybrid of online/in-person activities for the upcoming academic year.

II. Introduction

VISION

Accelerate the delivery of high value care to our patients and enhance the careers of our faculty and trainees.

MISSION

The mission of the DOM QPS Program is to promote a culture of patient safety, quality improvement and systems innovation among DOM faculty, trainees and staff, through data-driven support and patient-centered high value care. To achieve this mission, the DOM QPS Program has designated five overarching goals:



Foster a community of safety and quality at across our clinical sites and the University of Colorado Anschutz Medical Campus (AMC) community.



Advance our data analytics program to support a learning health system.



Build partnerships among DOM faculty, trainees and staff, SOM Departments and our health system partners to improve patient outcomes.

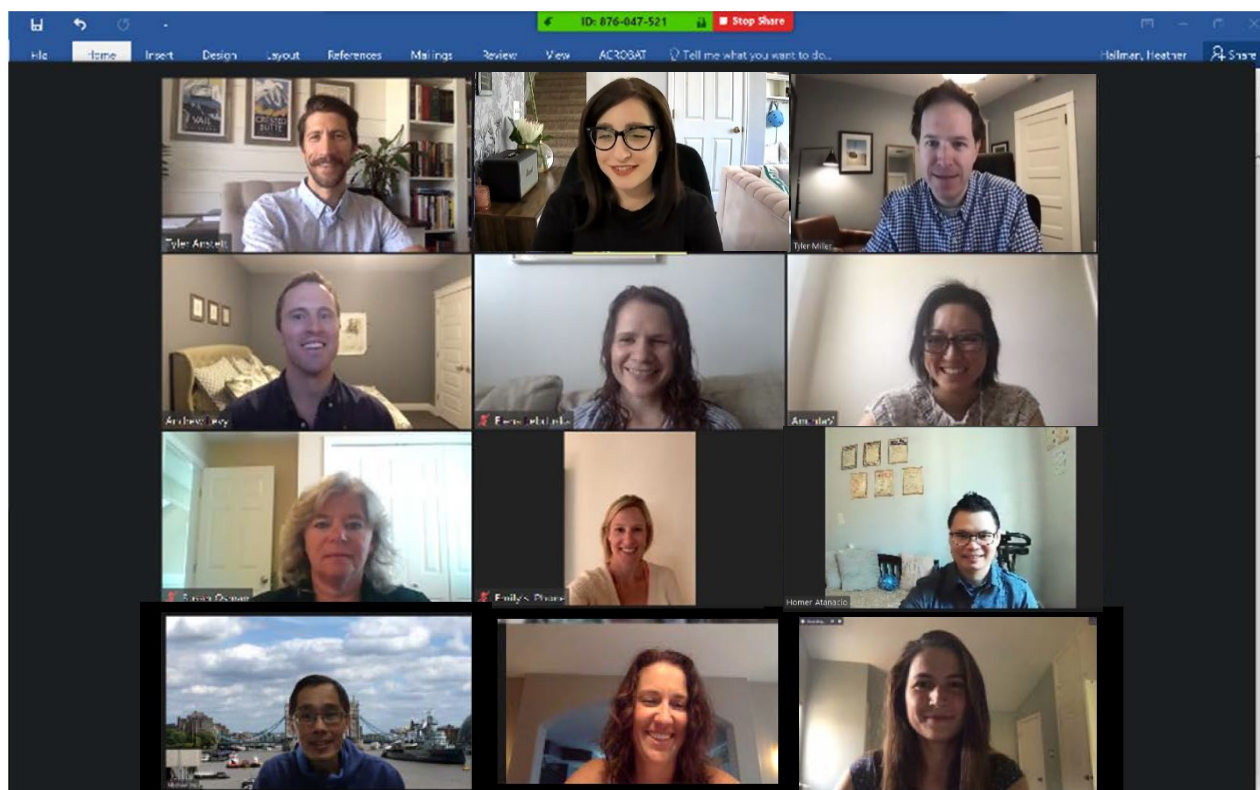


Educate faculty and trainees in quality improvement, patient safety, health systems improvement and clinical informatics.



Engage faculty and trainees in leading quality improvement activities.

DOM QUALITY & PATIENT SAFETY TEAM



Left to right: Tyler Anstett, DO; Heather Hallman, MHA, MSHS; Tyler Miller, MD, FACP; Andrew Levy, MD; Elena Lebduska, MD; Anunta Virapongse, MD, MPH; Susan Osman, BS; Emily Gottenborg, MD; Homer Atanacio, BS; Michael Ho, MD, PhD; Karen Ream, PA-C; Anna Neumeier, MD. Not pictured: Katie Raffel, MD

- **P. Michael Ho, MD, PhD**
DOM Vice Chair for Quality
- **Heather Hallman, MSHS, MHA**
Program Manager
- **Tyler Anstett, DO**
DOM Assoc. Vice Chair for Quality
- **Homer Atanacio, BS**
Project Manager
- **Anunta Virapongse, MD, MPH**
DOM Assoc. Vice Chair for Quality
- **Susan Osman, BS**
Analytics Developer

DOM QPS DIVISIONAL LEADERSHIP TEAM (quality leaders representing their academic affiliate clinical sites)

- **Emily Gottenborg, MD**
(UCH - Hospital Medicine)
- **Tyler Miller, MD, FACP**
(Veteran Affairs - Hospital Medicine)
- **Elena Lebduska, MD**
(Lowry - Internal Medicine)
- **Anna Neumeier, MD**
(Denver Health - Pulmonary & Critical Care)
- **Katie Raffel, MD**
(Denver Health - Hospital Medicine)
- **Karen Ream, PA-C**
(UCH - Cardiology)

III. Making Patient Care Safer

DOM MORBIDITY, MORTALITY & SYSTEMS IMPROVEMENT CONFERENCE

The mission of the M&M Conference is to establish a safe venue to identify areas for improvement in patient care, while promoting professionalism, integrity, and transparency. This year we saw a broad range of participation from several Divisions in the DOM and SOM Departments. The series highlighted several system issues resulting in Epic changes, multidisciplinary collaborations and issues escalated to hospital partners. With COVID-19 meeting restrictions, the conference was transitioned to an online format. With this online format, we created a new process for presenting cases and incorporated new data collection methods. In the upcoming year, we look forward to introducing a hybrid conference format including both in-person and online participation. Additionally, we renamed the conference as the DOM Morbidity, Mortality & Systems Improvement Conference to reflect the conference mission and activities more accurately.

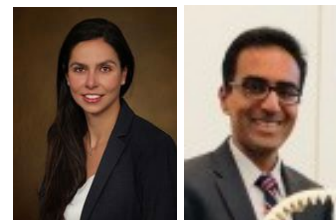
Table 1. AY20-21 DOM M&M Conferences

Date	M&M Conference Title	DOM Division	Case Presenter(s)	Case Outcome(s)
July 2020	Delayed Diagnosis in a Critically Ill Patient: (Re)Defining Standards and Processes of Care in the Face of Novel Illness	Pulmonary & Critical Care	Sue Gu, MD (Pulmonary & Critical Care Fellow); Tyler Anstett, DO (Hospital Medicine)	<ul style="list-style-type: none"> Add bowel movements to ICU summary report
August 2020	Splenic Infarct and Heart Block in a Patient with a Prosthetic Heart Valve	Hospital Medicine & Cardiology	Andrew Levy, MD (Cardiology); Tyler Miller, MD, FACP (Hospital Medicine)	<ul style="list-style-type: none"> Resident training on diagnosis pathways
September 2020	Missed TTP and Delayed Treatment (presented during DOM Grand Rounds)	Dept. of Neurology & Hematology /BMT	Jennifer Simpson, MD (Neurology); Tyler Miller, MD, FACP (Hospital Medicine)	<ul style="list-style-type: none"> Consult response project (e.g., order standardization, urgency definitions, data collection)
October 2020	Diverticular Abscesses in a Bone Marrow Transplant Patient	Infectious Disease & Hematology/ BMT	Swati Mathur, MD (Infectious Disease Fellow); Aaron Emmons, MD (Cardiology Fellow)	<ul style="list-style-type: none"> Chang path. report from "mixed morphotypes" to "mixed bacteria" Notification to tx team when pt. is no show b/c admission
November 2020	A Case of Rising Lactate and Deteriorating Condition	Hospital Medicine	Daniel Gergen, MD & Corwin McGee, MD (Chief Residents); Laura Macke, MD (Internal Medicine)	<ul style="list-style-type: none"> Collaboration with Department of Radiology to revise orders and processes
December 2020	Informing Patients of Abnormal Results: A Case of Delayed Diagnosis (presented during DOM Grand Rounds)	Dept. of Radiology & Internal Medicine	Eric Balaban, MD (Internal Medicine Fellow); David Zander, MD (Radiology); Elena Lebduška, MD (Internal Medicine)	<ul style="list-style-type: none"> Resident training on discussing possible malignancies Attending notification of significant test results ordered by trainee

January 2021	A Case of Alcohol Withdrawal Seizure	Addiction Medicine	Eric Rudofker, MD (Chief Resident in Quality & Safety); Dilip Raghuvier, MD (Internal Medicine)	<ul style="list-style-type: none"> • Resident training on alcohol withdrawal symptoms/treatment • Foster collaboration between VA and DH to align alcohol withdrawal protocols
February 2021	Delayed Diagnosis in a Patient Transitioned to Comfort Care	Internal Medicine, Hospital Medicine & Infectious Disease	Tyler Anstett, DO (Hospital medicine); Tara Ward, AGACNP-BC (Hospital Medicine)	<ul style="list-style-type: none"> • Resident training on coccidioides
April 2021	Case of Hyponatremia and Coordination of Care	Dept. of Emergency, Hospital Medicine & Nephrology	Amelia Bowman, MD (Chief Resident); Arun Kannappan, MD (Pulmonary & Critical Care)	<ul style="list-style-type: none"> • Resident training on foley and DDAVP administration • Collaborate with ED /Nephrology on a hyponatremia pathway

AY20-21 Featured DOM M&M Case: Case of Hyponatremia & Coordination of Care, April 2020 [Amelia Bowman, MD (left); Arun Kannappan, MD (right)]

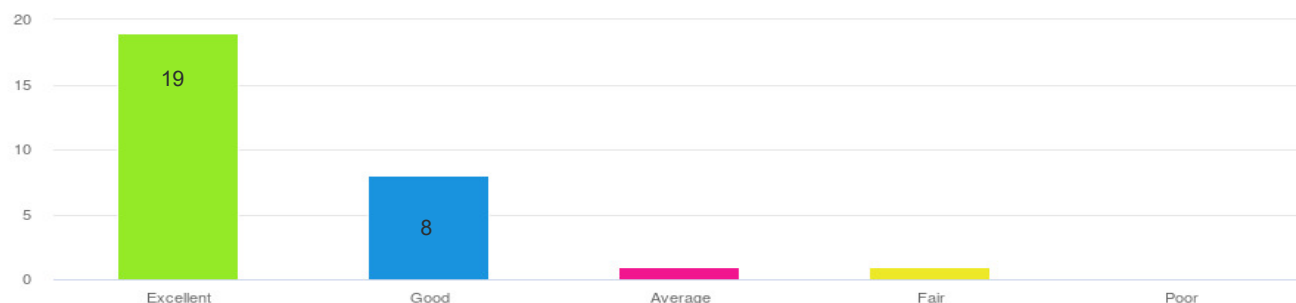
In this case, we examined a 71-year-old female with a history of T2DM who presented to the emergency department with four days of abdominal pain. During the patient's hospital course, sodium levels fluctuated significantly while the care team struggled to stabilize levels with various medications, hydration protocols and lab monitoring. The patient had a prolonged length of stay as a result. This case highlighted the need for standardization when treating patients with high sodium levels. Dr. Sarah Young (Nephrology), presented a new Agile MD pathway jointly designed with the Emergency Department (ED) to standardize lab & fluid orders, urine sampling schedules and admission guidelines for patients presenting to the ED with sodium level <130mEq/L. Dr. Young will work with Drs. Anunta Virapongse, Sarah Scarpato (Hospital Medicine) and Arun Kannappan, MD, (Pulmonary & Critical Care Medicine) to develop a sister pathway for the inpatient units with targeted RN communication plans and guidelines on timed labs. This case was a great example of multidisciplinary collaboration to solve a system issue impacting patient safety and outcomes.



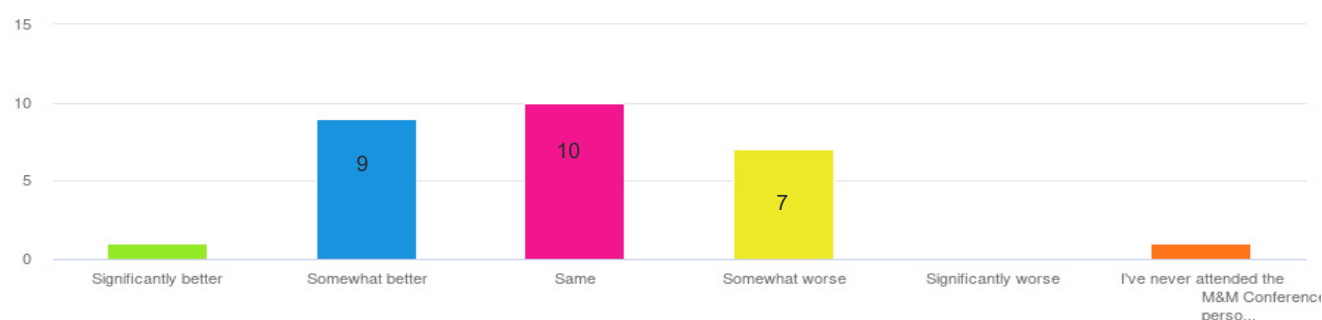
The DOM M&M and Systems Improvement Conference was transitioned to an online format for AY20-21 because of the COVID-19 pandemic. While this presented some logistical challenges, the change in venue provided many opportunities to improve engagement, incorporate conference feedback and collect online participation data. We saw an overall increase in conference attendance as well as increased engagement in root cause analysis and solution generation discussions. Below are highlights of data collected from the DOM M&M Conference Feedback forms. We look forward to using these findings to publish our experiences transitioning to an online format.

Figure 1. AY20-21 DOM M&M Conference Feedback Data (N=29)

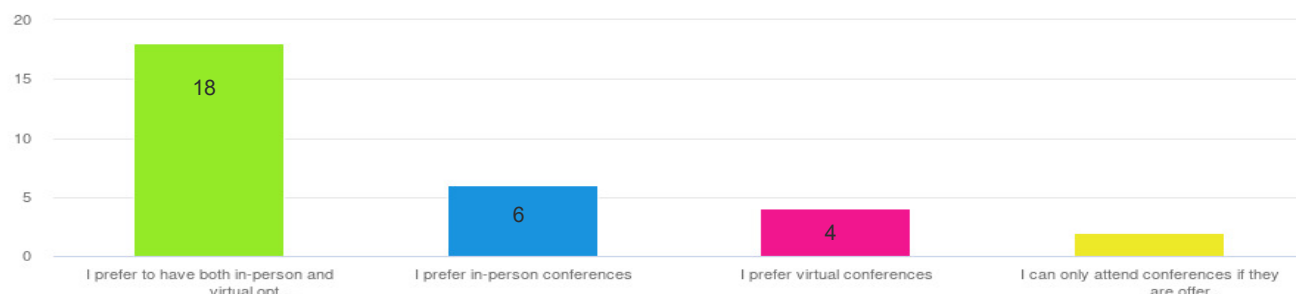
What was your overall impression of this conference?



Compared to past in-person M&M Conferences, how was your experience over Zoom?



How would you prefer to attend the M&M Conference in the future?



DOM QUALITY IMPROVEMENT, MORBIDITY & MORTALITY STEERING (QIMMS) COMMITTEE

In AY20-21, the DOM M&M Steering Committee (MMSC) rebranded itself as the DOM Quality Improvement, Morbidity & Mortality Steering (QIMMS) Committee. The change was made to reflect an updated mission and activities more accurately over the past few years. The original mission of this committee was to take system issues identified during Division M&M and DOM M&M conferences and try to solve them by working closely with UCH. Additionally, the goal was to create a standardized process for reviewing adverse events in an educational forum within each division through M&M conferences. Once action plans and system fixes are created, the goal is to disseminate them across all Divisions. The committee has since evolved into a community of quality and patient safety experts working to decrease silos across Divisions and working directly with UCH quality leaders to implement system changes impacting Departments outside of the DOM.

We have spent the last academic year aligning efforts with the UCH quality team including launching a new collaborative case review, creating quality metrics for the Divisions and Department, standardizing specialty consult requests and continuing our efforts in mortality notifications for primary and specialty care teams. The updated mission of the DOM QIMMS Committee is to provide oversight and support for faculty-led quality and patient safety initiatives through the DOM in both a consultative and active role. We will work directly with the UCH quality team to triage and develop plans using the *Performance Excellence Tool* and continue to work on DOM and Division M&M issues. Additionally, we are creating a pathway to help faculty-led quality improvement efforts gain exposure with hospital leadership by linking efforts with UCH priorities, engaging stakeholders and promoting spread and sustainability. Two example projects are highlighted below.

Consulting Service Response Project

A major effort within the QIMMS Committee for AY20-21 was to address specialty care consult requests and provide process standardization to improve response times. Through Divisional surveys and Epic data collection, we identified variability in the way specialty care teams receive consult requests, and the timing of their responses and documentation of action items. Proposed process standardizations include Epic-based consult orders, order-linked consult progress notes and actionable items per each consult order. QIMMS committee members are representing the DOM on a UCH steering committee including Anunta Virapongse, MD, MPH (Hospital Medicine) and Brian Montague, DO, MPH (Infectious Disease) to expand these efforts system-wide. The QIMMS Committee will support Divisions with the implementation of and compliance with new consult standardization processes working with UCH.

CT Ordering Changes in Epic

The QIMMS Committee agreed to implement two changes to the inpatient/outpatient Epic CT scan orders in response to two DOM M&M Conferences in AY20-21. In the November 2020 M&M case, a CT scan was ordered for a patient with AKI and portal gas on a KUB. Contrast was relatively contraindicated in this case, but necessary for this specific patient. This case revealed the need to clarify contrast guidelines and allow for exceptions in emergent cases. Additionally, the December 2020 M&M case highlighted a need to allow ordering providers the ability to designate the specific the CT order requested without it being overridden by Radiology. In response to these two cases, the QIMMS Committee worked with Justin Honce, MD and Matthew Markese, MD (Department of Radiology) to develop changes to the CT order interface. Epic changes, currently under committee review, include a banner across the top of the order to notify providers of contrast ordering guidelines and updated language for Radiology to contact the requesting provider about changes to CT scan orders.

IV. Improving Quality of Care

For AY20-21, the DOM QPS team strengthened our robust data support infrastructure and helped increase visibility for quality projects throughout the UCH system. The DOM QPS team continued to provide data support and built recurring reports to meet a variety of needs for DOM Divisions and UCH leadership, many of which were used to support providers as they managed the COVID-19 pandemic.

QPS DATA SUPPORT

For AY20-21, the QPS team provided assistance to nine Divisions with projects addressing a wide range of priorities including antibiotic stewardship, discharge practices, length of stay, patient volumes and admissions, telehealth visits, patient registries and referral tracking. The DOM QPS team also supported projects involving our trainees such as the IMRP Bonus Program, the LInQS Fellowship as well as the UCH/SOM Clinical Effectiveness and Patient Safety (CEPS) Small Grants Program. Below is a brief summary of projects the DOM QPS team supported during the past academic year.

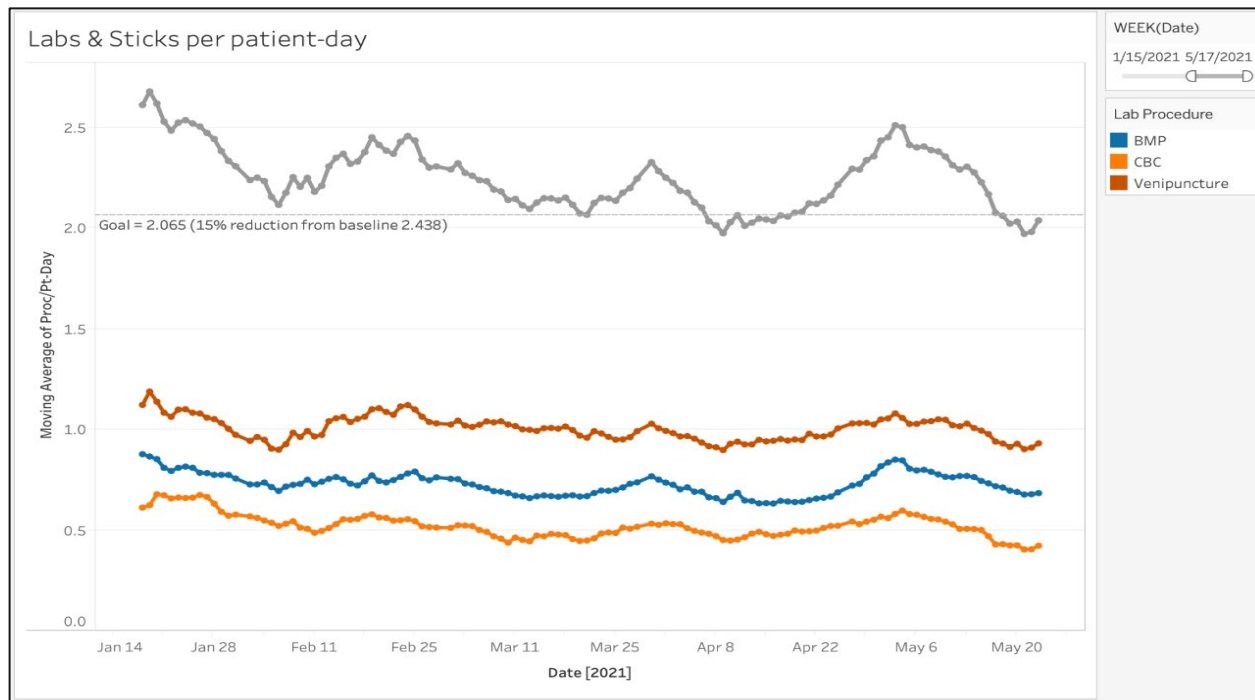
Table 2. AY20-21 DOM QPS Data Projects

Division	Project Name	Description
Infectious Disease	VECTORS: Vancomycin Errors Corrected Through Optimizing OPAT Medication Reconciliation and After Visit Summary Standardization	Develop monthly recurring reports to track metrics related to vancomycin orders, OPAT orders and discharge orders.
Infectious Disease	Linkage and Retention in Care for HIV Patients	Develop data report to track transitions of care for HIV patients including admissions, discharge and prescriptions.
Infectious Disease	Infectious Disease Fellowship Visit Volumes	Develop report to track fellow visit volumes by consults and progress notes to inform staffing decisions and fellowship progress.
Gastroenterology & Hepatology	Inflammatory Bowel Disease (IBD), Chron's & Colitis Foundation Registry	Develop clarity-based data report with IBD patients enrolled in a multi-center initiative. Data include demographics, diagnosis, medications and relevant encounter history.
Gastroenterology & Hepatology	Burden of Pre-Procedure Fresh Frozen Plasma (FFP) Utilization in Cirrhosis	Develop report to understand the volume of FFP administration in patients admitted with cirrhosis 48 hours prior to interventional radiology or endoscopic procedure.
Cardiology	Angiotensin Receptor-Nepriylsin Inhibitor Prescriptions in Patients with Systolic Heart Failure	Develop report to track the occurrence of ANRI counseling for eligible patients. Data include demographics, treatment history, insurance and encounters.
Endocrinology, Metabolism & Diabetes	Increase SGLT2 Inhibitor Use in Type 2 Diabetes with Early CKD	Develop dashboard of SGLT2 prescribing and use by eligible patients. Report used by multiple Divisions including Renal Medicine and Hospital Medicine.
Renal Disease & Hypertension	Renal Dashboard to Monitor Glomerular Filtration Rate (GFR) Values and Increase Referrals	Develop dashboard to track patient GFR lab values to refer for vaccinations, vascular surgery or home peritoneal dialysis.
Pulmonary Science & Critical Care	Pulmonary Dashboard Metric Tracking	Develop dashboard to track a variety of metrics including referrals to pulmonary rehabilitation, smoking cessation and immunizations.
Pulmonary Science & Critical Care	A-F Bundle Compliance: ICU Liberation with Epic Partnership	Began dashboard in 2019 and continue to add metrics for MICU utilization.

AY20-21 Featured DOM QPS Data Project: Internal Medicine Resident Project – Reducing Venipunctures at DH, Tyler Anstett, DO; Eric Rudofker, MD; Ellen Sarcone, MD; Michelle Knees, MD

Despite the lack of a GME Bonus program this year, the Internal Medicine Residency Program created a project focused on reducing unnecessary laboratory ordering for patients at Denver Health. Laboratory studies account for the highest number of orders in the hospital, though nearly all providers admit to ordering labs that may not change clinical care. The goal of this project was to reduce lab ordering and venipunctures by 15% in one year. Through education workshops, incentives and several Epic-based solutions (e.g., BPA for normal labs w/in 24hrs, one-click ordering and review of prior labs with less clicks), the team was able to reduce lab ordering and venipunctures by 11%. This reduction amounted to approximately 4,000 fewer ordered labs and venipunctures over the year. The project team expanded their efforts to UCH with the help of DOM QPS team data support to build a PowerBI dashboard tracking lab ordering and venipunctures.

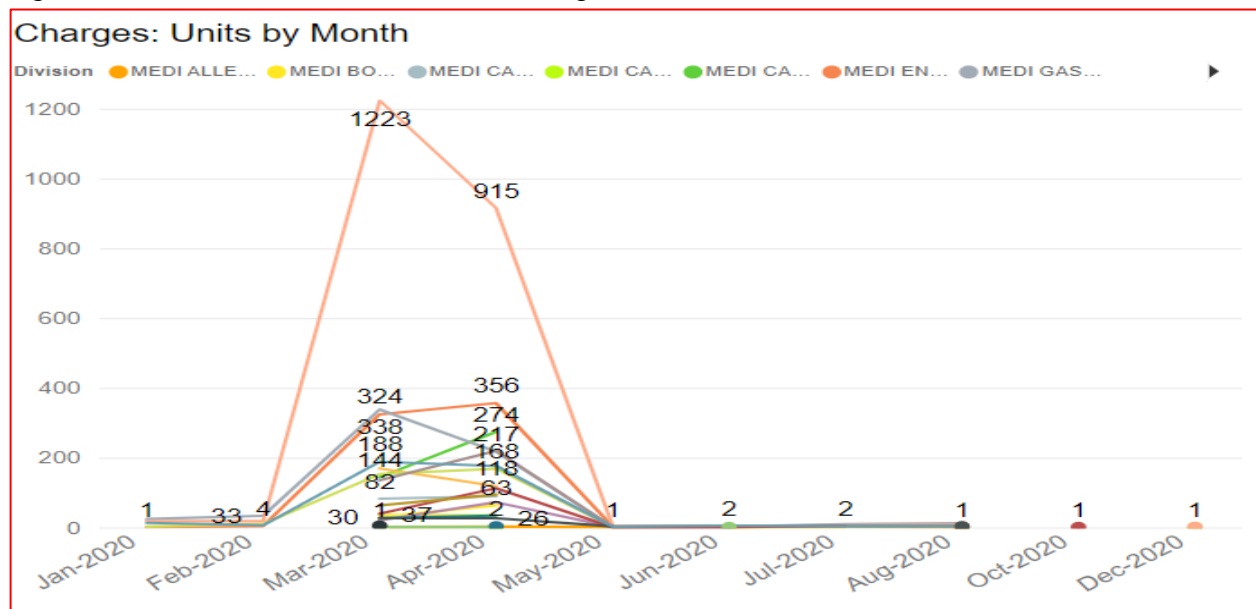
Figure 2. Labs & Sticks Per Patient Day (1/2021-5/2021)



AY20-21 Featured DOM QPS Data Project: Department of Medicine Telehealth Volumes and Revenue Tracking During COVID-19 Pandemic, Richard Albert, MD

In the last academic year, the demand for telehealth visits grew significantly during the COVID-19 pandemic. The DOM QPS team developed a PowerBI dashboard to track a variety of metrics for all visit volumes by provider, location, type of visit and the reimbursement costs associated with billing for telehealth visits. This dashboard provided invaluable information to the DOM during this hectic time to track volumes of visits and allocate staffing and resources. Today, this report continues to provide valuable information regarding all provider visits and charges.

Figure 3. Telehealth Visit Volumes and Charges



V. Pursuing High Value Care

ANNUAL SHARK TANK COMPETITION

For the fifth year, the DOM QPS team hosted the annual Shark Tank Competition in May 2021. The goal of the Shark Tank Competition is to identify P/QI projects, led by DOM faculty, that promote high value care (HVC). High value care is evidence-based, clinical practices that improve patient outcomes and potentially reduce the costs of healthcare. The winning project receives DOM QPS support including coaching, data support and analysis and increased visibility in the DOM and UCH.

This year we expanded the competition to include DOM projects from the Veteran Affairs Hospital and Denver Health Medical Center. In addition, we invited judges from these two sites to participate as sharks and to choose the winning project. With restrictions on large in-person meetings in place, the competition was held over Zoom. This allowed us to utilize several new features for the event. Each finalist submitted a pre-recorded video, which our judges were able to review prior to the event. Additionally, we incorporated audience participation to score each of the presentations.

The 2021 Sharks were a distinguished panel from UCH executive leadership, SOM leadership and DOM leadership.

- CT Lin, MD - UCH Chief Medical Information Officer
- Jennifer Wiler, MD - UCH Chief Quality Officer
- Jeffrey Glasheen, MD - IHQSE Director
- Tom Mackenzie, MD - Denver Health Chief Quality Officer
- Ed Havranek, MD - Veteran Affairs Hospital
- Tyler Miller, MD, FACP - Veteran Affairs Hospital
- Andrew Berry, MD - Veteran Affairs Hospital
- Cory Hussain, MD - Denver Health Medical Ctr.
- David Schwartz, MD - DOM Chair
- Ethan Cumbler, MD - Director of Quality, Surgery

2021-2022 Shark Tank Finalists

Laura Peters, DNP, FNP-C [Cardiology]

Increasing Advanced Care Planning in Specialty Ambulatory Clinics

Michael Tozier, MD; Kevin Sullivan, MD; Joanne Chiao, MD [Hospital Medicine]

Sickle Cell Disease Inpatient Care Improvement Project

Eric Rudofker, MD; Ellen Sarcone, MD [Internal Medicine]

Laboratory Stewardship: The Right Test at the Right Time

Tara Ward, MSN, RN, AGACNP-BC; Neelam Mistry, MD [Hospital Medicine]

Project SAFEST: Scheduling Ambulatory Follow-up for Effective and Secure Transitions

Lorna Allen, FNP-C [Infectious Disease]

VECTORS: Vancomycin Errors Corrected Through Optimizing OPAT Medication Reconciliation and After Visit Summary Standardization

The 2021-2022 Shark Tank Finalists all developed impressive HVC projects with novel interventions to improve healthcare quality and patient safety. The sharks were impressed with each team's project aims and methodologies, to the extent that all five were chosen to receive DOM QPS support. Lorna Allen's winning project is described below. These Shark Tank projects are making significant impacts towards changing care and increasing value at UCH. They address utilization, cost and help improve the effectiveness and efficiency of care.

2021-2022 Shark Tank Winner: VECTORS: Vancomycin Errors Corrected Through Optimizing OPAT Medication Reconciliation and After Visit Summary (AVS) Standardization (Lorna Allen, FNP-C)



Lorna Allen,
FNP-C, Shark
Tank Winner,
May 2021

The goal of this project is to standardize Outpatient Parenteral Antimicrobial Therapy (OPAT) ordering of IV antibiotics, specifically vancomycin, for discharging patients. OPAT orders are frequently absent from both the discharge medication list (24%) and the after-visit summary (AVS) (31%). This adversely impacts continuity of care, adds frustration for patients/providers and increases the potential for adverse drug errors. The aim of this project is to increase the accuracy of IV vancomycin orders on the discharge medication list from 68% to 90% and OPAT orders on the AVS from 69% to 90% in one year. This will be achieved by creating an OPAT-specific note in Epic, pulling the information into the AVS using a smart link.

2019-2021 Shark Tank Winner Update: HF-RADAR: Reduced Admissions, Decomensation and Augmented Recovery for Heart Failure Pts. (Karen Moulton, MD; Dan Huck, MD; Scott Freeman, MD)



Karen Moulton,
MD, Shark Tank
Winner, Oct.
2019

The goal of this project was to achieve timely optimal medical therapy (OMT) titration to prevent costly hospital re-admissions (e.g., 15% reduction) and improve clinical outcomes. The project team developed an Epic smart list to track and coordinate care for HF patients enrolled in the protocol. After patients' initial post-acute care visit, the clinic team schedules patients for 6 months of follow-up care visits with Cardiology fellows or NPs to initiate and uptitrate medications to guideline recommended goals. The AVS includes patient education materials and the goals for each visit. A key element of this project is communication with the patients' primary care provider (PCP)

for continuity of care. To date, 28 patients have been enrolled in the protocol with 58% of patients reaching OMT by six months (compared to 33% at baseline). The team continues to enroll patients into the protocol and will work on expanding the program.

VI. Educating Future Leaders

LEADERS IN INFORMATICS, QUALITY & SYSTEMS FELLOWSHIP

In 2019, the DOM QPS team introduced the Leaders in Informatics, Quality & Systems (LInQS) Fellowship Program. The objective of the LInQS Fellowship Program is to develop fellows and junior faculty into future leaders with successful academic careers in the areas of quality improvement, clinical system design, clinical informatics, and/or patient safety. This is a two-year program that combines didactics, longitudinal mentorship and hands-on training from faculty mentors with diverse expertise to support trainees and junior faculty. In the last academic year, several of the LInQS fellows utilized the QPS team for data extraction, report building and establishing Epic-based changes for their P/QI projects.

Our first cohort (AY19-21) completed the program with many impressive outcomes. Based on feedback from fellows and faculty, we have implemented several changes to the curriculum including new lectures, quarterly mentor meetings, structured work-in-progress discussions, expanded experiential activities and quarterly milestone presentations. In addition to the core didactic and mentoring received from the LInQS faculty, the LInQS fellows also participate in the Quality Safety Academy (QSA) workshops and the IHQSE Certificate Training Program (CTP). Looking towards the upcoming year, we plan to partner with the IHQSE on a new Foundations in Healthcare Leadership fellowship to help our fellows build valuable relationships and develop critical leadership skills.

Table 3.LInQS Fellowship Program Faculty Members

Clinical Informatics	Learning Health System	Quality Improvement & Patient Safety
CT Lin, MD Professor, Internal Medicine	P. Michael Ho, MD, PhD Professor, Cardiology	Tyler Anstett, DO Asst. Prof., Hospital Medicine
Lisa Schilling, MD, MSPH Professor, Internal Medicine	Katie Raffel, MD Asst. Professor, Hospital Medicine	Karen Ream, PA-C Asst. Professor, Cardiology
Amber Sieja, MD Assoc. Professor, Internal Medicine	Sridharan Raghavan, MD Asst. Professor, Hospital Medicine	Tyler Miller, MD, FACP Asst. Professor, Hospital Medicine
Jonathan Pell, MD Assoc. Professor, Hospital Medicine	Cory Hussain, MD Asst. Professor, Infectious Disease	
Brian Montague, DO, MS, MPH Assoc. Professor, Infectious Disease		

Table 4. Cohort 1 (AY2019-2021) LInQS Fellows

Shoshana Tell, MD Pediatric Endocrine Fellow Jennifer Taylor, MD Pulmonary & Critical Care Fellow	Blake Jones, MD Gastroenterology Fellow	Aaron Emmons, MD Cardiology Fellow
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Dr. Jones has presented his work at several national conferences and was awarded funding by the UCH/SOM CEPS Small Grants Program. He will join the faculty of the Division of Gastroenterology & Hepatology in the Fall 2021. Dr. Tell has presented her work at multiple local and national conferences and was awarded the Leone Cuttler QI Award for 2021 by the American Academy of Pediatrics. Dr. Tell will be joining the faculty at Joseph Sanzari Children's Hospital in Hackensack, NJ. Drs. Emmons and Taylor have completed their fellowships and are moving to private practice. In the fellowship exit survey, respondents noted they "strongly agree" the LInQS Fellowship Program was a valuable experience and would recommend the program to their peers. Additionally, respondents noted the LInQS Fellowship Program had guided their future career decisions.

Table 5. Cohort 2 (AY2020-2022) LInQS Fellows

Ryan Flood, DO Asst. Professor, Renal Medicine & Hypertension Lorna Allen, FNP-C Instructor, Infectious Disease Tara Ward, AGANP-BC Instructor, Hospital Medicine	Laura Macke, MD Asst. Professor, Internal Medicine Sarah Mann, MD Asst. Professor, Infectious Disease Henry Kramer, MD Asst. Professor, Hospital Medicine	Laura Peters, DNP Asst. Professor, Cardiology Tim Yen, MD Fellow, Gastroenterology & Hepatology
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The cohort 2 fellows have achieved impressive milestones in their first year of the fellowship. Dr. Kramer presented his work locally and nationally, in addition to receiving the Colorado Hospital Medical Staff Annual Awards for his work developing a COVID-19 pathway. Additionally, Laura Peters was awarded a grant from the UCH/SOM CEPS Small Grants Program and Lorna Allen was named the winner of the 5th Annual DOM Shark Tank Competition.

Table 6. Cohort 3 (AY2021-2023) LInQS Fellows

Annie Chen, MD Asst. Professor, Renal Medicine & Hypertension Julie Knoeckel, MD Asst. Professor, Hospital Medicine	Brendan Mulhern, MD Fellow, Pediatric Hospital Medicine Neha Agarwal, MD Fellow, Pulmonary Science & Critical Care	Robert Metter, MD Asst. Professor, Hospital Medicine
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HEALTH INNOVATIONS SCHOLAR PROGRAM

The Health Innovations Scholar Program (HISP) is an intensive training program for medical students who seek to lead innovative transformation of US healthcare. Medical schools typically do not provide the knowledge or skills necessary to drive reinvention of healthcare systems. The HISP is a mechanism to engage medical students early in their careers towards P/QI and innovation. The

students who have participated in HISP from 2013—2020 have engaged in experiential work across multiple clinical settings. For AY20-21, the HISP was not able to invite students from across the country due to COVID-19 restrictions but will resume in AY21-22 with 10 local CUSOM students.

VII. COVID-19 Response

UNIVERSITY OF COLORADO HOSPITAL COVID-19 AGILE MD PATHWAYS

While COVID-19 had a significant impact on DOM QPS activities in AY20-21, the DOM QPS team leveraged the resources and skills of the team to help support UCH during this challenging time. Members of the DOM faculty played a key role in the development of several COVID-19 Agile MD pathways including the *COVID Testing and Management Pathway (1035 encounters)*, the *COVID Discharge Pathway (170 encounters)* and the *Ambulatory Care COVID Pathway (170 encounters)*. These pathways have helped hundreds of providers throughout the UCH system deliver care that is efficient and evidence-based. The team was recognized for their work with the UCH Medical Staff Annual Awards in 2021.

DENVER HEALTH COVID-19 IN-PATIENT VACCINE PROGRAM

Our partners at Denver Health (DH) Medical Center have also faced challenges during the COVID-19 pandemic to vaccinate at-risk populations. Despite large efforts to equitably provide COVID-19 vaccines to DH patients, many barriers prevent patients from accessing vaccine appointments. In recent years, in-hospital vaccine administrations have increased seasonal influenza and pneumococcal vaccination rates, so the goal was to target in-patient populations to administer the COVID-19 vaccine. To achieve this goal, a multidisciplinary committee was convened to determine logistics and deploy an inpatient COVID-19 vaccination program using Epic Best Practice Alerts (BPA). From February 2021 to April 2021, DH administered 209 COVID-19 vaccine doses to inpatients. The success of this effort was achieved through a multi-disciplinary team who optimized provider/staff workflows and utilized electronic health record technology. DH continues to work on their efforts to improve in-patient vaccination rates for at-risk populations. The project team included QPS Leadership Committee member Katie Raffel, MD.

VETERAN AFFAIRS VIRTUAL ROUNDING DURING COVID-19

The COVID-19 pandemic brought unique challenges to medical training programs at CU. The CUSOM Resident Training Program faced major shortages as residents became sick and high-risk trainees were forced to stay home. A novel remote inpatient rounding structure was implemented to enable virtual rounding on inpatient services from home. This allowed sick residents, high-risk residents, and residents waiting on a COVID-19 test results to continue to participate in their inpatient rotations, and even reduced in-hospital demand for personal protective equipment (PPE). The Remote Resident Pilot Experiment was ultimately successful, according to subjective feedback from early adopters. This pilot was a way to provide direct clinical care while reducing the risk of contracting COVID-19. It was also an exciting way to test a novel inpatient care-delivery model that may be an innovative way of providing acute care through telehealth in the future. The project team included QPS Leadership Committee member Tyler Miller, MD, FACP.

VIII. Scholarship & Awards

RECOGNITION AWARDS

The [American Academy of Pediatrics / Pediatric Endocrine Society Leona Cuttler QI Award for 2021](#) was awarded to Shoshana Tell, MD (Pediatric Endocrine Fellow) for her project within the LInQS Fellowship Program. This award is given to a medical student, resident, fellow or junior faculty who has developed an exemplary P/QI project judged on originality, application of QI methodology and relevance to current Pediatric Endocrinology practice. Dr. Tell's LInQS Fellowship project focuses on lipid management for Type 1 Diabetes with the goal of reducing atherosclerotic cardiovascular disease. She has already made great strides in developing a lipid management pathway in the Barbara Davis Center for Diabetes and continues her work in reducing the number of pediatric patients with elevated LDL on statin therapies.

The 2020 University of Colorado Hospital Medical Staff Annual Awards recognized the Division of Hospital Medicine this year with the Impact Award. This award was given for the work done on developing the COVID-19 Agile Pathways to a team of hospitalists including Anunta Virapongse, MD, MPH (DOM Associate Vice Chair for Quality), Jonathan Pell, MD (LInQS Faculty Member) and Henry Kramer, MD (LInQS Fellow Cohort 2).

CONFERENCES & PRESENTATIONS

Kramer, Henry, Ortiz-Lopez, Carolina. A Hybrid Medicine Procedure – Long Stay Service Increases Procedure Volume and Improves Continuity. Society of Hospital Medicine Converge Conference, May 2021: Denver, CO.

Kramer, Henry. ASPIRE: Anticoagulation Safety Program for Improving Readmissions and Experience in Venous Thromboembolism (VTE). DOM Research & Innovation Conference, April 2021: Denver, CO.

Tell, Shoshana. Improving Patient Access to Electronic Health Record Data and Reducing Disparities in Access. Pediatric Endocrinology Nursing Society Virtual Conference, April 2021.

Tell, Shoshana. Improving Lipid Management in Pediatric Type 1 Diabetes (T1D) for Cardiovascular Risk Reduction. Pediatric Endocrinology Nursing Society Virtual Conference, April 2021.

Tell, Shoshana. Improving Cardiovascular Health in Diabetes Across the Lifespan. Epic Expert Group Meetings (XGM) Conference, April 2021.

IX. Future Plans

Looking ahead to the next academic year, we are enthusiastic to continue to innovate through our current programs, diversify faculty and trainee participation in DOM QPS efforts and to increase the visibility of our programs to the DOM Divisions. We will continue to collaborate with the DOM Divisions and UCH leadership to provide data support, education and to address the quality and safety needs of our faculty. For AY20-21, we will focus on developing hybrid in-person/online

programs (e.g., Quality & Safety Symposium, Shark Tank Competition, LInQS Fellowship and M&M Conferences) and will continue our engagement with trainees and faculty. We will also continue to develop dashboards and data reports to meet the needs of the DOM and its Divisions leading projects that drive quality and safety changes at UCH.

Legend

AVS – After Visit Summary
CEPS – Clinical Effectiveness and Patient Safety
CTP – Certificate Training Program
DOM – Department of Medicine
GME – Graduate Medical Education
HISP – Health Innovation Scholars Program
IHQSE – Institute for Healthcare Quality, Safety & Efficiency
LInQS – Leaders in Informatics, Quality & Systems
M&M – Morbidity & Mortality
MMSC – Morbidity & Mortality Steering Committee
QPS – Quality & Patient Safety
Q/PI – Quality and Process Improvement
SOM – School of Medicine
UCH – University of Colorado Hospital