Simulation-based Education as a Cultural Change Vehicle in Healthcare Quality & Patient Safety
Prof. Amitai Ziv – Founder of MSR

- Israeli Air Force > 20 years
- Hadassah / Jerusalem – Med. School & Pediatric Residency
- Sheba Medical Center, Deputy Director
  - Director, Patient Safety & Medical Education
  - Founder & Director, MSR, Israel Center for Medical Simulation
- Professor and Associate Dean of Sackler Medical School, Tel Aviv University
The Chaim Sheba Medical Center

- Largest in Israel
- Almost 2000 beds (1000 Acute + 900 Chronic)
- >6,000 Employees
- 85,000 Admissions
- 1M Patients
- 150,000 ER visits
- 35,000 Operations
- 10,000 Deliveries
- 850 MDs / 2000 RNs
- $350M Budget
Aviation and Medicine

• Similarities
  - High-risk and high-tech industries
  - Low tolerance to errors
  - Intolerance to not learning from errors
  - Diverse skills required

• Differences
  - Admission and screening culture
  - Training and certification culture
  - Reporting and debriefing culture

Assessment & Safety Culture
The Premise

- Current Patient Safety & Quality Care Reality is suboptimal
- The Underlying assumption / hypothesis is:
  - **Medical Education** and **Medical Assessment** has a share in this reality
  - A change in **Medical Education** and in its **Assessment Paradigm** could improve this reality
- Simulation-based Education has the power to serve as a cultural change vehicle leading towards:
  - More **Effective / Safe / Patient Centered** Medical Practices
  - Improved **Readiness / Preparedness** of Health Professionals
  - Improved **Accountability** of the **Health Profession** at large
The Epidemic

1999 ~ 100,000 annual deaths from medical errors - IOM

Medical errors are the 5th cause of death

1 x 747 Crashing daily
Medical errors are the 3rd cause of death
It’s About Our Systems

Simulation-based Education = Cultural change vehicle leading towards:

• More **Effective & Safe** healthcare systems
• Improved **Readiness/Preparedness** of professionals
• Improved **Accountability** of the profession
The (educational) Swiss Cheese Model

Inadequate Screening & Selection Process

Sub-optimal Training & Formative Assessment

Competency Assessment & Licensing Paradigm

Recertification / Maintenance of Competency (MOC & MOL)

Continuum of Education & Practice

Modified from Reason, 1991 © James Reason
Why Simulation

• Safe environment - mistake forgiving
  - Error driven education
• Proactive and controlled training
  - Nightmare driven education / Receptiveness
  - Just in Time / Transitions = Increased Motivation
• Trainee/ Team / System Centered Education
  - Experiential / Emotional learning - IPE
• Feedback and debriefing-based education
  - Reflective/Narrative learners / Process-based education
  - The message: Apply in & as Life Long Learners
• Reproducible, standardized, objective (CSA)
  - Assessment driven education
Professionalism- Hierarchy

- Competent knowledge base
  - Technical skills
    - Safety Skills
      - Non-technical skills
        - Professional Behaviour
Simulation Modalities
Simulation Driving Forces and Trends

- Patient Safety Movement
- Accountability of Medical Education
  - Competency-based education
- Ethics - Patient (& animal) Rights movements
  - “First Do No Harm” = Patient Centered Concept
- Liability and Mal-Practice (teaching vs. practice)
- Increased Emphasis on Screening, Licensure, Certification
- Multiple Sim-centers worldwide – multiple models
  - Single Profession, Single Modality, Institutional (e.g. - Mayo Clinic), National (MSR)
MSR – The Israeli Vision

National resource for comprehensive inter-disciplinary, multimodality medical simulation center dedicated to:

• Patient safety and quality care
• Hands-on training
• Readiness to clinical practice
• Performance assessment

Cultural Change Vehicle
MSR - Virtual Medical Environment – 13 Years of Activity

• All simulation modalities
  – SPs, High-tech simulators, Task trainers
• Clinical environments
  – Home, Field, ER, OR, Clinic
• Debriefing technologies
  – A/V & Debriefing software
• Multidisciplinary staff > 40
• > 190,000 Trainees / Examinees (>50% teams)
• > 2000 trained Instructors & > 2500 trained Raters
• MSR on Wheels
Guidelines and Principles

• National collaboration
  - Involve Regulators (IMA, MOH, IDF, HMO) – Certification

• Link with Risk Management and Patient Safety / “real world”

• Not for profit - fee for service – ~ operationally balanced

• Focus on debriefing
  - “Train the Trainer / Rater” - Bottom-up & top-down approach

• Focus on assessment - Expertise in testing and evaluation
  - Strategic partnership with NITE (“Israel’s ETS”)
National Programs (Sample)

- **Medical Preparedness programs**
  - Military/Civilian; Pre-hospital/In-hospital; In-Situ

- **Patient Centered Ethical Programs**
  - Transparency / Apology (error disclosure, informed consent)

- **Communication Skills focusing on:**
  - Conveying Difficult News
  - “End of Life Discussion”
  - Cultural Humility
  - Domestic Abuse

- **Interns - transition into hospitals** - 4 d “nightmare course”

- **Physician / Patient / Computer Skills**
National Simulation-Based High-Stakes Assessment
In Collaboration with NITE

• **Anesthesiology board exams** (since 2003)
  - > 70 examinees annually
  - In collaboration with the Israel Board of Anesthesia

• **Emergency Medicine board exams** (since 2012)
  - >20 examinees annually
  - In collaboration with the Israel Board of Emergency Medicine

• **Paramedics certification exams** (since 2004)
  - >100 examinees annually
  - In collaboration with the Israel EMS (Magen David Adom)

• **Advanced nursing licensing exams** (since 2008)
  - >1000 examinees annually (15 different clinical domains)
  - In collaboration with the Israel MOH Nursing Authority

• **MOR - Screening of medical school candidates** (since 2005)
  - > 1000 examinees annually on Humanistic Qualities (Empathy, Integrity, Maturity...)
National (Cultural) Impact

- High penetration rate
  - **Vertical** - MDs: Admission / Med School / Interns / Residents / Seniors / CEOs
  - **Horizontal** - RNs / Dieticians / Pharma / SW / OT/ Medical Clowns
  - **Health care institutions** - HMOs / Hospitals / Prof. Schools

- Multiple sectors experience High-Stakes SBT
  - ALL: Interns / Graduating paramedics / Military docs / Advanced nurses / > 80% MS candidates
  - Exposure / Involvement of > 50% of registered paramedics / Anesthesiologists / medical schools’ faculty (as Raters!)

- **Significant increase in SBME implementation**
  - Multiple peripheral sim-initiatives (in collaboration with MSR)
Evidence of Safety Improvement

• **Improved Outcomes** - Improved Survival rates following Institution wide Simulation-based Mock Codes
  – Michigan - Survival rates increased to approximately 50%
  – CHOP – Better neurological outcomes also
• Improved **Patient Experience**
  – Women’s Hospital Sheba -communication skills of staff
  – Tutors -communication skills of students and tutors
• Improved **Adherence to Guidelines**
  – Conscious sedation
  – Asthma
• Improved **Trainee Experience**
  – Interns – better sense of readiness and true ability
Simulation-based Safety Training: Patient Centered Paradigm Shift

Traditional approach

• Safety - Personal Value
• Secret / Close Guild
• Reactive System
• Assessment of Knowledge
• Duration-based education
• Apprentice-based learning

21st Century Cultural Shift

• Safety - System Value
• Transparency - Debriefing
• Proactive Approach
• Performance/Readiness Ass.
• Proficiency-based education
• Simulation-based Training
International Activities / Impact

• **Comprehensive Institutional Consulting**
  - Consultant to Albert Einstein Sao-Paulo (Brazil), NYP-Columbia University (US)
  - International training courses – Italy...
  - TTT/TTR (on/off-site) - Faculty development to McGill, Toronto - Michener, Sick-Kids, Kazakhstan, Spain, Hong Kong, Singapore, China and more...

• **Sister center initiatives**
  - Partnership with Mayo Clinic (ICU curriculum)
  - Partnership with Case Western (Surgical curriculum)

• **Developing World**
  - Ethiopia, Brith Mila (HIV), Ghana, Kenya...

• **Briefings @ US congress & HHS & HLS**
  - Multiple visits by International Military Medical Corp
  - Homeland Security & CDC & GNYHA & GNJHA
Lessons / Challenges

• Transition from “Wow” to “Mature” Phase

• Educational Challenges
  – Apply debriefing / self reflection in real practice

• Performance Assessment Measures of Skills
  – Apply Readiness Concepts – Competency-based progress
  – Measuring the “un-measurable”/“the important”

• Regional / National / (& global) collaboration - Crucial for success

• Recognition by Regulators: Accreditation / Licensure / Certification

• Delivery Model / Cost Effective
  – Fee for Service / Financial Stability
  – Philanthropic Funding for physical expansion, new generation simulators, additional trained staff
The (Patient Centered) Safety Message

Humility

"To Err is Human"
Teach others
Discussion group
Demonstration
Audiovisual
Reading
Lecture
Practice by doing
Teach others

Average Retention Rate

- 5%
- 10%
- 20%
- 30%
- 50%
- 75%
- 80%

National Training Laboratories, Bethel, Maine, USA