

QI 101: Introduction to Health Care Improvement

Ryerson Open School Chapter
Wednesday, October 28th, 2020

Objectives - What will we learn today?

3 Lessons

1. Describe common challenges in health care systems.
2. Understand the 6 dimensions of health care and their aims
3. Introduction to Improvement Science



Lesson 1

Health and Health Care Today

The Paradox

A Broken System that Produces Miracles?

Elimination of Several Infectious Diseases

Advanced HIV Drugs

Cures for Hep C

Reduced Hospitalization
and Mortality



Advancements and Complications

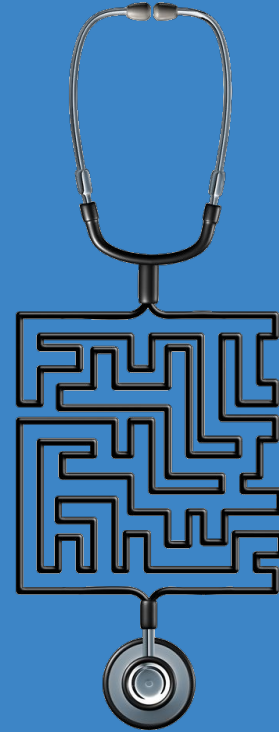
Challenges in an advanced health care system

Providers are becoming more specialized

Disease burden is shifting towards chronic conditions.

Demand for personalized care.

Demand for complicated procedures and expensive treatments.



Facts and Stats from Across the World

Cost of Care is Independent of Culture and Politics

Avg per capita spending among 34 members countries increased by 70+% between 2000 and 2010 (OECD).

High Cost Not Associated with Quality of Care

US spends more than 2x as much as other developed nations yet is still ranked 11th in quality.
\$9892 per patient in the US vs. \$4753 in the CAN (Johns Hopkins School of Public Health, 2019).

*Only \$11 per person in low income countries

Best Care Practices Are Not Good Enough

50% people not receiving recommended care.



Facts: Disparities in Health and Healthcare

Statistics from the WHO, 2015

Risk of maternal death - 1/11 in **Afghanistan** vs. 1/17,800 in **Ireland**

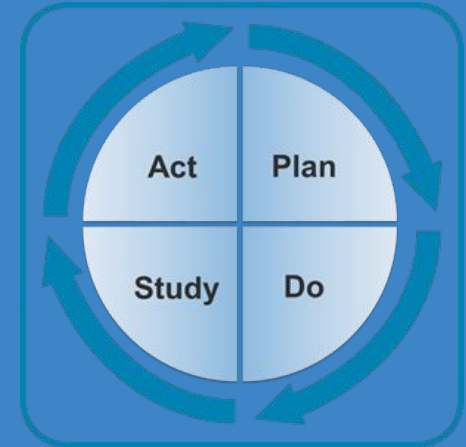
~80 percent of noncommunicable diseases are in **low- and middle-income countries**

In **Japan**, life expectancy at birth is more than 80 years; in several **African** countries, it's fewer than 50 years.

The Takeaway

Money is not enough

These issues require systemic change



International Efforts

In 2012, the UN urged nations to shift towards universal access to affordable and quality health care. Since, no single model can fit all nations, countries are encouraged to learn from one another.

Some key examples

Denmark - Primary care medical records are connected to a national network. All practices can share records easily.

India - Telemedicine network 24 urban hospitals to 800 centres. Reaching the impoverished at little cost

Germany - Mandatory health insurance. Limiting out of pocket to 2% of income, and 1% for sicker patients

Quick Quiz

1. In regard to health disparities around the world, which of the following statements is most true?

- ☐ Inequitable medical care is the primary driver of health disparities.
- ☐ Where a child is born significantly affects his or her life expectancy.
- ☐ The root causes of health disparities are complex.
- ☐ Where a child is born significantly affects his or her life expectancy **AND** The root causes of health disparities are complex

Quick Quiz

1. In regard to health disparities around the world, which of the following statements is most true?

Answer: Where a child is born significantly affects his or her life expectancy **AND** The root causes of health disparities are complex.

Quick Quiz

2. Which of the following is a trend in health care across industrialized nations?

- ☐ Providers are becoming more specialized
- ☐ The disease burden is shifting toward acute conditions.
- ☐ There is growing demand for complicated procedures.
- ☐ Providers are becoming more specialized **AND** There is growing demand for complicated procedures

Quick Quiz

2. Which of the following is a trend in health care across industrialized nations?

Answer: providers are becoming more specialized and there is a growing demand for complicated procedures

Lesson 2

The Institute of Medicine's Aims for Improvement

The Six Aims for Improvement...

SAFE: Refers to the safety of the care being delivered

TIMELY: Refers to reducing waiting times and delays

EFFECTIVE: Refers to providing appropriate care based on science

EFFICIENT: Refers to avoiding being wasteful (equipment, energy, ideas, supplies)

EQUITABLE: Refers to providing equal quality of care, regardless of personal characteristics

PATIENT-CENTERED: Refers to care that is focused on the patient

Aim # 1: Safety

Refers to the safety of the care being delivered

- Seems to be an obvious point but...
- In reality, 1 in 10 hospital patients harmed while receiving care
- Better communication and structure of care are major challenges

A Solution

- The Scottish Patient Safety Programme (SPSP)
 - Goal to reduce mortality rate by 15% across Scotland

Aim # 2: Timely

Refers to reducing waiting times and delays

- Delays hurt patients and caregivers
- According to CDC, avg wait time in US for emergency department is 1 hour
- Longer in others, CIH reported 1 in 10 patients in Canada >8 hours

A Solution

- Margret Marquart Catholic Hospital (Kpando, Ghana)
 - Shocked by mortality rate of children under five
 - Due to delays in seeking care and delays with clinicians in providing it
 - Community education, Triage/fast-tracking, blood bank readiness

Aim # 3: Effective

Refers to providing appropriate care
based on science

- The care has to be based on evidence
- Science that says what can help and what can harm
- Often, patients don't get recommended care or get unnecessary care
- *New England Journal of Medicine* study found that only half of care in US is evidence based

A Solution

- Claxton-Hepburn Medical Center (Ogdensburg, NY)
 - Prevent pressure ulcers by forming a team to research prevention strategies (new technology)

Aim # 4: Efficient

- Refers to avoiding being wasteful
(equipment, energy, ideas, supplies)

- A 2012 study by Dr. Donald Berwick and RAND analyst Andrew D. Hackbarth estimated 20% of US health spending is towards 6 categories: Failures of care delivery, failures of care coordination, overtreatment, Administrative complexity, Pricing failures and Fraud and Abuse

A Solution

- National Health System (NHS) England
- The Productive Series

Aim # 5: Equitable

Refers to providing equal quality of care, regardless of personal characteristics

- Studies show quality of care varies based on personal characteristic
- Ex. China (difference between urban and rural patients)

A Solution

- HealthPartners (Minnesota, US)
- Goal to reduce health disparities
- Pink Ticket Mammography

Aim # 6: Patient-Centered

Refers to care that is focused on the patient

- Studies show physicians listen to patients concerns for 20 seconds before interrupting
- Patients frequently complain of lack of customer service in healthcare
- Victor Montori (MD, professor Mayo Clinic) describes the lack of physician-patient interaction

A Solution

- Mayo Clinic
- A way to place information in the hands of patients

Quick Quiz

1. Which of the following improvement efforts is the best example of increasing the effectiveness of care?

- ☐ Shortening wait times at a clinic by allowing patients to self-register on a computer in the waiting room
- ☐ Improving the percent of clinic patients achieving their goal blood pressure by instituting a series of reminders for providers about evidence-based processes
- ☐ Decreasing adverse drug events by having a pharmacist on rounds in the intensive care unit
- ☐ Instituting quarterly focus groups of patients seen in the emergency department to better identify patient concerns

Quick Quiz

1. Which of the following improvement efforts is the best example of increasing the effectiveness of care?

ANSWER: Improving the percent of clinic patients achieving their goal blood pressure by instituting a series of reminders about evidence based processes

Quick Quiz

2. Michael S., a 49-year-old factory worker, goes to the hospital after developing chest pain at work. Physicians quickly diagnose him with an acute myocardial infarction (heart attack), and he has successful surgery to open his blocked coronary artery. While he is recovering in the hospital, he contracts an infection that could have been prevented through better infection control practices in the hospital.

Which of the IOM aims has this hospital failed to meet?

- ☐ Timely
- ☐ Safe
- ☐ Effective
- ☐ Equitable

Quick Quiz

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Which of the IOM aims has this hospital failed to meet?

ANSWER: Safe

Lesson 3

Changing Systems with the Science of Improvement

Understanding Systems

Lesson 1 - Why? Lesson 2 - What? Lesson 3 - How?

“Every system is perfectly designed to get the results it gets.”

US Healthcare System

1999 - 98,000 inpatient deaths per year due to errors.

2013 - cost more /capita than any other industrialized nation



Applied Science vs Pure Science

- Walter Shewhart regarding pure science and applied science: Lets use penicillin as an example
- Pure Science (Fleming's discovery of antibiotics) and Applied Science (Put the antibiotics to use, such as making it available to everyone and prescribing in controlled manner)

Which do you think is more challenging to accomplish?

In order to close the gap between what we know and the application of it:

- Mass produce and distribute medications
- Patients make appointments to get medications
- Providers well informed of these medications
- Providers can safely deliver them
- Patients can take medications as instructed

The Lens of Profound Knowledge

“Whenever you make a change, each change will affect other parts of your system.”

-WE Demings

Example, leaving half an hour early for work.

- Traffic is worse
- Coworkers you pick up on the way aren't ready
- Road blockage
- Your significant other doesn't like being woken up earlier

Demings developed System of Profound Knowledge



Four Aspects of Systems Thinking

1. Appreciation of a system

- A system is a network of interdependent components that work together to try and accomplish the goal of the system (The aim that everyone gains, but not having others lose out)

2. Understanding Variation

- There are two types of variation:
 - Intrinsic and typical (common causes)
 - Result of unusual event, outside of typical operation (special cases)

To make improvements, you be able to tell the difference between the two

Four Aspects of Systems Thinking

3. Theory of Knowledge

Knowledge is based on theory, and that theories need to be developed, applied, and tested in order to advance knowledge in a systematic fashion.

4. Psychology (Human Behaviour)

People are fundamentally different, with varied strengths, beliefs, and motivations. Because people are fundamental components of the systems in which they work, all these human factors will affect systems outcomes.

Lens of Profound Knowledge in Healthcare

Problem - 'At any time, 1.4 Million people suffer from Hospital Acquired Infection'

Solution - Simple hand hygiene.

Problem - Only 50% compliance rate!

Why?!

Appreciation of a system

Hospital

NICU

Surgery

PT

Administration

Understanding Variation

Gather data

Average compliance?

Stratify with the systems

Theory of Knowledge

Scientific theories on hygiene

Public theories on germs

Psychology

What people believe

How they will act based on this belief

Quiz

1. Transcendental Nursing Home is working on decreasing its rates of catheter-associated urinary tract infections (UTIs) among its residents. While reviewing data, the improvement team notices that the UTI rate on Floor 3 is half that of the rest of the floors. They decide to visit the unit and find out what it is doing differently.

After speaking with caregivers on Floor 3, the improvement team discovers that there is a particularly dedicated head nurse on the unit whose mother died after a catheter-associated UTI. This nurse orients all new providers and also provides feedback when she sees that catheters are being placed unnecessarily in patients.

Which component of Deming's System of Profound Knowledge do this nurse's actions best represent?

- ☐ Appreciation of a system
- ☐ Psychology (human behavior)
- ☐ Theory of knowledge
- ☐ Understanding variation

Quiz

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Which component of Deming's System of Profound Knowledge do this nurse's actions best represent?

ANSWER : Psychology (human behaviour)

Quiz

2. Which of these is a question particularly associated with the “theory of knowledge” component in Deming’s System of Profound Knowledge?

- ☐ What is the variation in results trying to tell you about the system?
- ☐ What are your predictions about the system’s performance?
- ☐ What motivates people to act as they do?
- ☐ What is the whole system that you’re trying to manage?

Quiz

2. Which of these is a question particularly associated with the “theory of knowledge” component in Deming’s System of Profound Knowledge?

ANSWER: what are your predictions about the system’s performance

Group Discussion!

What have been your experiences with the quality of healthcare systems? It could be anywhere in the world, online, newspapers, etc. Do you know of any creative and innovative ways these healthcare systems are trying to improve quality of healthcare delivery (think about 6 aims, 4 aspects of systems thinking? You can compare and contrast if you wish. What do you like about them? Do you think they could do better?