

## Learning Objectives: Patient Safety and Technology

1. Define consumer health informatics (CHI).
  - AKA patient/consumer health tech
  - Any electronic tool, technology or system that is:
    - Primarily designed to interact with health info users or consumers
    - Interacts directly with the consumer who provides personal health information to the CHI system and receives personalized health information back
    - Data, info, recommendations or other benefits provided to the consumer that may be used with a healthcare professional, but is not dependent on a healthcare professional
  
2. List and explain 4 factors that have contributed to the growth of CHI.
  - Availability (and marketing) of health information directly to consumers
  - Rise of chronic diseases and the need for patient self-management
  - Increasing strains on the current health systems designed to treat acute symptoms
  - Patients are less willing to automatically accept the opinion of their healthcare provider
  
3. Recall the 3 considerations for evaluating online sources: authority, accuracy, and scope.
  - Authority: expertise of the author
    - Scholars: relevant credentials; cited by other experts; expertise
  - Accuracy: viewpoints/bias? Factual data? Advertising? Dated? Spelling, grammar? Publisher?
  - Scope: topic too broad? Too narrow? Intended audience?
  
4. Recall the general state of medical information available online and on medical talk shows based on current available evidence.
  - Current state of online medical information is poor
    - Google: 58% correct in searching for a diagnosis online
    - TV: 54% of time information was validated
  
5. Describe 6 common features of a patient portal.
  - a. Online registration (updating demographic info, check dr schedules, make appointments)
  - b. Submit medication refill requests
  - c. Receive, track, and input lab results
  - d. Patient education materials
  - e. Personal health records (PHR) including pt updates of status & uploading clinically relevant findings
  - f. Secure messaging with the healthcare team
  
6. List 3 pros/cons that are similar with personal health records and electronic health records.
  - Needs to be interoperable and transferable
  - Security concerns
  - Data that is captured needs to be presented in a readable format

## Learning Objectives: Technology in Public Health

1. Define the role and 2 key principles of Public Health in BC and compare it to the terms “publicly-funded health” and “population health.”
  - **Public health:** protect and promote health
    - 2 key principles: focus on prevention rather than treatment and address health needs of a population rather than individuals
  - **Publicly-funded health:** universal healthcare
  - **Population health:** specifically for any given population
2. List 5 roles that Public Health has in BC.
  - Access to safe drinking water and food
  - Delivering province-wide vaccination programs
  - Analyzing and reporting on the health status of BC residents
  - Managing communicable disease outbreaks
  - Encouraging healthy behaviors to prevent chronic diseases and injuries
3. Define Public Health Surveillance and recall that reporting can be mandated.
  - The ongoing systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation, and evaluation of Public Health
  - Surveillance can be mandated for specific diseases & conditions
4. List up to 6 examples of how surveillance can help the Public Health team.
  - Estimate the significance of a problem
  - Determine distribution of illness
  - Detect epidemics
  - Identify laboratory research needs
  - Evaluate programs and control measures
  - Monitor changes in health practices and behaviors
5. List and describe 4 examples of different surveillance systems, including when each system might be implemented.
  - a. **Case surveillance:** reporting data on individual cases or events based on previously identified criteria
    - Ex: report of Zika virus, patient demographic, travel place, travel time, etc
  - b. **Syndromic surveillance:** reporting data on clinical features of an unknown disease for detection and rapid response
    - Ex: rapid spread of new influenza-like virus
  - c. **Behavioral surveillance:** reporting data on health risk behaviors, usually done by interview or medical exam
    - Ex: smoking in underage children
  - d. **Laboratory surveillance:** reporting data from labs and hospitals to monitor for infectious diseases
    - Ex: food-borne pathogen in one restaurant in Vancouver

6. Recall 2 examples (influenza, antibiograms) of surveillance reports that can be useful in clinical practice.
7. Define Public Health Informatics (PHI).
  - The systematic application of information and computer science and technology to public health practice, research and learning
  - Significant enabler of more efficient and effective surveillance and public health overall
  - Data can be pulled from many sources (EHR systems, insurance claims, hospital admissions, internet-based health inquiries)
8. Explain 2 reasons why PHI is different from other patient-specific eHealth systems.
  - Includes data from non-traditional health data sources
  - Data needs to be accurate and **rapidly accessible** for it to be usable
9. Recall 3 examples of a non-traditional healthcare data source that would be helpful for PHI.
  - Environmental (weather, temperature)
  - Transportation logistics
  - Global factors
10. Explain the Panorama system and provide 4 examples of its intended functions.
  - A national Public Health surveillance system
  - Designed to:
    - Track vaccine inventories
    - Manage immunization programs
    - Investigate and contain the spread of communicable diseases
    - Manage and respond to disease outbreaks
    - Tracks workload management
11. Compare and contrast the main purpose of the Global Disease Detection program (GDD) and the Global Public Health Informatics Program (GPIHP).
  - GDD (by the CDC): key program for developing and strengthening global capacity for rapid Public Health (surveillance, reporting, verification, response)
  - GPIHP: links electronically with local partners around the world
    - Goal: develop and apply standardized data management tools to create an efficient system of collecting, analyzing, storing and reporting data
12. Define Geographic Information Systems and recall the main advantage of this system.
  - A system of hardware and software utilizing data into mapping and analyzing Public Health information
  - Provides locations, trends, conditions, and geographic patterns
  - Can map well-known data such as spread of disease, or patient devices
    - Ex: asthmapolis: GPS-enabled inhalers track use of rescue inhalers & upload to portal

13. Demonstrate the use of [www.healthmap.org](http://www.healthmap.org) to help provide accurate and up to date information regarding disease outbreaks.
- Collects real-time data to provide a database
  - Can filter by disease or location to try and prevent international pandemics
  - Can layer data such as temperature, comment fields, etc

#### **Learning Objectives: Remote Delivery of Care**

1. Compare and contrast the definitions of telehealth, telemedicine, telepharmacy and mHealth.
  - **Telehealth:** broad term: use of electronic info to support long-distance clinical healthcare
  - **Telemedicine:** specific to use of medical information being transmitted b/w 2 sites electronically
  - **Telepharmacy:** specific to appropriate dispensing of meds when pharmacist is in different site
  - **mHealth:** healthcare delivered via mobile devices – term will be obsolete (are small computers)
2. Provide 3 examples of how telehealth can be utilized in almost all areas of care delivery.
  - Direct patient care (virtual visits)
  - Product dispensing
  - Communication among team & patient (emails, chats)
  - Link to mobile apps and patient portals
3. Recall 5 reasons that are driving the growth of telehealth.
  - Rising costs to provide healthcare services
  - Shortage of clinicians
  - Stresses on the current system
  - Patient expectations for technology-enabled services
  - Improve access in remote areas

NOTE: telehealth cost savings is still unclear – mixed evidence

4. Describe 3 modes of healthcare data transmission, including 4 categories of remote patient monitoring.
  - a. **Store-and-forward:** images/videos saved & sent to be viewed when time permits (asynchronous)
    - Ex: common in dermatology/radiology, pt sends updated pics of wound to nurse
  - b. **Real time:** images/videos captured & sent in real-time as viewed by remote clinician; 2-way communication allows for more sophisticated assessments
    - Ex: electronic stethoscopes or otoscopes
  - c. **Remote monitoring:** monitoring pt status for disease management (1% Cdns use this)
    - i. Enabling info: providing pt disease-specific info & care plans
    - ii. Self-monitoring systems: pt reports data, triggering pre-programmed interventions (ex: take additional dose of drug)
    - iii. Assisted monitoring: regular check-ins with a clinician
    - iv. Environmental monitoring: sophisticated devices that capture pt status & reports it

5. Explain the pros and cons of 3 different communication modes.
  - a. **Patient-portal secure messaging**  
Pros: asynchronous, can attach docs/photos, creates paper trail  
Cons: no personal interaction, requires internet access
  - b. **Telephone**  
Pros: widely available, cheap, real-time  
Cons: unstructured, no paper trail, only real-time
  - c. **Audio-video**  
Pros: most robust data available to clinician, “best of both worlds,” real-time  
Cons: Expensive hardware/software that is secure, requires relatively fast network
  
6. List the 4 primary provincial telehealth networks.
  - Enterprise Network Gateway (eNG): connects health authorities together – **main provider**
  - Physician’s Private Network (PPN): connects physician offices to eNG and allows remote access of EMRs – acts similar to VPN
  - UBC private network through UBC MedIT
  - First Nations Health Authority

NOTE: Bridges may be required to connect sites from these networks together via authorization from IT support (ex// PPN is a secure bridge to eNG)
  
7. Describe point-to-point and multi-point telehealth calls for both direct and bridged connections.
  - Point to point (direct) = contacting someone in the same network
  - Point to point (bridged) = contacting someone in a different network
  - Multi-point (direct) = group of people contacting each other in the same network
  - Multi-point (bridged) = group of people contacting each other in different networks
  
8. List 5 possible barriers to the use of telehealth.
  - Lack of reimbursement models
  - High cost of implementing hardware
  - Limited availability of capable networks and bandwidth
  - Lack of standards (ex: pt devices used to access telehealth)
  - Potential for increased cost in a consumer-driven system

## **Lecture Objectives: Integrating Telehealth into Aboriginal Healthcare**

1. List and describe 3 reasons that have led up to the expansion of telehealth services in British Columbia by the First Nations Health Authority (FNHA).
  - Transformative Change Accord 2006: First Nations leadership council & BC provincial government - 10 year plan that identifies 29 action items to close gaps in health disparities
    - Action #23: create a fully integrated clinical telehealth network
  - First Nations Telehealth expansion of 2013: link First Nations communities with health centres on reserve to a comprehensive telehealth network
    - Integration with the systems of health authorities allows First Nations to participate in professional development programs
  - Prime Minister Justin Trudeau 2015 plan followed-up by his 2016 budget: 5 priorities including lifting the 2% cap on funding for First Nations programs & implementing all 94 recommendations from the T&R commission.
  
2. In addition to what was listed in previous lectures as possible barriers to implementing telehealth, list 2 other factors that can affect service delivery.
  - Geography – specifically remote or isolated communities
  - Community readiness