Digital Health Enabling Integrated Care: The Interoperability Challenge

Special Interest Group
International Foundation of Integrated Care

2019/2020 Webinar Series
December 5th 2019
Digital Health Enabling Integrated Care SIG

SIG Leads

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Canada

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International Foundation for Integrated Care

SIG Vision

Develop a clear understanding of the role digital solutions play in the delivery of integrated care.

Create a platform for an engaged group to share knowledge around available technologies and development, implementation, and evaluation methods to further the field and enable the spread.

Terms of Reference on the website
SIG 2019/2020 Activities

- Monthly newsletter
- Webinar series
  - January 23rd: The engagement challenge
  - March 2nd: The scale and spread challenge
- Conference sessions
  - ICIC20 – Croatia
  - NACIC – (Toronto) Canada
Today’s Speakers

Dr. Toni Dedeu
Interim CEO
International Foundation for Integrated Care (IFIC)

Dr. Nick Guldemond
Associate Professor
Integrated Care and Technology
Erasmus School of Health Policy & Management

Dr. Tara Sampalli
Assistant Director for Research in Primary Healthcare
Nova Scotia Health Authority
Assistant Professor of Medical Informatics
Dalhousie University

Dr. Jennifer Jones
Associate Professor of Medicine
Dalhousie University
Practicing clinician
Setting the stage
Why is interoperability important?

For health and care professionals
- Strengthen coordination to improve quality and safety, better access to patient information and decision-making supports

For patients and citizens
- Improved integration of care and enhanced safety

For users
- Lower implementation and integration costs

For health and care businesses
- Expand markets, open up competition and reduce costs to developers

Providing functional links across levels

Rainbow Model of Integrated Care (RMIC)

Interoperability is the ability of different information systems, devices and applications (‘systems’) to:

- Access, exchange, integrate, and cooperatively use data in a coordinated manner
- within and across organizational, regional and national boundaries, to:
- provide timely and seamless portability of information, and
- optimize the health of individuals and populations globally.

Health data exchange architectures, application interfaces and standards enable data to be accessed and shared appropriately and securely across the complete spectrum of care, within all applicable settings and with relevant stakeholders, including by and with the individual.
Four levels of interoperability

• **Foundational (Level 1)** – establishes the inter-connectivity requirements needed for one system or application to securely communicate data to and receive data from another

• **Structural (Level 2)** – defines the format, syntax, and organisation of data exchange including at the data field level for interpretation

• **Semantic (Level 3)** – provides for common underlying models and codification of the data including the use of data elements with standardised definitions from publicly available value sets and coding vocabularies, providing shared understanding and meaning to the user

• **Organizational (Level 4)** – includes governance, policy, social, legal and organisational considerations to facilitate the secure, seamless and timely communication and use of data both within and between organisations, entities and individuals. These components enable shared consent, trust and integrated end-user processes and workflows.
A European movement: Advancing solutions for multimorbidity

Recommendations from Joining the Dots conference, Brussels 27-28 November 2019 presented to EU eHealth Network meeting:

• Health and care practitioners must be up-skilled and further educated on multimorbidity and associated complexity of conditions, while further enculturated to multidisciplinary teamwork. Education of patients and the public is also essential.

• There is a need for co-ordinated efforts to understand better multimorbidity implications to health and care at local, regional, national and European levels. We recommend consensus efforts for both policy and practice for this challenge.

• Europe must move towards data driven guideline development for multi-morbid conditions (beyond traditional evidence-based approaches with the use of dynamic data, different level of abstractions in the definition of the conditions and the use of data from PROMs and PREMs)

• Europe must investigate the use of patient-defined PROMs (co-produced with health and care practitioners and negotiated based on patient choices)
Guest Speakers

Dr. Nick Guldemond
Dr. Tara Sampalli
Dr. Jennifer Jones
MyHealthNS Journey: In Search of a Platform to Support Specialist-Primary Health Integration

Drs. Jennifer Jones & Tara Sampalli
Nova Scotia Context

1 multisite hospital complex, 9 regional hospitals, 35 community and other locations

**Employees:** (unionized and non-unionized): 23,400+

**Physicians:** (2,043 specialists 1,064 family physicians) 3,107
Nova Scotia Context

• Formation of a provincial health authority in 2015

Mission: To achieve excellence in health, healing and learning through working together

Vision: Healthy people, healthy communities – for generations

Technology a key enabler
Designing technology for a provincial system – key considerations

• Value for patients and clients
• Value for providers
• Hospital and community-based care
• Rural and urban communities
• Interoperability
• Background
  • The case for specialty-primary care integration for digestive healthcare delivery
  • The state of access to GI care in Nova Scotia

• Innovating care through implementation of patient-oriented, virtual medical neighborhood across primary and specialty care

• Implementation Considerations

• The need for digital heath integration
Chronic GI Disease Burden

• More than 20 million Canadians suffer from digestive disorders
  • CRC, IBD, CLD, UGIT cancers, IBS, GERD, dyspepsia, ulcers, NAFLD, Cirrhosis etc.
• In 2000: 18 billions dollars in annual health costs and lost productivity
• 30,000 Canadians die annually from digestive disorders
• Account for at least 10 percent of inpatient hospitalizations
• Prevalence of digestive disorders has doubled over the past decade
• Comprise as much as 20 percent of case mix in PHCP
• Wait times for digestive care exceed recommended benchmarks in numerous provinces in Canada
• Median wait time for semi-urgent consultation 12-18 mos
• Obvious reasons include
  • Inadequate physician supply to meet population needs
  • Geographic inequities in access to specialty services
  • Mismatch between geographic locale, patient need, and resources
  • Other structural and process barriers
Stakeholder Perceptions of Access in Nova Scotia

- Primary Healthcare Physicians (PHCPs)
- Aim: To identify barriers to access to IBD care for referring PHCPs in NS
- Population-based survey
  - N= 634 questionnaires mailed to all PHCPs in NS
  - 61 questionnaires received (response rate of 25.4%)
- Qualitative data comments were themed using framework analysis to identify key barriers
The majority of PHCP (57%) were dissatisfied with the current referral process
- long patient wait times
- perceived system inefficiency

Key areas of geographic variance in access:
- Access to specialty care in the community
- patient wait times

Ideas to improve access:
- increased gastroenterologist supply, particularly in rural areas
- creation of a provincial centralized referral and triage process
Patient and Provider Satisfaction with IBD Care in NS

PHCP Satisfaction with Current IBD Specialist Referral System
(by health zone)

Heat map of Nova Scotia based on the mean satisfaction of primary health care providers with the IBD specialist referral system.

Mean satisfaction was estimated by assigning a score to each categorical group correspondingly as follows:

- Very Dissatisfied = -1
- Dissatisfied = -0.5
- Neutral = 0
- Satisfied = 0.5
- Very Satisfied = 1

PHCP Satisfaction with Current IBD Specialist Referral System
(by county)

Heat map of Nova Scotia based on the satisfaction of primary health care providers with the IBD specialist referral system.

Mean satisfaction was estimated by assigning a score to each categorical group correspondingly as follows:

- Very Dissatisfied = -1
- Dissatisfied = -0.5
- Neutral = 0
- Satisfied = 0.5
- Very Satisfied = 1
Barriers & Facilitators
Barriers & Facilitators

Inefficient Process

- Inappropriate healthcare resource use
- Opaque referral and triage process
- Lack of access to diagnostic tests
- Communication
  - Patient and PHCP Appointment
  - Referral Sent to IBD Specialist
  - Patient Seen by IBD Specialist
  - PHCP Satisfaction
- Patient Anxiety
- Geographic inequity

No access to specialist in community
### Themes and Subthemes from Patient Focus Groups

<table>
<thead>
<tr>
<th>Themes</th>
<th>Subthemes</th>
<th>Access</th>
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<tbody>
<tr>
<td>Experiences</td>
<td>Patient as Partner</td>
<td>Acceptability</td>
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<td>Experiences</td>
<td>Appropriateness</td>
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**Themes**
- Patient as Partner
- Experiences
- Processes
- Structures/System Issues

**Subthemes**
- Changing expectations
- Acknowledgements of views
- Age
- Gender
- Advocacy and support
- Disease Education
- Co-morbidities
- Frequency of system interactions
- Autonomy and power dynamics
- Diagnostic journey
- "Right care" by "right person"
- Psychosocial support
- Coping strategies
- Information management
- Medication history
- Trial and error
- System stagnation
- Timely initial diagnosis
- Access to GP and Specialist care
- Collaborative/team-based care
- Coordination of care

**Access**
- Acceptability
- Appropriateness
- Affordability
- Approachability
- Availability & Accommodation
CAre Through informed heALth sYSTem inTegreation: CATALYST Network

• Multidisciplinary, national research network developed to support the development, implementation and evaluation of innovation to improve delivery of evidence-based care

• Both the intervention and the implementation strategies relevant

• Future pragmatic, prospective, comparative-effectiveness cohort study (type III hybrid implementation-effectiveness study design)
CATALYST: What is being implemented?

- Evidence-based care pathways composed of multiple EB diagnostic and treatment components for the diagnosis and treatment of luminal gastrointestinal symptoms beginning with LGIT symptoms

- Local and remote facilitation of multidisciplinary care

- Structured provider-provider consultative appointments

- Specialist facilitated, multidisciplinary diagnosis and treatments
How is this being implemented? The Virtual Medical Neighborhood

• Aligns PHCPs, specialists, and other allied healthcare professionals into a tightly coordinated team to provide comprehensive medical care

• Some studies have suggested reductions in referrals and wait times

• Innovation in care delivery is essential in Nova Scotia to improve cost-effectiveness and quality of care
Where are we now? COM-B Behavior Change Wheel

Michie S. Imp Sci 2011
## COM-B Domains Addressable by VMN

<table>
<thead>
<tr>
<th>Domain</th>
<th>Behavior</th>
<th>Intervention</th>
<th>Intervention Function</th>
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<tbody>
<tr>
<td>Capability</td>
<td>Content knowledge &amp; skills</td>
<td>-collaborative development of intervention pathway and strategy -Web based CDS tool -peer support through virtual consultations -case co-management -extension of expertise of specialty health home to primary health home (digital integration)</td>
<td>Education Modelling Environmental restructuring or enabling</td>
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<tr>
<td></td>
<td>Access to allied healthcare</td>
<td></td>
<td></td>
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<tr>
<td>Opportunity (environment)</td>
<td>Lack of access to diagnostics</td>
<td>-specialist-led facilitation of diagnosis</td>
<td>Incentivization &amp; enabling</td>
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<tr>
<td>Motivation automatic)</td>
<td>Pessimism</td>
<td>Learning through regularly scheduled VMN appts</td>
<td>Enablement and training</td>
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<td>Change anxiety</td>
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Current Status

- Foundational research
- Feasibility testing
- Grant Support
- Community Engagement & Pilot Planning.
CFIR: Consolidated Framework for Implementation Research

Intervention (unadapted)  Outer Setting

Core Components

Inner Setting

People Involved

Intervention (adapted)  Adaptable Periphery

Core Components

Process

Causal Chain
Information and Communication Workflow Integration Needs

- Integration of providers
  - Patient-level integration (shared chart, communication, tracking, results, education and remote education)
  - Collaboration and communication (patient-provider, provider-provider)

- Integration of patient and provider(s)

- Data capture for evaluation

- Integration multidisciplinary care providers & team members
  - Education
  - Allied healthcare intervention(s)
  - Care plan development and delivery

- Access to Education
  - Self-management, autonomy, self-efficacy
Components of a Logic Model:

Program Action - Logic Model

Inputs
- Activities
- Participation

Outputs
- Short Term
- Medium Term
- Long Term

Outcomes - Impact
- Learning
- Awareness
- Knowledge
- Attitudes
- Skills
- Opinions
- Aspirations
- Motivations
- Action
- Behavior
- Practice
- Decision-making
- Policies
- Social Action
- Conditions
- Social
- Economic
- Civic
- Environmental

Situation
- Needs and assets
- Symptoms versus problems
- Stakeholder engagement
- Intended outcomes

Priorities
- Consider:
  - Mission
  - Vision
  - Values
  - Mandates
  - Resources
  - Local dynamics
  - Collaborators
  - Competitors
  - Intended outcomes

What we invest
- Staff
- Volunteers
- Time
- Money
- Research base
- Materials
- Equipment
- Technology
- Partners

What we do
- Conduct workshops, meetings
- Deliver services
- Develop products, curriculum, resources
- Train
- Provide counseling
- Assess
- Facilitate
- Partner
- Work with media

Who we reach
- Participants
- Clients
- Agencies
- Decision-makers
- Customers
- Satisfaction

What the short term results are
- Learning
- Awareness
- Knowledge
- Attitudes
- Skills
- Opinions
- Aspirations
- Motivations

What the medium term results are
- Action
- Behavior
- Practice
- Decision-making
- Policies
- Social Action
- Conditions
- Social
- Economic
- Civic
- Environmental

Assumptions

External Factors

Evaluation
- Focus - Collect Data - Analyze and Interpret - Report

Formative → Process → Outcome → Impact
Thank you
Next up!

Next webinar: January 23rd: The engagement challenge