Health System Science: The Third Science

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Employment: Ohio University Heritage College of Osteopathic Medicine
No Commercial Conflicts
Objectives

1. Describe Health System Sciences.
2. Predict how health system transformation will impact your career.
3. Strategize how you alter educational goals to become a leader in the new care paradigm.
CASE:
Traditional Medical Education Topics

<table>
<thead>
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<th>Clinical Vignette</th>
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<td>A 71-year-old male presented to the emergency room with shortness of breath. In the emergency room, he is found to be tachypneic and hypoxic (Oxygen saturation of 92%); a chest x-ray suggests bilateral pulmonary edema. The patient is diagnosed with new-onset congestive heart failure and acute kidney injury and admitted to the internal medicine service.</td>
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During the hospitalization, the patient is treated with intravenous diuretics, oxygen supplementation, low sodium diet, and physical therapy. A cardiology consultation is ordered, and the cardiology team believes the acute onset heart failure is potentially secondary to ethanol cardiomyopathy. A transthoracic echocardiogram is performed, which shows global wall motion abnormalities and an ejection fraction of 30%. Over the next 5 days, the patient is monitored for ethanol withdrawal and weaned from oxygen supplementation. The intern prepares the discharge instructions and summary, which includes six new medications and close follow up. He orders a visiting home nurse to go to the house and provide guidance, help administer and monitor medication adherence, check home safety and measure blood pressure and weight. The patient is discharged to home.

Four days later, the patient deteriorates at home and calls 911. An ambulance takes him back to the hospital’s emergency room, and he is readmitted to the hospital with acute congestive heart failure.

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Basic science

Clinical science

CORE DOMAINS

- Health care structures and processes
- Health care policy, economics, and management
- Clinical informatics and health information technology
- Population health
- Value-based care
- Health system improvement
POLICY, MANAGEMENT, AND ECONOMICS

THE IHI TRIPLE AIM

Population health

Experience of care

Per capita cost

Quality
(Outcomes + Safety + Service)

Value = \frac{\text{Quality}}{\text{Total cost}}

Clinical Informatics

- Imaging informatics
- (Clinical field) informatics
- Bioinformatics (cellular and molecular)
- Legal informatics
- Informatics = people + information + technology
- Research informatics
- Consumer health informatics
- Clinical informatics (person)
- Biomedical and health informatics
- Public health informatics (population)
- Chemoinformatics

HEALTH SYSTEM IMPROVEMENT

CROSS-CUTTING DOMAINS

Leadership and Change Agency
