

# C5/D5: Linking Improvement Science with Academia

*Kedar S. Mate, MD*

*Vice President, IHI*

*Assistant Professor of Medicine, Weill Cornell  
Medical College*

*This presenter has nothing to disclose*

# Objectives

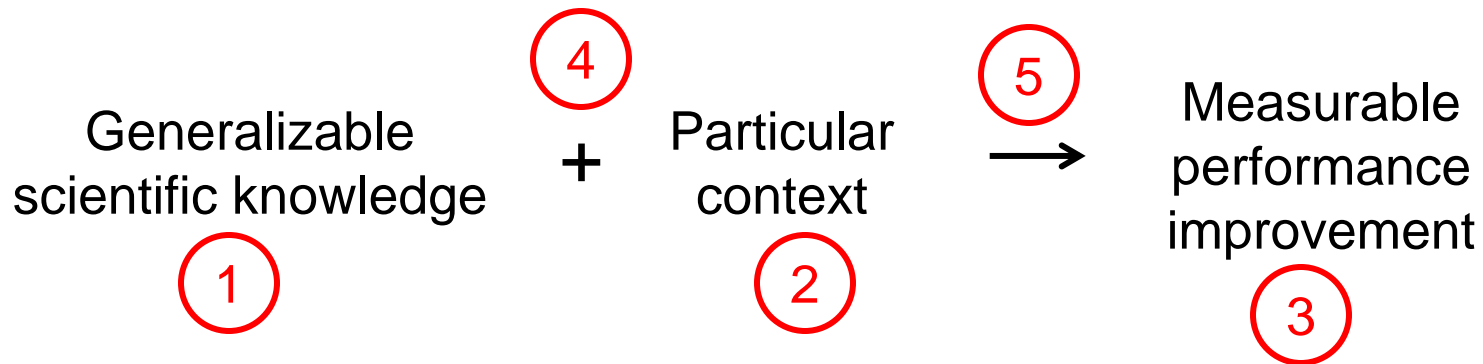
- Understand how to improve alignment between institutional quality and safety priorities and those of clinical training programs.
- Structure faculty, resident and student training programs to more effectively deliver quality and safety lessons.
- Learn about HMC's own efforts to provide quality and safety training to its clinical trainees.

# What is improvement science?

**Making and Studying an improvement are usually different activities and both are necessary to develop the science of improvement**

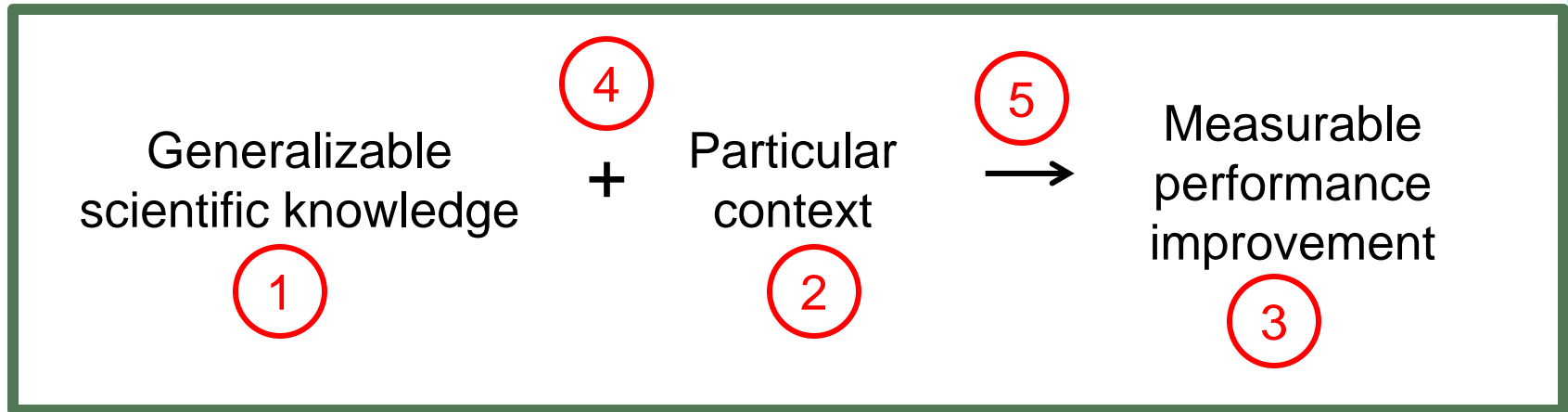
Paul Batalden

# Making improved health care, using generalizable science...



Paul Batalden

# Studying the process of making improvements...



Paul Batalden

# Goals of Improvement Science

“...to ensure that quality improvement efforts are based as much on evidence as the best practices they seek to implement.”

–Shojania & Grimshaw, 2005; *Improvement Science Research Network*

# 3 Key Mistakes of QI Studies

- Aim is too big and trying to take on too much
  - Ex: Reduce readmissions to zero across a whole state in six months
- The data are not available or in your control
  - Ex: Readmissions data only available from claims data that we don't have access to
- The change you hope to make is not in your control
  - Ex: Change reimbursement policy for readmissions at the state level



# Overall guidance

## Start Small and Specific

- At your unit level
- With data that are currently available
- Using changes that you can implement next week

# Improvements not matched to problems

- “We’ll have a lecture series on the subject”
- “Let’s develop a practice guideline”
- “Do an audit, send performance reports”
- “Create a new electronic order set”

From K. Shojania

# Matching problem to solution

- Case Study: Trying to reduce CA-UTI
  - Aim: Decrease urinary catheter use
  - Approx 20% of hospitalized pts have catheters; main cause of nosocomial UTI
  - Insertion not indicated 25% of the time
  - Urinary catheters are placed in ER before admitting MD sees the patient
  - Continued use not indicated 50% of the time
  - Admitting MDs unaware of catheter 30-50% of the time
- Proposed Solution: “Educate admitting MDs about need for urinary catheters”

# Designing QI studies

1. Articulate an explicit theory
  - Match active ingredients of solution to problem
2. Specify active ingredients of intervention
  - Think about dose and intensity (how much, how often)
3. Acknowledge the evidence that supports *and* refutes your theory
  - The more detail here, the better your theory will be

# Designing QI studies

4. Anticipate the timeline for when to expect impact
  - Use evidence or past experience to inform this determination, set up end-line surveys accordingly.
5. Process for refining intervention (learning)
  - Explicitly identify how you will learn as the QI intervention unfolds
6. Modify theory of the intervention
  - Schedule fixed times throughout the study to modify the original theory

# Designing QI studies

7. Document unintended consequences
8. Answer traditional challenges
  - Secular trends
  - Time for intervention to work (lag/lead)
  - Primary outcome validity
  - Does the outcome tell the whole story
  - Cost & Cost-effectiveness

So, how do we create an academic system capable of studying these questions and training future generations of clinicians in how to pursue continuous improvement?

# Broad Context

- Focus on improving quality has been around since IOM report on medical error, *“To Err is Human”*
- Much talk about getting serious about teaching quality & safety, but...
- Unfortunately, most efforts have been limited, under-resourced, and poorly coordinated



# New Realities from the US context

- Congressional demand for accountability in GME
- ACGME's Next Accreditation System
- US hospitals still unsafe (teaching hospitals not among the safest)
- The growth of hospitalists in multiple fields
- Rise of demand from residents AND from patients

# Specific Context

- 2011: ACGME's next accreditation system was being established along with a new site visit program
- Focus on quality & safety education had been part of milestones and key learning objectives for years
- Rare instances of more than “meeting the requirements”
- Common problems raised:
  - Don't have skilled faculty
  - Institutions not aligned
  - Projects disconnected
  - Residents don't see the value

# Collaboration with ACGME/ Harvard Medical School and IHI

- The purpose of the collaboration was to identify and vet innovations that may help teaching hospitals and GME programs become more **aligned** and **capable** in quality and safety training and programming.
  - Aligned = a shared understanding of the core elements of quality and safety (Q&S) programming in the institution
  - Capable = the ability to execute on this shared Q&S agenda
- Underlying theory...these were the two big barriers

# Methods: 90-Day Innovation at IHI

- Scan the environment constantly for innovative ideas in healthcare and beyond
- Develop a prototype
  - Conceptual/logic model for achieving a concrete goal
  - Key “drivers”
  - Package of promising change concepts
  - Measurement framework
- Perform preliminary pilot and feasibility testing in the health care delivery system
- Develop “technical brief” and specifications for further testing

# Methods: Scanning Phase

- Literature review (150+ articles; 17 key articles)
- 23 institutions interviewed
- 13 quality & safety curricula reviewed
- 2 site visits
- Multiple expert meetings
- Design for a 2-day seminar

# Key Findings: Obstacles

- Disconnect between C-suite and GME programs (knowledge, aims, commitment)
- Teaching Hospital / Medical School operate in silos
- Disregard for trainees as improvers (seen as obstacles to improvement)
- Discontinuous trainee involvement (scheduling challenges, projects rather than ongoing systems improvement, episodic rather than continuous)
- Genuine misalignment of available resources (skills holders not matched with willing and interested trainees)

# What's the Ideal State...

- Leaders (CEOs, COOs, Deans, Dep heads, Program Dirs) create shared priorities and link Q&S training for residents to these priorities
- Residency programs buy-in to these priorities and facilitate Q&S learning opportunities and careers in Q&S
- Faculty respect Q&S activities of the institution, and are able and willing to teach Q&S
- Residents execute and appreciate Q&S work every day and are celebrated for doing work that supports the institutional goals

# Principles (1)

- Discard the deeply held belief that trainees are irrelevant to Q&S in teaching hospitals.
- Clinical trainees *do* matter for Q&S in teaching hospitals
- If a teaching hospital is serious about working on Q&S, it must pay attention to trainees
  - Residents interact with patients at the front line (clinic, hospital, L&D, ER, OR) and matter to the patient experience.
  - Residents produce waste and inefficiency, impact patient perceptions, make errors, increase risk and erode value
  - Residents will transform the culture of medicine in years to come.



**Residents perform Q&S duties daily**

**Primary Drivers**

Residency Program clearly prioritizes this

Evidence-based, Integrated, relevant curriculum

Professional Significance

Time

**Secondary Drivers – Change Ideas**

Credible faculty available to be teachers and mentors

Maintain ACGME certification  
Departmental milestones

Hospital demonstrates support (could be financial if the value proposition was clear)

Program Director trained in QI

Clear Expectations

Appropriate scope and timelines

Longitudinal, experiential learning

Didactic curriculum

Tiered exposure to QI

Conferences, lectures, board cert., CMEs, professional network

Funding opportunities

Future career opportunities

Didactic  
Experiential  
Daily engagement

# Principles (2)

- Engaged and competent faculty are vital to skilling up trainees
- At first, they will have to learn alongside clinical trainees and this can cause discomfort
- Not all faculty can be expected to become experts in this area, however for those who choose to “specialize” in this field, advanced training will be needed

## Secondary Drivers – Change Ideas

### Primary Drivers

Career Pathway

Institutional Resources/  
Infrastructure

Professional Development

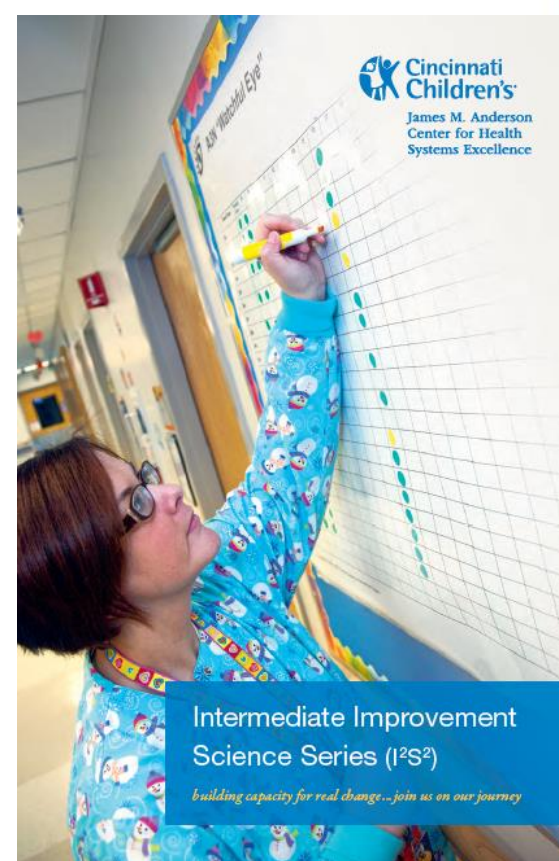
Time

- Promotion pathway/ metrics for promotion in QI track
- Mentors
- Respect/prestige
- Financial Incentives
- Early Career training (fellowships)
- Educating the IRB for QI Research
- Clear funding streams for QI research
- Relevant, evidence-based, integrated curriculum
- Allied professional support staff
- Institutional Visibility or ROI to leverage investment
- Institutional Champion
- Access to continuous data and QI /systems engineering expertise
- Conferences, lectures
- MOC Part 4 link, CMEs
- Professional network
- Experiential, longitudinal training in QI
- Paid % of Salary

Qualified, Capable,  
Engaged, &  
Motivated  
Faculty Teaching  
Q&S to residents

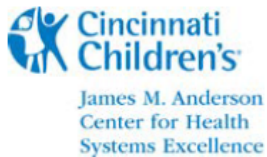
# Introduction to Quality Improvement

[Click here to start](#)



Intermediate Improvement Science Series (I<sup>2</sup>S<sup>2</sup>)

*building capacity for real change...join us on our journey*



## Advanced Improvement Methods (AIM) Course Plan

Wave 9

1.25.13



In Collaboration with

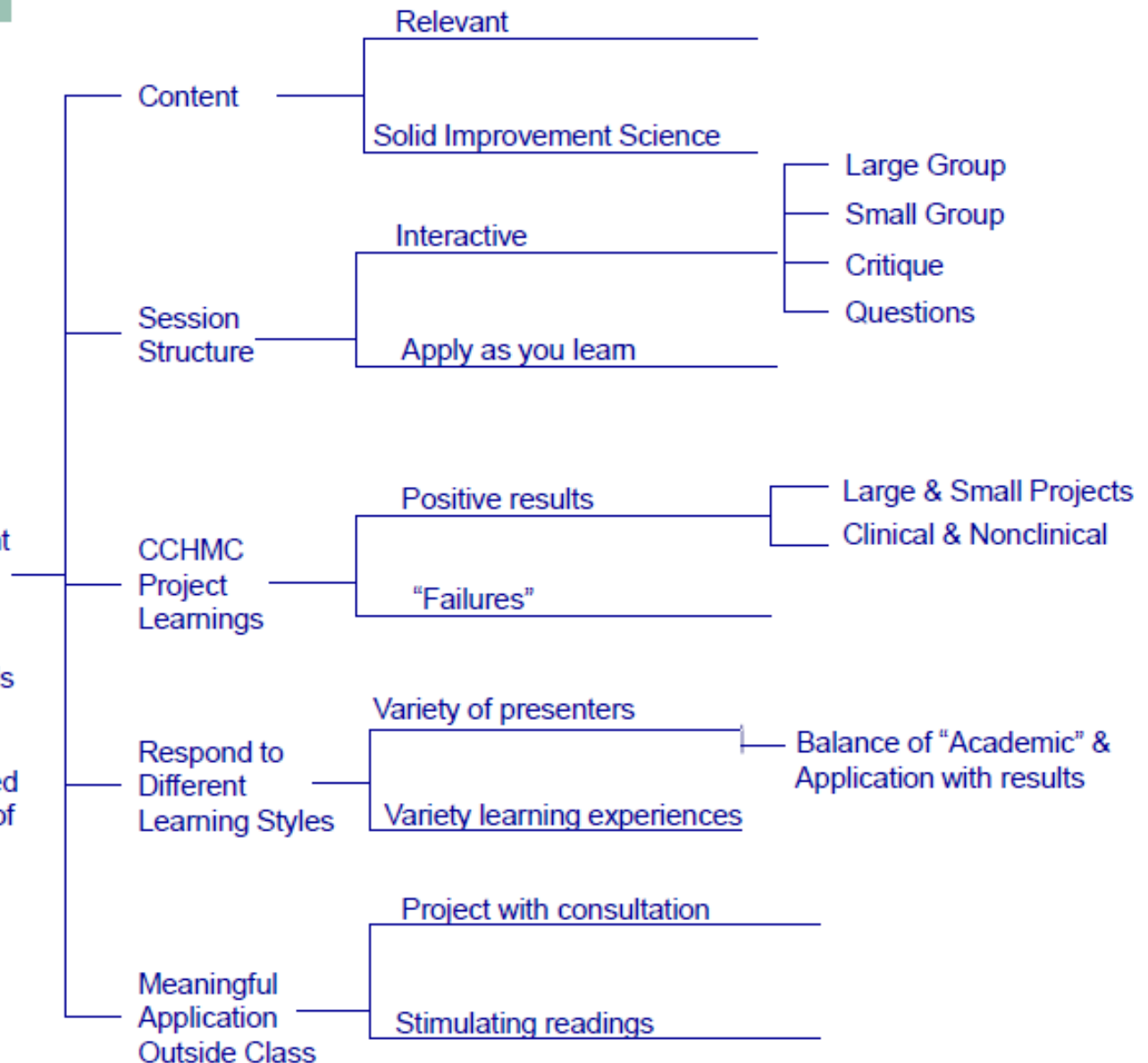


## Aims

- To develop an intermediate level of knowledge & skill to do & lead improvement
- To get results on a specific project
- To develop a common language & culture/behaviors

## Measures

- Improvement on the I<sup>2</sup>S<sup>2</sup> assessment tool
- % of projects with results
- % of projects which are sustaining results 6 months after the course ends
- % of participants who have initiated and successfully completed an additional project and/or have coached an additional project within one year of completing the course



# Principles (3)

- Aligned projects = better projects (better results, more sustainable)
- This means investment and making resources available. Importantly this means rushing improvement expertise to the front line and providing real-time data for improvement
- This may not be new money, it's achieving more with the available resources

# Case Example: Georgetown



- System dysfunction is never more evident than when one is in training.
  - Because of the unfortunate nature of our training system, trainees are often blamed for system errors
- Because of this frontline view, there is a tremendous will for change among trainees.
- They are tremendously agile in their thought processes and are not attached to an ingrained status quo.
- They rarely have the opportunity to work in an interprofessional manner.

# The Georgetown Story



- Interprofessional Chapter of 70 members



GEORGETOWN  
UNIVERSITY

McDonough  
SCHOOL of BUSINESS



GEORGETOWN UNIVERSITY  
School of Nursing & Health Studies





# Getting There from Here...



## Partnership with institutional leadership, secure a mandate

- Georgetown Center for Patient Safety
- Georgetown Masters in Health System Administration
- Georgetown School of Medicine
  - Remove barriers
  - Buy faculty time
  - Encourage learners to participate

# Focus on a Big Opportunity



- Engage students/trainees in projects that are central to the strategic plan of your health care organization.
- In our case:
  - Resident handoffs
  - Central line blood stream infections
  - Hospital readmissions
  - DVT prophylaxis improvement
  - Post discharge communication with community primary care physicians
  - Hand hygiene
  - Central line air embolism prevention
  - Private partnership with an industry partner

# Project Example: CLABSI



- Team structure:
  - Health system administration student: Project manager, Daniel Bitman, BS
  - Physician champion: Medicine resident, Daniel Alyeshmerni, MD
  - Nursing champion: Elizabeth Giunta, RN
  - Medical student: Orlando Sabbag, MSIII Peter Aleksandrov, MSIII
  - Nursing student: Lindsay Gingras
- Barriers: Time, focus, maintaining momentum
- Results:
  - On vascular surgery unit, CLABSI rate ~ 3.2/1000 device days to 0 CLABSI rate for over one year.



# Principles (4)

- Programs and institutions often do not find common ground; systems need deliberate design to make this happen
- Make collaboration and alignment the default setting in a teaching hospital. Examples:
  - Morbidity & Mortality Review (UT Houston)
  - Dual-funded quality chief (VA)
  - Safety rotation (Cornell)
  - CLER visit committee (Multiple)
  - Adverse event reporting (Illinois)
  - Aligned resident research activities (PPI)

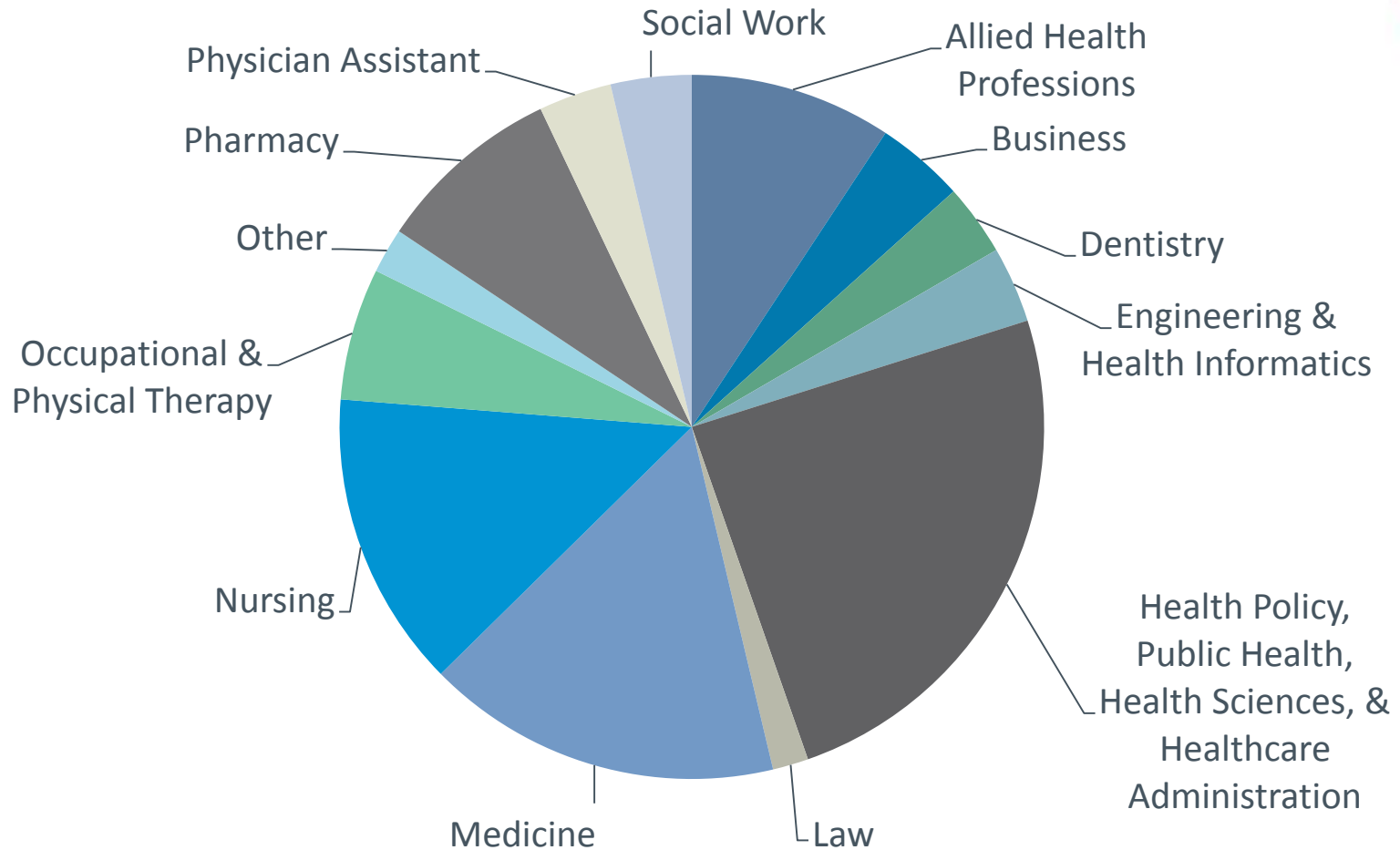
# Morbidity & Mortality Review

- Learning cases summarized and made available to participants
- M&M Meeting is held with everyone on iPads to review details
- Mix seating with resident and faculty intermingled
- Questions are posed during case review:
  - E.g. What antibiotic would you administer? With 3-4 options
- Participants vote electronically, results are posted
- If there is a lot of variation in key decision points, case is stopped to discuss pros and cons of each & work to standardize practice
- Results are summarized, sent out to everyone to review

# Principles (5)

- Strong belief and evidence that experiential learning is crucial to training residents whether real or simulated, in-person or virtual, just-in-time or asynchronous
- Q&S skills are learned (much like medicine & surgery) through practice and experience.
- Strong belief that interdisciplinary relationships and teamwork are vital to effective experiential learning

# Disciplines Represented in Chapters



# IHI Open School

## Quality Improvement Practicum

- Learner-driven QI initiatives/projects in a clinical setting with active mentoring and coaching by a faculty advisor with experience in leading QI
- Recommendations:
  - Teams should include learners from different backgrounds.
  - Teams should include 2-3 members, but interprofessional group projects can be up to 6-7 members if this helps inclusivity of other professional groups.



# IHI Open School Quality Improvement Practicum

Learner(s) complete required courses

Learner(s) identify faculty, health system sponsor(s), and project

Learner(s) create charter, cause and effect diagram, 2 PDSA cycles, run charts, summary

Learner(s) complete project

IHI Open School approves project & awards Practicum Certificate of Completion

# Table Exercise

- Consider your health service unit, what kinds of improvement projects are you thinking about doing?
- How do trainees impact patients in your health service units?
- How could students be engaged in your improvement projects & programs?

# Slides from Dr. AbdulAtif

- Regarding what is being done now at HMC

# Conclusion

- Many extrinsic pressures
- Need for intrinsic desire to understand the value, purpose and intention behind developing trainees that deeply understand quality and safety