Clinical Immersion
(Expectations and Concepts)

Mark Johnson MD
Choose your own adventure lecture

• 1) Story
• 2) Exercise
• 3) Idea generation
• 4) Medical Lecture
Hospital Best Practices

• Meetings
  • Be patient
  • Be punctual
  • Have a designated communicator on team (rotate)

• Clothing
  • Always wear business casual

• Respect patients and caretakers

• Isolation – MRSA/Cdiff/Airborne/TB
Rules for the Passive Observer

• Don’t touch anything Blue
• Sterility maintained by controlling contact
• Ask where you should stand
• Hold you hands folded and in front of you
• Have ID badge visible
Sterile Field

• Be alert in the Operating Room
• Listen to directions from staff and surgeons
In the Clinics

• Keep experiences private and professional
  • Be prepared for what you may see or hear
  • Don’t share publicly (HIPAA)
Medical Culture

• Put the patient first and center – Mayo model
• “First do no harm” – Hippocratic Oath
• See one, do one, teach one
• Evidence Based Medicine – Lidocaine story, SGC in ICU
• Guidelines.gov
Fundamental Theorem of Informatics

\[(\text{brain} + \text{computer}) \geq \text{brain}\]

(Friedman, 2009)
Exercise 1: write down all the people in health care system
Who (health care)

- Medical Assistant
- Nursing Assistant
- Home Health Aide
- LPN
- Physician
- Therapist
- RN
- Pharmacy Tech
- Sonographer
- Lab Tech
- Pharmacist
- EMT
- Rad Tech
- PT/OT/ST
- Health informatician
- Respiratory Therapist
Who (health care pt 2)

- Phlebotomist
- Surgical Tech
- Physician Assistant
- Nurse Practioner
- Dietician
- Orderly
- CRNA

- Physician
- Optometrist
Exercise 2

• List all the specialties
Specialties

- Allergy and Immunology
- Anesthesiology
- Dermatology
- Diagnostic Radiology
- Emergency Medicine
- Family Medicine
- Internal Medicine
- Medical Genetic
- Neurology
- Nuclear Medicine
- OB/GYN
- Ophthalmology
- Pathology
- Pediatrics
- Physical Medicine and Rehab
- Preventative Medicine
- Psychiatry
- Radiation oncology
- Surgery
- Urology
Exercise 3:

- List all subspecialties for medicine or surgery
Internal Medicine Subspecialties

• Advanced Heart Failure and Transplant Cardiology
• Cardiology
• Cardiac Electrophysiology
• Critical Care Medicine
• Endocrinology
• Gastroenterology
• Geriatrics
• Hematology and oncology
• Infectious disease
• Interventional cardiology
• Nephrology
• Oncology
• Pulmonology
• Rheumatology
• Sleep medicine
• Sports Medicine
• Transplant hepatology
Surgical Subspecialties

- Colon and rectal surgery
- General surgery
- Surgical critical care
- Gynecologic oncology
- Plastic surgery
- Hand surgery
- Neurosurgery
- Neurointerventional
- Ophthalmic surgery
- Oral and maxillofacial surgery
- Orthopaedic surgery
- Otolaryngology
- Pediatric surgery
- Thoracic surgery
- Vascular Surgery
Team Approach

• Communication, Coordination, Decision Making
• Valued over information memorization
My Story @ UIUC, UIC-Rockford

• Problem Solving with the best—builds confidence
• Complex university system – opportunity recognition
• Greek life – prepares for social politics and rigorous training
Future Trends

• Future is here – just not evenly distributed
• Health care is 20 years behind everyday life
• Less invasive
• Abundance Management/Complexity
• IOM-NAE
• New Engineering Med school
• Game Theory
• Simulation
Systems Medicine Disease: Disease Classification and Scalability Beyond Networks and Boundary Conditions

Richard Berlin*, Russell Gruen² and James Best³,4

1 Department of Computer Science, University of Illinois, Urbana, IL, United States, 2 Department of Surgery, Nanyang Institute of Technology in Health and Medicine, Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, Singapore, ³Lee Kong China School of Medicine, Nanyang Technological University, Singapore, Singapore, ⁴Imperial College, London, United Kingdom

In order to accommodate the forthcoming wealth of health and disease related information, from genome to body sensors to population and the environment, the approach to disease description and definition demands re-examination. Traditional classification methods remain trapped by history; to provide the descriptive features that are required for a comprehensive description of disease, systems science, which realizes dynamic processes, adaptive response, and asynchronous communication channels, must be applied (Volkenhauer et al., 2013). When Disease is viewed beyond the thresholds of lines and threshold boundaries, disease definition is not only the result of reductionist, mechanistic categories which reluctantly face re-composition. Disease is process and synergy as the characteristics of Systems Biology and Systems Medicine are included. To capture the wealth of information and contribute meaningfully to medical practice and biology research, Disease classification goes beyond a single spatial biologic level or static time assignment to include the interface of Disease process and organism response (BechTEL, 2017a; Green et al., 2017).

Keywords: systems medicine, disease, scalability, networks, boundary conditions
Food Discovery with Uber Eats: Building a Query Understanding Engine
June 6, 2018

Uber engineers share how we process search terms for our Uber Eats service, using query understanding and expansion to find restaurants and menu items that best match what our eaters want.

From Beautiful Maps to Actionable Insights: Introducing kepler.gl, Uber’s Open Source Geospatial Toolbox
May 29, 2018

Created by Uber’s Visualization team, kepler.gl is an open source data agnostic, high-performance web-based application for large-scale geospatial visualizations.

Growing the Data Visualization Community with deck.gl v5
May 25, 2018

deck.gl v5 incorporates simplified APIs, scripting support, and framework agnosticism, making the popular open source data visualization software more accessible than ever before.

Mediation Modeling at Uber: Understanding Why Product Changes Work (and Don’t Work)
1. **4 more hospitals join Apple health records project**
   Four more hospitals have recently signed on to Apple's health records project. By Julie Spitzer - 9/7/18

2. **Elliott Management, Bain Capital favored in bidding for athenahealth**
   Bain Capital and Elliott Management have teamed up as the frontrunner in the race to acquire athenahealth, the New York Post reports. By Julie Spitzer - 9/7/18

3. **Hiawatha Community Hospital to replace McKesson EHR with athenaNET**
   Hiawatha (Kan.) Community Hospital is slated to transition to an athenahealth EHR Sept. 11, replacing the McKesson EHR the hospital has used for nearly six years, Hiawatha World Online reports. By Jessica Kim Cohen - 9/7/18

4. **Open Source EHR Association to release international version of VA's VistA EHR**
   Open Source EHR Association launched an initiative to create an international version of VistA, the Department of Veterans Affairs' homegrown EHR. By Jessica Kim Cohen - 9/7/18

5. **Apple is hiring for its health business; Cerner president sells $10M in shares & more -- 8 health IT key notes**
   Here are eight recent news updates from technology and health IT companies: By Jessica Kim Cohen - 9/7/18

6. **New Jersey Hospital Association establishes data center**
   The New Jersey Hospital Association launched a new data and informatics center, which will focus on leveraging data to gain a better understanding of New Jersey's health challenges. By Anuila Vithal - 9/6/18
Top 10 Patient Safety Concerns for Healthcare Organizations 2018

ECRI Institute’s Top 10 Patient Safety Concerns for 2018

1. Diagnostic errors
2. Opioid safety across the continuum of care
3. Internal care coordination
4. Workarounds
5. Incorporating health IT into patient safety programs
6. Management of behavioral health needs in acute care settings
7. All-hazards emergency preparedness
8. Device cleaning, disinfection, and sterilization
9. Patient engagement and health literacy
10. Leadership engagement in patient safety