Educational Enhancement for Academic Physicians
Adult Learning Theory and Innovative Teaching Styles

Daphne Norwood MD MPH
Anthony Wilson MD

THE UNIVERSITY of TENNESSEE
GRADUATE SCHOOL OF MEDICINE

Learning Objectives

- Discuss where residents physicians are as learners, including recent demographic and curricular data for UTMCK PGY-1 residents and US allopathic medical students and possible effects from the COVID19 pandemic

- Describe why an understanding adult learning theory can enhance faculty teaching methods.

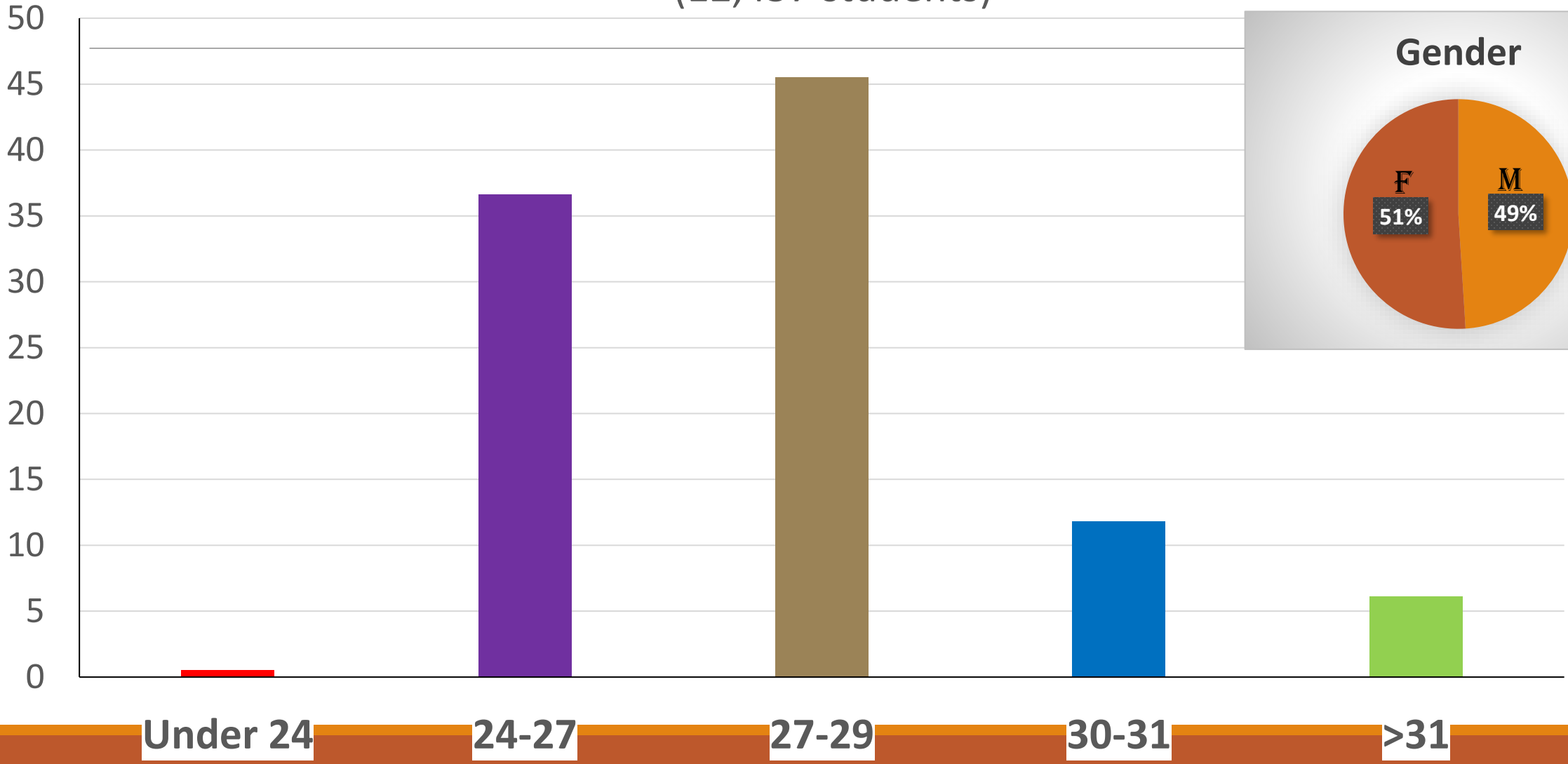
- Review several basic tenets of adult learning theory and applications to resident and medical student teaching.

Are the residents looking younger to you?

Doogie Houser MD
actor Neil Patrick Harris
1989-1993 TV show

Age 0f 2019 US Allopathic Graduates

*extrapolated from AAMC 2016 M2 SRS data
(12,457 students)



Who are the 2019 PGY-1 Residents at UTMCK?

Median Age: 27 years
Range 24 – 49 years
Mean 27.8 Mode 26

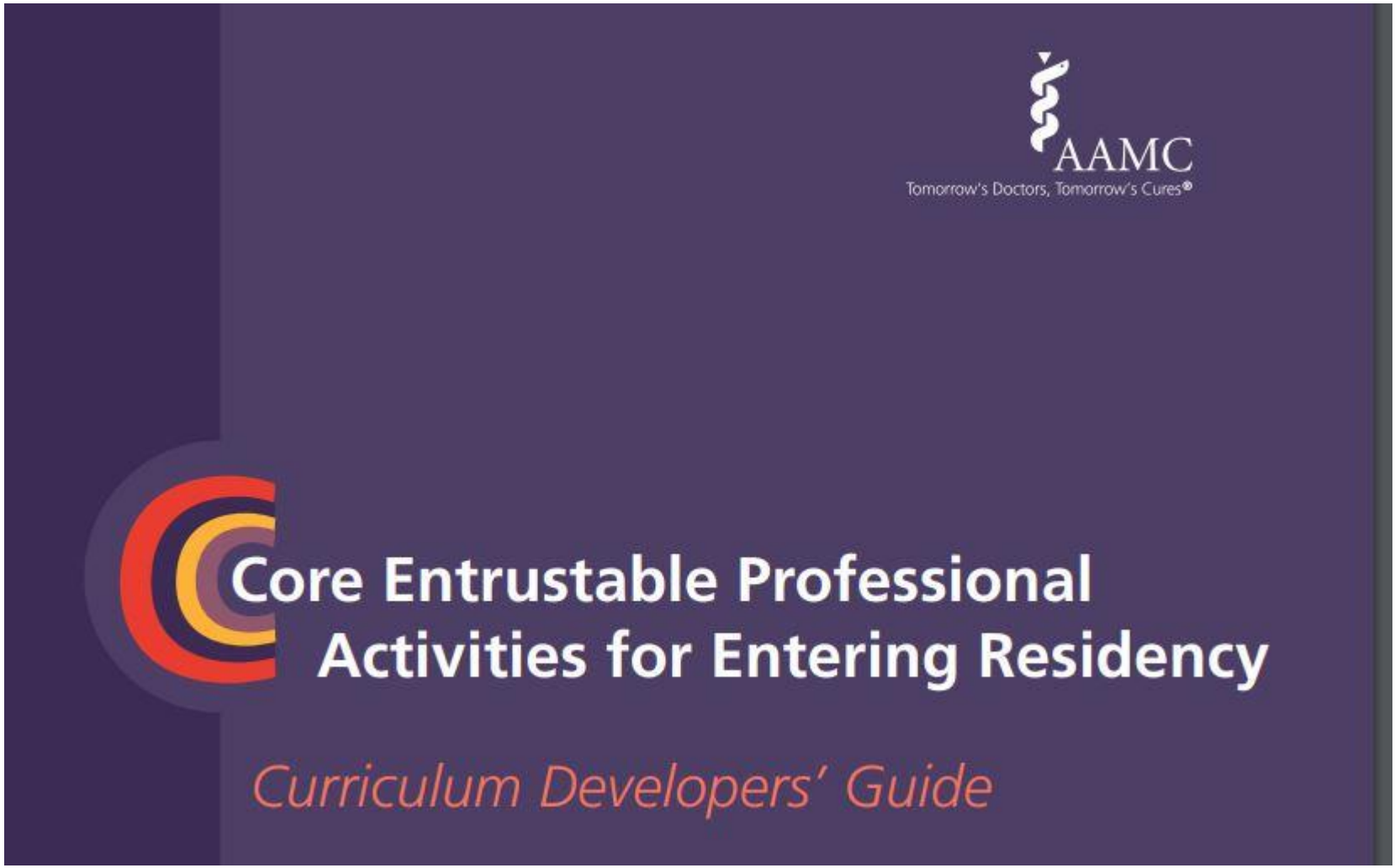
57% Male
43% Female

54 New Residents

Adult Learning Foundational Principles

- ✓Experience provides the basis for learning.
- ✓Recognize your learners as adults who come to your program with a set of experiences.
- ✓These experiences affect their expectations and approach to residency education.

AAMC: Thirteen Skills That Medical Students Should Have Day #1



aamc.org/intiatives/coreepas/publicationsandpresentation

2019 UTMCK PGY-1 Class Training Backgrounds

71% from US Allopathic (MD) Schools

20% from Osteopathic (DO) schools

54 New Residents

9% are US Citizens from International Medical Schools

And then there was the pandemic

- Cancelled clinical rotations….
- More virtual experiences…
- Certain types of experiences were not possible and more variation in preparation…

Review of IM, IM-Prelim, EM, Peds, and other PGY-1 from one academic institution's program directors perceptions of entering residents' skills

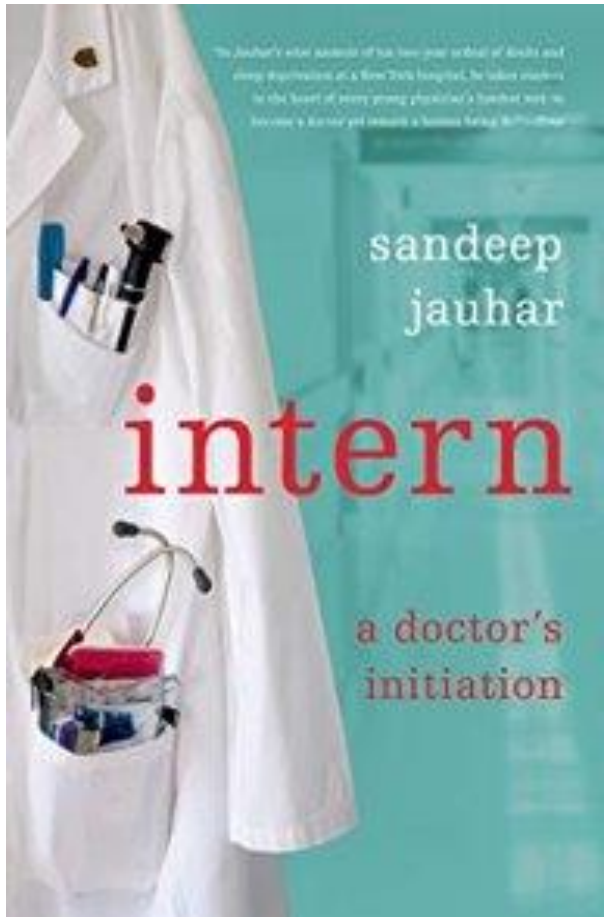
TABLE 2
Program Director Entrustable Professional Activity (EPA) Ratings

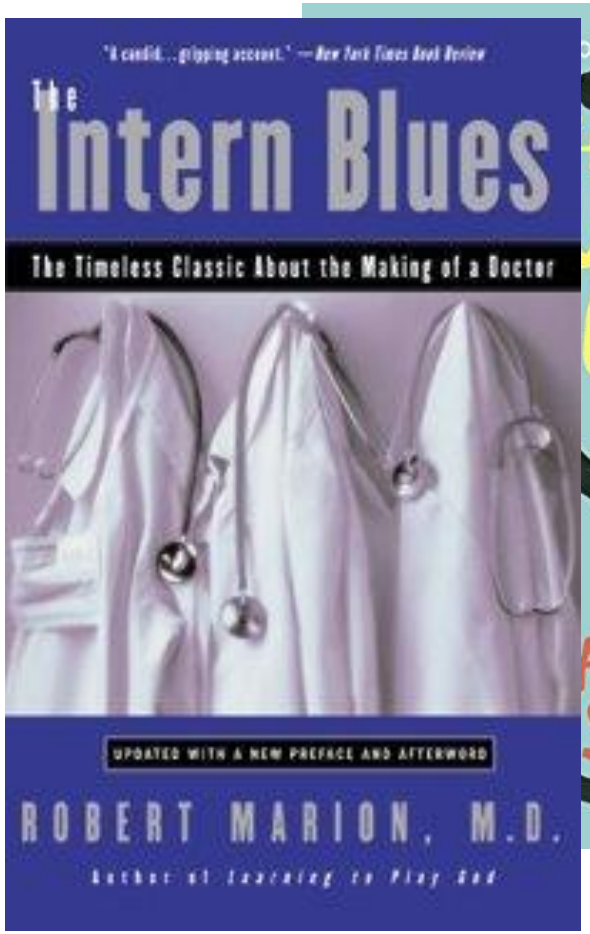
EPA	% Able to Perform Without Supervision	SD	% Not Observed
EPA 1: Gather a history, perform physical examination	78	0.4	0
EPA 2: Develop a differential diagnosis	72	0.5	0
EPA 3: Recommend and interpret diagnostic and screening tests	70	0.5	0
EPA 4: Enter and discuss orders/prescriptions	69	0.5	0
EPA 5: Document a clinical encounter	98	0.1	0
EPA 6: Present orally a patient encounter	94	0.2	0
EPA 7: Form clinical questions and retrieve evidence to advance patient care	61	0.5	6.1
EPA 8: Give or receive a patient handover	68	0.5	2.8
EPA 9: Collaborate as a member of an interprofessional team	88	0.3	0
EPA 10: Recognize a patient requiring urgent or emergent care	74	0.4	2.2
EPA 11: Obtain informed consent	63	0.5	9.5
EPA 12: Perform general procedures of a physician	94	0.3	14.5
EPA 13: Identify system failures and contribute to a culture of safety and improvement	38	0.5	37

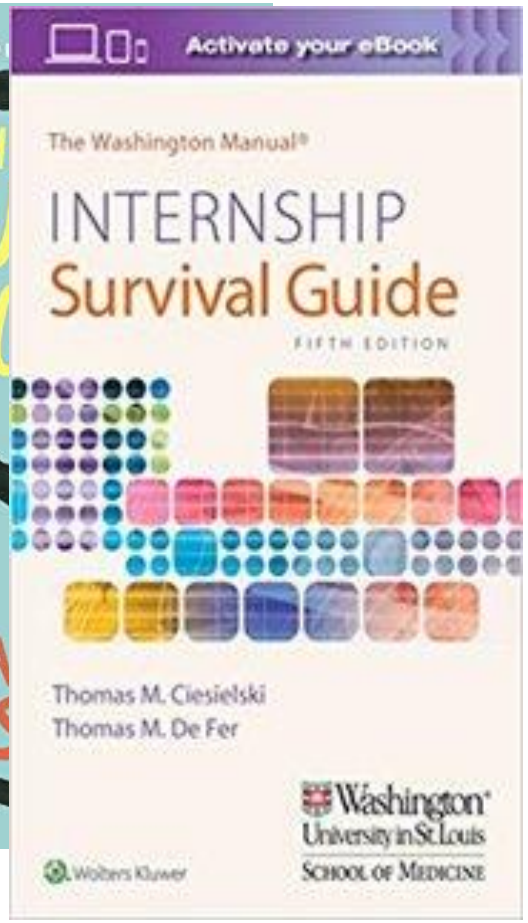
Note: A total of 94% (164 of 174) of those observed are able to perform, but of the total, 14.5% were not observed.

Pearlman et al. ***J Grad Med Educ***. 2017.

They may have some preconceptions….







Experience (or perception of it) can be an asset or a liability.

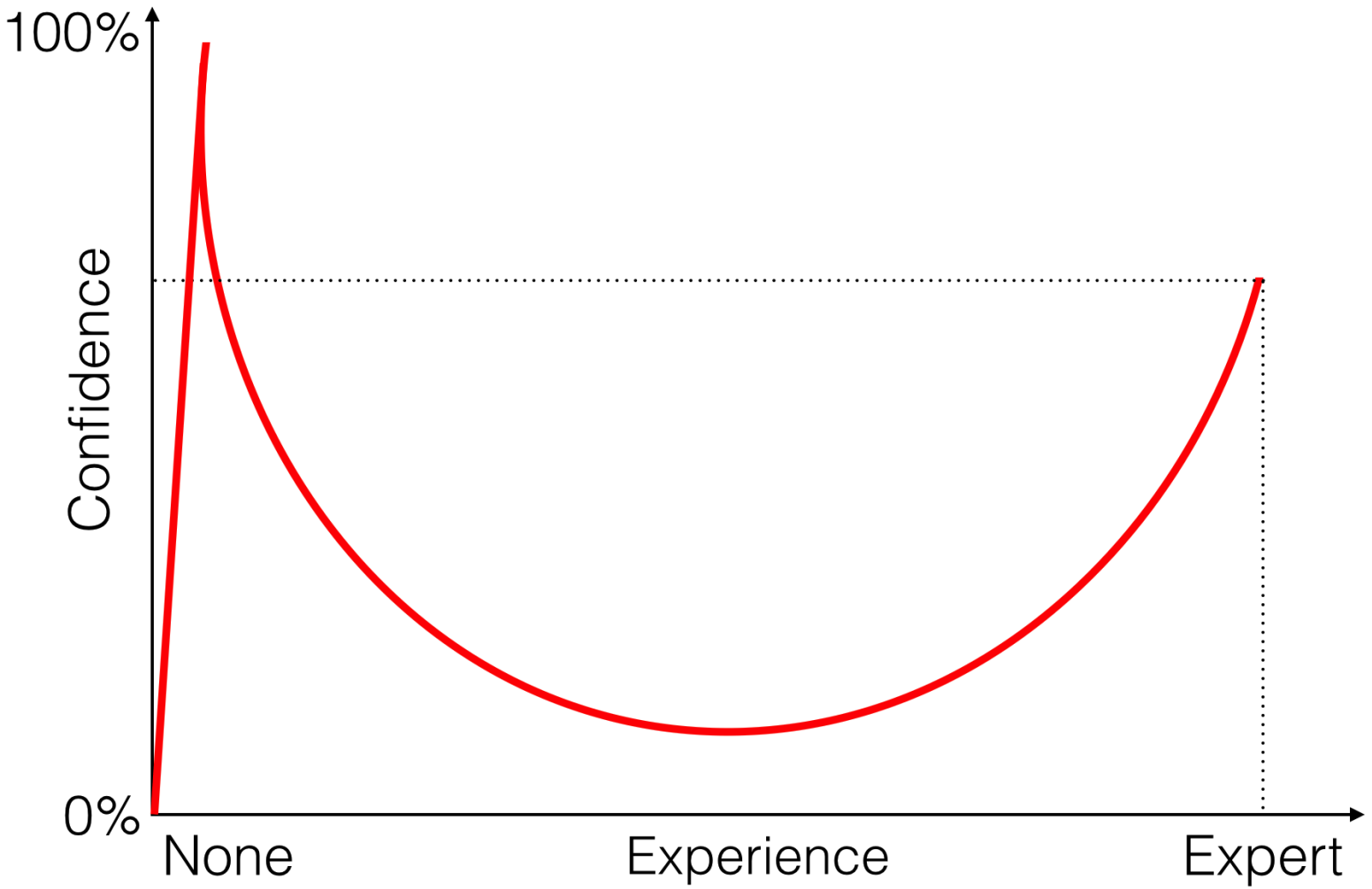
"My New Role" from ABC Scrubs Feb 3, 2009

I used to be an expert
on the Dunning-Kruger Effect,

but then I began to learn more about it.

Reddit/2019

Dunning-Kruger Effect



Kruger, J., Dunning D. (1999)

COVID has changed a lot

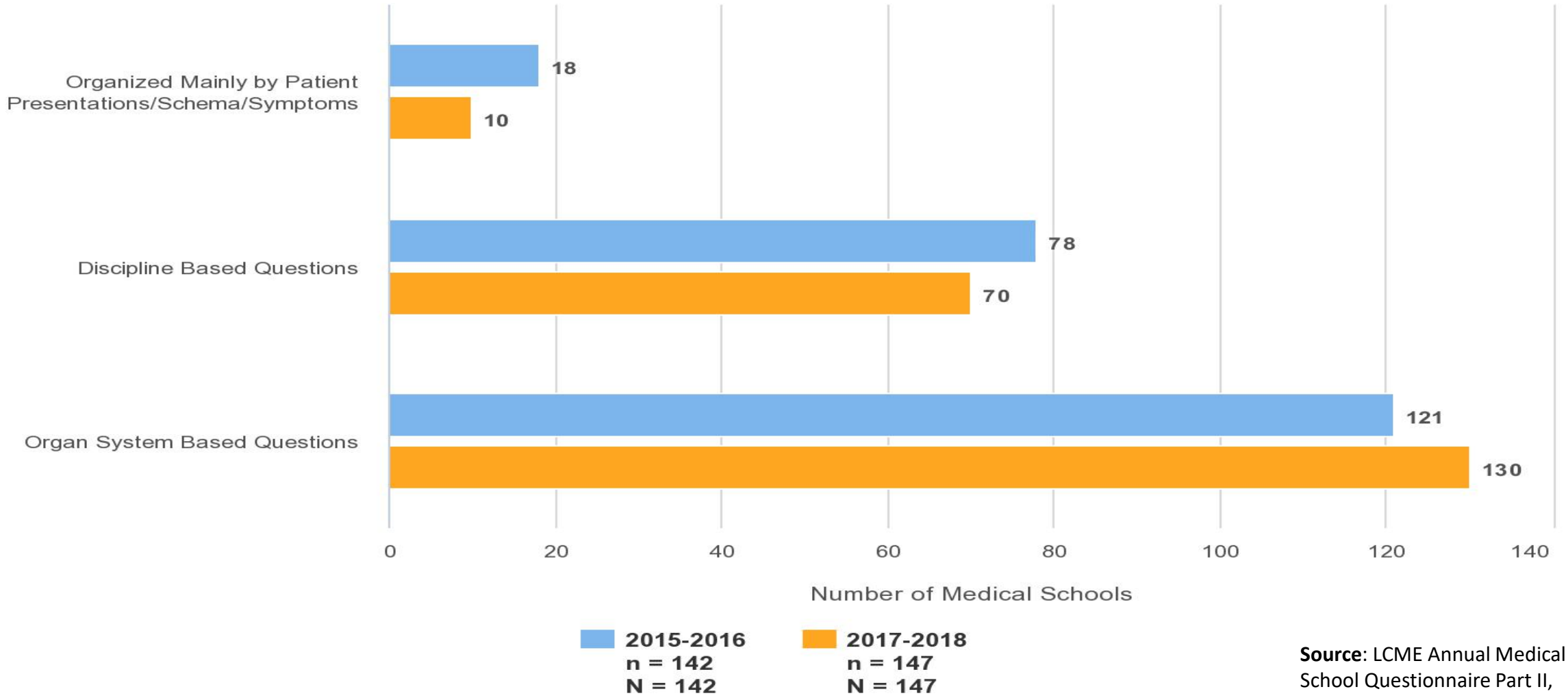
Lots of teaching is remote (Zoom and Teams)

Interaction with patients may even be remote!

Groups are smaller

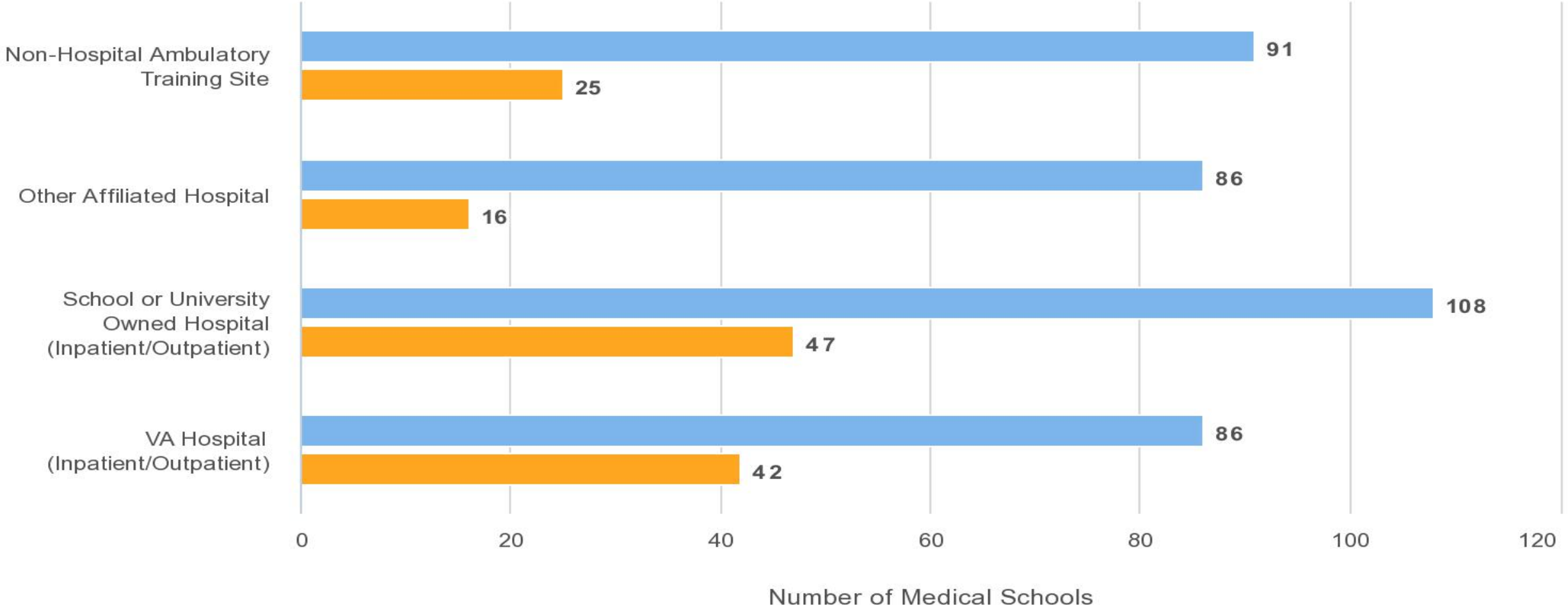
Need to observe and train physicians is even more acute.

Curriculum Structure During Pre-Clerkship Years: Organization



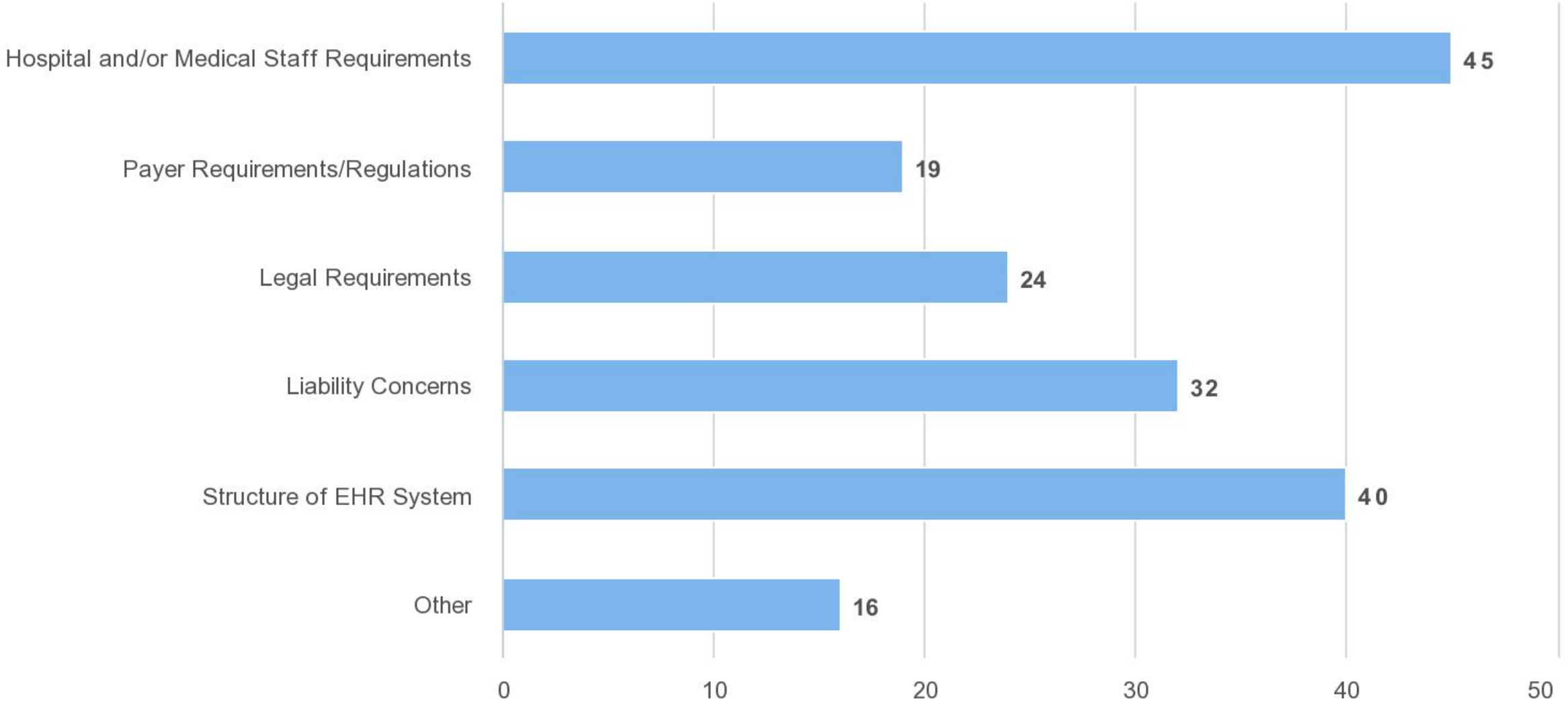
Source: LCME Annual Medical School Questionnaire Part II, 2015-2016 and 2017-2018

Level of Medical Student Access to Electronic Health Record (EHR) System: 2013-2014



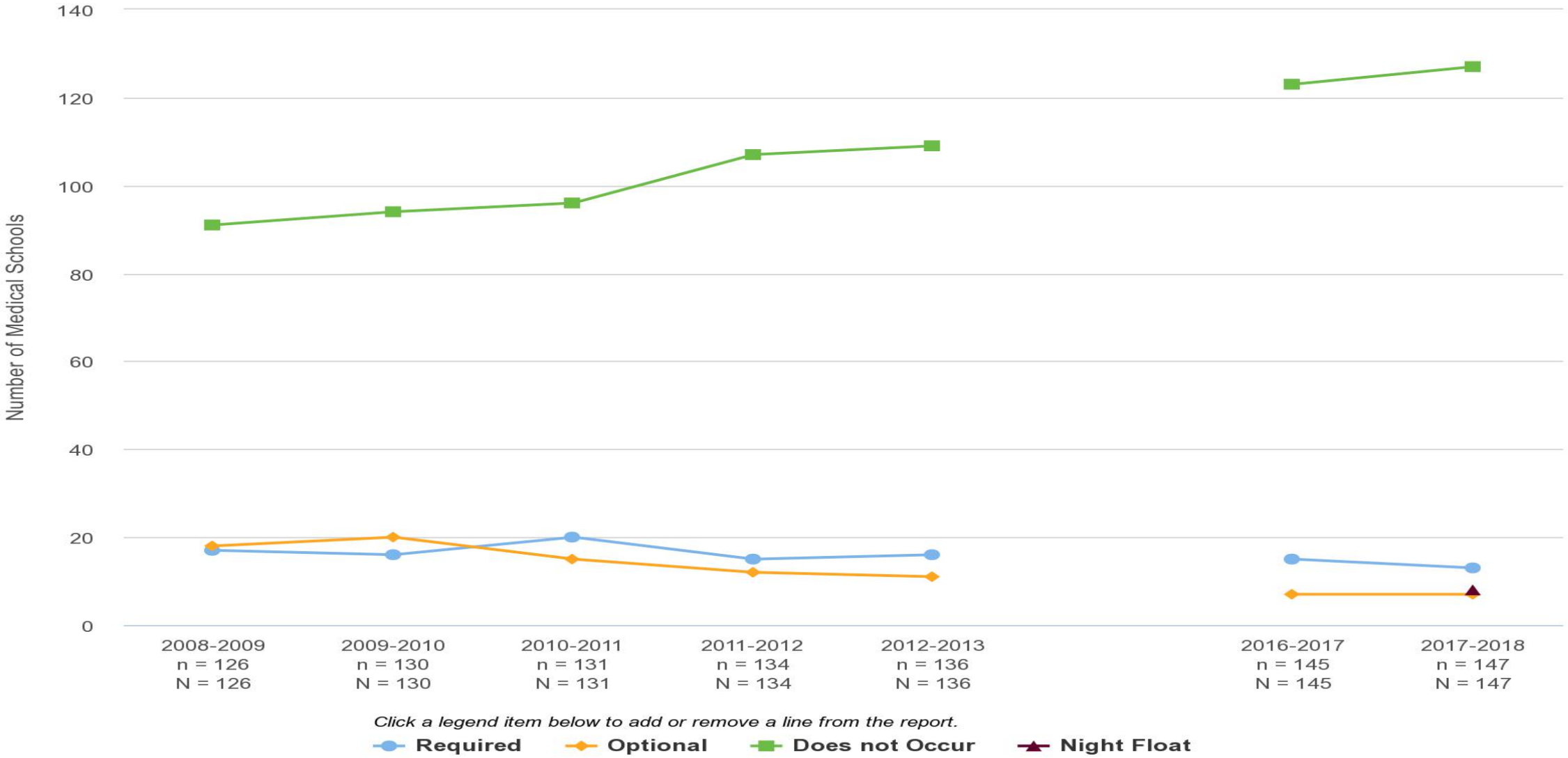
Source: LCME Annual Medical School Questionnaire, Part II 2013-2014

Reasons Medical Students are not Permitted to Enter Information into the Electronic Health Record (EHR) System: 2013-2014



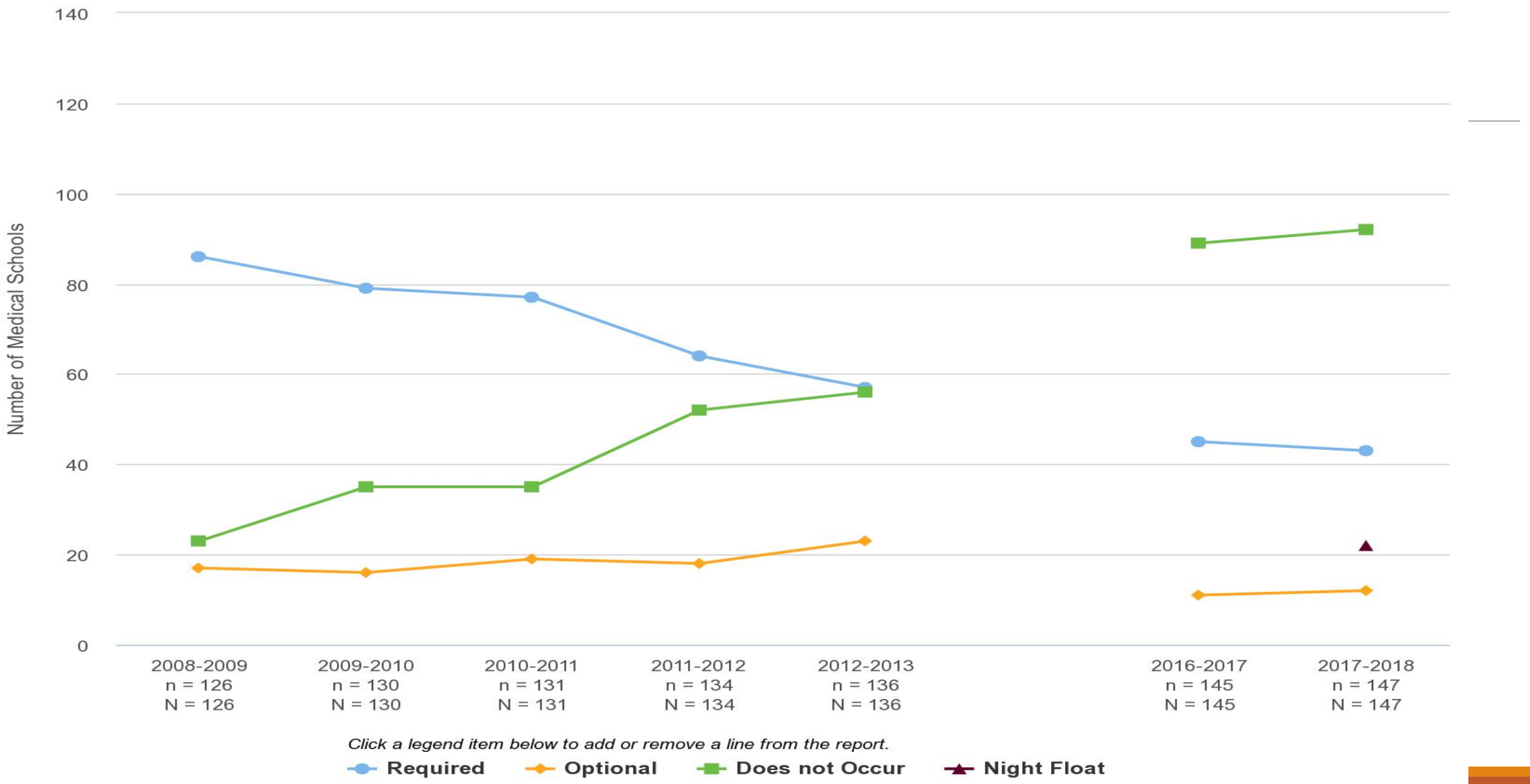
Source: LCME Annual Medical School Questionnaire, Part II 2013-2014

Hospital Night Call Requirements for Students in Clinical Clerkships: Family Practice

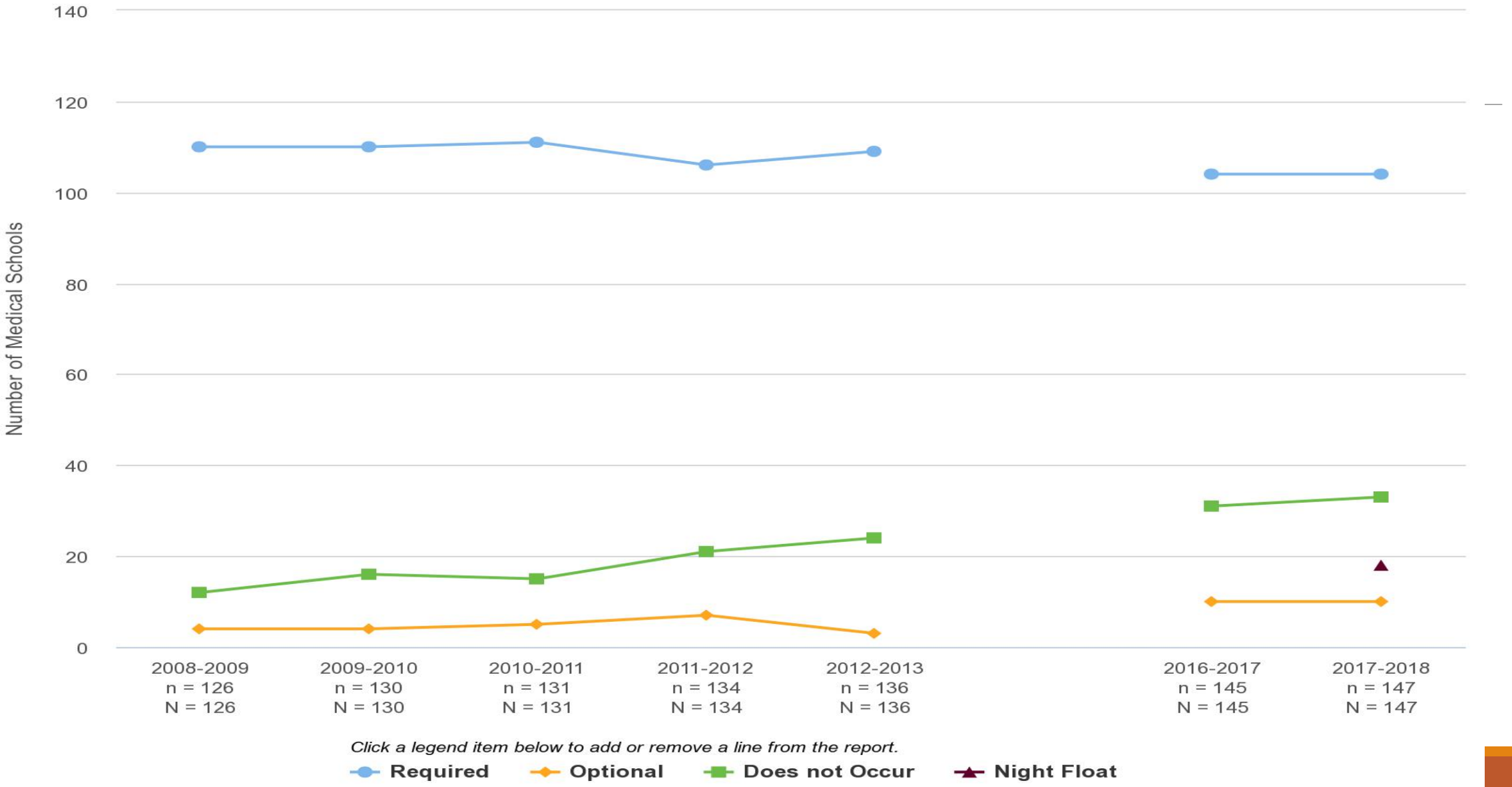


Source:LCME Annual Medical School Questionnaire Part II, 2001-2002 through 2012-2013, 2016-2017, and 2017-2018

Hospital Night Call Requirements for Students in Clinical Clerkships: Internal Medicine



Hospital Night Call Requirements for Students in Clinical Clerkships: Surgery




HELLO
MY NAME IS
Generation Z

Generation Z

They have been computer-oriented their whole lives.

Technology is part of their workflow.

Knowledge can be gained by peers or a wide variety of sources rapidly.

Experts can be self-created.

They want to be part of fluid learning creation.

Knowledge and entertainment can be viewed in short snippets.

(Tik Tok is 3-15 second music videos.)

What drives Gen Z in the workplace?

"**Devoted to Development:** Generation Zers are committed to continuous learning … because they know their careers will be [long and diverse].

"**Transformation of Training:** Generation Zers share Millennials' distaste for … today's [mundane and outdated] workplace trainings.

"**Compelled by Coaching:** Generation Zers will pursue coaching relationships because they … want leaders to coach them through … learning, decisions, and actions.

"**Empowered by Entrepreneurship**
63% of Generation Zers want colleges to offer courses in founding or running a business…

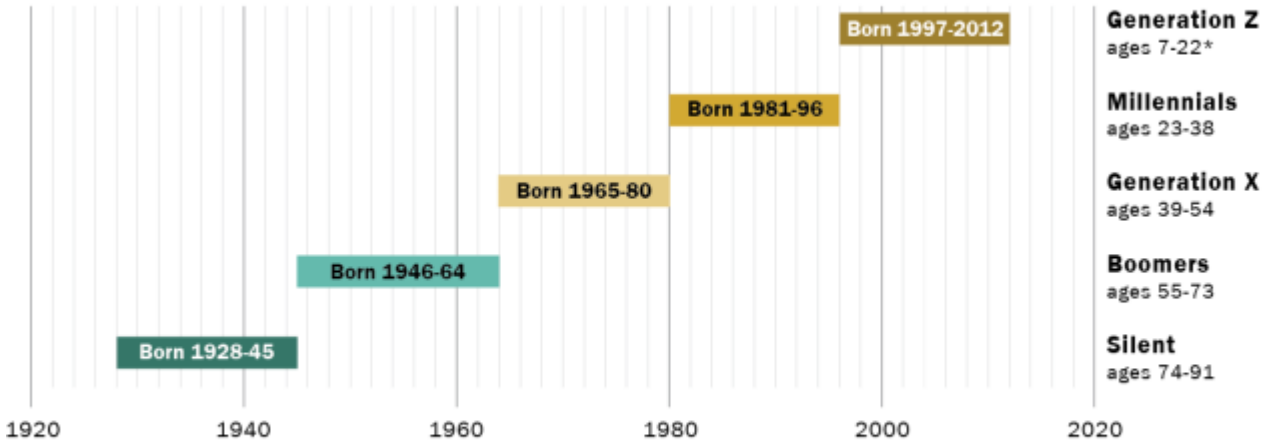
"**Freed by Feedback**
Generation Zers want feedback more often and for communication [to be swift and mobile]."

Ryan Jenkins, "The Similarities Between Gen Z and Millennials — Are You Prepared?" HR Daily Advisor (Oct. 2, 2017)

80%

of Gen Z teens say YouTube has helped them become more knowledgeable about something.

The generations defined



*No chronological endpoint has been set for this group. For this analysis, Generation Z is defined as those ages 7 to 22 in 2019.

PEW RESEARCH CENTER

Unique Role of Medical Educators

Recognize that residents may come from very different backgrounds and experiences. Don't assume what they know – explore what they know.

Beware of the hidden curriculum which precedes your interaction with them.

Understand what resident physicians assume their role is and clarify what their role is supposed to be.

Help them think more broadly about the patient's situation and the effects of their practice in the hospital.

Observe and give feedback about micro-skills and practice habits.

Recognize that this transition can be very stressful.

Teaching Methods

Pedagogy

"Child-leading"

External motivation

Teacher directed/ Traditional

Student as a recipient of knowledge and priorities.

Teaching involves transmission of expertise.

Content determined by teacher.

Teacher sets the methods of learning… can include Socratic Method.

Andragogy

"Man leading"

Internal motivation

Term popularized in 1970's by Malcolm Knowles.

Learning involves experience, including error; problem solving.

Learners need reason and relevance for topics.

Ownership. Adults are involved with planning and evaluation of instruction.

Dual role – Learners and Physicians

No longer “medical students” but there is a lot they don’t know.

Expected to take care of patients, have medical knowledge, learn and adapt quickly, communicate, be professional, and deal with complex systems *from Day #1*

(despite milestones that might extend 3-5 years or more).

They are physicians to the patients.

They are on a team.

Facilitating forming good practice habits

Factors Affecting Interns' Perception Of the Validity Of Personal Practice Data Statistics

Outpatient Clinic Outcome Data

OWNERSHIP
"This data (mammogram rates) on my patient panel reflects the previous resident's work"

I never saw that patient.

Low numbers, not statistically significant.

I only saw that patient once as a "prn".

Inpatient Hospital Outcome Data

OWNERSHIP
"This data (re-admission rate for CHF) listed for me was the team's work. I was following directions of my senior/attending.

Low numbers, not statistically significant.

I saw that patient only one day and then they transitioned to another intern.

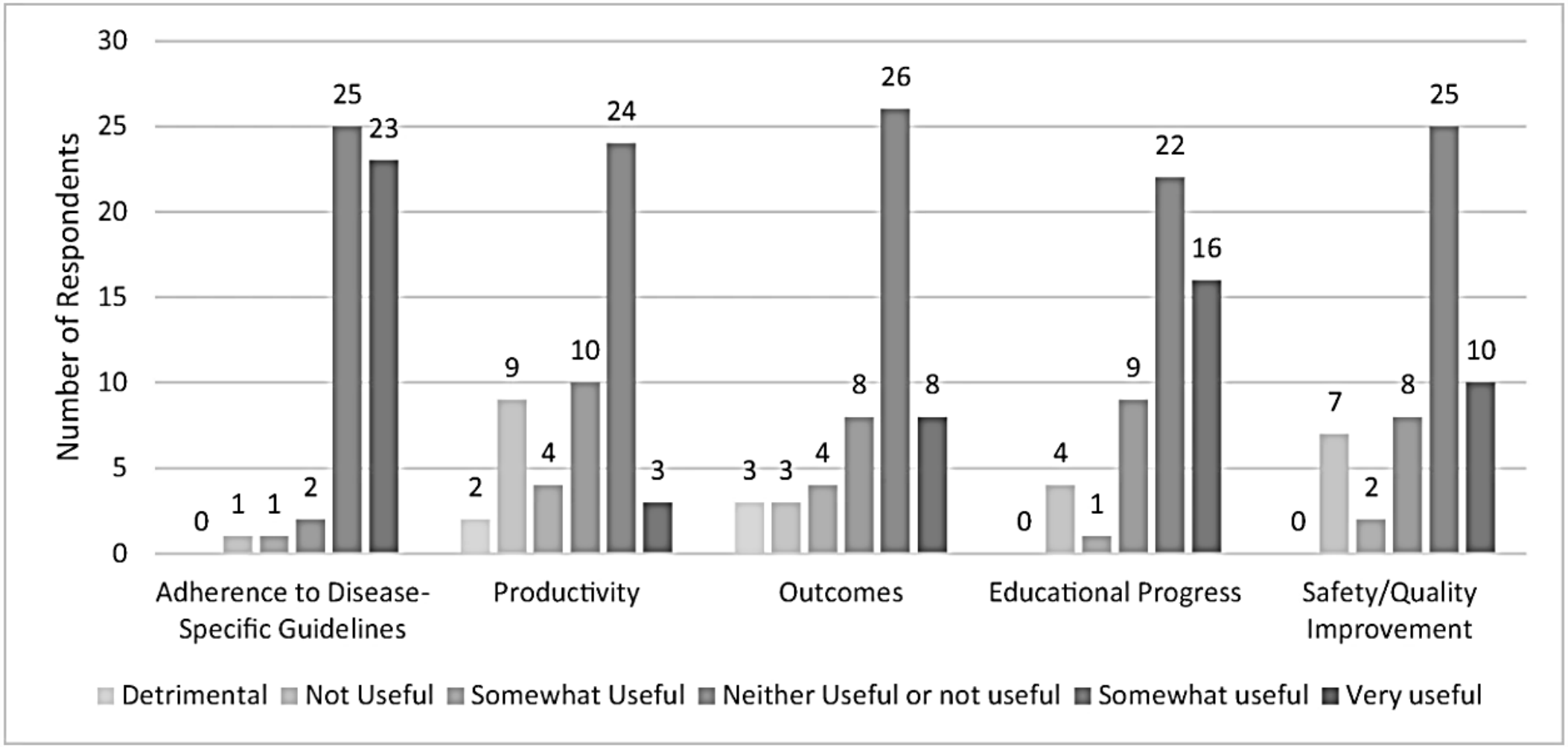
I don't remember seeing the inpatient teams data – maybe I was on an elective.

It's hard to get meaningful data on interns.

Create shared construct of what it means to develop a practice habit and explaining that over and over…..

WHO	WHAT
Resident (and peers) buy in because they generate the data.	Round robin review for H+P elements /coding/smoking cessation, evaluation of sign-out, QI projects identifying practice gaps (Choosing Wisely). "Resident" pt safety committee –group data. Journal practice habits, EMR and dictation completion, exercise/health habits.
360 degree evaluators (faculty, nursing, ancillary staff, patients) using ACGME milestone elements to rate EPA's/competencies with information delivered by faculty, PD and CCC.	Milestone evaluations of the six competences (Patient Care, Medical Knowledge, Practice Based Learning and Improvement, Systems Based Practice, Communications, Professionalism)
Simulation Center staff/faculty	Practice high risk, repetitive activities (ACLS, Sterile Field, Suturing) and give feedback to develop good habits.
"The System with an EMR" (hospital, clinic)	The degree to which resident-specific data is available varies widely by EMR/system. Set reasonable expectations for your system, their role and the time in their training. Explain that group data is relevant to their personal training environment. Link to guidelines.

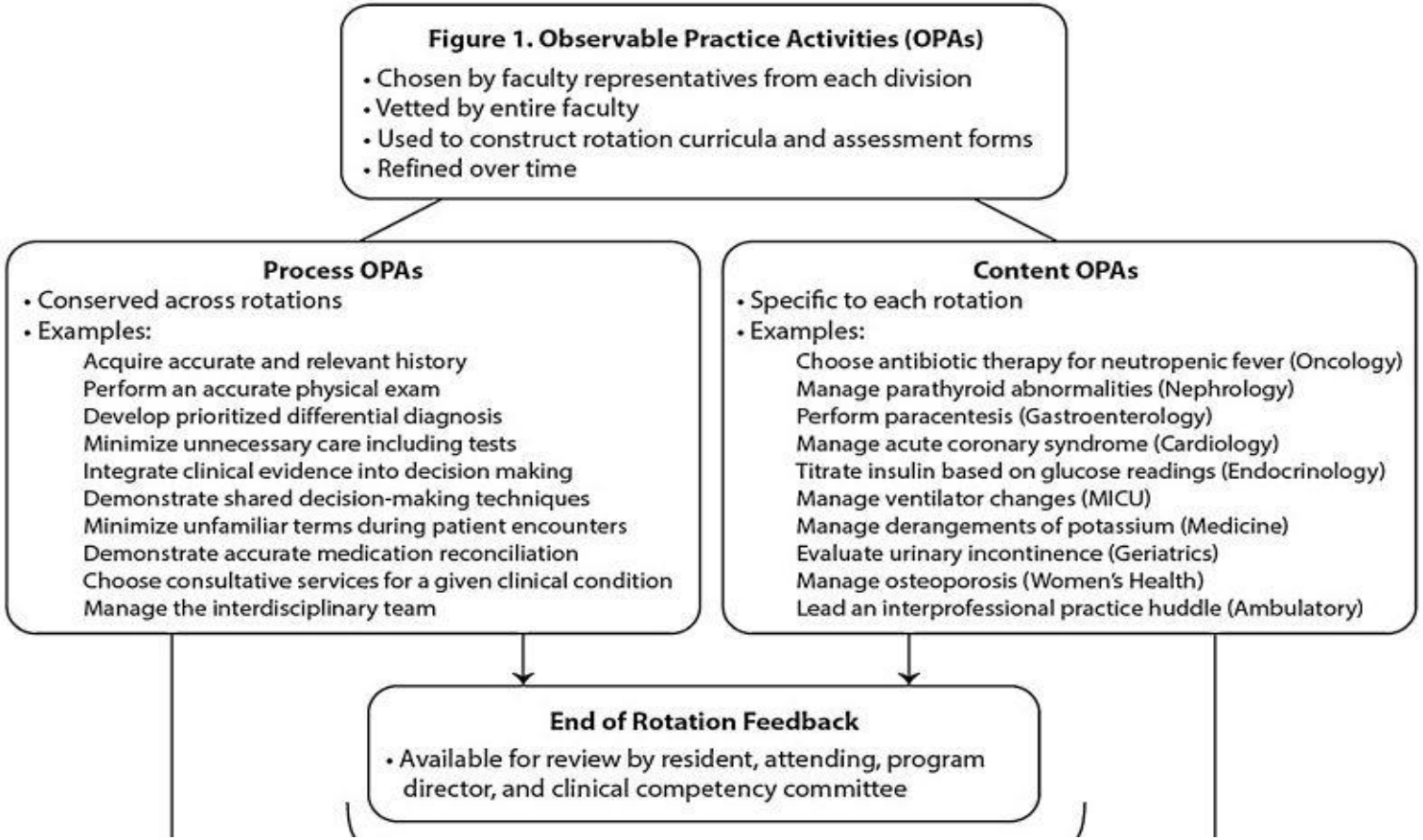
Psych Resident's Preferred Domains of Practice Habit Data



Resident-perceived utility of hypothetical domains of practice habit data

Zebrowski et al. ***Acad Psych*** (2020) 44:413-417.

Educational Progress as a measure of practice habits (aka what all programs are already doing)



***Warm et al. J Gen Intern Med, 2013*.**

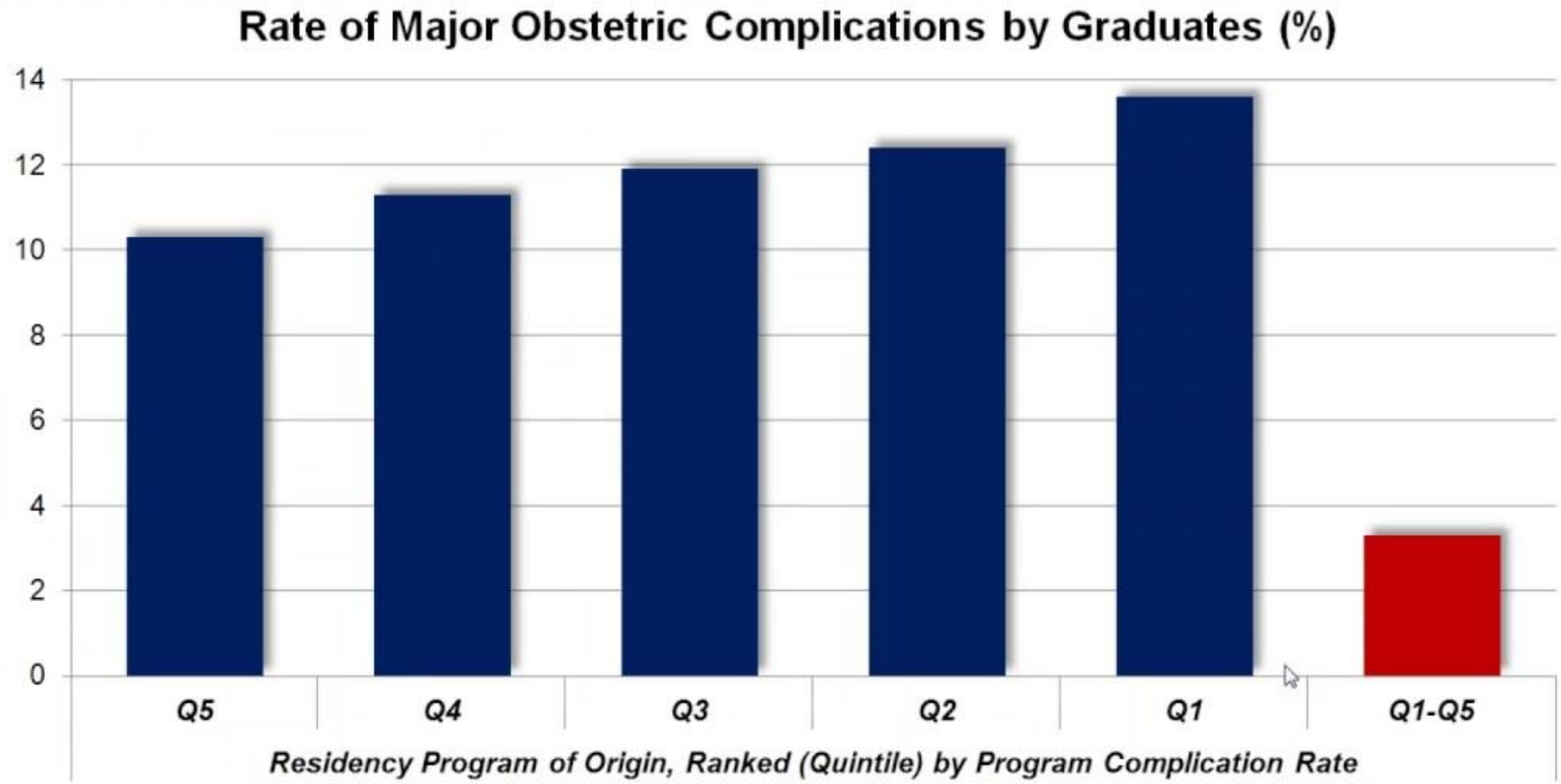
We need to ask for a paradigm shift
Residents are learners, physicians and hospital QI stewards

"Good resident physicians
come from good hospitals"

Tom Nasca, when starting CLER (Clinical Learning Environment Review), but definitely paraphrased…….

Evaluating Residency Programs Using Patient Outcomes

Asch, DA, et.al. JAMA 2009;302(12):1277-1283.



Lessons from the Literature: OBGYN – The team milieu your resident learns in affects their practice long-term (Asch et al JAMA 2009) so group/team/hospital data is important practice habit data for your resident

- **Study:** A retrospective analysis of all Florida and New York obstetrical hospital discharges between 1992 and 2007, representing 4,906,169 deliveries performed by 4,124 obstetricians from 107 US residency programs.

- **Methods:** Nine measures of maternal complications were evaluated from vaginal and cesarean births reflecting laceration, hemorrhage, and all other complications after vaginal delivery; hemorrhage, infection, and all other complications after cesarean delivery; and composites for vaginal and cesarean deliveries and for all deliveries regardless of mode.

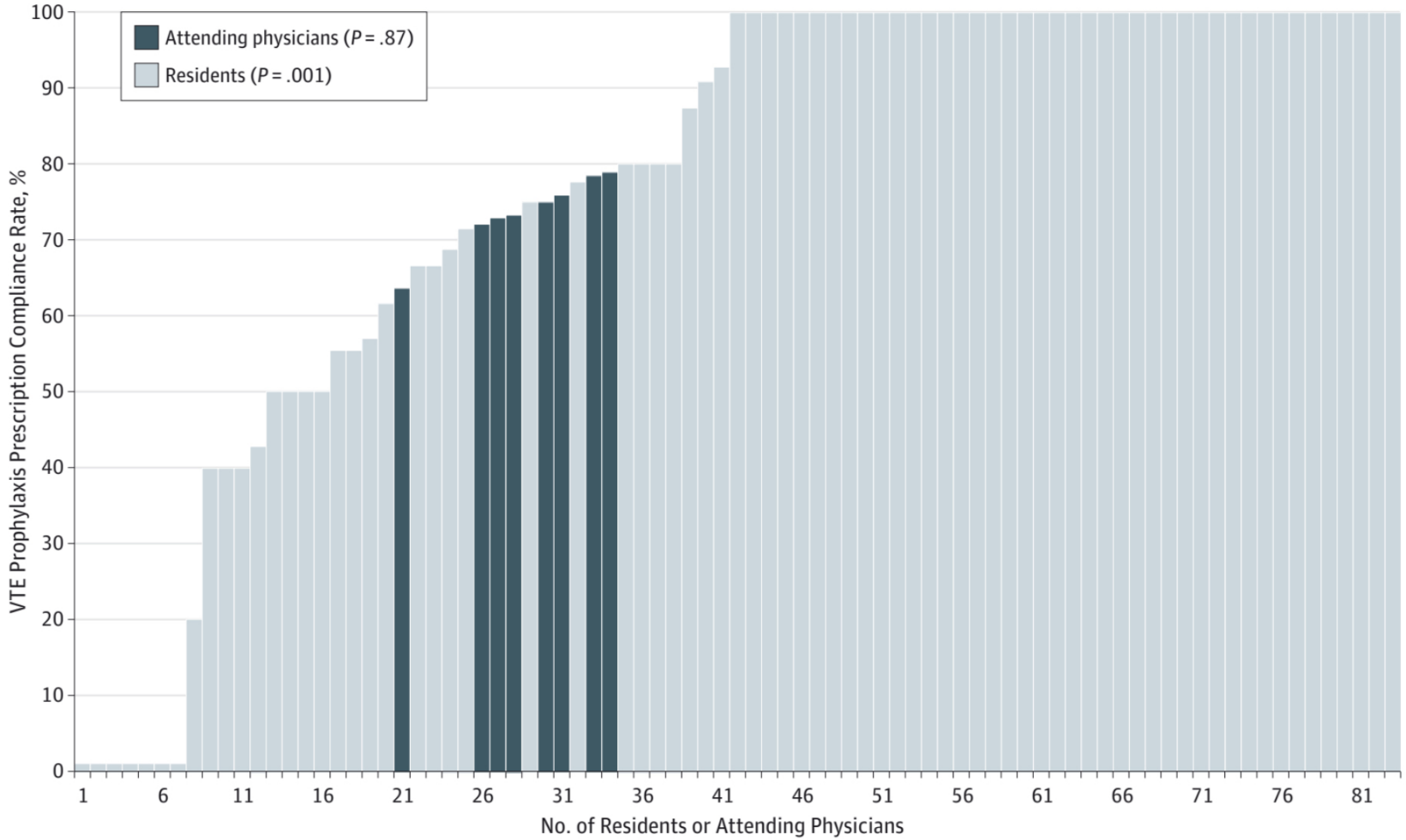
- **Results**: Obstetricians' residency program was associated with substantial variation in maternal complication rates. Women treated by obstetricians trained in residency programs in the bottom quintile for risk-standardized major maternal complication rates had an adjusted complication rate of 13.6%, approximately one-third higher than the 10.3% adjusted rate for women treated by obstetricians from programs in the top quintile (absolute difference, 3.3%; 95% confidence interval, 2.8%-3.8%). The rankings of residency programs based on each of the 9 measures were similar. Adjustment for medical licensure examination scores did not substantially alter the program ranking.

- **Conclusions:** Obstetrics and gynecology training programs can be ranked by the maternal complication rates of their graduates' patients. These rankings are stable across individual types of complications and are not associated with residents' licensing examination scores.

Lessons from the Literature: The same result was seen with Surgery programs – residency hospital quality data correlates with later patient outcomes

- Bansal et al. (2016) similarly did a retrospective study on 230,769 patients' discharge records from New York and Florida from 2008-2011 involving 24 general surgery procedures performed by 454 surgeons from 73 surgery residency programs.
- Results showed that ranking of residency program predicted procedural risk. Comparing the top tercile to the bottom tercile, differences were seen in death, complications, prolonged length of stay, and failure to rescue.
- This effect decreased with increasing years of practice. Although the differences were statistically significant, the magnitude of the effect was small, generally less than 1%.

Figure. Risk-Appropriate Venous Thromboembolism (VTE) Prophylaxis Prescription Compliance Rates

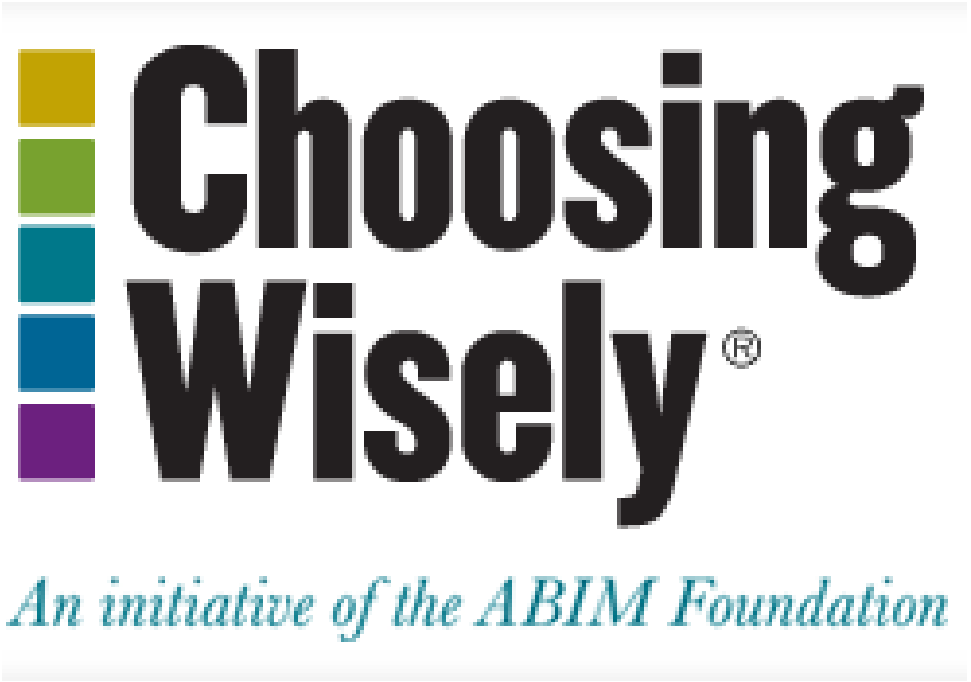


Compliance rates for risk-appropriate VTE prophylaxis prescriptions attributed to residents (light blue) and attending physicians (dark blue) are compared for all adult trauma patients admitted to the Johns Hopkins Hospital during the 2012-2013 academic year. Seven residents were 0% compliant, and 42 residents were 100% compliant.

Lau et al . JAMA Surgery (2015).

Lessons from the Literature: Surgery– Showing the resident where they fall in with the group data is an educational tool. Outliers do not always recognize their practice gap.

- Lau et al (2015) JAMA Surgery noted that “many common process measures are entirely dependent on resident physician with minimal direct, real-time oversight or feedback from attending physicians.”
- They looked at DVT presentation in all adult patients on the adult trauma service in 2012-2013. 75 residents prescribed 74% of 343 patients appropriate VTE prophylaxis. Habitual resident outliers in prescribing were seen. 42 had perfect ordering practices, 7 did not order any prophylaxis.
- They suggest the process quality measures used by The Joint Commission and CMS to evaluate hospitals and attending's as good sources of data, specifically appropriate antibiotics for CAP and ACE inhibitors for systolic CHF.



www.choosingwisely.org

More than 70 societies with membership of over 1 million clinicians currently participate in developing Top Five practice recommendation lists

Lessons from the Literature: <u>Multiple Residencies Working Together</u>– Consider a Resident Patient Safety Committee as a subset to the Hospital's Patient Safety Committee with residents across specialties

- Vanderbilt developed a "Choosing Wisely" committee of residents with faculty advisors with the goal of reducing daily unnecessary ordering of metabolic panels (BMP) and complete blood counts (CBC) on the inpatient medicine and surgery services.
- **Method:** The intervention was to do a didactic session with certain team and then regular data feedback with goal rates and peer comparison. 7824 patient-days in control group and 5759 patient-days in intervention group were evaluated.
- **Results:** The mean number of BMP tests decreased by 23% and CBC by 28% on the house staff services over a 10 month period. Patients with lab-free days increased by 4%. There were no adverse length of stay, ICU transfers, mortality or 30 day readmission rates.

Caringwith compassion.org supported by ACP

HISTORY AND PHYSICAL

Chief Complaint

History of Present Illness
The narrative should include pertinent items of the 5 bio-psychosocial care domains (see figure) that directly impact the presenting condition. Effects of the present illness on functional status should be noted.

Past Medical and Psychiatric History
Specifically enquire regarding mental health diagnoses, communicable diseases, and exposure-related conditions. Gynecologic history if indicated.

Medications, Allergies
Include assessment of adherence related to resources, access to food/water, storage limitations, etc.

Family History
Include mental health conditions and substance use disorders.

Social History
- SOCIAL SUPPORTS: Friends, relatives, support programs, and professionals; negative relationships, high-risk sexual interactions and interpersonal violence
- RESOURCES: Housing status, living environment, food access and sufficiency, childcare, income, transportation, health insurance
- BEHAVIORS: Substance use, somatization
- FUNCTION: ADLs, IADLs, education level, occupation and employment, literacy, numeracy

Review of Systems
Consider queries for weight loss/chills (HIV/TB); cough/hemoptysis (TB, tobacco-related disease, or other infectious pulmonary disease); skin lesions; foot concerns; genitourinary discharge or dysuria; mood concerns, hallucinations, or thought concerns.

Physical Examination
With deference to patient comfort and tolerance, include assessment of skin, feet, mood, affect, and mental status.

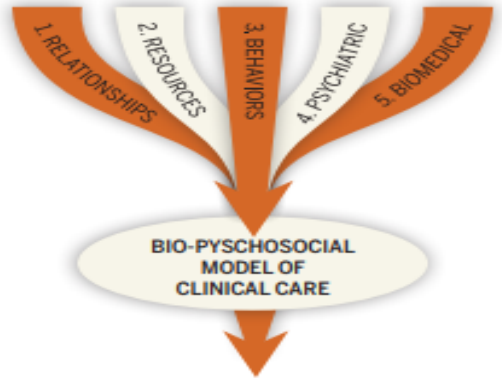
ASSESSMENT AND PLAN

Assessment
Summarize and interpret the presenting history. Include salient contributing concerns from the psychosocial domains. Summarize and interpret the pertinent findings from the physical exam and review of available data.

Problem List
A comprehensive problem list with necessary related differential diagnoses, diagnostic plans, and therapeutic plans would include:

- PRESENTING COMPLAINTS: Findings related to chief complaint, urgent concerns, or unstable conditions
- BIOMEDICAL CONDITIONS: Chronic health issues requiring active management, minor medical findings
- PSYCHIATRIC DISORDERS: Conditions impacting self management, function, access to care, or quality of life
- BEHAVIORAL AND SUBSTANCE USE DISORDERS: Identified stage of behavioral change, assessment of self efficacy
- SOCIAL SUPPORT SYSTEMS: Conditions requiring monitoring, counseling, intervention; sources of positive support or role modeling or self management assistance
- COMMUNITY AND ENVIRONMENTAL RESOURCES: Identified concerns related to housing, community environment/safety, food security, childcare, transportation, health insurance, income, etc.
- HEALTH MAINTENANCE: Risk-based assessment for transmissible diseases, substance-related diseases, nutritional deficiencies, exposure-related conditions, and standard screening

BIO-PSYCHOSOCIAL CARE DOMAINS



1. **Social Support Systems**
   Personal connections, relatives, and friendships. May be positive (e.g. marriage) or negative (e.g. interpesonal violence).
2. **Community and Environmental Resources**
   Health insurance, housing, transportation, community environment and safety, food security, childcare, income.
3. **Behavioral and Substance Use Disorders**
   Personality disorders, substance use, somatization.
4. **Psychiatric Disorders**
   Major conditions such as major depression, bipolar disorder, and schizophrenia.
5. **Biomedical Conditions**
   Communicable diseases such as TB, HIV, STIs, hepatitis, and respiratory diseases; complications of exposure such as skin diseases, frostbite, and trench foot; complications of tobacco, alcohol, and substance use; vitamin deficiency and malnutrition; sequelae of chronic diseases.

Resulting Functional Status
The net effect of all domains on a patient's life. Includes level of education, employment, social interactions, community roles, and life skills.

- ADLS: Eating, bathing/toileting, getting in and out of bed/chairs, dressing/grooming
- IADLS: Medication management, driving, food access and preparation
- Education level, occupation, literacy, numeracy, social and community engagement

AHRQ

TeamSTEPPS®

Team Strategies & Tools to Enhance Performance & Patient Safety

Performance Dimension Training

Set one or more SMART (specific, measurable, achievable, relevant, timely) goals that matter to your learners and label them as practice habits

Patient Care

- A practice that an intern specifically does (DVT prophylaxis), writing a discharge summary with smoking cessation.
- Using risk calculators in note.

Systems-Based Practice

- In a group, pick a process that is frustrating in clinical care.
- Lead/Participate in TEAMSTEPPS, LEAN training or Health Care Matrix QI.

Medical Knowledge

- Giving a synopsis of a relevant article about a patient each week to the group.
- Write a clinical abstract of an interesting case twice a year.

Interpersonal Communications

- Have a senior resident or faculty evaluate Sign In/Sign Out.
- Have nurse evals reflect communication skills and collaboration.

Practice-Based Learning and Improvement

- Do a self-reflection tool and identify processes to improve.

Professionalism

- Finishing paperwork on time (H+P, Discharge Summary)
- Answering pages on time

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