CU GME Quality & Safety Programs

2019-20 Annual Report

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GME Quality & Safety Bonus Program

Purpose: The GME Quality and Safety Bonus program is a data-driven program to provide financial rewards to residents for their contributions to improving the quality and safety of patient care at CU's clinical institutions

Guiding principles:
· All CU residents and fellows are eligible to participate and earn the bonus
· The Bonus Program Steering committee is comprised of Chief Quality Officers from Children's Hospital of Colorado, University of Colorado Hospital and Denver Health Medical Center, representatives of the Housestaff Association, CU's Associate Dean of GME and GME Director of Quality and Safety Programs and supports the administration of the program
· The Bonus Program Steering committee guides residents to select metrics that are data-driven, align with our hospitals' and departments' quality/safety priorities, meaningfully impact patient care and pertain to residents' clinical work. The committee considers the following factors in approving metrics proposed by programs:

- Residents' clinical activities can impact the metrics in a measurable way.
- Real-time, institutional-level data can be reported on quarterly/monthly basis
- Goals can be tiered for achievement
- Meaningfully improve patient care
- Clinical institutions value the goal/metrics

Academic Year 2019 – 2020
Due to success in prior years, the Steering Committee allowed all training programs the opportunity to propose and work on improving metrics that they select. Additionally, the committee asked that the "program-specific metrics" selected by trainees fulfill the following criteria: 1) align with priorities of our clinical institutions, their Departments or Divisions 2) are actionable by residents, and 3) meaningfully improve care for patients. Programs selected metrics and conducted their improvement work at University of Colorado Hospital, Children's Hospitals of Colorado and at Denver Health Medical Center, depending on the sites at which each program provides care. This year, the 1146 resident full-time equivalents (FTEs) participated in the program, increased from 1237 FTE that participated in academic year 2018-2019. Also, the residents selected 36 program-specific metrics, increased from 33 metrics the year prior.
A summary of all projects on which residents worked on this year for the Quality and Safety Bonus Program can be found **here**. Residents succeeded in achieving many of their goals and their efforts led to meaningful improvements in patient care. Table 1 highlights improvements related to resident or fellow QI efforts.
We recognize the impact that COVID-19 had on the quality projects in the spring of 2020. However, the strong work done by our trainees in the fall and early spring allowed most programs to achieve their top tier goals. In recognition of these efforts, the Steering Committee, Hospital and GME Leadership, awarded the full bonus to all CUGME trainees.
On June 16, 2020, five resident and fellow teams presented their projects and results in the second annual GME Quality and Safety Showcase, which was held virtually. For this year, all incoming CUGME Interns attending the showcase as part of their orientation. Our hospital leadership faculty and administrators were also in attendance. The event featured the Bonus Program initiatives led by Child Neurology, Obstetrics and Gynecology, Physical Medicine and Rehabilitation, Pulmonary Disease and Critical Care Medicine and General Surgery.
Looking ahead to the next academic year, we have renamed our program to the GME Partnership for Quality and Safety Program. The bonus for academic year 2020-2021 is currently paused due to the financial impact of COVID-19 on our hospital partners. Notably, 26 programs are participating in our this year's program, including the greatest number of fellowships (11), thus far.

Table 1. Care improvements and bonus earned related to residents' quality efforts.

Program	Metric	Care Improvement
Anesthesiology	Timely antibiotic administration	Rates improved from 95% to 98.2%
Neurosurgery	Ensure appropriate timely discharge before 11am on weekends	Improved timely discharge by 11am from 21% to 72.3%
OBGYN	Antibiotic Re-dosing at Time of Cesarean	Compliance improved from 20% compliance to 81%
Pulmonary Disease CCM	Increase pneumococcal vaccination rates of clinic patients	DH compliance increased from 59.8% to 75%, UCH compliance increased from 46.3% to 60%
Surgery	Compliance of risk-appropriate pre-operative prophylaxis administration	Improved to 85.27% compliance from a baseline of 79.14%

Clinical Effectiveness and Patient Safety Small Grants Program for Residents and Fellows (CEPS-RF)

Purpose

The Clinical Effectiveness and Patient Safety Small Grants Programs for Residents and Fellows (CEPS-RF) was created to promote resident and fellow participation and leadership of quality and safety initiatives within the University of Colorado Hospital (UCH). The program also supports and promotes faculty development of skills in mentoring trainees in quality and safety innovation projects. CEPS-RF is supported by the CUSOM and UCH.

Program

The CEPS-RF Grants Program awards up to $5000 for one year to resident- or fellow-led teams conducting quality or safety projects within UCH.

Program requirements of grantees includes:

1. Quarterly progress reports submitted to the CEPS-RF Grants Committee.
2. Quarterly progress meetings with the CEPS-RF Grants Committee
3. Submission of project results as an abstract to a relevant national meeting or a manuscript to a peer-reviewed journal.
4. Presentation of results to UCH leadership and the CEPS-RF Committee

As part of the grant program, grantees attended quarterly work-in-progress meetings which included training in quality improvement (QI) methodology. "Just-in-Time" mentoring was also provided on an as-needed basis to the teams. Targeted faculty development was provided to the faculty mentors to support the attainment of knowledge and skill for QI coaching. Grantees were also encouraged two attend the Quality and Safety Academy.

Academic Year 2019-2020

For this academic year, six teams submitted Letters of Intent, and all were invited to submit full project proposals. Three teams were awarded grants (Table 3), totaling $12,982.

While many projects were paused due to the COVID-19 pandemic, Grantees enjoyed tremendous success in their projects. Key outcomes included:

- Establishment of compliance checklist for ChloraPrep technique with 100% compliance from RNs in PDSA 2
- Implementation of a standardized education process for providers performing site prep
- Successful collaboration between Anesthesiology and Allergy & Immunology to develop a phone screening and testing protocol for patient-reported penicillin allergy prior to surgery

One project was abandoned due to the COVID-19 Pandemic, but two of the grants were approved a 1-year no cost extension to continue QI projects into the 2020-2021 academic year.

All three teams were led by residents or fellows in their efforts and included multidisciplinary and interprofessional teammates. The success of the projects also highlights significant return on investment for the amount awarded to each team. Table 4 shows resident and fellow awardees for academic year 2020-2021. Five grant proposals were submitted, of which three were selected for award.

Table 3. AY19-20 CEPS-RF Grantees

Project Team Members	Project Title	Department	Award
Alexadra Kovar, (PGY-3 Surgery Resident); Ethan Cumbler, MD; Matt Iorio, MD; Veronica Broslawik, MLS(ASCP), MPH; Michelle Barron, MD; Kelly Joiner, MBA, BSN, RN, CNOR; Cassandra Pender, MBA; Faculty Mentor: Sarah Tevis, MD	The Impact of Standardized Surgical Site Prep Technique and a Formal Educational Curriculum on Surgical Site Infections at University of Colorado Hospital	Breast Surgical Oncology	$4,982
Nicholas Alvey, MD, MPH (PGY-2 Surgery Resident); Frank Newsome, RN; Tim Pratt, RN; Anjeli Kalri, MD, Faculty Mentor: Angela Selzer, MD	Evaluating patient-reported penicillin allergies at UCH pre-operative anesthesia clinic to reduce non-cephalosporin perioperative antibiotic prophylaxis use	Anesthesiology	$4,000
Tom Gulvezan, MD, MBA (PGY-3 Anesthesiology Resident); Ethan Cumbler, MD; Nathan Clendenen, MD; Kevin Rogers, MD; Toby Trujillo, PharmD, Faculty Mentor: Angela Selzer, MD	PACT-F: Perioperative Aspirin Continuation Task Force	Anesthesiology	$4,000

Table 4. AY20-21 CEPS-RF Grantees

| Project Team Members	Project Title	Department	Award
Victoria Huynh, MD (PGY-3 Surgery Resident) | Sarah Tevis, MD | Ethan Cumbler, MD | Darlene Tad-Y, MD | Nicole Christian, MD | Mark Nehler, MD | Clark Lyda, PharmD	Improving Guideline-Concordant Opioid Prescription Practices in Surgery Using Multimodal Approach	Surgical	$9,940
Rebecca Pollard, MD (PGY-4 Neurology Resident) | Sharon Poisson, MD | Michelle Leppert, MD | Jennifer Simpson, MD | Vincent Timpone, MD | Matthew Salzberg, MD | Stefan Sillau, PhD	Screening for emergent large-vessel occlusions using focal objective neurologic symptoms in patients arriving to the emergency department	Neurology	$9,848
Timothy Yen, MD (Gastroenterology Fellow) | Swati Patel, MD | Frank I. Scott, MD | Sarguni Singh, MD | Kellie Haygood, BSN	Upper Gastrointestinal Bleeding Admissions: Improving quality of care after endoscopy	Gastroenterology	$10,000

Culture of Safety

The concept of safety culture originated outside of healthcare in studies of "high reliability organizations", which consistently minimize adverse events in a setting of complex work. A culture of safety includes key elements of a commitment to achieving consistently safe operations, a blame free environment where individuals report errors or near misses without fear of punishment or retribution, a flattening of hierarchical structures in order to solve patient safety problems and commitment of organizational resources to address safety concerns. Improving the culture of safety at the University of Colorado is critical to preventing or reducing errors and improving overall healthcare quality. Resident perception of safety culture is positive. According to the 2017 -2018 Housestaff Association survey, of 857 fellow and resident respondents, 75% of residents received interprofessional training, 92% felt there was a culture of safety for resident reporting of patient safety concerns, and 76% had received training on disclosure of adverse outcomes.

As part of promoting a culture of safety at University of Colorado, we have emphasized the importance of patient safety event reporting to residents and fellows. Each year, new interns and residents undergo simulation training on adverse event reporting. Housestaff adverse event reporting activity has been monitored since 2014. Beginning in July 2015, all incoming interns and new residents were trained in the recognition of unsafe conditions and the submission of online safety event reports in a simulation activity. In academic year 2020-2021, 873 patient safety reports were submitted across UCH, Children's Hospital and Denver Health. (Figure 1), increased from 843 in the academic year prior.

Patient Safety Reporting by Hospital
2014-2020 AY
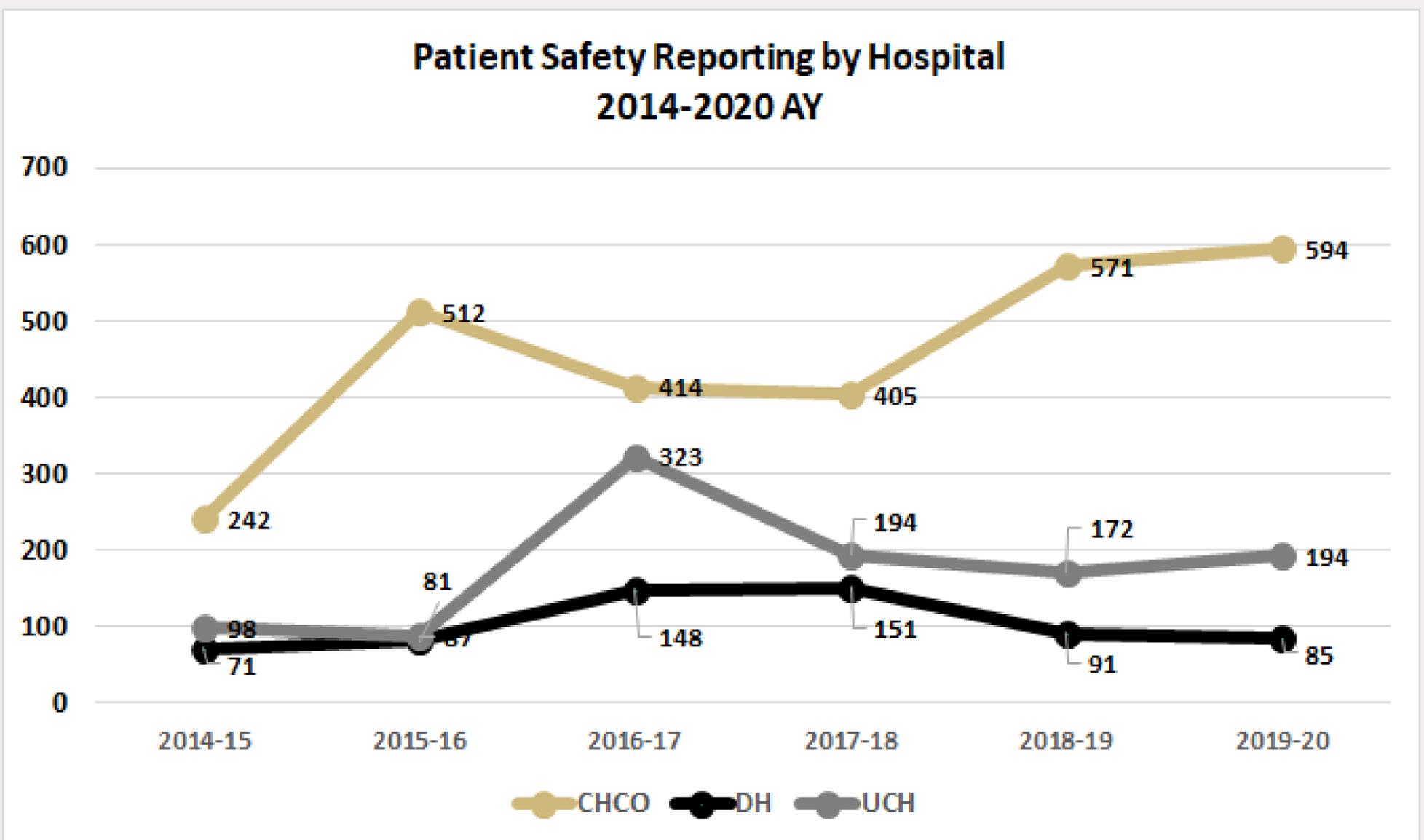
The most common types of events reported by residents were care coordination (services teams, professions), medication (dosing, administration, delays or timing), laboratory (delays, ordering) and airway management. These 4 types accounted for more than 70% of the resident submitted reports for this past academic year at UCH, Denver Health and Children's Hospital. This continues the trend from the preceding four years, with the same four event types accounting for more than 70% of the resident submitted incidents.

Figure 2. Adverse events submitted by residents and fellows for Academic years 2019 – 2020, frequency of event types.
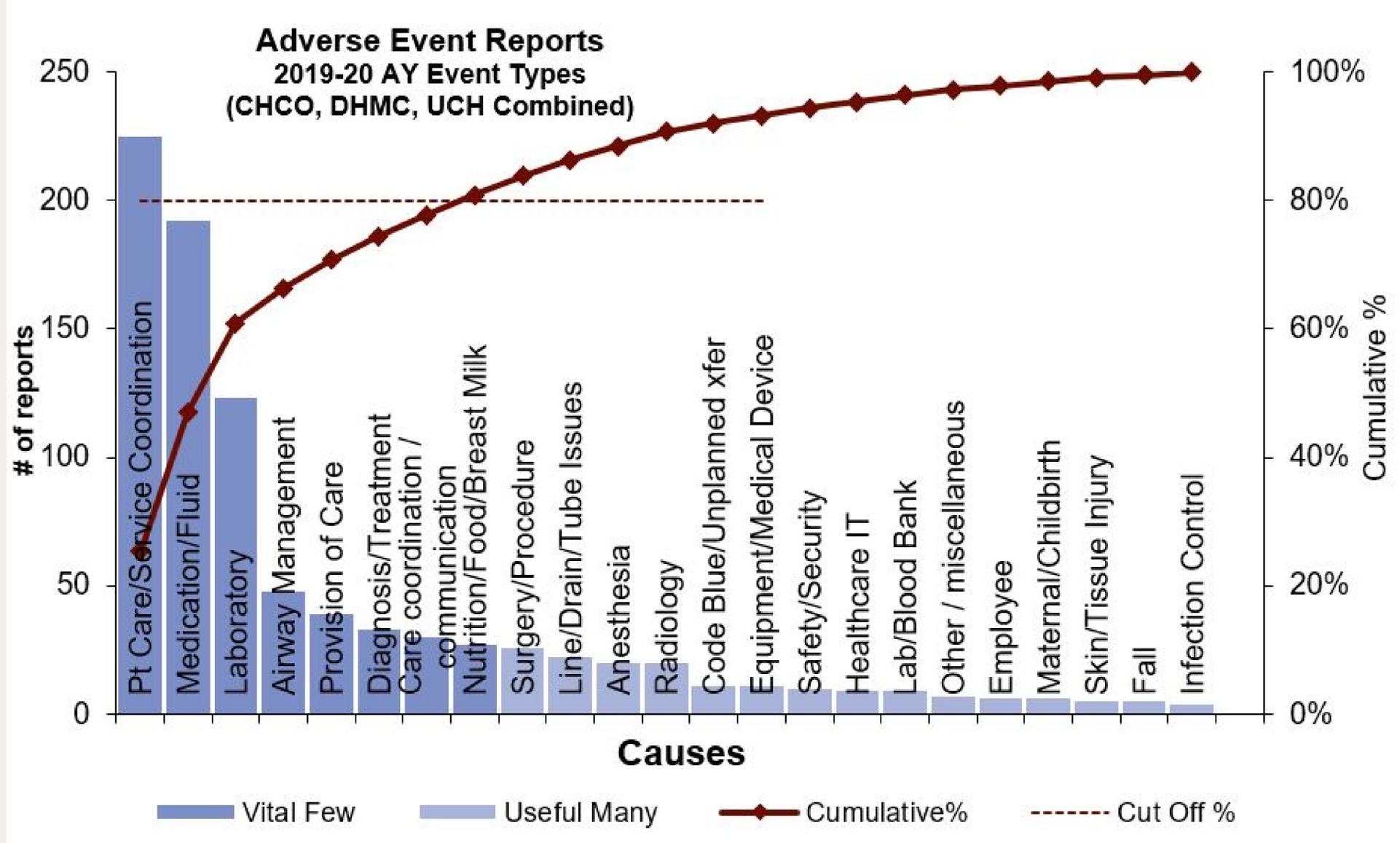
Quality & Safety Academy

Co-Sponsored by the **Institute for Healthcare Quality, Safety, and Efficiency** and Graduate Medical Education

The Quality & Safety Academy, offers residents, fellows, and faculty in any program affiliated with University of Colorado a series of workshops designed to build foundational knowledge in quality improvement and patient safety, which will enable them to effectively participate in quality and safety work in the clinical setting. Program content builds on itself to support progressive acquisition of competency, and program elements.
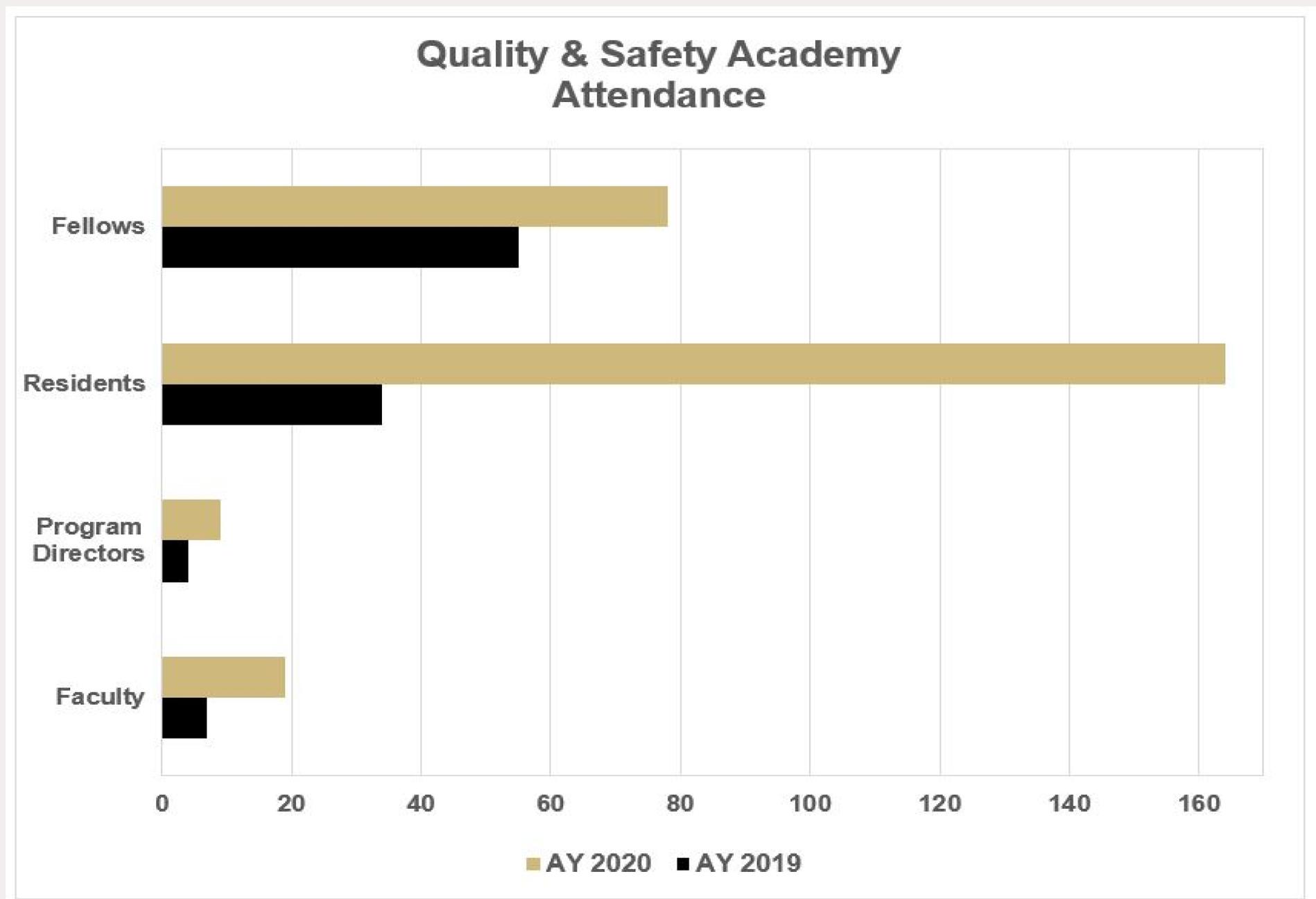
ENGAGEMENT

**AY 2020
Total Attendees**

275

AY 2019- 106 Attendees

**AY 2020
# of Programs Represented**

59

AY 2019- 45 Programs

-3.5%

Quality & Safety Academy Attendance

Bar chart showing attendance by category for AY 2020 (tan) and AY 2019 (black):
- Fellows: AY 2020 ~78, AY 2019 ~55
- Residents: AY 2020 ~164, AY 2019 ~34
- Program Directors: AY 2020 ~9, AY 2019 ~3
- Faculty: AY 2020 ~19, AY 2019 ~7

Legend: AY 2020, AY 2019

Quality & Safety Academy
"I would recommend this training to others."

Session	Strongly agree or agree	Somewhat Agree	Neither Agree or Disagree	Somewhat disagree	Disagree or Strongly Disagree
Intro Sessions	64	48	4	14	5
Fellow Sessions	70	23		2	
Faculty Session	12				
All Sessions	146	71	4	16	5

Legend: ■ Strongly agree or agree ■ Somewhat Agree ■ Neither Agree or Disagree ■ Somewhat disagree ■ Disagree or Strongly Disagree
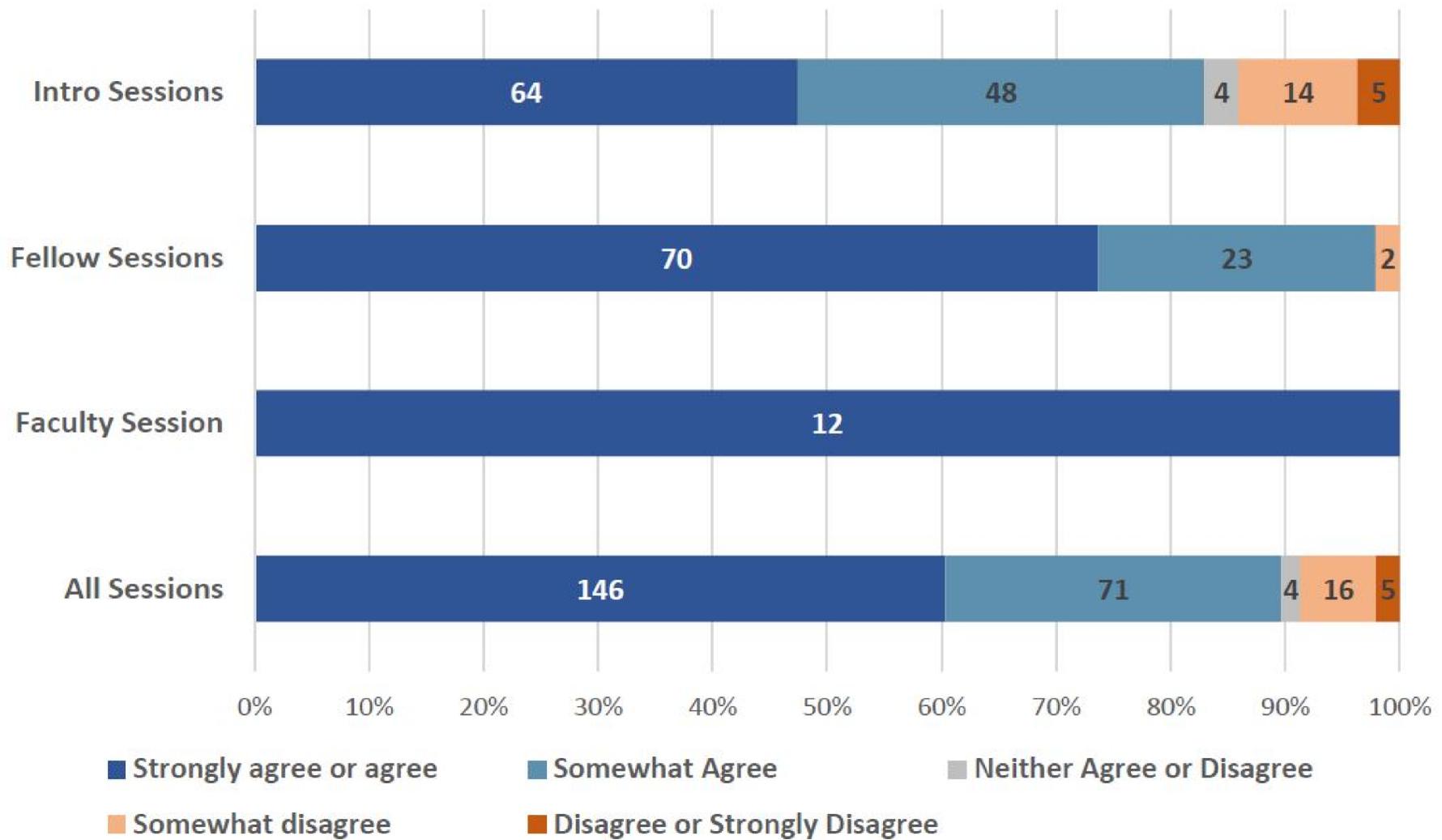
Resident Series

Teaching Faculty:

Tyler Anstett, DO (Director)

Emily Gottenborg, MD

Darlene Tad-y, MD

Juan Lessing, MD

Samuel Porter, MD

Kathi Dangerfield

Joe Grubenhoff, MD

Session 1: Concepts of Patient Safety
- Introduction to High Value Care
  - Core Concepts of Safety: Just Culture and Safety, adverse event review, disclosing an adverse event
  - Diagnostic accuracy, cognitive error, and introduction to how clinicians think

Session 2: QI Basics for Project Work
- QI Basics for Projects
  - Defining a Systems Problem for Improvement
  - Identify contributing factors (Fishbone diagram)
  - Exploring the core process (Process map)
  - Data Management: data collection and analysis

Session 3: Human Factors in QI
- Human side of QI
  - Creating a Project Charter
  - Change management 101
  - Project management
  - Stakeholder analysis

Session 4: Overcoming Barrier to Project Success
- Overcoming Barriers to improvement efforts
- Expert Stations:
  - Data Acquisition, management, analysis
  - Process analysis
  - Implementation assistance and Stakeholder management

Fellow Series

Teaching Faculty:

Tyler Anstett, DO (Director)

Anna Neumeier, MD

Andy Levy, MD

Emily Gottenborg, MD

Average Session
Attendance:

39

Session 1: Foundations of Patient Safety
- Creating and Facilitating a Systems-Based M&M
  - Case finding, preparing a conference, facilitation skills, event analysis, identification of action Items, developing and using a trend-tracker to foster learning and action over time

Session 2: Adverse Events into Quality Improvement
- Turning Adverse Events into QI work
  - Defining a Systems Problem for Improvement
  - Identify and prioritize contributing factors (Fishbone diagram, Pareto diagram)
  - Exploring the core process (Process map)
- Data in QI
  - Data collection: Sources, feasibility methods, Data analysis: Statistical methods in QI

Session 3: Quality in Academics
- Creating Scholarship from QI Work
  - Guidelines for publishing QI work
  - QI and the IRB
  - Writing a Quality manuscript
  - Where to Publish QI?

  Getting Grants for QI Work
  - Opportunities for Grant Funding, Writing Grants

Session 4: Overcoming Barriers to Project Success
- Overcoming Barriers to improvement efforts
- Expert Stations:
  - Data Acquisition, management, analysis
  - Process analysis
  - Implementation assistance and Stakeholder management

Fellows Series Publications:

Neumeier A, Levy AE, Gottenborg E, Anstett T, Pierce RG, Tad-Y D. **Expanding Training in Quality Improvement and Patient Safety Through a Multispecialty Graduate Medical Education Curriculum Designed for Fellows.** MedEdPORTAL. 2020 Dec 30;16:11064. doi: 10.15766/mep_2374-8265.11064. PMID: 33409360; PMCID: PMC7780740.

Faculty Session

Teaching Faculty:

Tyler Anstett, DO (Director)

Darlene Tad-y, MD

Ethan Cumbler, MD

Session: Coaching & Teaching Quality: A Workshop for Faculty Quality/Safety Educators

Learning Objectives:

- Coaching QI Work 101
- Increasing your influence, managing up and down
- Tips for Navigating Key Tools: Process Mapping, Fishbone diagrams, Data pitfalls, Change Roadmap, Case Review
- Assessing Success – Improvement and Learnin

CLER Visit

ACGME Clinical Learning Environment Review (CLER) Visit to University of Colorado Hospital

In October 2018, the Accreditation Council for Graduate Medical Education (ACGME) visited the University of Colorado Hospital to conduct its Clinical Learning Environment Review program (CLER). The CLER team visited 25 clinical locations within the hospital and observed six resident change of shift handoffs. The team interviewed 56 residents and fellows, 55 faculty members and 46 program directors from the residency and fellowship programs at UCH, as well as key executive leaders of UCH including CEO Will Cook, CMO Jean Kutner, MD and CQO Jeffrey Glasheen, MD.

The CLER visitors highlighted these key findings comparing the 2018 visit to the 2016 visit:
- percentage of residents who experienced an adverse event, near miss or unsafe condition increased to 82% from 79% in 2016, and of those 35% stated that they reported through the clinical site's reporting system
- 43% of residents received feedback on the outcome of an adverse event submitted, increased from 39%
- 61% stated they were aware of the hospital's quality improvement priorities
- 80% reported participating in a QI project of their own or their department's design, of which, 42% felt that the project linked to a hospital QI goal
- only 2% reported receiving quality performance data about the care of their own patients which was the same as in 2016

This feedback from the CLER visitors prompted several improvement initiatives to improve the clinical learning environment for trainees. Since 2018, GME and our clinical partners have worked to address these areas for improvement. The table on the following page summarizes these efforts.

CLER Focus Area	Areas for Improvement in 2018	Efforts to Address Areas for Improvement
Patient Safety and Health Care Quality	*Patient Safety Event Reporting* Trainees highlighted the challenge with finding the appropriate venue for reporting at some of our clinical institutions. Additionally, the lack of a robust feedback loop on reports posed a challenge to residents	▪ Safety event reporting simulation included GME orientation for all incoming residents and fellows ▪ Guides and website links to all reporting systems available through MedHub ▪ "Safety Rounds" with UCH Executive Leaders to provide feedback and loop closure ▪ Automatic notification from reporting system to reporter with details of outcome once report is closed ▪ Development of Resident Professional Review committee and processes for review of adverse events involving a resident
	Data on Practice Habits Residents reported low rates of receiving quality performance data on the care of their own patients.	▪ Residents trained on querying electronic medical record (EMR) to generate a report on patient panel in Quality and Safety Academy ▪ Creation of a dedicated dashboard for residents displaying data visualizations for their QI projects
Transitions of Care	*Use of a Standardized Process* 84% of CU residents reported following a standardized process for handoffs between shifts that included a standardized written template	▪ Transitioned to an EMR-embedded handoff tool for a written template that is the same for all departments and programs ▪ Formation of the Transitions of Care Task Force to standardize definitions of types of handoffs and develop best practices for each type for use across programs
Professionalism	*Honesty in Reporting* Residents indicated that they documented findings they did not personally elicit or at times felt pressured to compromise integrity to satisfy an authority figure.	▪ Residents and faculty trained on the roles of the CU Office of Professional Excellence and Office of Equity as resources for confidential reporting and resolution of unprofessional or discriminatory behavior ▪ Tailored training on documentation integrity for faculty and residents
Clinical Experience and Education	*Fatigue Mitigation* CU residents indicated a culture of "powering through" when fatigue and a lack of awareness of hospital initiatives to recognize and address fatigue	▪ Ensured robust process of duty hour violations review and program-specific interventions to address systemic issues ▪ Resources for fatigue mitigation more prominently available on School and Hospital websites
	Wellbeing Activities promoting wellbeing not widely known and a perception that the hospital and school are not aligned in efforts	▪ Creation of GME Crisis Response Team ▪ Dedicated leaders in both the hospital and school focused on faculty and staff wellbeing ▪ Dedicated wellness days and 24-7 availability of mental health resources for residents and fellows ▪ Recognition programs specifically for residents and fellows