EMERGENCY MEDICINE

FUTURE CHALLENGES AND DISRUPTIONS
NO CONFLICTS OR DISCLOSURES

GOALS:

DEFINE EMERGENCY MEDICINE

REVIEW FUTURE CHALLENGS AND DISRUPTIONS

Judith E. Tintinalli, MD, MS
Professor
Department of Emergency Medicine
Adjunct Professor, Medical Journalism,
School of Journalism
and Mass Communications
Adjunct Professor, Health Policy and
Administration, School of Public Health
University of North Carolina
Clinical Professor,
Michigan State University
College of Osteopathic Medicine
EM OF 2020

- A POPULATION-BASED SPECIALTY
- A SYSTEM OF CARE
- A UNIQUE CLINICAL PRACTICE
- A MANAGEMENT SPECIALTY
POPULATION-BASED

- ALL DISORDERS, ALL AGES
  - No target population
  - Complaint based, not organ based
  - Classless, genderless
  - Low to High acuity
  - Care for the ages: young and old
  - Only specialty providing care independent of patient’s ability to pay
POPULATION-BASED

- ANY DAY AND ANY TIME
- CARE WHEN PREVENTION AND COMMUNITY SERVICES FAIL*
  - 2002-2015, 30% ↓ in PCP visits (938 → 637/1000m Medicaid and > 65)
  - 2002-2015, 12% ↑ ED visits (385 → 430/1000)

*S-C Chou, AK Venkatesh, NS Trueger, SR Spitts. 'Primary Care Office Visits for Acute Care Dropped Sharply in 2002-15, While ED visits Increased Modestly’ Health affairs 38:2, Feb 1, 2019
POPULATION-BASED

- Reflects age distribution of community
- Reflects prevalence of community disorders
Impacts the Health of the Public

- **Primary Prevention**
  - Infection Control Practices (flu)
  - Post-Exposure Prophylaxis (Rabies HIV Tetanus)

- **Secondary Prevention**
  - Hypertension
  - ACS/TIA
  - HIV/STD

- Education, Treatment, Referral
- Often the first to identify outbreaks
  - Anthrax, EBOLA, MERS, Legionnaire’s
A SYSTEM OF CARE

- A FRAMEWORK FOR EMERGENCY CARE
  - FROM COMMUNITY ➔ ED ➔ FOLLOWUP
- A SET OF ORGANIZED HEALTH CARE PROFESSIONALS
  - PHYSICIANS, NURSES, APPS, EMTS, PARAMEDICS, FIRST RESPONDERS
- TRAINING FOR PROCESS AND PROCEDURES
  - TRIAGE AND TELE-TRIAGE
  - TELEMEDICINE
  - DECISION RULES

Sax DR et al ‘Tele-Triage Outcomes for Patients with Chest Pain: Comparing Physicians and Registered Nurses’ Health Affairs: 37,12, Dec 2018
A SYSTEM OF CARE

- LEGISLATIVE AND STATE SUPPORT
  - TRAUMA SYSTEMS
  - POISON CONTROL CENTERS
  - EMS SYSTEMS

- HOSPITALS
  - PROVIDE SPECIALTY COVERAGE FOR TIME-SENSITIVE CONDITIONS
  - TRAIN RESIDENTS AND NURSES

- MEDICAL SCHOOLS AND COMMUNITY COLLEGES
  - TRAINING OF HEALTH CARE PROVIDERS
UNIQUE CLINICAL PRACTICE

- TIME-SENSITIVE AND SPECIALTY CONDITIONS
  - TRAUMA, SEPSIS, STROKE, STEMI
- ANY ANATOMIC OR ORGAN SYSTEM CONDITION
  - EYE DENTAL, SKIN, BONE, LIGAMENT...
- ANY NONSPECIFIC CHIEF COMPLAINT
  - FEVER, ABDOMINAL PAIN, HEADACHE, MALAISE, COUGH
EM: HIGH SENSITIVITY for illness and injury

- Other specialists want HIGH SPECIFICITY for diseases that fit their practice
- General practice: most common, least serious disorders first
- Emergency Medicine: most serious disorders first
UNIQUE CLINICAL PRACTICE

- CARE FOR MULTIPLE PATIENTS SIMULTANEOUSLY
  - TRIAGE
  - STANDING ORDERS
  - MULTITASKING
  - PRIORITIZATION
  - RISK STRATIFICATION
  - RAPID DECISION-MAKING
UNIQUE CLINICAL PRACTICE

- INTEGRATION
  - Care across specialty lines

- COORDINATION
  - Prioritizes care planning
A MANAGEMENT SPECIALTY

- DECISION MAKERS
- MANAGERS
  - Standardize/integrate policies and procedures to reduce variation*
  - Organize levels of care
  - Data analysis for efficiency

Sabbatini AK et al ‘Reducing Variation in Hospital Admissions From the Emergency Department for Low-Mortality Conditions May Produce Savings’ HealthAffSept 2014, 33:9, 1655
A MANAGEMENT SPECIALTY

- SYSTEMS-BASED PRACTICE
  - Integration
    - Care across specialty lines
  - Coordination
    - Prioritizes care planning

- THE BIG PICTURE
  - Complaint as part of a body system
  - Treatment plan as part of the health system
TURN CHALLENGES AND DISRUPTIONS INTO OPPORTUNITIES
IMPROVE OUR MESSAGE

- WE ARE A SYSTEM OF CARE
- WE ARE PART OF THE CONTINUUM OF CARE
- THINK OF SYSTEM IMAGES AND STORIES THAT EXPLAIN WHO WE ARE
EM UNDER THREAT

- CLOSURE OF HOSPITALS AND RESIDENCY PROGRAMS
  - USACS AKRON, OHIO
  - DREXEL
  - CRITICAL ACCESS HOSPITALS
- RAPID MED SCHOOL AND RESIDENCY EXPANSION
  - ACEP MANPOWER STUDY UNDERWAY
  - AMA DOES NOT INCLUDE DO PROGRAMS IN REPORTS
- ADVANCED PRACTICE PROVIDERS*
  - INCONSISTENT TRAINING, ‘DIPLOMA MILLS’
  - NOT REQUIRED TO ATTEND ED CONFERENCES
  - US STATE VARIABILITY ON INDEPENDENT PRACTICE
  - LACK OF EM STANDARDS/BENCHMARKS FOR SUPERVISION
  - INCONSISTENT PRACTICE FOR ACUITY LEVELS
  - PHYSICIAN DOCUMENTATION STANDARDS

*Tucci, Veronica, response to ‘benchmark patients /hr for EPs and the Entire ED (including extenders)’ ACEP blog, 10/14/19
MAKE OPPORTUNITIES

- PROVIDE AND PROVE VALUE-BASED CARE
- WORK WITH OTHERS
- TRAIN LEADERS
- AI
- THE SEE-SAW OF EM LIFE
- THE DIGITAL DOC
- TELEHEALTH
US EMERGENCY CARE = 3% Health Care Expenditures

ED ADMISSIONS = 8.3% Health Care Expenditures

ED DIAGNOSTICS important For Diagnosis Inclusion And Exclusion

THE ED CAN DECREASE HOSPITAL COSTS:
- Only necessary admissions
- Reduce readmissions*
- Observation units
- Reduce clinical variation


Laniece I et al 'Incidence and main factors associated with early unplanned hospital Readmission among French medical inpatients aged 75 and over admitted through emergency Units' ageandageing2008:37:416
VALUE-BASED CARE

- Maryland 2014: Global Budget Revenue for all hospital services
- 2014-16, One center, 1% ↓ ED generated hospital admit, 3.3% ↓ inpatient stays, 2.7% ↑ obs days (mostly lower acuity admits)
- 2012-15, 10 centers, 0.8% ↓ ED generated hospital admit (vs 0.2% ↓ controls)


VALUE-BASED CARE

- Appropriate Use Criteria (AUC) and Clinical Decision Support
- Effective Jan 1, 2020, financial effects 2021
- Reasoning for advanced imaging for suspected PE, headache, hip pain, back pain, neck pain

Silverman, M ‘Check the Right Box’ Emergency Physicians Monthly, Nov 2019 p 6-7
<table>
<thead>
<tr>
<th>Concept</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case Conferences and Grand Rounds</td>
<td>Analyze if/how diagnostics, POCUS, and interventions provided value and decreased cost</td>
</tr>
<tr>
<td>Journal Clubs</td>
<td>Review methods and conclusions to determine clinical significance; review non-clinical journals</td>
</tr>
<tr>
<td>Lectures</td>
<td>Core Concepts of value-based care</td>
</tr>
<tr>
<td>Patient Interactions</td>
<td>Discuss anticipated value of ordered tests/procedures</td>
</tr>
<tr>
<td>Attending Interactions</td>
<td>Discuss which tests/procedures actually added value</td>
</tr>
<tr>
<td>Discharge</td>
<td>Costs and value of prescribed medication (Tamiflu model)</td>
</tr>
<tr>
<td>Multi-Departmental Conferences</td>
<td>Different practices that add or subtract from patient value</td>
</tr>
</tbody>
</table>

Adapted from Moriates C, Arora, V, Shah N ‘Understanding Value-Based Healthcare’ McGraw Hill Education/Lange 2015
WORK WITH OTHERS

- GET INVOLVED IN REGIONAL AND NATIONAL ACTIVITIES WITHIN AND OUTSIDE EM
  - MANY NATIONAL ISSUES AFFECT OUR PRACTICE
  - We can’t solve them on our own
  - We are well poised to further influence outside of EM (top 10 specialty)

- YOUR LOCAL INSTITUTION
  - SILOS are going, going, gone
  - Hospitalists, intensivists, hospital committees, administration
TRAIN LEADERS

- EITHER DRIVE THE BUS, OR GET RUN OVER*
  - Not just shift work
- TEACH LEADERSHIP AND NEGOTIATING TECHNIQUES
  - Challenge ineffective systems
- THE ONLY POPULATION-BASED SPECIALTY
  - Become Health Services, Health Economics, and Health Informatics specialists

*Attributed to Kevin Biese, MD
AI WILL AFFECT OUR PRACTICE

- APPROPRIATE USE CRITERIA ALREADY IN PLACE
- IMAGING BASED SPECIALTIES ALREADY IMPACTED*
- WHAT AI CAN’T DO, PHYSICIANS WILL ALWAYS DO:
  - PROCEDURES
  - PATIENT-CENTERED DECISION MAKING
  - SYSTEM-BASED PRACTICE
  - MANAGE COMPLEX HEALTH CARE NEEDS
  - GIVE COMFORT AND COMPASSION

• *From A&E to AI Science and Technology, The Economist. June 9th 2018  68-69
• O’Connor A ‘AI Is Likely to Transform Medicine: Dr Eric Topol discusses AI’s promise’
• New York Times, Tues Mar 12, 2019
• He, J et al ‘The practical implementation of artificial intelligence technologies in medicine’ Nature Medicine, Jan 2019, 25: 30-36
• Metz, Cade ‘AI Shows Promise as a Physician Assistant’ New York Times, Feb 11, 2019
<table>
<thead>
<tr>
<th>Disease conditions</th>
<th>Our model</th>
<th>Physicians physician group 1</th>
<th>Physicians physician group 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asthma</td>
<td>0.920</td>
<td>0.801</td>
<td>0.837</td>
</tr>
<tr>
<td>Encephalitis</td>
<td>0.837</td>
<td>0.947</td>
<td>0.961</td>
</tr>
<tr>
<td>Gastrointestinal disease</td>
<td>0.865</td>
<td>0.818</td>
<td>0.872</td>
</tr>
<tr>
<td>Group: ‘Acute laryngitis’</td>
<td>0.786</td>
<td>0.808</td>
<td>0.730</td>
</tr>
<tr>
<td>Group: ‘Pneumonia’</td>
<td>0.888</td>
<td>0.829</td>
<td>0.767</td>
</tr>
<tr>
<td>Group: ‘Sinusitis’</td>
<td>0.932</td>
<td>0.839</td>
<td>0.797</td>
</tr>
<tr>
<td>Lower respiratory</td>
<td>0.803</td>
<td>0.803</td>
<td>0.815</td>
</tr>
<tr>
<td>Mouth-related diseases</td>
<td>0.897</td>
<td>0.818</td>
<td>0.872</td>
</tr>
<tr>
<td>Neuropsychiatric disease</td>
<td>0.895</td>
<td>0.925</td>
<td>0.963</td>
</tr>
<tr>
<td>Respiratory</td>
<td>0.935</td>
<td>0.808</td>
<td>0.769</td>
</tr>
<tr>
<td>Systemic or generalized</td>
<td>0.925</td>
<td>0.879</td>
<td>0.907</td>
</tr>
<tr>
<td>Upper respiratory</td>
<td>0.929</td>
<td>0.817</td>
<td>0.754</td>
</tr>
<tr>
<td>Root</td>
<td>0.889</td>
<td>0.843</td>
<td>0.863</td>
</tr>
<tr>
<td><strong>Average F1 score</strong></td>
<td><strong>0.885</strong></td>
<td><strong>0.841</strong></td>
<td><strong>0.839</strong></td>
</tr>
</tbody>
</table>

The See-Saw of EM Life

- Changes in curriculum needs
  - Obstetrics
    - eALSO* for first responders, military, international EM, US ED care
    - Decreases in US hospital OB services
  - Suboxone
  - POCUS
  - Geriatric Emergency Medicine
  - Mental Health*

*Advanced Life Support in Obstetrics (ALSO) @aafp.org
*Belsher BE et al Prediction Models for Suicide Attempts and Deaths: A systematic review and Simulation JAMA Psychiatry March 13, 2019, e1-11
*Johnston ANB et al 'Review article: Interventions for people presenting to emergency departments with a mental health problem: A systematic scoping review' EMAustralasia (2019), 31, 715-729 PMID 31257713
The See-Saw of EM Life

- Longevity
  - Technical and Cognitive Performance
  - Stress Tolerance and Mental Health*
    - Shift fatigue
    - Overcommitment
    - Bureaucracy
    - Financial Planning: start now
- Childbearing and Leave Policies
  - Highly variable by institution/department
  - Stresses on two physician couples


Sir Tim Berners-Lee ‘the web has become a public square, a library, a doctor’s office, a cinema, a bank...[it has] made our daily lives easier...with every new feature, every new website, the divide between those who are online and those who are not increases...’
- Apps and Decision Tools have changed practice
- Blogs, posts, and podcasts have changed teaching and learning
  - Engage the learner
  - Use valuable commuter time
  - Multimedia
  - Provide clinical tips that EBM may not be able to do for years...brings the 'expert' to your iphone

*Allen NG et al 'Ethical Issues with Foam' ACEP NOW Nov 2018, 24-25
Digital Disruption will impact EM

- Decision support tools will learn context, suggest guidelines and individualized treatments (AI...)
- Quality measurement- who’s fastest, who uses least resources, tougher peer comparisons
- NPs and PAs can shoot past EM directly to specialists for management

We’ll become digital docs

Nick Genes, MD PhD
Associate Professor Emergency Medicine, Genetics and Genomic Sciences
Icahn School of Medicine
Chair, ACEP Informatics Section
TeleHealth fits exactly into the population-based model of EM

Add TeleHealth to the medical student and resident curriculum

- Need different H&P skills
- Phone and video behaviors
- Economics and effect on the health system, EPs, NPs and PAs
- TeleHealth Systems more difficult to establish in tertiary-care systems

**Ellimoottil, An, Moyer, Sossong, Hollander “Challenges and Opportunities Faced by Large Health Systems Implementing TeleHealth” HealthAffairs, 37:12, Dec 2018**
TeleHealth

- Interact with patients and colleagues*,**
- Disaster Management
  - RelyMD
- Urgent care visit management
- Drone doctors
- Travel Health
- Duane Reed EM-hospital kiosks (NYP OnDemand)
- ED consults in critical access hospitals***

* Kane CK et al *The Use of Telemedicine by Physicians: Still the Exception Rather than the Rule* Health Affairs 37:12, Dec 2018
** Ellimoottil, An, Moyer, Sossong, Hollander *Challenges and Opportunities Faced by Large Health Systems Implementing TeleHealth* Health Affairs, 37:12, Dec 2018
*** Ward MM et al *Use of Telemedicine for ED Physician Coverage in Critical Access Hospitals Increased after CMS Policy Clarification* Health Affairs 37:12, Dec 2018
BE SMART

• KEEP UP WITH MEDICINE
• USE DIGITAL RESOURCES
• LEARN FROM RESIDENTS
• ASK IF YOU DON’T KNOW SOMETHING
BE KIND: TO YOURSELF, YOUR PATIENTS, CONSULTANTS, NURSES, HOUSEKEEPING, CLERKS, AND EVEN TO NASTY PATIENTS
BE COOL

- ENERGETIC
- EXCITING
- BIT OF A REBEL
- POPULAR
- PART OF A UNIQUE SUBCULTURE
LIGHT THAT FIRE!