Digital Health
Managing the Opportunity and Complexity

Presented by:
Dennis Giokas
Chief Technology Officer
Head, Emerging Technology Group

©Canada Health Infoway 2014
Healthcare Summit - Kelowna
June 26, 2014
**Infoway’s Refreshed Blueprint**

- Address new priorities for health care IT
- Reflect new digital health functional opportunities
- Align with health system transformation initiatives
- Enable transformation
- Guidelines for new programs
- Now the “**Digital Health Blueprint**”
Digital Health is Complex

• Health care is complex
  – Communications
  – Information
  – Coordination
  – Collaboration
  – Knowledge and Evidence
• Automating aspects of health care with ICT adds another dimension of complexity
• Emerging technologies are disruptive and complex
• Requires thoughtful ICT strategic decisions
Illustrated by....

• Emerging technology drivers and enablers
• Digital health computing environments
• Tailoring workflow
• Information explosion
• Guidelines for clinical decision deployment
• Guidelines on the use of mobile devices and apps
• Remote patient monitoring use case
These enablers are intertwined, creating a new computing ecosystem which is user-driven. One that is beginning to accelerate in health. One that will transform health delivery.
Digital Health Environments

- EHR Data and Services
- Point of Service Applications
- Diagnostics
- Mobile Apps
- Social
- Reference
- HIAL for Interoperability and Process Management
- Analytics
- Devices
- Genomics
Functional Aspects of Digital Health

Health Information
User Interface & Experience
Digital Health Services
Workflow Across the Care Continuum
Communication Across the Care Continuum
Health Analytics
Functional Aspects of Digital Health

**Health Information**
- Nature of information
- Where is it stored
- Shared
- Exchanged

**User Interface & Experience**
- Which device
- Centralized
- Local

**Digital Health Services**
- Common and reusable
- Cross organizational
- Embedded in devices and applications

**Workflow Across the Care Continuum**
- Configurable
- Rules-based
- Monitored
- Managed

**Communication Across the Care Continuum**
- Real time
- Store and forward
- Push-pull
- Which device(s)

**Health Analytics**
- Real time or periodic
- Contextually appropriate
- Across multiple sources
Technologies are not simply inventions which people employ but are the means by which people are reinvented.

Marshall McLuhan
How?

“Providers must do their part by reengineering care processes to take full advantage of efficiencies offered by health IT...”

Did You Know?

• Clinical and administrative workflow and decision support can be tailored based on:
  – Clinical data
  – Context (role and place)
  – Personal preferences
  – Business rules
  – Clinical practice guidelines

• Benefits
  – No need to adhere a single process
  – Manage, monitor and evaluate the process
  – Agile – can easily adjust as process improvements are identified
Digital Health is Information Intensive
We have become like the most primitive Palaeolithic man, once more global wanderers, but information gatherers rather than food gatherers. From now on the source of food, wealth and life itself will be information.


Marshall McLuhan
By 2015 - 665 TB in the avg hospital

Clinicians must stay on top of:
• 10,000+ diseases & syndromes
• 2,000+ Rx
• 1,100+ lab tests

PubMed: 22.6 million records
• 1 million articles indexed annually
• 13% of articles published in NEJM in 2009 were reversals of previous findings
• 50% of clinical guidelines become outdated in < 6 years

Clinicians must stay on top of:
• 10,000+ diseases & syndromes
• 2,000+ Rx
• 1,100+ lab tests

PubMed: 22.6 million records
• 1 million articles indexed annually
• 13% of articles published in NEJM in 2009 were reversals of previous findings
• 50% of clinical guidelines become outdated in < 6 years
Mobile devices and apps
- 100,000+ mobile health and fitness apps
- Consumers downloaded 24 million health apps in 2012
- CMA survey on professional use:
  - 53% use iPhone
  - 32% use the iPad
  - 32% use BlackBerry or other smartphone or tablet device

Human Genome for personalized medicine
- 3GB
- Approaching $300
- Millions of variants
Clinical Decision Support Deployment

**In Clinical Applications**
- CDS based on the data and patient information within the organization
- Organizational clinical guidelines frame the CDS algorithms implemented
- Organizational workflow management based on the local CDS rules and mechanisms

**CDS in Mobile Apps**
- Generally provided from other clinical systems:
  - EMR/HIS the device is tethered to
  - Information services “in the cloud”

**CDS on information in motion**
- Analytics on processes
- Real time alerts

**Shared Service**
- Common and consistently applied CDS algorithms across multiple organizations, regions, or settings
- Applied against the patient’s EHR
- CDS content and services provided and managed by clinical authority
Use of Mobile Devices and Apps

“On the go”
- Workflow support
- Communications
- Geo-location context
- Real time access
- Anywhere, anytime
- Always connected

App appropriateness
- Alignment with guidelines
- Efficacy
- Safety
- Usability

Single function apps

Diagnostics
EHR Data and Services
Mobile Apps

©Canada Health Infoway 2014
Remote Patient Monitoring Use Case

- Remote patient monitoring of blood pressure
  - Utilizing a mobile device and app
  - Biometrics to an electronic monitoring service
  - Alerts to family physician
  - Communication to patient
1. Referral to RPM service: Based on RM service availability the clinician refers the patient into a specific RM program (ex. diabetes management, post surgical discharge, etc.)

2. RPM Service enrollment: Service determines if the patient qualifies for the RPM program. Patient record and care plan created.

3. Asset Management: New patient request sent to Asset Management. Equipment, ordered, configured, shipped to patient's home.

4. Setup & Training: Setup performed by the patient or care provider, then training delivered remotely or via the care provider.

5. Health data collected & transfer: Biometric & health data collected and transferred to a RPM service provider.

6. Monitoring of health data: Analyse and monitor patient data comparing it against patient’s care plan.

7. Patient follow up as required: Clinician calls or books an appointment with the patient when results vary from Care Plan.

8. Summary data submitted to EHR: Relevant clinical summary data submitted to a Digital Health System (e.g., EHR, EMR, PHR, etc.)
Remote Patient Monitoring

Shared Data and Services

Interoperability and Process Management Environments (HIAL)

Mobile Apps

Submit BP Results

Please book appointment

Dr. Paul

EMR Clinical Applications

Medical Devices

Mabel

RMMS

©Canada Health Infoway 2014
In Summary - Blueprint Illustrates

- Leveraging existing investments in the EHRS
- Guide for the solution architecture
  - Appropriate use of various computing environments for specific functionality
  - How to tailor, configure and manage clinical and administrative processes
  - Effective use of modern and emerging technologies
  - Future Infoway investment programs
- Guidance for ICT strategic plans and roadmaps based on priority business functions and implementation choices
Thank you

Website: www.infoway-inforoute.ca

ETG Resources: https://www.infoway-inforoute.ca/index.php/resources/technical-documents/emerging-technology

E-mail: dgiokas@infoway-inforoute.ca

Blog: http://infowayconnects.infoway-inforoute.ca/

Twitter: @Infoway