

# Health Systems Science Education: Preparing for the 21st-Century Healthcare System

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# Objectives

1. Define Health Systems Science and describe its role in the medical education framework.
2. Describe the increasing need for clinical learning environments to achieve competency-based education, specifically in regards to Health Systems Science competencies.
3. Review strategies for allowing students to add value to care delivery and educating about Health Systems Science principles during clinical experiences.
4. Discuss challenges in integrating Health Systems Science principles in medical education.



3 Questions and Concepts



# Question 1

Healthcare professionals have received sufficient education to optimally function in evolving health systems:

1. Yes
2. No

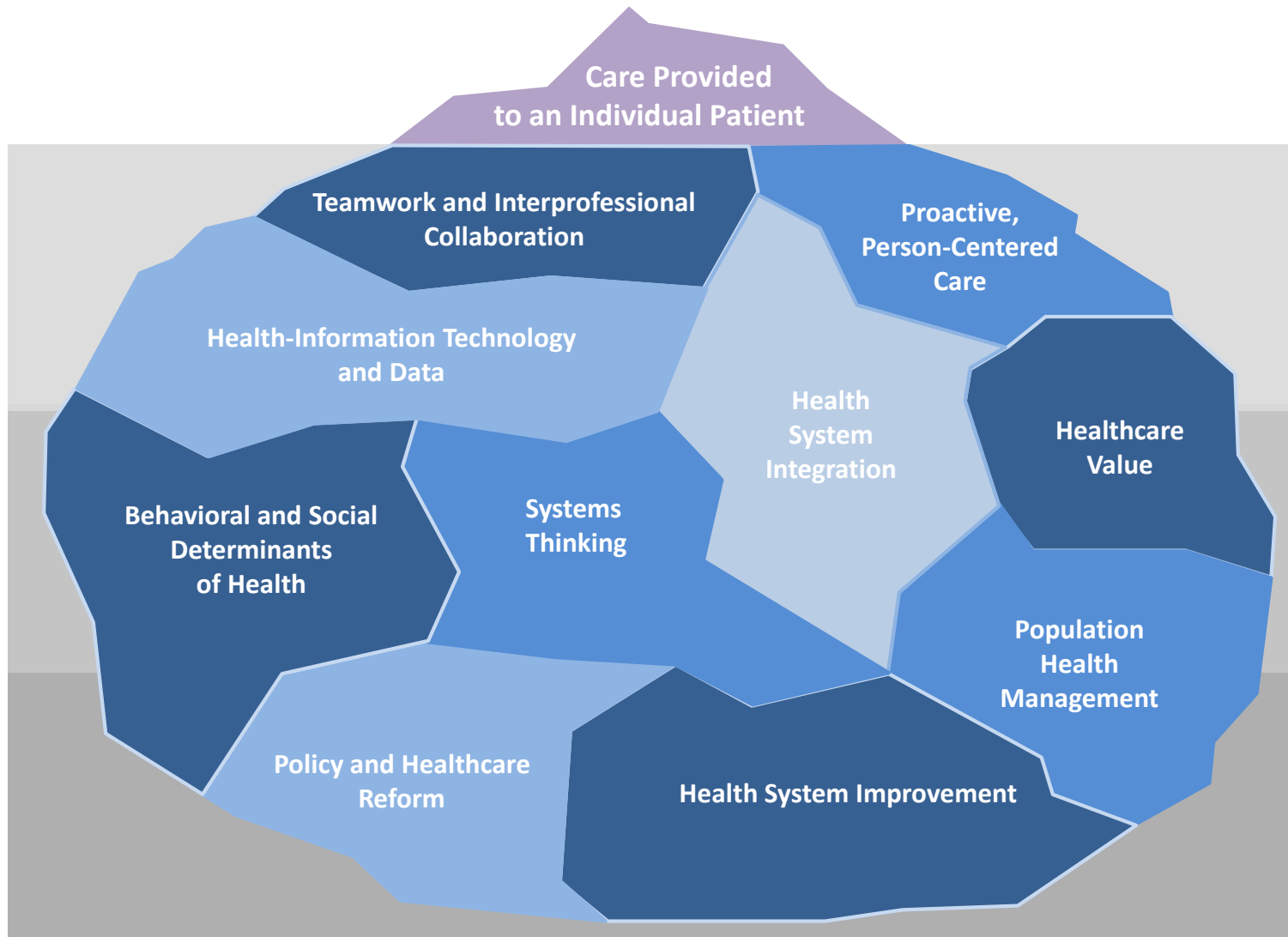


# Concept 1

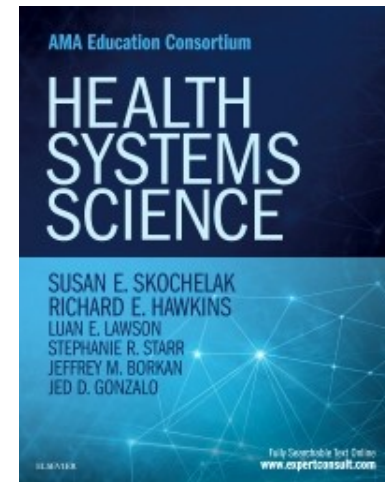
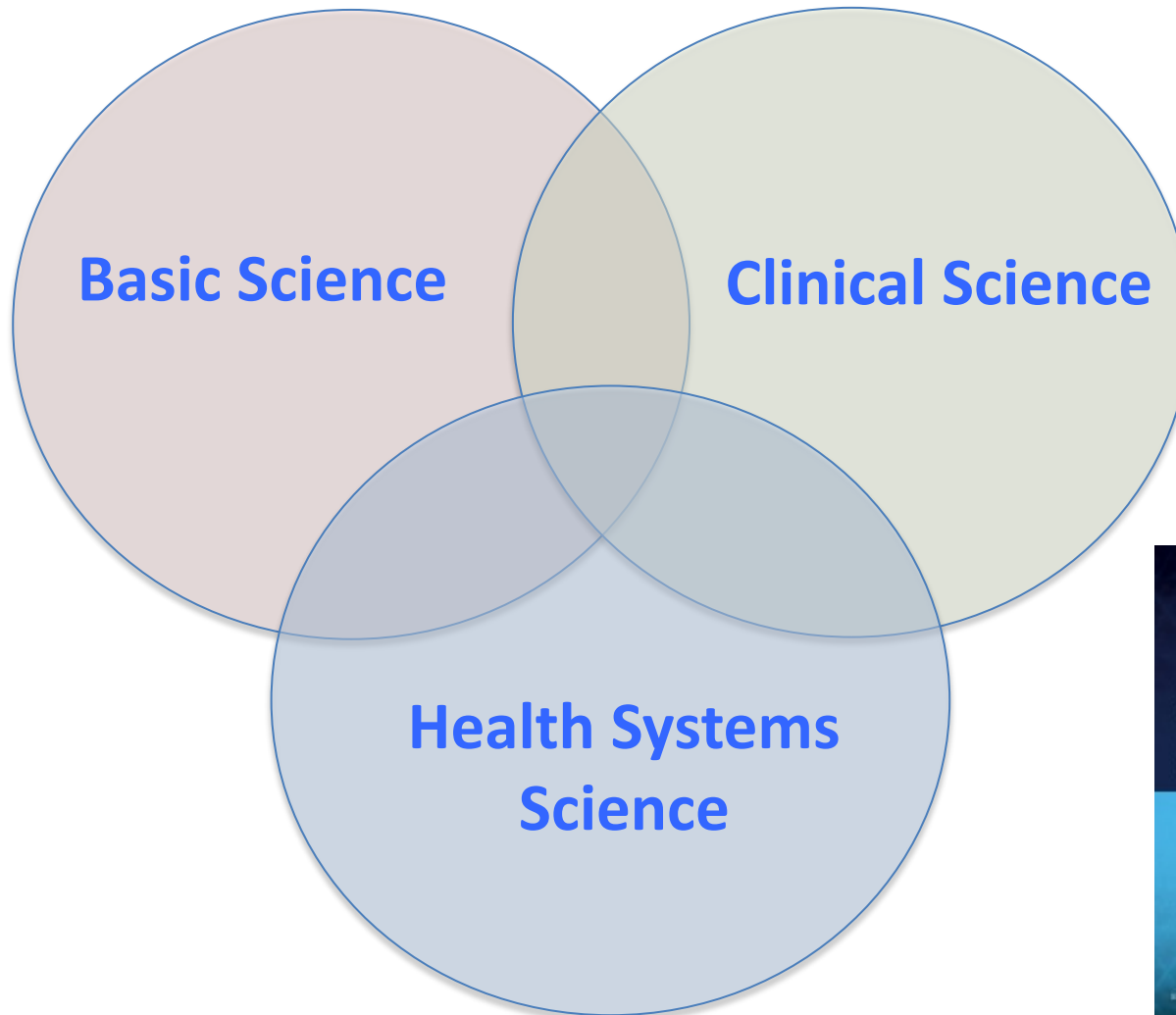
Health Systems Science is the emerging  
“third pillar” of medical education.



# Iceberg of Health Care Transformation



# A New Triad



# Health Systems Science Competencies

**Systems-Based Practice:** Demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care

Crosson et al. Gaps in Residency Training Should Be Addressed to Prepare Doctors for 21<sup>st</sup>-Century Delivery System. Health Affairs, 2011

Lucas. Getting the improvement habit. BMJ. 2015.

Gonzalo, et al. Identifying and Defining Curricular Content Domains for Health Systems Science. Acad Medicine 2016.

Gonzalo, D Wolpaw, S Skochelak. Chapter 1. Health Systems Science. Elsevier. December 2016.

Havyer et al. Science of health care delivery milestones for undergraduate medical education. BMC Medical Education 2017.

Gonzalo et al. Aligning Education with Health Care Transformation: Identifying "New" Faculty Competencies. Acad Medicine 2017.



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# Health Systems Science Competencies

## Functional Competencies

Patient-Centered Care

Processes and Collaboration

Clinical informatics, data, tools

Population and public health

Policy and payment

Value-based care

Health system improvement

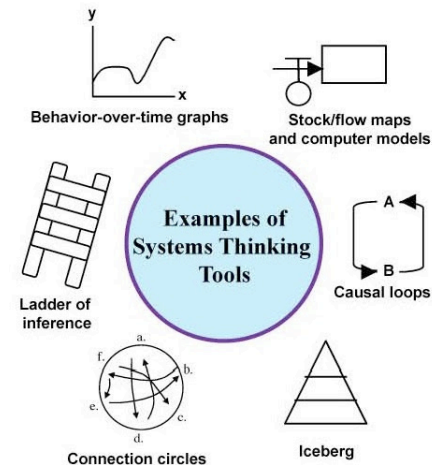
## Foundational Competencies

Teaming

Leadership

Change Agency and Management

Systems Thinking



Crosson et al. Gaps in Residency Training Should Be Addressed to Prepare Doctors for 21<sup>st</sup>-Century Delivery System. Health Affairs, 2011

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# LCME and ACGME

## DCI - 3.5 LEARNING ENVIRONMENT/PROFESSIONALISM

*'A medical school ensures that the learning environment of its medical education program is conducive to the ongoing development of explicit and appropriate professional behaviors in its medical students, faculty, and staff at all locations and is one in which all individuals are treated with respect.'*

## CLER Focus Areas/Common Program Requirements

1. Patient Safety
2. Health Care Quality/Disparities
3. Care Transitions
4. Supervision
5. Fatigue Management, Mitigation, and Duty Hours
6. Professionalism



# HSS Curricular Continuum

Year 1

- SHS711 - Science of Health Systems
  - Patient Navigator Roles (n=150 students); Systems Ethnographers

Year 2

- SHS721 - Science of Health Systems Course (n=150 students)

Year 3

- Integrated Clerkship HSS Exercises (several pilots)

Year 4

- SHS743 - Translating Health Systems (n=150 students)
- HSS Electives (Interprofessional Academy Elective, Population Health Elective)

GME

- Core HSS Curriculum (4 hours across all GME programs)
- HSS Resident Course (1-week immersive course, n=40)

Faculty

- Health Systems Science Academy (Year 1 n=14, Year 2 n=29)
- Health Systems Science Seminar Series



# Question 2

When medical students are on clinical rotations, they are:

1. An asset - they add value to care delivery and help advance the team's work for the patient.
2. A time and resource "liability" – they tend to require more work and investment than the value they add



# Concept 2

Value-added roles can improve alignment with clinical care while also enhancing education in HSS.



# Are medical students an asset or liability?



**“Value-Added Medical Education:** Experiential roles for students in practice environments that have the potential to positively impact individual patient and population health outcomes, costs of care, or other processes within the health system, while also enhancing student knowledge, attitudes, and skills in Clinical or Health Systems Science.

Direct patient care
History-taking
Evidence-based medicine
Patient education
Patient advocates
“Care Extenders”
Clinical process extenders
Safety Analysts
QI Team Extenders
Population Health Managers
Research and systems projects
“Systems” Projects

Shea et al. Compensation to a dept. of medicine for the teaching of medical students. NEJM, 96.

Jones et al. On the cost of educating a medical student. Acad Medicine, 97.

Lin, et al. Value-Added Medical Education: Engaging Future Doctors to Transform HealthCare Today, JGIM 2014

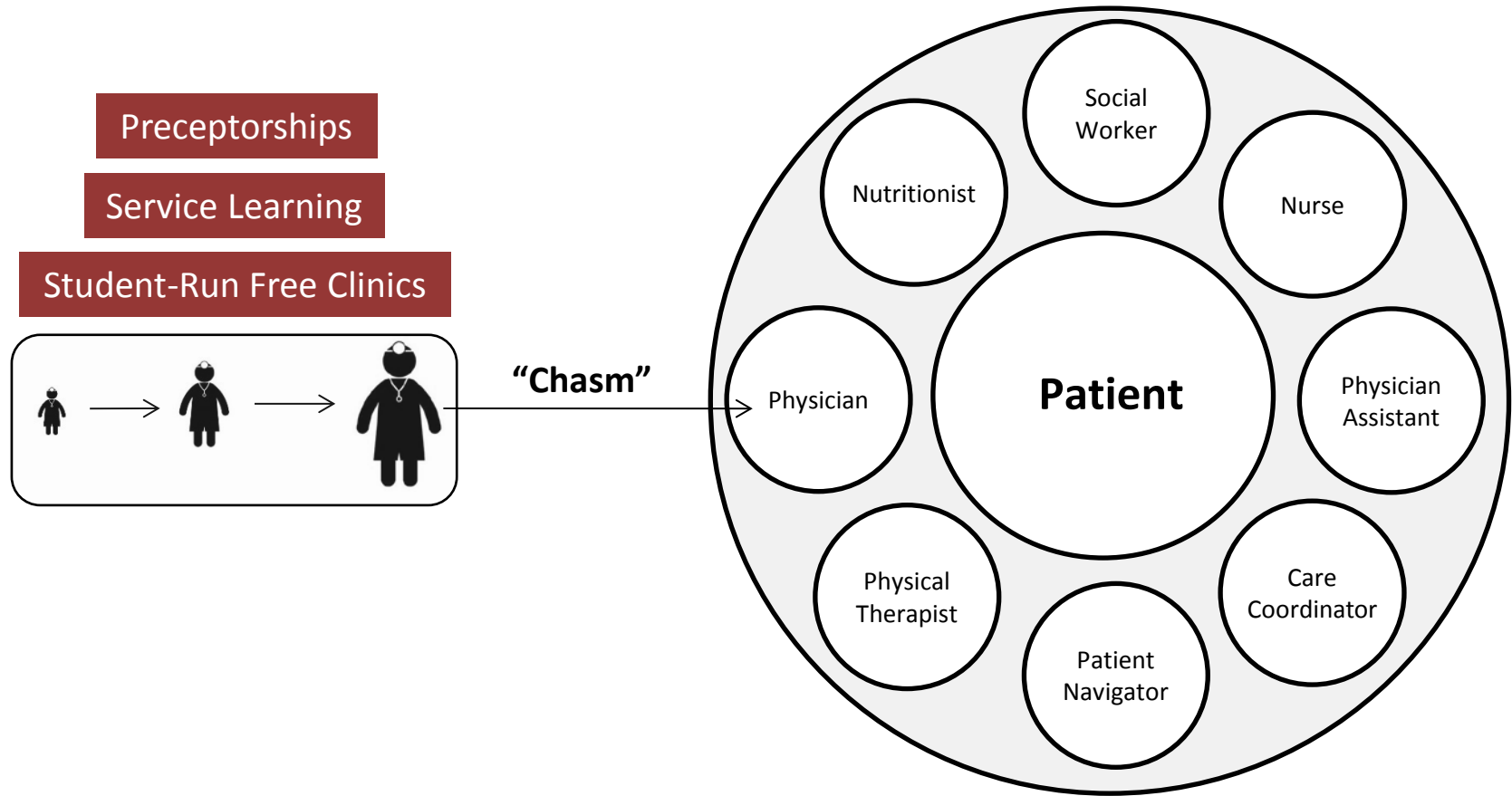
Gonzalo et al. Medical Students as Systems Ethnographers: Exploring Patient Experiences and Systems Vulnerabilities in the ED. AEM, 2017

Gonzalo et al. A Constructive Reframing of Student Roles Using a “Communities of Practice” Lens. Acad Medicine 2017

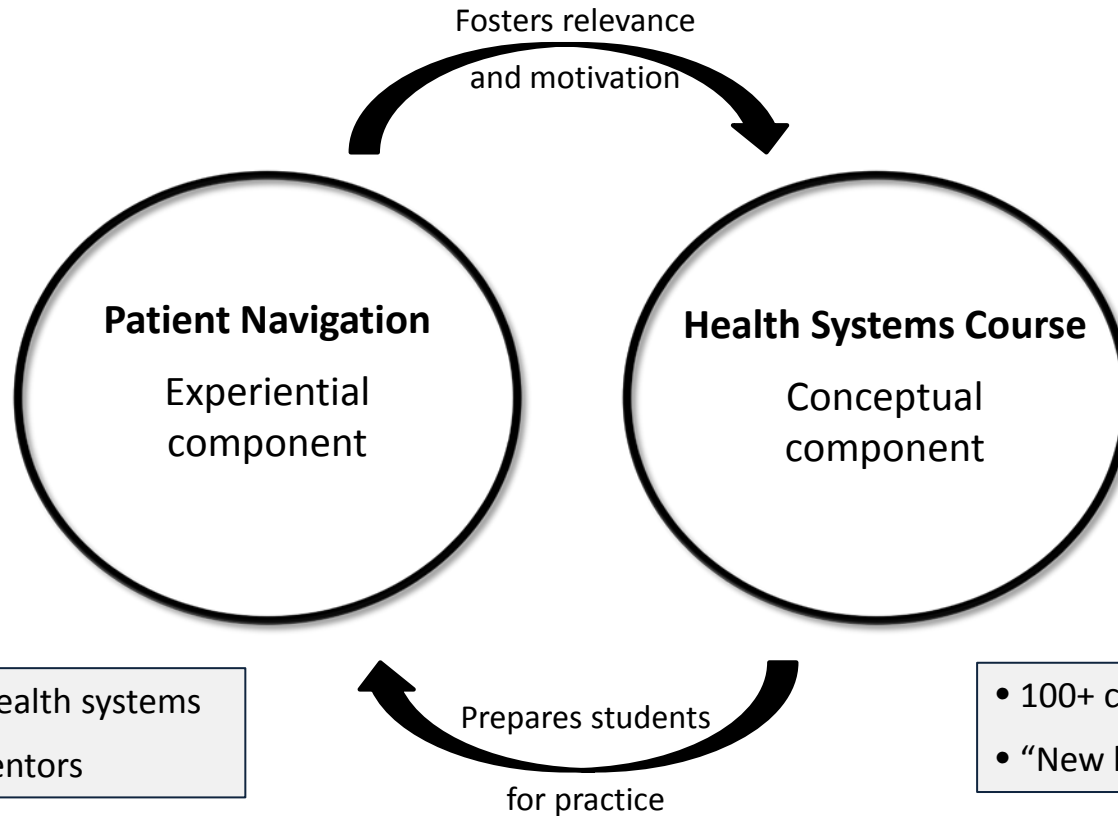


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# Current Education Model: The Mini Physician Model



# Systems Navigation Curriculum



Freeman. Patient navigation: a community centered approach. *Cancer education*, 2006.

Freund et al. National Cancer Institute Patient Navigation Research Program. *Cancer* 2008.

Gonzalo JD et al. Educating for the 21st-Century Healthcare System: Basic, Clinical and Systems Sciences. *Acad Medicine*. 2015.

Gonzalo JD et al. Value-Added Clinical Systems Learning Roles that Transform Education and Health. *Acad Medicine*, 2016.



# An Example – IM Clinic

**Team:** 2, 1<sup>st</sup>-year students, care manager, social worker, physician mentor

**Case:** 84F with multiple comorbidities with “↑ no show” rate. Through in-clinic discussions, calls, and home visits, students learned the patient’s ex-husband, was an alcoholic, and her primary means for transportation. In her cluttered apartment, she had fallen 3x during the past year, each resulting in a fracture. Students helped facilitate:


- (1) A motorized wheelchair,
- (2) In-home ramp,
- (3) Walk-in shower, and,
- (4) Dependable source for transportation.


Students helped the patient apply for public assistance, and advocated for her while she was in clinic. Following visits, students educated the patient about her treatment plan, and confusing areas. Students determined moving to a nursing home was financially unfeasible. Although she qualified for assistance, the process of approval would be lengthy. Students reached out to local churches to help identify in-home needs. They identified an organization willing to volunteer weekly and help her with activities of daily living, and providing an expanded social network.


## Functional Competencies

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# Question 3

Who should be teaching Health Systems Science?

1. Physicians
2. Health system leaders (e.g. CMOs, CQOs, CNOs)
3. Community-based care managers and nurses
4. Other interprofessional providers



# Concept 3

Integrating HSS into education and care delivery  
is a challenge.



# Comments from the “Frontlines”

## Importance of Learning HSS

1. “If medical education isn’t broke, don’t fix it.”
2. “HSS is too complex and best learned in residency or practice.”
3. “Early students do not have skills to contribute to health care, and the roles already exist.”
4. “Health Systems Science is not yet a true science.”

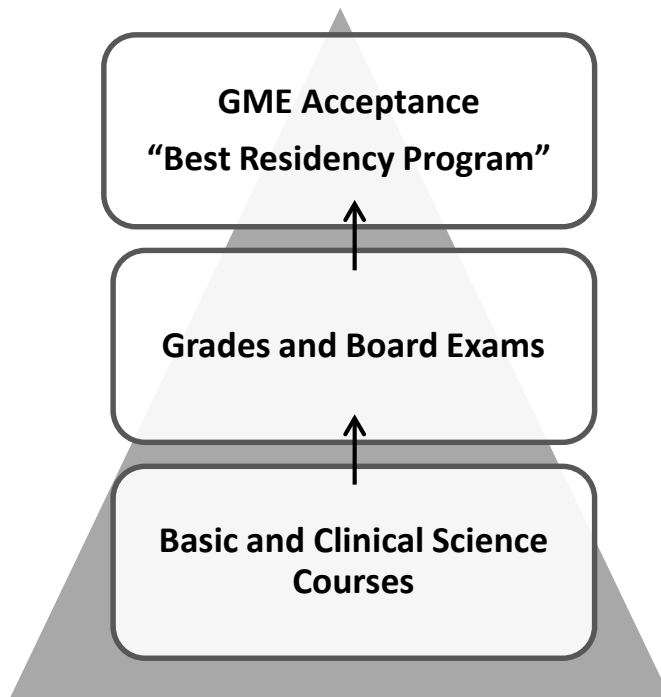
## Practical Concerns

1. “There is limited space in an already packed curriculum.”
2. “Few faculty have the knowledge and skills to teach HSS.”
3. “Accreditation agencies and licensing boards do not support medical education transformation.”
4. “Evolving health systems are not ready to partner with schools with HSS curricula.”



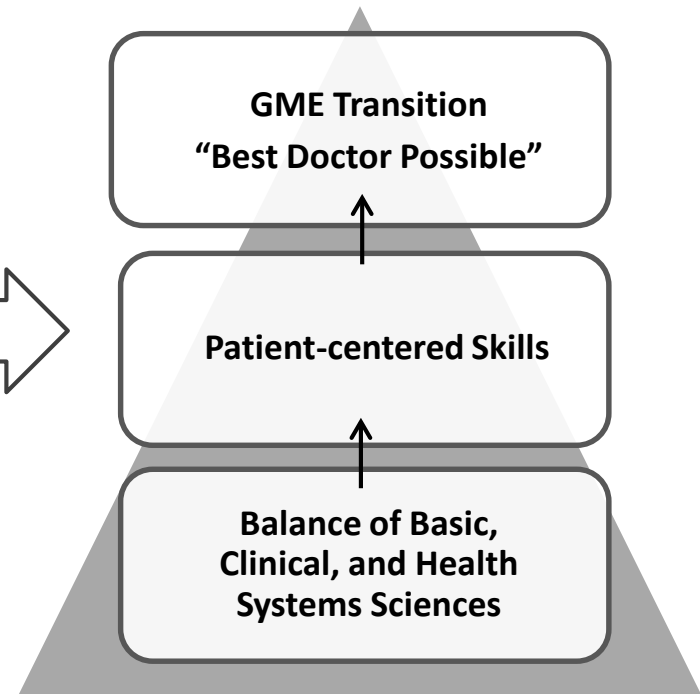
# Key Challenge: Student Perspective

## Current Medical Student Priorities



**At Odds**

## Alternative Medical Student Priorities



# Health Systems Science is a “Call to Action”

1. The “Expanding Educator Bench”
  - New roles (especially interprofessional providers)
  - Evolving roles (especially clinical mentors)
2. “New” culture required in medical education and healthcare
  - Need for better integration of academic health center missions

# Conclusion

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**Thank you for inviting me!**  
**Comments or questions?**

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