MAKING SYSTEMS WORK FOR PATIENT CARE

SINI Preconference: Revolutionary Informatics for the Nurse Executive
July 20, 2011
Introduction

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- Partner, CNO, CSC Healthcare Solutions
- Executive oversight of multiple EHR Implementations at Academic Medical Centers and Integrated Delivery Networks
- Throughout career, active role in the healthcare industry through participation in American Health Information Management Association (AHIMA), American Medical Informatics Association (AMIA), College Health Information Management Executives (CHIME), Health Information Management and Systems Society (HIMSS), Health Management Academy (HMA) and Technology Informatics Guiding Education Reform (TIGER)
1. What it Will Take to Make Systems Work for Patient Care
2. Ways in Which Health Information Technologies (HIT) Can Create Systems to Improve Patient Care
3. Shift to Focus First on Health, then on Care
4. Healthcare Needs Significant Disruptive Changes to Address its Major Problems
5. Nurse Leaders Can Influence Decisions that Make Systems Work for Patient Care
Section I

Evolution, Revolution, or Disruption Innovation — What will it take to make systems work for patient care?
“Our antiquated healthcare policies, technologies, and business models are locking us into a 19th century medical mentality that won’t work for us in a 21st century economy so challenged by Global Aging,” asserts Eric Dishman in U.S. Senate testimony.
Section I

• **Disruptive innovation is an innovation that disrupts an existing market**
  – The term is used in business and technology literature to describe innovations that improve a product or service in ways that the market does not expect, typically by lowering price or designing for a different set of consumers

• **Digital disruptions are about information and communication technologies that change business models deeply, and often shockingly**
  – Disruptions, on par with the telephone and automobile can transform the marketplace and society so completely that it can take decades for their full impact to be realized

• **Twenty First Century Digital Disruptions**
  – The digital disruptions initiated by the Internet’s launch at the end of the 20th century, and responsible for a tremendous spike in global productivity, promise a second-round impact in the 21st century that we can only begin to imagine
Section I

Types of Innovation

1. **Sustaining** (revolutionary or discontinuous)
   - An innovation that creates a new market by allowing customers to solve a problem in a radically new way. (e.g., the automobile)

2. **Evolutionary**
   - An innovation that improves a product in an existing market in ways that customers are expecting. (e.g., fuel injection)

3. **Disruptive**
   - An innovation that creates a new (and unexpected) market by applying a different set of values. (e.g., the lower priced Ford Model)

*Disruptive Technologies* was coined by [Clayton M. Christensen](https://www.bgsu.edu/guides/cla++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++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Source: From Wikipedia, the free encyclopedia
## Innovation Disrupted Markets

### Examples of Innovation
- 8 inch floppy disk drive
- 5.25 inch floppy disk drive
- 3.5 inch floppy disk drive
- Downloadable Digital Media
- Microcomputers
- Personal Computers
- Desktop Publishing
- Computer Printers
- Digital Photography
- Podcasting
- Steamships
- Telephones
- Automobiles
- Private jet
- Plastic
- Light-emitting diodes
- Digital synthesizer
- Mobile Telephony
- LCD

### Causing Disrupted Market
- 14 inch floppy disk drive
- 8 inch floppy disk drive
- 5.25 inch floppy disk drive
- CD, DVDs
- Mainframes
- Minicomputers, workstations, laptops
- Traditional Publishing
- Offset Printing
- Chemical photography
- Broadcast Radio & TV
- Sailing ships
- Telegraphy
- Rail transport
- Supersonic transport
- Metal, wood, glass etc
- Light bulbs
- Electronic organ and piano
- Mobile Discount Operators
- CRT
Section 1

- Electronic Health Records (EHRs) is probably the most disruptive technology that has impacted care delivery
  - Evidence based clinical content (order sets, clinical pathways, etc.)
  - Clinical decision support (alerts and reminders)
  - Provides templates for documentation
  - Repository of data (phenotypic, genetic, etc.)
  - Reporting and trending of data
  - Shifting roles of care providers
Section 2

Ways in Which Health Information Technologies (HIT) Can Create Systems to Improve Patient Care
Section 2

- HIT can help by providing the umbrella framework needed for comprehensive management of health information and its secure exchange between consumers, providers, government and quality entities, and insurers
  - Improve health care quality
  - Prevent medical errors
  - Reduce health care costs
  - Increase administrative efficiencies
  - Decrease paperwork
  - Expand access to affordable care

(Definition of HIT From Wikipedia, the free encyclopedia)
Section 2

• Interoperable health IT will improve individual patient care.
  – Interoperable refers to the ability of diverse systems and organizations to work together (inter-operate). The term is alternatively used in a broad sense, taking into account social, political, and organizational factors that impact system to system performance.*

• Interoperability will also bring many public health benefits including:
  – Early detection of infectious disease outbreaks around the country
  – Improved tracking of chronic disease management
  – Evaluation of health care based on value enabled by the collection of de-identified price and quality information that can be compared

* Source: From Wikipedia, the free encyclopedia
Section 3

Shift to Focus First on Health … Then on Care
Section 3

• Today’s environment demands a new approach that is both efficient and effective

• Although “wellness first” is not new, *its renewed focus is because it relieves many of the burdens of today’s strained healthcare system:*
  – Insufficient healthcare resources
  – Increased demand due to an aging population
  – Expectations for high quality and safety, lower insurance payments
  – An increasing population that is overweight and living with chronic conditions
The wellness-first perspective will impact patients, providers, business models and the global healthcare ecosystem as all shift to focus first on health, then on care.

- The model relies on technology to put medical knowledge and advice — once the sole purview of physicians — into the hands of patients to proactively monitor health and wellness.
- Technologies also change the interactions between clinicians and patients via online patient and physician communities and virtual providers, and empower changes in their roles.
- The success of this model is critically dependent on behavioral, educational, process and payment changes.
Section 3
Smart Phones in Health Care

Smartphone apps are increasing in popularity and are being widely used in healthcare as health apps, but more research needs to be conducted on their efficacy as patient adherence tools, according to a survey by Consumer Health Information Corporation (CHIC).

The survey was distributed to smart phone consumers at affiliated universities, businesses and posted on Facebook in April 2011. Survey results were collected from 395 respondents.

March 2011, consumer survey showed that 26 percent of apps are downloaded and used only once.

Of the people who confirm using their apps, 74 percent drop out by the 10th use.

26 percent of smart phone applications retain consumer loyalty and are used repeatedly.

A better app (34.4 percent) and lack of user friendliness (32.6 percent) are the top reasons for discontinuation of smart phone apps.
Behavioral scientists hypothesize that in order for health apps to be successful and change patient behavior, they should target motivational needs to promote behavioral change.

Surveyed consumers agreed with this and stated that they would be more likely to use an interactive app that can analyze logged information and provide feedback (79.9%).

Ultimately, it is the patient who decides whether or not they will continue to use an app or take a drug.

Patients will not use a smart phone app simply because it is innovative or handy.

Of the 47 smoking apps identified and analyzed in the study, none met the proven public health guideline recommendations. For health apps to be successful patient adherence tools, they should follow established evidence based guidelines.
Section 3

**Growing aging population.** From 2000 to 2050, the number of people on the planet ages 60 and over will triple from 600 million to 2 billion.3

**Shortage of care providers.** By 2025, it is estimated that the United States alone will be short 260,000 registered nurses and at least 124,000 physicians.4

**Increasing prevalence of chronic conditions among children and adults.** For example, diabetes for all age groups worldwide is expected to increase from 2.8 percent in 2000 to 4.4 percent by 2030. **By 2030 chronic diseases, not infectious diseases, will be the leading cause of death globally.**5

**Fragmented care management.** Only 56 percent of adult chronic condition patients in the United States receive recommended care.6

**Rising healthcare costs.** For almost 50 years, spending has grown by two percentage points in excess of GDP growth across all Organization for Economic Co-operation and Development (OECD) countries.7

U.S. healthcare costs are expected to rise to $4.5 trillion by 2019, up from $2.5 trillion in 2009 and $2.3 trillion in 2008. Research by the Australian Institute for Health and Welfare estimates the total health and residential aged care expenditure to increase 189 percent over 30 years (2003-2033), from $85 billion to $246 billion.8

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The International Diabetes Federation estimates diabetes will affect up to 438 million by 2030.
Section 4

Healthcare Needs Significant Disruptive Changes to Address its Major Problems
Section 4

Significant Disruptive Changes Needed to Address Major Healthcare Problems

1. E-Power to the Patient
2. Earlier Detection
3. High Tech Healing
4. Resources More, but Different
5. Global Healthcare Ecosystem
Section 4

1. E-Power to the Patient

• This is not about diminishing the role of the clinician but enlarging the role of the patient

• The patient is empowered through changes in behavior and the use of health information bolstered by new technologies
  – The patient is in charge of his or her care management on a daily basis, marked by “shared care” between patient and provider
  – The patient is empowered through the availability of health information, new technologies and a support system to encourage and monitor their progress

• The issue becomes one of selecting the right technologies and applications that suit the patient’s health status and lifestyle
1. E-Power to the Patient (Cont’d)
   - The Internet and the smartphone are key technologies for assisting the patient, with thousands of applications (apps) offered for free or a small investment
     - Apps:
       - More than 5,800 smartphone apps are already on the market, providing medical content, capturing patient information, and sending messages and alerts — all of which help patients manage diets, medications, and health goals
       - When coupled with simple medical devices, such as a Band-Aid-like heart rate sensor that transmits data wirelessly to a smartphone, managing health gets easier
     - Social Networking:
       - One key element of behavior change, and one where technology can play a major role, is the ability to connect with others with similar health issues for support and advice
Section 4

2. Earlier Detection

• Most people know they should have a healthy lifestyle, but knowing what to do and which tools to use can be overwhelming
  – Accelerating early diagnosis is crucial to starting treatment for, if not preventing, a problem
• Supporting technologies range from simple, inexpensive paper lab tests to genetic testing for variants aligned to known health problems
  – By making tests more affordable and more convenient to use, more people are likely to use them and detect diseases earlier, when they are less expensive, complex, and time-consuming to treat
Section 4

3. High-Tech Healing
   - Technology systems can improve care and the long-term quality of life
     - Regardless of how healthy a lifestyle people follow, or how much testing they perform, people will become ill
     - Next-generation implants and ingestibles use a number of technologies to monitor disease progress, dispense medications, and assist and replace malfunctioning organs and limbs
     - By combining medicine with technology, it is possible to enable people with medical conditions such as diabetes, blindness and epilepsy to better manage chronic conditions
A High-tech tattoo uses nanotechnology “ink” to monitor glucose levels.

Source: Christine Daniloff/MIT News
This sensor on a pill tracks medication adherence so patients don’t have to.

Source: Proteus Biomedical
A tooth implant would dispense the right dose of medicine at the right time, so patients never have to remember to take their meds.
Section 4

A smart pill can deliver targeted doses of medicine to specific locations in the body.

Source: Philips
4. Resources: More, but Different

- “Healthcare organizations must be learning organizations, using the data they are collecting to make changes in practices to provide better, more efficient and effective care” — Dr Harold Deutsch
  
  - New care models to support increasing demand are evolving
  - Expertise is optimized and spread
    - Healthcare team will work at the top of their licenses
      - Patient education shift to patient care assistants who are hired with medical assistance credentials. Once complete their training modules, promoted to health coaches. EHR provides templates to guide patient discussions
      - Patient advocate act as the point person for coordinating care or help monitor care of distant family members
    - Resources are more available through remote technologies and online communities, for both care consultation, teaching and training
4. Redesigned Care Teams:
- Team includes doctors, nurses, dieticians, chronic care coaches, physician assistants, and medical assistants and even robots
- Primary care physician plays central role; each team member plays a supporting role depending on their level of expertise or training
- Allows primary care physician more time to focus on complex cases
- Team members work together to execute a plan of care
- Patient is a member of the care team, as is the family
Section 4

4. Systems Support the Care Team:
   • Robotics
   • Electronic Health Records (EHR)
   • Personal Health Records (PHR)
   • Health Information Exchanges (HIE)
   • Online support groups
   • In-home testing devices and monitors
   • Smart phones
Professionals and students can hone their medical decision making skills in the safety of a virtual environment.
Mobile robots connect patients to physicians who cannot be there in person, particularly specialists such as the neurologist shown here.
Global Healthcare Ecosystem Emerges
Section 4

5. Global Healthcare Ecosystem Emerges
   • As the world continues to connect, healthcare systems are becoming increasingly linked across states, nations, and world regions
     – By developing the ability to safely share patient and research data, the health community ensures that the number of people focused on problems, and the potential for better outcomes, will increase
     – Connecting the dots, not only by linking networks but by linking care givers — professional, family, and technology-based — with innovative diagnostic and healing tools, draws together an industrial-strength support system for people, offering a new potential for staying well
Section 5

Nurse Leaders Can Influence Decisions that Make Systems Work for Patient Care
Section 5

Nurse Leaders Can Influence Decisions that Make Systems Work for Patient Care

• Nurses should have greater influence in many healthcare areas — from reducing medical errors to improving efficiency
  – In a Gallop survey of opinion leaders, called "Nursing Leadership from Bedside to Boardroom: Opinion Leaders' Perceptions," conducted between Aug. 18 to Oct. 30, 2009, most agreed *that nurses are one of the most trusted sources of health information*
  • However, they saw nurses as having less healthcare reform influence than government, insurance, and pharmaceutical executives.
  • A majority said they felt that nurses should have more influence on health policy, planning, and management, said Risa Lavizzo Mourey, MD, president and CEO of the Robert Wood Johnson Foundation. “*(But) what this confirms is that they are underutilized in leadership roles*"
The survey findings were compiled from interviews of more than 1,500 "opinion leaders" in the fields of insurance, corporate, health services, government and industry thought leaders, and university faculty.
Section 5

Among the survey findings:

- **Opinion leaders said that nurses' primary areas of influence were:**
  - reducing medical errors (51%)
  - improving quality of care (50%)
  - coordinating patient care in the healthcare system (40%)

- **A majority of opinion leaders said they would like to see nurses have more influence in a large number of areas including:**
  - reducing medical errors and improving patient safety (90%)
  - improving quality of care (89%)
  - promoting wellness and expanding preventive care (86%)
  - improving healthcare efficiency and reducing costs (84%)
  - coordinating care through the healthcare system (83%)
  - helping the healthcare system adapt to an aging population (83%)
  - increasing access to healthcare (74%)
Among the survey findings:

- **Three-quarters of opinion leaders said government officials will have a great deal of influence in healthcare reform in the next five to 10 years, compared to:**
  - 56% for insurance executives
  - 46% for pharmaceutical executives
  - 46% for healthcare executives
  - 37% for doctors
  - 20% for patients
  - 14% for nurses

- **The top barriers to nurses' increased influence and leadership are:**
  - not being perceived as important decision makers (69%)
  - or revenue generators (68%)

- **Compared with doctors:**
  - nurses' focus on primary rather than preventive care (62%)
  - nursing not having a single unified voice in speaking on national issues (56%)
Nurses Must Get Fully Engaged at Every Level of the Delivery System

• To move forward, nurses need to pull together "the stories, the knowledge, the experiences" that they encounter every day

• "It seems incredible that in a time when our challenges are the worst that they have ever been and that they are getting more complex — that we were somehow not making use of all our assets"

• **If nurses fail to get "fully engaged at every level of the delivery system — from policy formulation to operations — we all will suffer"**
Section 5

- Better information leads to better decisions. This is true for every industry, and healthcare is no exception

- Better connected care, represented by public health efforts as well as individual care practices, and better connected research, represented by national and international studies, are the hallmarks of healthcare globalization

- Overall, health delivery will always be local, but with a global knowledge base to draw from, the local care team is better equipped to make the right decisions

- There will always be a global-local dynamic at work. This dynamic will evolve within the context of the “wellness first” perspective to create a global healthcare ecosystem that promotes health, well-being and better health outcomes for all
Technology can become obsolete very fast. But caring for people will never be obsolete.

We nurses are responsible for taking care of people. We choose that and making this option in our lives we were nominated to ‘carry the light’ — the symbol we inherit from Florence Nightingale.

Bring this light to health care and nursing informatics to demolish any frontier you can find in your pathway.
"If the cost goes down and the quality goes up, you’re using IT correctly. Those are your metrics."

— Former Senator Bob Bennett, the Republican who represented Utah from 1993 to 2011.
Section 5
Systems need to support our thought flow and work flow.

“It is important that a aim never be defined in terms of activity or methods. It must always related directly to how life is better for everyone.” — Edward Demming

Leverage a change management methodology and toolkit.
Section 5

What role will you play in making systems work for patient care?
Section 5
Questions Raised by Nurses Embarking on EHR Implementation.

• When we have CPOE, how will I know when there is a new order?
• Will all of our documentation be in the new system?
• Can the aide/patient care tech still do vital signs?
• Can the IV pumps link to the new system?
• Do we have to manually enter current orders on patients before we go up on the new system?
• How are errors tracked?
• Will we be using a Iphone or Ipad?
• How much more time is this going to take me to use the new system?
• Can I hurt the patient by using the new system?
Section 5
What Can the CNE Advocate for in Information Technology Systems?

• Selection: system functionality, clinical content, and devices
• Project governance: position at all levels of the decision making structure e.g. executive steering, project steering, and work groups
• Project goals and objectives: input in deciding what will be measured to demonstrate project success
• Clinical content: evidence based when possible
• Optimization and efficiency: key process/work flow redesign
• Quality reporting: standardization of nomenclature (data)
• Change management: adoption methodology and tools
• Testing: end user acceptance
• Training and go live support: adjust staffing levels to support training and go live
MAKING SYSTEMS WORK FOR PATIENT CARE

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Notes


   http://www.naph.org/Homepage-Sections/explore/History/1860.aspx

   Note: Most of the aging population increase will occur in developing countries.

4. Nursing Shortage: American Association of Colleges of Nursing (AACN) Nursing Shortage Fact Sheet, September 2010, bullet 4,

   http://www.america.gov/st/health-english/2008/June/20080612141457Icnirellep0.7136347.html


   http://www.mckinseyquarterly.com/Health_care_costs_A_market-based_view_2201


