

# Update in Medical Education

April 24, 2014

SGIM National Meeting

San Diego, CA

# About Us

- Carol Bates
- Shobhina Chheda
- Briar Duffy
- Kathel Dunn
- Reena Karani
- Brita Roy
- Lisa Willett

# Aims

We wish to present an engaging review of selected high quality medical literature from 2013 relevant to the SGIM audience

Our emphasis is on new insights that our membership can use in their day to day educational practice.

# Methodology

- Hand searches of mainstream medical education journals and major clinical journals
- Supplementary computer search of clinical journals and other education journals
- Articles of potential interest were reviewed by 2 members; brought forward for discussion
  - Modified MERSQI
- All members contributed to developing final list

# Journals Hand Searched

- Academic Medicine
- Medical Education
- Medical Teacher
- JGIM
- JAMA
- NEJM
- Annals Int Med
- BMJ
- The Lancet
- BMC Med Education
- Teach Learn Med
- Journal CE Health Prof
- JAGS
- JGME
- Journal Hospital Med

# Themes

## **Improving Clinical Skills in UME: Reena**

- Pre-clerkship dyad training & OSCEs for clinical reasoning

## **Where and When we Teach: Carol**

- Bedside Rounds & July Bootcamp

## **What's new with Continuity Clinic: Briar**

- Resident satisfaction & 50/50 model

## **Handoffs/Transitions in care: Brita**

- Continuity clinic & Inpatient

## **Assessment in action: Lisa**

- EPAs & Simulation for communication

# Improving clinical skills in UME

Reena Karani

Toolsgaard et al., J Gen Intern Med 2013

Myung et al., Med Teach 2013

# Improving Efficiency of Clinical Skills Training: A Randomized Trial

Tolsgaard MG, Bjork S, Rasmussen MB, Gustafsson A,  
Ringsted C

JGIM 2013;28(8):1072-7

Funding: University of Copenhagen and Copenhagen  
University Hospital Rigshospitalet



# Background and Aim

- Cooperative dyad-training
  - Been shown to improve learning of complex motor skills
  - May hinder learning of tasks that depend on declarative knowledge
- Patient encounter skills require cognitive and motor skills
- Efficiency and effectiveness are critical given limited curricular time and resources
- To evaluate the effect that dyad training versus single training has on patient encounter skills of pre-clerkship medical students

# Methods

- Randomized, observer-blinded study
- 49 pre-clerkship medical students at the University of Copenhagen
- Exclusions: prior clinical experience
- 4 hour course: practical, taking history and conducting physical
- 4 hour practice session
  - Students randomized to dyad practice or single practice groups one day after course
  - History and PE on 4 cases (PNA, tonsillitis, DVT, new onset DM) played by trained SP's
  - 25 minutes per case; 25 minutes for write up with work up, differential and management plan

# Method

- Dyad practice
  - Alternate between doing and observing with equal hands-on time for all 4 encounters
  - Suggest, comment or discuss essential steps during history and PE
  - Discuss encounter, differential and management plan during write-up
- Single practice
  - Manage all 4 encounters alone
- Outcomes
  - Performance test 2 weeks after of individual students
    - 2 new cases (COPD, CMV/EBV infection)
    - Video encounters and write-ups scored by 2 trained, blinded raters
    - Notes rated using RIME framework by 2 authors
  - Self-reported confidence in managing clinical patient encounters
    - 9 point Likert scale (1=very insecure, 9=very confident)

# Results

- 3 of 98 videos excluded due to poor audio
- Inter-rater reliability 0.69 (95% CI 0.5-0.81)
- Performance test mean score: Dyad 40.7 % (SD 6.6) vs. Single 36.9% (SD 5.8),  $p=0.04$ , effect size 0.61.
- Self-reported confidence mean: Dyad 7.6 (SD 0.9) vs. Single 6.5 (SD 1.1),  $p<0.001$ , effect size 1.16

# Limitations

- Small, single-center study with self-selected participants
- Pre-clinical students with overall low performance scores
- Testing was conducted soon after teaching and practice session

# Implications

- Clinical skills training in dyads was not detrimental to individual performance as measured using SP's
- Dyad training prompted higher confidence in managing future patient encounters compared to training alone
- Dyad training allows for more efficient use of resources
  - Martineau, BMC Med Ed 2013;13:55
  - Shanks, Med Education 2013;47(12):1215-22

# Effect of Enhanced Analytic Reasoning on Diagnostic Accuracy: A Randomized Controlled Study

Myung SJ, Kang SH, Phyo SR, Shin JS, Park WB

Med Teach 2013;35:248-50

Funding: Seoul National University Hospital  
Research Fund

# Background

- Large proportion of preventable errors are due to cognitive bias
- Types of cognitive bias
  - Premature closure
  - Anchoring
  - Confirmation bias
- Analytic reasoning can combat cognitive bias
  - Consideration of alternative diagnoses and of evidence to support and refute it



# Aim

- To determine whether enhancement of analytic reasoning increases medical students' diagnostic accuracy on an OSCE

# Methods

- 145 fourth year medical students in Korea randomized to analytic reasoning (AR) or control group
- OSCE
  - 4 stations; 10 minutes for SP encounter, 5 minutes to complete answer sheet
  - AR group sheet: Table for diagnoses, signs and symptoms to support or refute each, one most probable diagnosis
  - Control group sheet: one most probable diagnosis
- Diagnostic accuracy score for all 4 cases calculated
  - Perfect score 4.0

# Results

- 65 students in AR group and 80 in control group
- No differences in baseline characteristics
  - Age, GPA, gender
- No differences in OSCE scores
- Mean diagnostic accuracy

Analytic Reasoning	Control	p value
3.4 +/- 0.66	3.05 +/- 0.98	0.016

# Limitations

- Single-center study
- No validity evidence for cases
- Some cases may have been too simple

# Implications

- Reflecting on alternative diagnoses as well as supporting and refuting information may reduce diagnostic errors among medical students
- The use of a guide – such as a table – may enhance AR
- Further study is needed to clarify the impact of case difficulty on this finding

# Where and When we Teach

Carol Bates

Gonzalo et al., J Gen Intern Med 2013

Stickrath et al., Acad Med 2013

Cohen et al., Acad Med 2013

# The art of bedside rounds: A multi-center qualitative study of strategies used by experienced bedside teachers

Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H, Hemmer PA, Kernan WM, Kogan JR, Rafferty C, Wong R, Elnicki DM

JGIM 2013; 28(3):412-20

Funding: University of Pittsburgh Medical Center's Shadyside Thomas H. Nimick, Jr. Research Fund and the Shadyside Hospital Foundation

# Background

- <25% of teaching encounters occur at bedside; duty hour mandates may have further decreased
- Attending discomfort, inexperience, and increasing demands limit bedside teaching
- Aim: To determine a core set of effective techniques used by bedside rounders in preparing themselves, selecting patients, and allocating roles during bedside rounds



# Definition of Bedside Rounds

- Team of providers (at least one houseofficer and attending of record) at bedside
- Presenting history and/or reviewing at least one exam component and
- Discussing diagnosis/management
- Excluding “hallway rounds” “card flips”

# Methods

- 10 institutions identified 3-6 faculty experts
  - General Internists
  - Inpatient teaching at least 2 weeks in 2 yrs
  - Perform bedside rounds at least 3 weekdays
- Two investigators recorded interviews
- Analyzed for themes and codebook developed
- Saturation of themes at 24 of 34 interviews
- Two investigators updated codebook and independently analyzed transcripts

# Results

- Bedside Rounders:
  - 51% Associate or Full Professors
  - 14 years (1-42) of academic experience
  - Bedside rounds on average in 62% of patients
- Preparation strategies:
  - Trainee orientation
    - Seek buy-in, define roles/expectations, establish patient-centered climate, tailor activities to trainee experience
  - Disease specific
  - Patient specific
  - Mental mind set

# Results Continued

- Patient selection
  - Preferred patients: Acuity, new admissions, important clinical decisions, educational value
  - Likely deferred: Geographically distant, impaired communication, sensitive issues, unwilling patient
- Role allocation during rounds
  - Key steps: Introduction, presentation, exam, patient comfort, discussion, closing
  - Assignment based on strengths/team dynamics

# Conclusions

- Limitations
  - “Rounders” identified by single individual (clerkship directors) at each institution and may not be best institutional experts
  - All institutions are large academic centers
  - No information on preparation time
  - Excluding patients with “sensitive issues” may limit teaching on important populations
- Implications
  - Resource to promulgate bedside rounds
  - Guide for individual bedside rounders

# Implications

- Resource to promulgate bedside rounds at institution
- Guide for individual faculty

# More on bedside rounds...

Stickrath C, Aagard E, Anderson M. MiPLAN:  
A learner-centered model for bedside  
teaching in today's academic medical  
centers. Acad Med 2013;88:322-327.

# MiPLAN

- Meeting before teaching begins
- i – introduction, in the moment, inspection, interruptions, independent thought
- Patient care
- Learner's questions
- Attending's agenda
- Next steps



# Making July safer: Simulation based mastery learning during intern boot camp

Cohen ER, Barsuk JH, Moazed F, Caprio T, Didwania A, McGaghie WC, Wayne DB  
Acad Med 2013;88:233-39.

Funding: Northwestern Memorial Hospital; Excellence in Academic Medicine Act of Illinois Department of Healthcare and Family Services

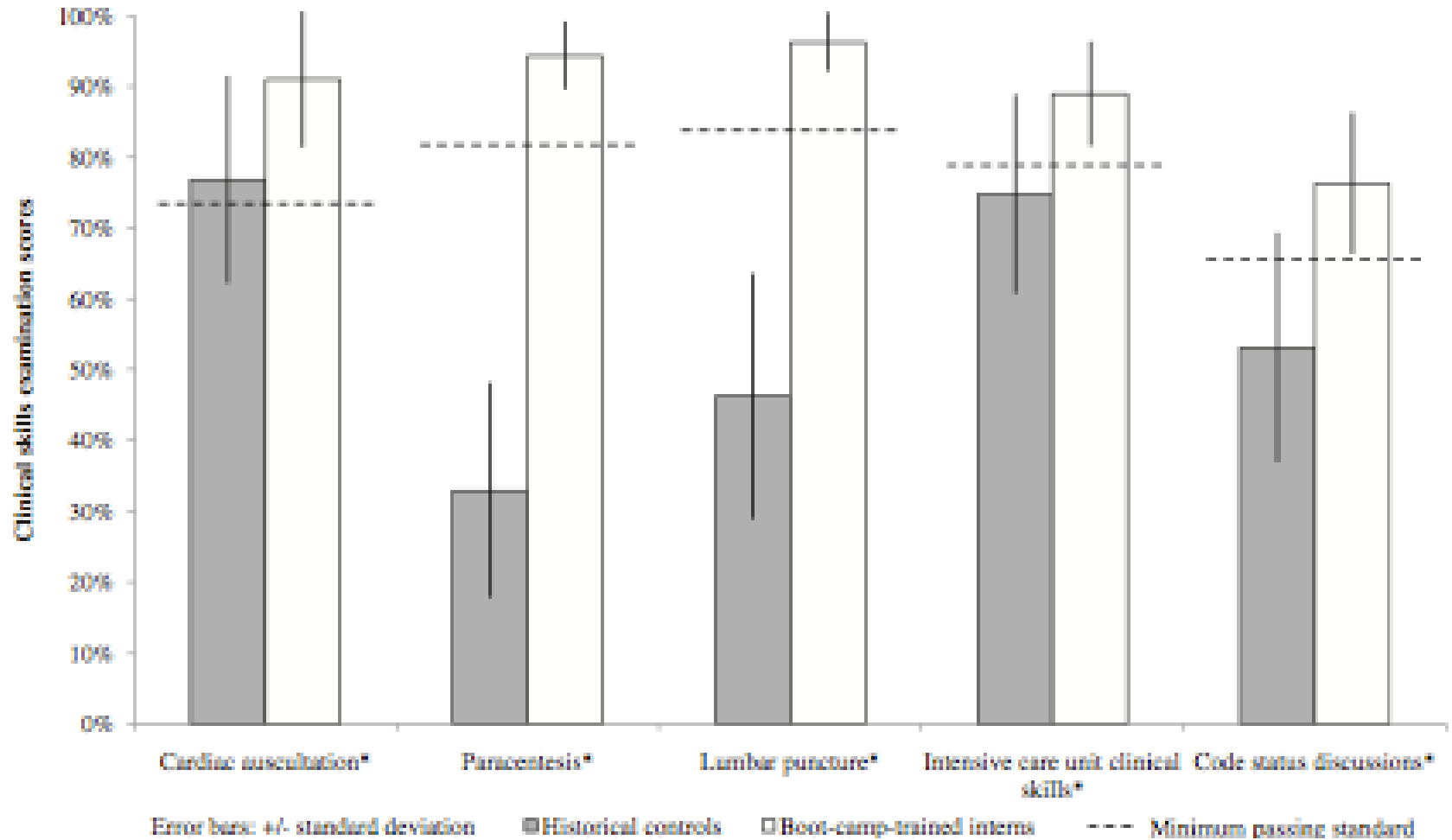
# Background

- Increased morbidity and mortality in July
- Incoming trainees in unfamiliar environment with variable skills
- Simulation-based boot camps have been used in medical student and surgical intern training
- Mastery learning ensures minimal skills
- Aim: Evaluate the impact of simulation-based medical intern boot camp on clinical skills

# Methods

- 47 June 2011 interns vs 109 from 2009-2010
- 24 hours of teaching over 3 days
- Scenarios: Cardiac auscultation, paracentesis, LP, ICU clinical skills, code status discussion
- Didactic teaching, simulation practice, online modules, standardized patients, feedback
- Evaluation: 5 station clinical exam; practice and retesting until minimal standard reached

# Results



# Results

- Baseline experience with skill 45% (paracentesis) to 100% (auscultation)
- Baseline self confidence 29 to 70 (scale 0-100)
- Additional training for mastery for up to 1 hour required in 4% (LP) to 38% (code status discussion) per domain
- High intern satisfaction with curriculum
- Cost \$34,282

# Conclusions

- Limitations
  - Single institution
  - No data on retention, patient outcomes
  - Selected domains may be irrelevant to July effect
- Implications
  - Simulation based boot camp training is well received and likely improves skills of incoming interns

# What's new with Continuity Clinic?

Briar Duffy

Peccoralo et al., J Gen Intern Med 2013

Weiland et al., J Gen Intern Med 2013

# Resident Satisfaction with Continuity Clinic and Career Choice in General Internal Medicine

Peccoralo LA, Tackett S, Ward L, Federman  
A, Helenius I, Christmas C, Thomas DC


J Gen Intern Med 28(8):1020–7

Funding: None



# Background

- Intention to pursue General Internal Medicine
  - Medical students
    - 1998: 15.7%
    - 2006: 6.7%
  - IM residents
    - 1998: 54%
    - 2003: 27%
- ACGME 2009 required:
  - 130 ambulatory half-day sessions over 3 years
  - Decreased conflict between ambulatory and inpatient experiences



Internal medicine  
trains  $\frac{1}{4}$  of all  
residents

# Aim

- To assess resident satisfaction with continuity clinic and the association of the resident clinic experience with resident attitudes toward careers in GIM

# Methods

- Surveyed residents at 3 institutions
  - Mount Sinai, Temple, Hopkins Bayview
  - All institutions had primary care programs
- Continuity Clinic Learner's Perception Survey
- Survey covered 32 clinical elements in broad categories (e.g. preceptors, educational environment, staff, administrative, time management, and number of patients)
  
- Residents planning GIM careers
  - Bayview (71%)
  - Mt. Sinai (43%)
  - Temple (41%)

# Results

- 48 % of residents prior to starting residency planned to pursue GIM
- 38 % reported being likely to enter a career in GIM as a result of continuity clinic (CC)
  - 59%: CC made no difference
  - 11%: **More** likely to choose GIM due to CC
  - 28%: **Less** likely to choose GIM due to CC
- 83% somewhat or very satisfied with clinic across all 32 elements
  - 96 % somewhat satisfied or very satisfied with clinic preceptor (highest element)
  - 66 % somewhat satisfied or very satisfied with time management (lowest element)
- Intend to enter GIM prior to beginning residency → more likely to consider a career in GIM based on CC (OR 29.0, 95 % CI 24.0–34.8)

# Limitations

- This study: intend to enter GIM: 48%
- Nationally: 20-27%
- High satisfaction with clinic—generalizable?
- No data on no-show rates, clinic resources, burnout, why not considering GIM
- GIM—clinic and/or hospital medicine?

# Implications

- To increase residency graduates pursuing GIM, may need to spark that interest before entering residency
- Improving continuity and number of patients seen over 3 years may help recruit for GIM

# An Evaluation of Internal Medicine Residency Continuity Clinic Redesign to a 50/50 Outpatient–Inpatient Model

Weiland ML, Halvorsen AJ, Chaudhry R,  
Reed DA, McDonald FS, Thomas KG

J Gen Intern Med 28(8):1014–9

Funding: None

# Background

- Need to improve internal medicine outpatient training
- Varieties of continuity clinic:
  - Traditional: 1-2 half-days/week during most rotations
  - Block: sustained clinic time for several sessions/week alternating with sustained time out of clinic
    - Long block
    - 4+1, 4+2, 4+4, etc



# Aim

- To assess the impact of continuity clinic redesign on clinical and educational outcomes.

2009-2010

Traditional weekly clinic model during all rotations

- One half-day per week during 10 months of the year
- Clinic days arranged around call schedule



2010-2011

50/50 outpatient–inpatient model scheduled in alternating 1 month blocks:

- 50 % Outpatient
  - Twice-weekly continuity clinic
- 50 % Inpatient
  - no continuity clinic

# Methods

## Clinical outcomes

- Continuity for physician (resident seeing own pts)
- Usual provider continuity (pt seeing own physician)
- HTN at goal
- Quality of DM care
- Percent of pts receiving eligible preventive services
- Resident panel size, # patient visits, proportion missed appointments
- Patient satisfaction
- Safety Attitudes Questionnaire

## Educational outcomes

- Resident satisfaction with continuity clinic
- Faculty satisfaction with continuity clinic
- Resident performance in continuity clinic
- Learners' Perceptions Survey
- Attendance at program-wide teaching conferences

# Results

## Clinical outcomes

- Mean panel size *increased* significantly (120 vs. 137.6)
- Proportion of missed appointments *decreased*
- Perceived outpatient safety and teamwork *improved*
- Care team continuity was unchanged
- Individual physician and patient continuity of care *declined*
- No difference in patient satisfaction or other outcomes

## Educational outcomes

- Attendance at teaching conferences *improved*
- Resident clinic performance *improved*
- Learners' Perceptions Survey: ability to focus on clinic and perceived inpatient/outpatient balance both *improved* significantly (30 % vs. 85 %, 27 % vs. 71 % )
- No differences in resident or faculty satisfaction with clinic

# Limitations

- No concurrent control group
- Multiple changes simultaneously
  - No clinic on inpatient months
  - Preceptor continuity
  - Yearly focused continuity-clinic rotation

# Implications

- Moving to 50/50 model may decrease continuity of care, but doesn't seem to affect patient satisfaction
- Residents like focus on clinic and inpatient/outpatient balance and may perform better in clinic

# HANDOFFS/TRANSITIONS IN CARE:

Fewer errors, better patient care

Brita Roy

Clinic: Pincavage et al., Acad Med, 2013

Inpatient: Starmer et al., JAMA, 2013

# Results of an Enhanced Clinic Handoff and Resident Education on Resident Patient Ownership and Patient Safety

Pincavage AT, Dahlstrom M, Prochaska M, Ratner  
S, Beiting KJ, Oyler J, Vinci LM, Arora VM.

*Acad Med* 2013;88(6):785-801

Funding: Picker-Gold Graduate Medical Education  
Challenge Grant Program

# Background

- Patients must transition providers at end of their PGY-3 PCP's residency training
- Risk of harm to patients during transition between providers
- Most resident handoff training focuses on inpatient setting

Aim: *To implement and assess an enhanced clinic handoff protocol*



# Methods

- Design: Pre-post-intervention comparison
- Setting:
  - One internal medicine resident clinic
  - July 2010 (pre) and July 2011 (post)
- Outcomes:
  - Resident survey (11-items) given November 2011
    - Satisfaction with and perceived efficacy of sign-out
    - Amount of contact with graduated PGY-3
    - Number of high-risk patients called
    - Adverse events or near misses
  - Patient outcomes: chart review in January 2012
    - If/when patient visited correct new PCP
    - Number of missed visits
    - Follow-up of test results
    - ED visits/hospitalizations

# Intervention

- 60-minute didactic
  - Identifying high-risk patients
  - Standardized tool
  - Refill meds and complete departure paperwork
- PGY-3s select one rising PGY-2 to handoff *high-risk patients and those with pending labs*
  - 1-hour protected time in June 2011
- Priority scheduling for high-risk patients with new PCP in June and July
- Protected 1 hour clinic time for PGY-2s for telephone visits with high-risk patients

# Results

- Resident outcomes:
  - Mean 12 patients handed off (range: 13-28)
  - 76% of residents used telephone visits
    - Mean 9.1 patients called (range: 4-15)
    - 44% discovered missed test
  - More likely to have seen >20 handoff patients within 3 months after handoff (52% vs. 5%)
- Patient outcomes:
  - More high-risk patients saw correct PCP (82% vs. 44%)
    - More high-risk patients missed first visit (43% vs. 29%)
  - More tests followed up appropriately (67% vs. 46%)
  - Similar number lost to follow-up 6 months post handoff
  - Trend towards decreased ED visits and hospitalization 3 months post handoff (20% vs. 26%)

# Limitations

- Single institution
- 1 internal medicine resident clinic
- Handoff made to rising PGY-2
- Elaborate intervention
  - Resident education
  - Flag high-risk patients
  - Protected time for handoff
  - Clinic scheduling coordination
  - Clinic time for telephone visits
- Ability to do 1:1 handoff in 2011
  - 7 residents received 2 handoffs in 2010

# Implications

- Focused end-of-training clinic handoffs may result in better patient outcomes
  - Telephone visits may be important tool
- More work needs to be done...
  - 33% tests not followed-up appropriately
  - 22% of high-risk patients did not follow-up

# Rates of Medical Errors and Preventable Adverse Events Among Hospitalized Children Following Implementation of a Resident Handoff Bundle

Starmer AJ, Sectish TC, Simon DW, Keohane C, McSweeney ME, Chung EY, Yoon CS, Lipsitz SR, Wassner AJ, Harper MB, Landrigan CP

*JAMA* 2013;310(21):2262-2270

Funding: Controlled Risk Insurance Company Risk Management Foundation Grant Program and Boston Children's Hospital Program for Patient Safety and Quality Research

# Background

- ACGME requires residency programs to provide instruction on inpatient handoffs
- No standard process or content
- Aim: *Combine several suggested strategies into a handoff bundle and assess:*
  - Medical error rates
  - Miscommunication rate
  - Resident workflow

# Methods

- Design: Pre-post-intervention comparison
- Setting: 2 general inpatient pediatric units
- Intervention: Handoff bundle (October 2009)
  - 2-hour communication training session
    - TeamSTEPPS
    - Team Strategies
    - Tools to Enhance Performance and Patient Safety
  - SIGNOUT? Mnemonic
  - Team handoff
  - Relocation to quiet space
  - Periodic oversight by CMR or attending
  - Computerized tool (for 1 unit)



# Outcomes

- Assessment timing:
  - Pre: July 2009 – September 2009
  - Post: November 2009 – January 2010
- Medical errors and adverse events
  - Chart review
  - Daily error reports
  - Daily survey of overnight residents
  - Incident reports
- Assessment of written handoffs
- Observation of verbal handoffs
- Observation of workflow

# Results

- Reduction in medical error rates by 15.5 errors per 100 admissions ( $p < 0.001$ )
- Written handoff more complete
  - Greater in unit with computerized tool
- More time with patients and families
- No change in verbal signout time
  - Fewer interruptions

# Limitations

- 1 hospital, 2 Pediatric inpatient units
- Intensive, bundled intervention
- Greater effects in unit with computerized handoff tool
- Post-intervention data collection later in the same year
  - July effect?
- Unblinded

# Implications

- A comprehensive handoff bundle, including resident education and computerized tool, reduced medical errors

# Assessment in Action

Lisa Willett

Hauer, et al., J Gen Intern Med 2013

Curtis, et al., JAMA 2013

# Developing Entrustable Professional Activities as the Basis for Assessment of Competence in an IM Residency: A Feasibility Study

Hauer K, Soni K, Cornett P, Kohlwes J, Hollander H, Ranji S, Ten Cate O, Widera E, Calton B, O'Sullivan P,  
J Gen Intern Med 2013 28(8):1110-14

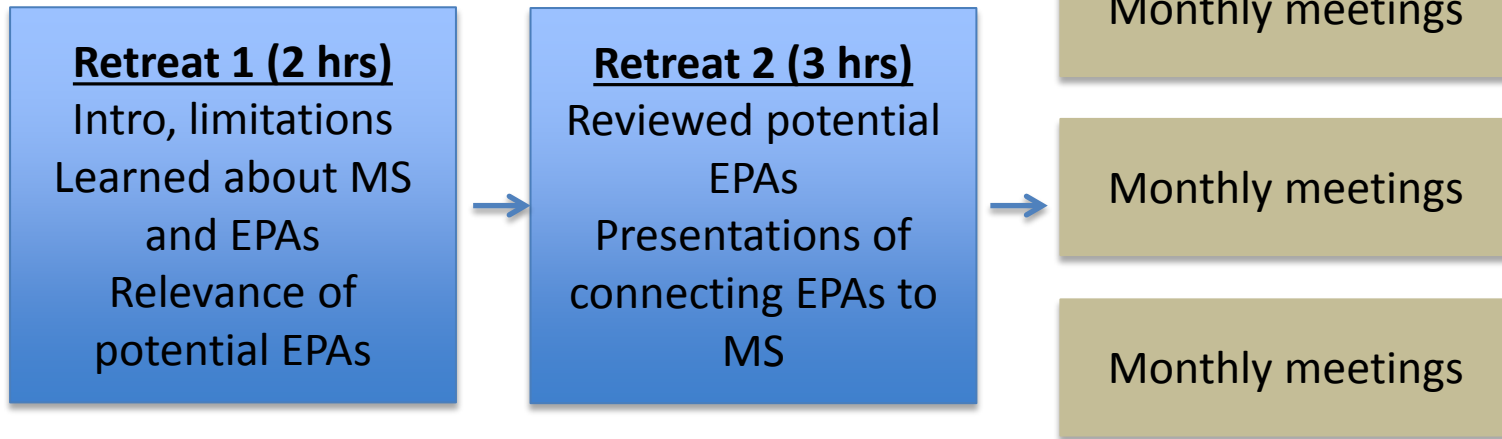
Funding: none

# Background & Aim

- EPAs are method for operationalizing competencies and milestones in the context of actual clinical work
  - Grant “entrustment” to a trainee to conduct certain activities unsupervised
- Aim: to describe the development and feasibility of two EPAs for competency based assessment

# Methods

- Setting: UCSF IM residency, 62 PGY1s
- EPA Development Process:



- Rankings from retreats, key stakeholders in residency curriculum and clinical service
  - Inpatient Discharge: QI/PS leaders
  - Family Meeting: aligned with existing PGY1 PC curriculum



	Discharge (d/c) EPA	Family Meeting (FM) EPA
Description	Develop & implement safe d/c plan	Observe a family meeting to discuss serious or sensitive news with a patient/family
PGY level	PGY1 to PGY2	PGY1 to PGY2
Curriculum	-1-hour didactic (writing d/c summary) -2 noon conferences on safe d/c -1 hour peer review and feedback of d/c summary -monthly ward orientations	-1 week PC rotation -1 noon conference on running a FM -online modules and selected papers for self-directed learning
Setting	4-week inpatient GM ward	1-week PC rotation
Activity	PGY1 d/c patient, including completing d/c summary	-PGY1 observes a FM -PGY2/3 leads a FM
Assessment*	-EPA rubric by ward attg -PGY1 reflection in portfolio	-PGY1 reflection on observation, with faculty feedback -PGY2/3 observed 3+, with structured feedback

\*Linked to curricular milestones and competencies

	PGY1 %	Attg %
<b>Discharge EPA (N=43 PGY1, N=43 Attg)</b>		
Survey response rate	65	74
Participated in	43	34
Improved my skills	67	46
Facilitated useful feedback	83	82
Recommend to continue this	83	64
Did not participate		
I did not know about it	56	52
I did not have time	31	33
I forgot about it	6	14
Interested in participating	94	91
<b>Family Meeting EPA (N=26 PGY1)</b>		
Survey response rate	62	-
Participated in	43	-
Improved my attention to FM	75	
Recommend to continue this	50	
Did not participate		
I did not know about it	25	-
	100	
Interested in participating	50	-

# Limitations

- Pilot innovation
- Single institution
- 2 EPAs
- Low participation rate
- Cannot determine if EPAs enhanced education or assessment

# Implications

- PGY1 and attendings found EPAs useful for learning and feedback
  - High interest
- Barriers of new assessment system in large program: competing time demands & communication
- Time intensive, administrative support needed
- Whether improves entrustment unknown
  - But EPAs are here (to stay?)

# Effect of Communication Skills Training for Residents and NPs on Quality of Communication with Patients with Serious Illness

Curtis J, Back A, Ford D, Downey L, Shannon S, Doorenbos A,  
Kross E, Reinke L, Feemster L, Edlund B, Arnold R, O'Connor  
K, Engelberg R

JAMA 2013;310(21):2271-2281

Funding: National Institute of Nursing Research of the NIH

# Background & Aim

- Communication about palliative and end-of-life care improves QOL, decreased depressive symptoms, and reduces intensity of care at end of life
- Simulation improves communication skills
- Workshop showed improved outcomes, assessed by SPs
- Aim: whether simulation improves end-of-life care communication
  - Patient, family, and clinician-reported outcomes

# Methods

- Setting: U of Washington, MUSC, 2007-12
- Participants: IM residents, fellows, NP trainees
- Design: randomized trial, pre/post intervention
- Intervention:\* Eight 4-hour sessions led by MD and RN
  - Didactic with demonstration role play
  - Skills practice with simulation (sim patient, family, clinician)
  - Reflective discussions
- Outcomes: survey of 3 types of evaluators (blinded), Patients (P), Families (F), Clinicians (C)
  - Quality of Communication (QOC) (18 items P/C; 19 items F)
  - Quality of end-of-life care (QEOLC) (26 items P/F; 10 items C)
  - Depression (PHQ-8)
  - Functional status (SF-12)

# Results

- 1068 eligible trainees, 44% randomized
  - >Participation of physicians than NPs (55 vs 18%)
    - >PGY1 (81%) vs later training level (39%); women (60%) vs men (52%)
- Surveys received
  - P (44% RR): 1866 completed by 1717 P of 345 trainees
  - F (68% RR): 936 completed by 898 F of 295 trainees
  - C (57%): 2756 completed by 890 C of 325 trainees
- Lower RR
  - P in hospice, end-of-life communication documented, age>80, cancer and ESLD; URM; inpatient care (vs outpatient)
  - F if patient death, or if P was URM
  - C if MD (vs RN)



# Results – QOC scores

(0=poor to 10=absolutely perfect)

- Patient: Composite mean score: NS
  - Pre-intervention for both, post for C = 6.3 vs. Sim = 6.5 (p NS)
- Patient: Overall: NS
  - Pre-intervention for both, post for C = 8.5 vs Sim = 8.4 (p NS)
    - After co-variate adjustment, NS
- Family and clinician: NS
  - Clinicians rated PGY1 lower
- 2 post-hoc analyses: outpatients, and self reported “poor” health
  - Improved QOC scores for “poor” health

# Results: Secondary Outcomes

- QEOLC (quality of end of life care): NS
  - P, F, C (C rated PGY1 lower)
- Depression (PHQ-8)
  - Increased depressive symptoms on intervention group (10.0 vs 8.8)
    - Depressive scores of PGY1s were highest
- Functional status (SF 12): NS

# Limitations

- Measurements of communication and care are new
  - Although internal consistency and construct validity supported, responsiveness, sensitivity, minimally clinical significant difference not known
- Ceiling effect of scores by P, F
- Post intervention surveys completed up to 10 months later
- Nonresponse bias (propensity modeling showed no evidence that non-response produced bias in primary outcome)

# Implications

- This simulation intervention showed improved outcomes with communication assessed by SPs, but not in actual practice
  - *“difficulties that untrained or unprompted patients and families have in accurately rating clinician communication or end-of-life care”*
  - *“suggest that patients and family members may require training or prompting to provide accurate assessment of these skills”*
- SPs may not reflect the perceptions of real patients, families, and clinicians in communication or end-of-life care
- There is still much to learn about the impact of simulation. Further studies of patient-level outcomes are needed

# Thank you!

## Questions?

### **Improving Clinical Skills in UME: Reena**

- Pre-clerkship dyad training and use of OSCEs for clinical reasoning

### **Where and When we Teach: Carol**

- Bedside Rounds and July Bootcamp

### **What's new with Continuity Clinic: Briar**

- Resident satisfaction and 50/50 model

### **Handoffs/Transitions in care: Brita**

- Continuity clinic and Inpatient

### **Assessment in action: Lisa**

- EPAs and Simulation based communication

# Update in Medical Education

## SGIM Annual Meeting

CUA2, Thursday 1-2:30 PM  
April 24, 2014  
San Diego, CA

Carol Bates, MD  
Shobhina Chheda, MD, MPH  
Briar Duffy, MD  
Kathel Dunn, MSLS  
Reena Karani, MD, MHPE  
Brita Roy, MD, MPH  
Lisa Willett, MD

**Improving efficiency of clinical skills training: a randomized trial. Tolsgaard MG, Bjorck S et al. JGIM 2013;28(8):1072-7.**

This single institution study evaluated the effect of dyad training versus single training on patient encounter skills of pre-clerkship medical students. 49 students with no previous clinical training participated in a 4-hour practical course on taking histories and conducting physical examinations. Students were then randomized to a 4-hour practical training session in dyads or alone. SP's were trained to portray cases of pneumonia, tonsillitis, DVT or new onset DM. Students received 25 minutes per case and 25 minutes to develop a write up. Dyad students were allowed to alternate between doing and observing as well as the freedom to suggest, comment and discuss during the encounter and write-up time. Single practice students managed all four encounters alone. Individual student performance on 2 SP encounters of different cases as assessed by trained raters 2 weeks later found higher mean scores in dyad students compared to single practice students (40.7% vs 36.9%,  $p=0.04$ ). On a 9 point Likert scale (1=very insecure, 9=very confident), dyad students had higher self-reported confidence in managing future clinical patient encounters compared to single practice students (7.6 vs 6.5,  $p<0.001$ ).

Limitations: This was a small, single-center study with a group of self-selected participants and thus generalizability is limited. As testing was conducted soon after the practice session, durability of the learning is unknown. Finally, overall performance scores were low in this clinically-naïve group implying that further clinical training is needed.

Implications: Clinical skills training in dyads is efficient and resulted in higher performance on SP encounters by preclinical medical students. Dyad practice also resulted in higher self-reported confidence in managing future patient encounters. Dyad training may be an efficient use of resources in clinical skills training.

**Effect of enhanced analytic reasoning on diagnostic accuracy: a randomized controlled study. Myung SJ, Kang SH, Phyo SR et al. Med Teach 2013;35:248-50.**

This study sought to determine whether enhancement of analytic reasoning increases medical students' diagnostic accuracy on an OSCE. All 145 fourth year medical students at one university completed a 4-station OSCE and

were randomized to an analytic reasoning (AR, N=65) or control group (N=80). Students received 10 minutes for the SP encounter and 5 minutes to complete an answer sheet. The AR group was required to complete a table with diagnoses, signs and symptoms to support diagnoses and list the most probable diagnosis. Control group students listed the most probable diagnosis. Mean diagnostic accuracy score (perfect score=4.0) was higher in AR group than in control group (3.4+/- 0.66 vs. 3.05 +/- 0.98, p=0.016).

Limitations: This was a small single-center study and thus generalizability is limited. No validity evidence is available for the cases and some cases may have been too simple.

Implications: Reflecting on alternative diagnoses as well as supporting and refuting information may reduce diagnostic errors among medical students. Efforts to facilitate analytic reasoning may be beneficial when teaching medical students.

**The art of bedside rounds: A multi-center qualitative study of strategies used by experienced bedside teachers. Gonzalo JD, Heist BS, Duffy BL, Dyrbye L, Fagan MJ, Ferenchick G, Harrell H, Hemmer PA, Kernan WM, Kogan JR, Rafferty C, Wong R, Elnicki DM. JGIM 2013;28(3):412-20.**

Bedside rounds appear to be increasingly uncommon. With the hope of encouraging bedside rounds, these authors attempted to determine a core set of effective techniques used by faculty noted for their experience. The authors defined bedside rounds as a team activity including at least one houseofficer and attending in which the patient's history is presented at the bedside, the exam is reviewed, and the discussion of the medical issues and management are discussed in the patient's presence.

The authors identified one person at 10 academic institutions who in turn identified at least 3 faculty known for their bedside rounds. Faculty had to be general internists, had to attend on the wards at least 2 weeks in 2 years, and when on service had to conduct bedside rounds at least 3 times a week. Two investigators taped interviews with these faculty and analyzed scripts for themes. They found that these faculty prepare for rounds by orienting trainees seeking buy-in, defining roles and expectations, and establishing a patient-centered climate. Attendings would prepare themselves by reading in advance about the diagnosis and the specific patient to be presented, and would focus their mind set on their goals in rounds. Ideal patients are selected because of their acuity or new arrival on service, important clinical decisions, or general educational value. Patients



would be deferred from rounds if geographically distant, unable to clearly communicate, were unwilling, or for sensitive issues in the patient's care. Roles at the bedside include: introduction, presentation, exam, patient comfort, discussion, closure. Assignment to team members would be based on individual strengths and team dynamics.

This paper provides a rubric for institutions and individuals who wish to expand bedside rounds. The key limitation is the absence of time estimate for faculty preparation. We also wonder if the suggested exclusion of patients with sensitive issues might imply missed opportunities to teach on that important content.

**MiPLAN: A learner-centered model for bedside teaching in today's academic medical centers. Stickrath C, Aagard E, Anderson M. Acad Med 2013;88:322-327.**

We share this additional paper on bedside rounds as a companion piece. The authors present their own framework for bedside rounds which uses the MiPLAN mnemonic:

Meeting before teaching begins

i – introduction, in the moment, inspection, interruptions, independent thought

Patient care

Learner's questions

Attending's agenda

Next steps

**Making July safer: Simulation based mastery learning during intern boot camp. Cohen ER, Barsuk JH, Moazed F, Caprio T, Didwania A, McGaghie WC, Wayne DB. Acad Med 2013;88:233-39.**

Incoming interns have variable skills and are coming to work in an unfamiliar environment; this may partially explain the increased morbidity and mortality seen in July. The concept of boot camp has been used to train medical students and surgical interns. These authors studied the impact of a simulation-based boot camp for medical interns using the outcome of scores on a clinical skills examination. Each intern was required to have a minimum score on this exam achieving "mastery."

The program started with 47 interns in June 2011; their performance on the clinical skills examination was compared to 109 interns from 2009-2010. Boot camp occurred over 3 days with 8 hours of teaching per day. Teaching was provided in the 6 domains of cardiac auscultation, paracentesis, LP, ICU clinical skills, and code status discussion. Teaching

methodologies included didactics, simulation practice, online modules, standardized patients, and feedback. The Evaluation was a 5 station clinical exam; interns would practice and retest until they reached a preset minimal standard for each content area.

Performance on the clinical skills examination was statistically significantly improved in each domain as compared to the performance of historical control interns. The greatest improvement was seen in the paracentesis and lumbar puncture domains. Only 45% of interns reported prior experience with paracentesis; 49% reported experience with LP, 72% with both ICU skills and code status discussion, and 100% with cardiac auscultation. Their baseline self-confidence ranged from 29 to 70 on a scale of 0-100. Additional training for mastery for up to 1 hour was required in 4% (LP) to 38% (code status discussion) per domain. Interns rated the curriculum highly and thought it should be required prior to internship. The authors estimated the cost to be \$34,282 including faculty time, resident salary, supplies, and facility rental fees.

This study suggests that simulation-based boot camp training is well received by incoming medicine interns and can improve skills. That said, this study did not demonstrate an impact on patient outcomes, and did not demonstrate that the chosen domains are relevant to the July effect. There is also no data on learning retention. Finally, this study was done at a single institution.

## **Continuity clinic**

**Resident Satisfaction with Continuity Clinic and Career Choice in General Internal Medicine. Peccoralo LA, Tackett S, Ward L, Federman A, Helenius I, Christmas C, Thomas DC. J Gen Intern Med 2013;28(8):1020–7.**

This study assessed resident satisfaction with continuity clinic and the association of the resident clinic experience with resident attitudes toward careers in GIM. The researchers surveyed all categorical and primary care internal medicine residents at Mount Sinai, Temple, and Johns Hopkins Bayview regarding 32 elements of their continuity clinic and their likelihood of choosing GIM as a career choice. Two hundred twenty five residents completed the survey for an overall response rate of 90%. Researchers found that 38% of residents were planning on pursuing GIM after graduation ( $p = 0.003$ ), which is higher than the national average. The continuity clinic experience made no difference in reported career choice for 59% of residents, while the clinic experience for 11% of residents increased their likelihood of entering GIM, and for 28% of residents decreased their

likelihood of entering GIM. 83% of residents were somewhat or very satisfied with clinic across all surveyed residents. Residents who considered careers in GIM prior to residency were the most likely to consider a career in GIM based on clinic (OR 29.0, 95 % CI 24.0–34.8). Residents who were very satisfied with the continuity of relationships with patients (OR 4.08, 95 % CI 2.50–6.64) were also more likely to consider a career in GIM based on clinic.

Limitations: These programs had significantly more residents planning careers in GIM than the national average. In addition, “GIM” was not defined and may include clinic and hospital careers; the study did not explore the relationship between continuity clinic and intent to pursue a hospitalist career.

Implications: To produce more primary care physicians, we may need to increase the interest in GIM prior to residency.

**An Evaluation of Internal Medicine Residency Continuity Clinic Redesign to a 50/50 Outpatient–Inpatient Model. Weiland ML, Halvorsen AJ, Chaudhry R, Reed DA, McDonald FS, Thomas KG. J Gen Intern Med;28(8):1014–9.**

This single institution pre-post study sought to assess the impact on clinical and educational outcomes of changing their continuity clinic model. Previously, their residents had a weekly half-day of clinic; the redesign featured a 50/50 inpatient/outpatient model with twice-weekly continuity clinic during outpatient months and no clinic during inpatient months. Researchers compared data pre- and post-clinic redesign, which occurred in the 2010-2011 academic year. They analyzed existing patient level data as tagged to a particular resident across many clinical and educational domains. They also surveyed residents, preceptors, and patients. The clinic redesign affected all 144 of the residents, but due to missing clinic data, only data from 96 of those residents was included in the study.

Among clinical outcomes with the new model, residents' panel size increased (120 vs. 137.6), the proportion of missed clinic appointments decreased (12.5 % vs. 10.9 %;  $p \leq 0.01$ ), perceptions of teamwork and safety increased (3.6 vs. 4.1 on 5-point scale;  $p \leq 0.001$ ), but individual physician and patient continuity of care decreased (63 % vs. 48 % from physician perspective; 61 % vs. 51 % from patient perspective;  $p \leq 0.001$  for both) despite no change in team continuity. The quality of provided diabetes, hypertension, and preventive care was not different after the redesign. Educationally, residents attended more teaching conferences (57.1 vs. 64.4;  $p \leq 0.001$ ), their performance in clinic improved (3.6 vs. 3.9 on 5-point scale;  $p \leq 0.001$ ), and they felt they were more able to focus on clinic and

that they had appropriate inpatient/outpatient balance (30 % vs. 85 %, 27 % vs. 71 % very or somewhat satisfied, respectively, both  $p < 0.0001$ ). Overall patient, resident, and faculty satisfaction were unchanged after the redesign.

**Limitations:** In addition to concentrating clinic in half of the rotations, the change also included new preceptor scheduling which provided more preceptor-learner continuity than before the change. In addition, residents now have an extra continuity clinic-focused rotation during their residency, which increases their exposure to the clinic setting.

**Implication:** Moving to a 50/50 inpatient/outpatient model may decrease continuity of care, but it doesn't seem to affect patient, resident, or preceptor satisfaction, or process of care measures. These changes might enable residents to better focus on various educational activities, help them be more competent at outpatient care, and increase their perception of teamwork and safety in clinic.

**Results of an Enhanced Clinic Handoff and Resident Education on Resident Patient Ownership and Patient Safety. Pincavage AT, Dahlstrom M, Prochaska M, Ratner S, Beiting KJ, Oyler J, Vinci LM, Arora VM. Acad Med 2013;88(6):785-801.**

At the end of training, PGY-3 residents must transition the care of their patients to another resident. There is increased risk of harm to patients during this transition due to missed test results, delayed care, missed diagnoses, and medical errors. Additionally, residents find this transition stressful, and often lack a feeling of ownership of the new patients. Most handoff education is focused on the inpatient setting, and few programs to improve clinic handoffs currently exist.

The authors developed an enhanced clinic handoff protocol for identified "high-risk" patients and assessed resident perceptions and patient outcomes before and after the intervention. The enhanced clinic handoff included components to improve communication and processes for both residents and patients. Residents received a 1-hour education session on identifying high-risk patients and use of a standardized handoff template, and were instructed on completing thorough documentation. Rising PGY-2's (not incoming PGY-1's) received the handoff, were allotted 1-hour protected time in clinic for telephone visits with new high-risk patients and were provided with the graduating resident's permanent contact information. For patients,

both oral and written notification of the transition was improved and priority scheduling for high-risk patients was implemented by clinic staff.

An average of 12 patients (range: 13-28) per PGY-3 resident were identified as high risk and handed off. 76% of PGY-2 residents used telephone visits, with mean 9.1 patients called, during which 44% revealed missed tests. The enhanced clinic intervention resulted in greater satisfaction with handoff and greater resident ownership of new patients, but there was no reduction in resident stress level. All patients were aware of transition, more patients saw the correct provider (88% vs. 44%), more tests were followed up appropriately (67% vs. 46%), and there was a trend towards decreased acute care utilization (20% vs. 26%).

This study suggests that internal medicine residency programs should pay greater attention to end-of-training clinic transitions to improve quality of care and patient safety. This paper provides a strategy for training programs to improve the handoff process. Though benefits were modest in this study at 6 months, this type of program warrants consideration and longer term follow-up.

**Rates of Medical Errors and Preventable Adverse Events Among Hospitalized Children Following Implementation of a Resident Handoff Bundle. Starmer AJ, Sectish TC, Simon DW, Keohane C, McSweeney ME, Chung EY, Yoon CS, Lipsitz SR, Wassner AJ, Harper MB, Landrigan CP. JAMA 2013;310(21):2262-70.**

Several strategies to train residents on improving inpatient handoffs have been suggested, including communications training, implementing mnemonics, minimizing interruptions during the signout time, and providing standardized handoff templates. This study combined several suggested strategies into a "handoff bundle" and assessed medical error rates, miscommunication rates, and resident workflow before and after bundle implementation.

The handoff bundle included a 2-hour communications training session, taught residents the SIGNOUT? Mnemonic, and required handoffs to be performed by unified teams of residents and interns. Handoffs were now required to be in a quiet space. A standard written template was provided in

one unit, and a second unit had a computerized standard template. There was periodic oversight of the signout process by a CMR or attending physician.

The authors assessed medical errors and adverse events, by chart review, daily error reports, daily survey of overnight resident team, and formal incident reports 3 months prior to and 3 months after the intervention. Additionally, they evaluated written and verbal handoffs and observed workflow.

There was a significant reduced medical error rates by 15.5 errors per 100 admissions after the handoff bundle was implemented. The greatest percentage reduction in intercepted potential adverse events. The written handoffs were more complete post-intervention, especially in the unit using a computerized tool. There was no change in verbal signout time, and there were fewer interruptions during the signout period. Housestaff spent significantly more time per shift with patients and families.

This study demonstrates that a comprehensive handoff bundle, which includes both resident education and a computerized handoff tool may reduce medical errors.

**Developing Entrustable Professional Activities as the Basis for Assessment of Competence in an IM Residency: A Feasibility Study. Hauer KE, Soni K, et al. JGIM. 2013;28(8):1110-14.**

This single institution study describes a pilot and feasibility evaluation of two Entrustable Professional Activities (EPAs), a new method in graduate medical education that operationalizes the competencies and milestones in the context of actual clinical activities. For EPA development, two retreats and a series of monthly meetings of Internal Medicine residency leaders included explanations of milestones, rationale for EPAs, a generation of potential EPAs, and final selection of 2 EPAs, included in this study: 1) Inpatient Discharge (aligned with key institutional stakeholders for patient safety and quality), and 2) Family Meeting (provided within existing curriculum in palliative care). A framework for EPAs was provided, including the name of the EPA, a description of the activity, the targeted learner level (Post-graduate year, PGY), curriculum, setting, activities, and assessment. The assessments were linked to milestones and competencies. To assess the feasibility of the EPAs, a survey was sent to PGY1s and attendings identified for the activities. For the Inpatient Discharge EPA [PGY1 survey response rate (RR) = 65.1%], 42.9% of PGY1s participated, with the majority finding it improved skills (66.7%), facilitated useful feedback (83.3%) and

recommended continuing it (83.3%). Of those who did not participate, 56.3% were unaware of the EPA, 31.3% didn't have time, and 6.3% forgot about it; 93.8% were interested in participating. For the family meeting (PGY1 RR 61.5%), 42.9% participated, with 75% improved attention to family meeting education, and 50% recommended continuing it. Of those who did not participate, 100% were unaware of the EPA; 50% were interested in participating.

**Limitations:** This was a small, single-center study of two EPAs with limited participation in the activities and surveys, and was unable to determine if EPAs enhanced education or assessment.

**Implications:** This study outlines a process for EPA selection, provides a framework for developing EPAs, including methods and evaluations, and identifies barriers for implementation. EPAs are being used in medical education to assess outcomes, and sharing experiences across institutions is important.

**Effect of Communication Skills Training for Residents and NPs on Quality of Communication with Patients with Serious Illness, A Randomized Trial. Curtis JR, Back AL, et al. JAMA 2013;310(21):2271-81.**

This was a randomized trial of a simulation-based communication skills-building workshop for internal medicine residents, subspecialty fellows, and nurse practitioners that assessed the effects of this intervention on patient-, family-, and clinician-reported outcomes. In prior study, this workshop was associated with significant improvements in communication skills regarding giving bad news and responding to emotion, as assessed by standardized patient encounters. Of 1,068 eligible trainees from 2 academic medical centers, 44% were randomized to the intervention workshop, consisting of eight 4-hour sessions, versus control. Sessions included a brief didactic overview, demonstration of a role-play, skills practice using simulation, and reflective discussions. The outcomes were scores on 1. Quality of Communication (QOC) questionnaire (18 items for patients and clinicians, 19 for families) 2. quality of end-of-life care (QEOLC) questionnaire (26 items for patients and families; 10 for clinicians) 3. depression questionnaire (PHQ-8) and 4. functional status. The survey response rate was 44% of patients (1866 surveys completed by 1717 patients evaluating 345 trainees), 68% of families (936 surveys completed by 898 families of 295 trainees), and 57% of clinicians (2756 surveys completed by 890 clinicians of 325 trainees). Of pre-post mean scores, there was no significant difference in QOC scores, QEOLC, depression, or functional status between

groups, even when adjusted for covariates, except for increased depressive symptoms on intervention group [10.0 (95% CI, 9.1 to 10.8)] compared with control and pre-intervention group [8.8 (95% CI, 8.4 to 9.2)]. Clinicians rated post-graduate year (PGY) 1 lower for QOC and QEOLC. In a post hoc analysis, patients who rated their health as “poor” had improvement in scores with the intervention. Propensity modeling showed no evidence that nonresponse or exclusion of surveys from the analysis produced bias in the primary study findings.

Limitations: Measurements of communication and care are new, and although the internal consistency and construct validity was supported, the responsiveness, sensitivity, and minimal clinically significant difference (MCID) are not known. There were ceiling effects of scores by patients and families. The post intervention surveys were completed up to 10 months later.

Implications: Prior study by simulated patients, showing improved outcomes with simulation communication, may not reflect the perceptions in actual practice by patients, families, and clinicians in communication or end-of-life care. There is still much to learn about the impact of simulation. Further studies of patient-level outcomes are needed.