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WHERE **THE WORLD** CONNECTS FOR HEALTH

Conference & Exhibition | March 5–9, 2018

Las Vegas | Venetian – Palazzo – Sands Expo Center

The Impact of Smartphone Technology in Clinical Practice

Session 46, March 6, 2018

Dr. Sean P Spina, *BScPharm, ACPR, PharmD, FCSHP*
Clinical Pharmacy Coordinator - Island Health
Clinical Assistant Professor – University of British Columbia

UBC

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Conflict of Interest

Dr. Sean P Spina, BScPharm, ACPR, PharmD, FCSHP, RPh

Contracted Research: *Vocera*
Access to technology for purpose of evaluation: *Apple Canada*

Speaking fees for current program:

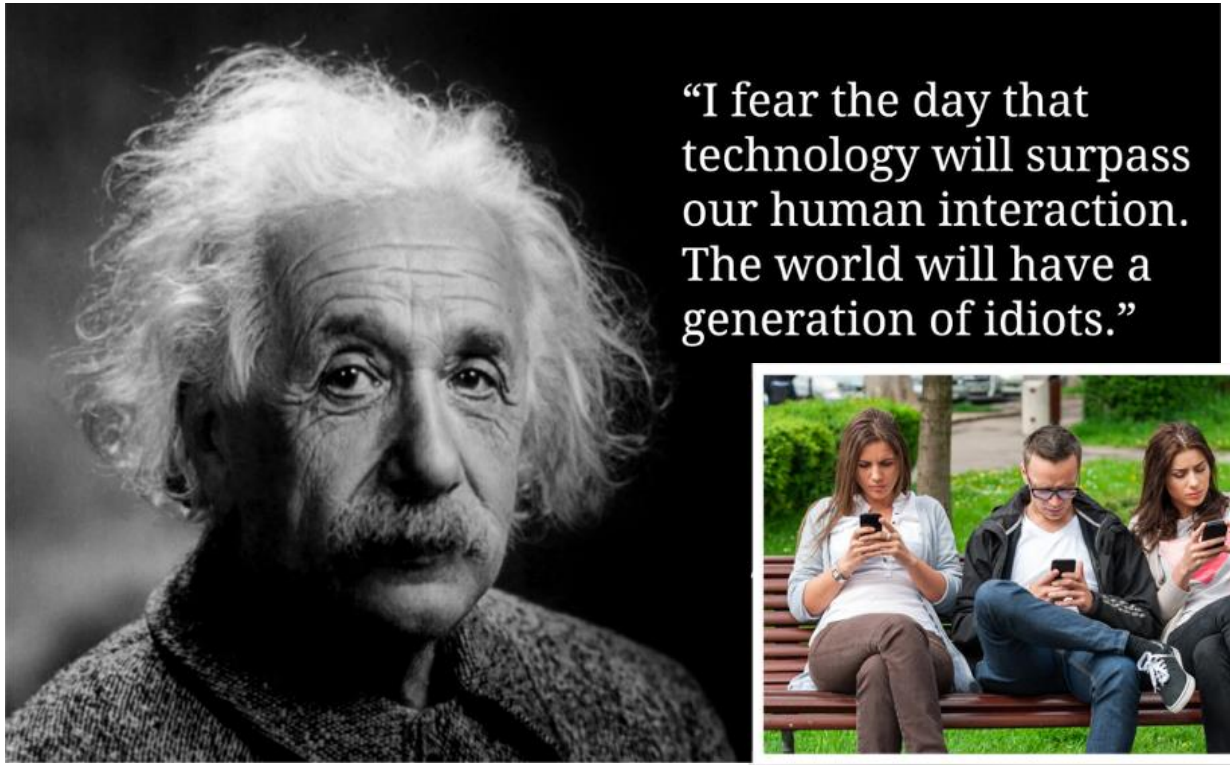
- I have received no speaker's fee for this presentation
- Funded travel to this conference: *Vocera*

Agenda

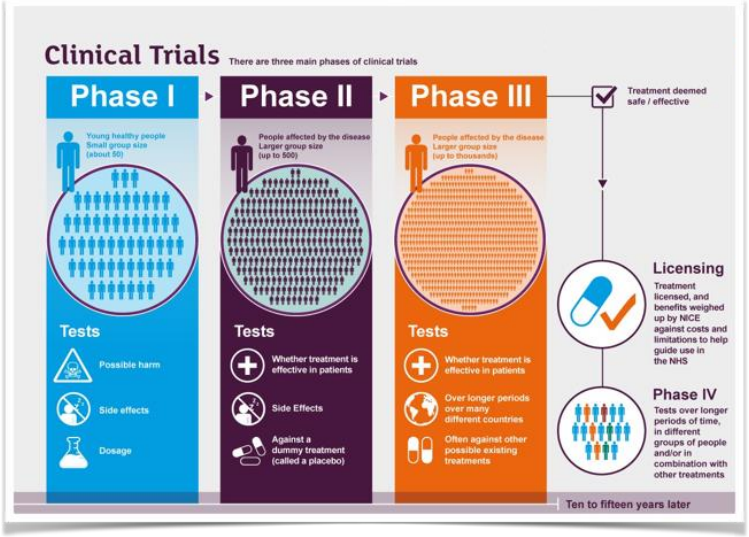
- Memory Lane
- Formal Projects x 3
- Technical Controls
- Current Communication Practices
- Future

Learning Objectives

- Analyze current communication practices and identify opportunities for improved communications efficiency
- Discuss how secure, integrated communications amongst all healthcare enterprise stakeholders improves care and processes
- Demonstrate how mobile technology enables health care professionals to streamline communication and collaboration, reduce interruptions, improve physician response times and help hospitals and health systems transform care delivery by redefining how they connect and share information


"I fear the day that technology will surpass our human interaction. The world will have a generation of idiots."

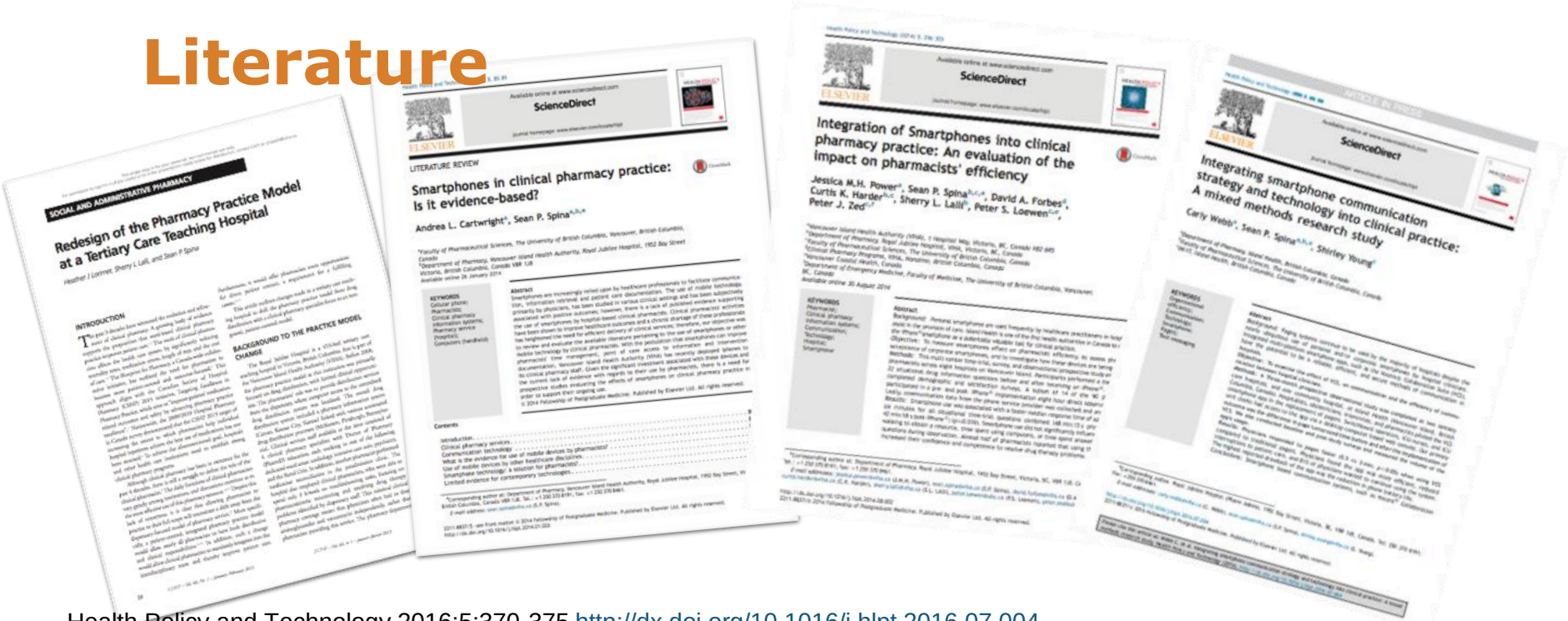
Inspiration



Why….

EVIDENCE

Literature



Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004
Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002
Health Policy and Technology 2014;3:85-89 http://dx.doi.org/10.1016/j.hlpt.2014.01.003
CJHP 2013; 66(1):28-34

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Integration of Smartphones into Clinical Pharmacy Practice: An Evaluation of the Impact on Pharmacists' Efficiency

Jessica Power, BSc.Pharm, ACPR
Pharmacy Practice Resident
(2012 - 2013)

Dr. Sean Spina,
Dr. Curtis Harder, Ms. Sherry Lalli,
Mr. David Forbes, Dr. Peter Loewen, Dr. Peter Zed

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Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002

Background

- First study of its kind in North America
- Island Health was one of the first health authorities in Canada to endorse the iPhone

Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002

Study Design

P	90 Island Health Pharmacists
I	Corporate Smartphones (iPhone 4)
C	Current communication devices
O	• Timed questionnaire • Survey • Direct Observation
T	October 2012 to March 2013

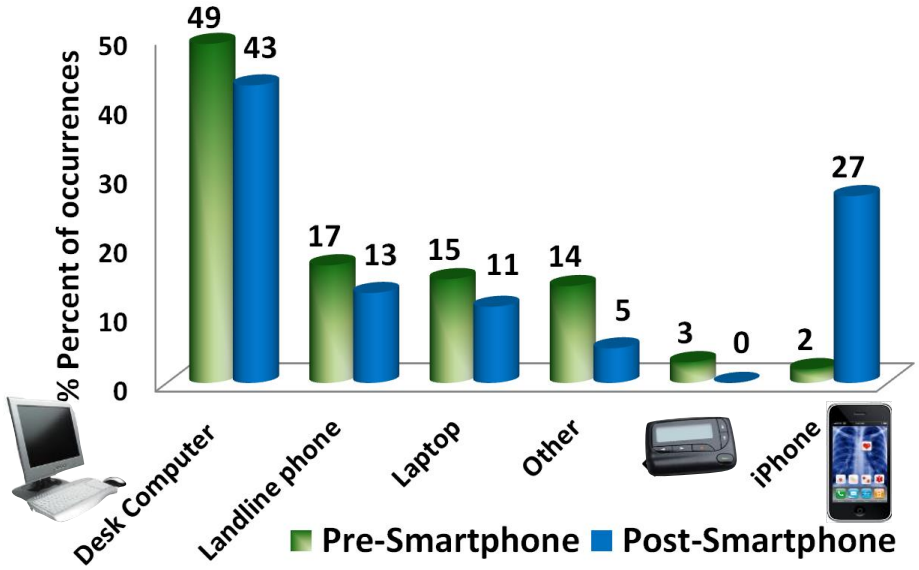
Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002

Results

Smartphone use facilitated a statistically significant faster response time (p=0.039)

Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002

Types of Technology used by Pharmacist



Pre- vs. Post- Smartphone implementation
(n=502 occurrence Pre-Smartphone and n=644 Post-Smartphone)

Results

Positive

- Accessibility to drug information
- Rapid communication
- Easier management of emails

Negative

- Small screen
- Poor reception
- Lack of resolved Drug Therapy Problem tracker

Pharmacists

- 98% - iPhones useful
- 87% - iPhones improved job performance
- 46% - increased their confidence and competence in resolving Drug Therapy Problems

Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002

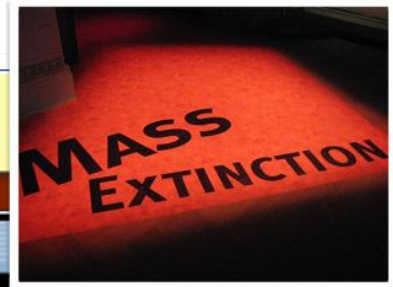
Applicability to Practice

Sufficient evidence to continue to support the use of smartphones within Island Health's pharmacy department

Canadian Society of Hospital Pharmacists

Société canadienne des pharmaciens d'hôpitaux

Health Policy and Technology 2014;3:296-305 http://dx.doi.org/10.1016/j.hlpt.2014.08.002



Service INFORMATION

island health INFORMATION MANAGEMENT INFORMATION TECHNOLOGY

When:	**Effective March 2015**
Service(s):	**TELUS Paging**
Region/Site:	**All Island Health**
Impact:	**TELUS advised Island Health last Summer that it is *phasing out its paging services*. Island Health had over 1000 TELUS pagers in use by various departments and programs. Network Services has established an alternate service provider, RadioWorks, for paging service.** **In-building paging services (i.e. Talkback, Code, and 3-Digit paging) are NOT affected by this change.** **If you have a TELUS Pager:** • **TELUS pagers will cease to function after March 1 2015** • **Any users still using TELUS pagers are asked to replace or return their devices**

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Integrating Smartphone Communication Strategy and Technology (SCST) into Clinical Pharmacy Practice: A Mixed Methods Research Study

Carly Webb, BSc.Pharm, ACPR
Pharmacy Practice Resident
(2014-2015)

Dr. Sean Spina, PharmD
Ms. Shirley Young

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Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004

Current communication systems at Island Health

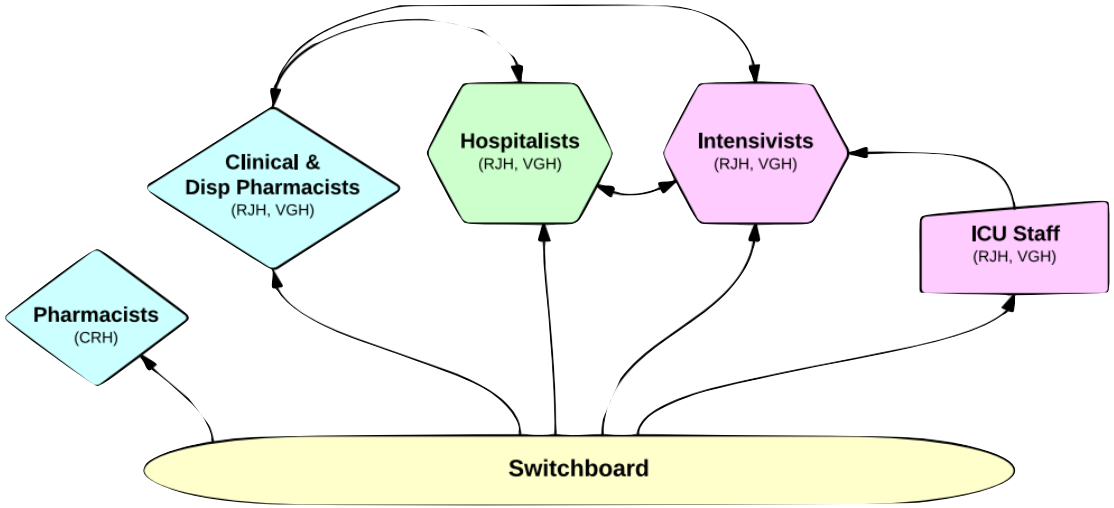
- Smartphones (personal and corporate)
- SMS Messaging
- Telephone
- Hands-Free Communication Badges
- Pagers
- Email
- Written (e.g. pink notes)

Study Design

P	161 Pharmacist, Hospitalists, Intensivists, Switchboard & Nurses across 3 sites
I	Secure Mobile Clinical Communication Solution (SMCCS) (Smartphone app and web console)
C	Baseline data, baseline survey
O	1: Page Turnaround Time 2: Survey Responses / Subjective Feedback / Usage data
T	2014-2015

Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004

Study Design

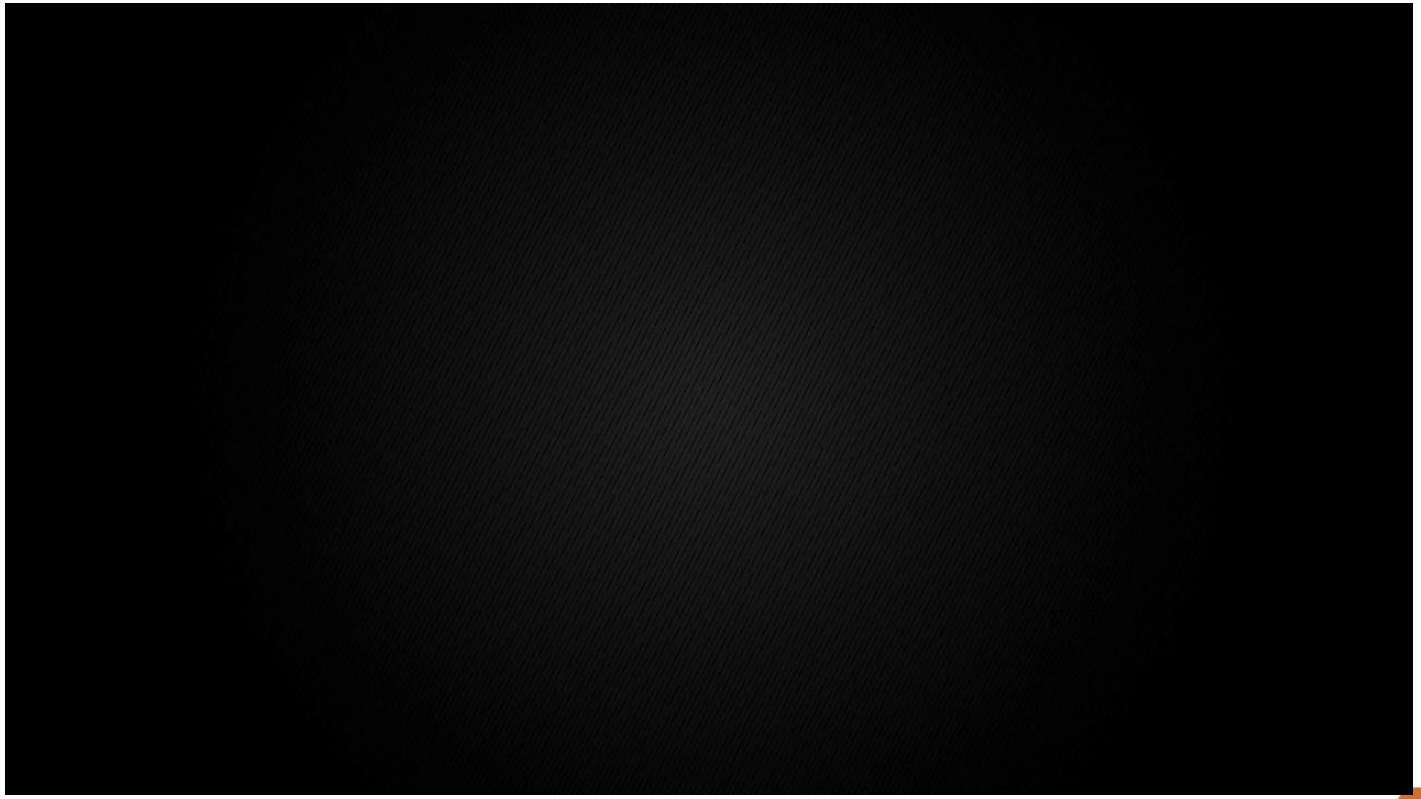


Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004

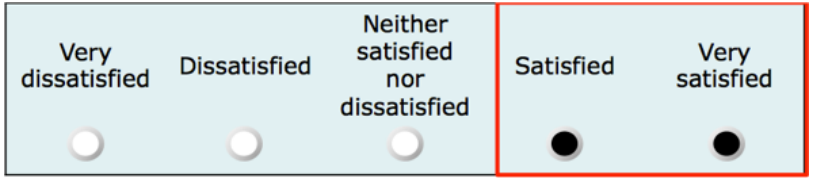
Clinical Question

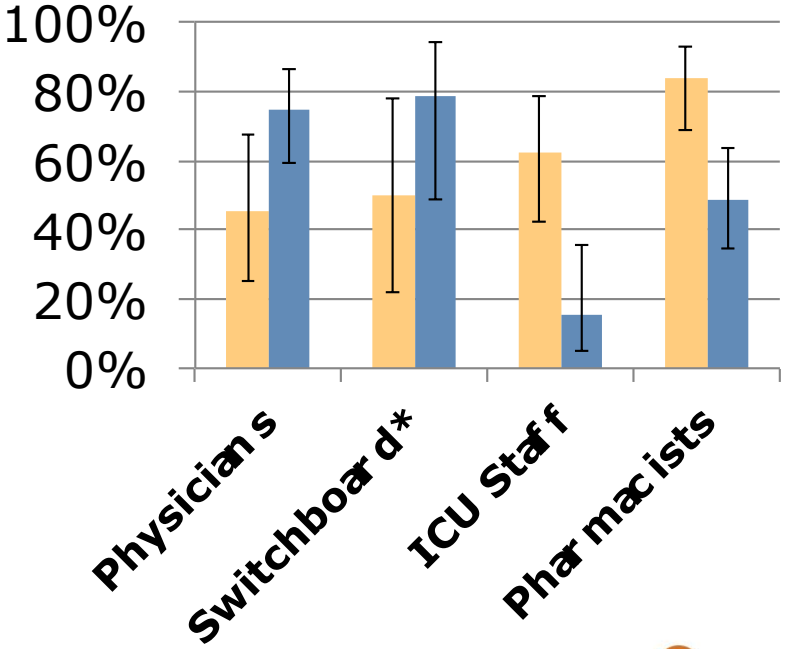
How does the use of an integrated smartphone communications solution affect communication between switchboard, pharmacists, physicians and nurses compared to current state?

Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004



Secondary Endpoint





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Secondary Endpoint

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
○	○	○	●	●

	Physicians (n= 43)	Switchboard (n = 14)	ICU Staff (n = 26)	Pharmacists (n = 49)
SMCCS improved patient care	28.6%	14.3%	18.2%	34.7%
SMCCS improved patient safety	31.0%	28.6%	9.1%	32.7%
SMCCS enabled faster care	38.1%	21.4%	9.1%	36.7%
I would like to continue using SMCCS	**81.0%**	**71.4%**	**18.2%**	**42.9%**

Survey Response Rate
Survey #1: >70% for pharmacists; >30% for physicians, switchboard, and ICU staff
Survey #2: >80% for pharmacists, physicians, and switchboard; >30% ICU staff

Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004

Secondary Endpoint

	Alerts	Chats
Hospitalists	2388	754
Intensivists	817	315
Obstetricians	111	59
ICU CNLs	9	35
Pharmacists	483	4528
Total	**3808**	**5691**

Health Policy and Technology 2016;5:370-375 http://dx.doi.org/10.1016/j.hlpt.2016.07.004

Secondary Endpoint

Positive aspects of Secure Mobile Clinical Communication Solution

	Physicians (n = 43)	Pharmacists (n = 49)
Ability to **contact someone directly** without going through switchboard	56.8%	68.0%
Ability to **send/receive additional information**, rather than just callback #	65.9%	66.0%
Knowledge that the recipient **received the page or message**	43.2%	56.0%
Convenience of only needing one device	88.6%	38.0%
More **reliable coverage** (works on both WiFi + cell network)	29.5%	22.0%
Ability to **customize** volume or vibrate settings of device	40.9%	20.0%

Negative aspects of Secure Mobile Clinical Communication Solution

	Physicians (n = 43)	Pharmacists (n = 49)
I experienced battery life issues after installing SMCCS	68.2%	62.0%
Battery drain negatively affected my day-to-day WORK activities	59.1%	52.0%
Battery drain negatively affected my day-to-day PERSONAL activities	52.3%	24.0%
Battery drain negatively affected patient care activities	18.2%	22.0%
Having to enter password to view pages or messages	9.1%	14.0%
Phone being in "Do Not Disturb" and alerts not coming through	27.3%	8.0%

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BRITISH COLUMBIA | island health

NEWS RELEASE

Island Health Project Uses New Smartphone App to Improve Communication

"This smartphone app is a great example of using innovation to improve health services in British Columbia," said Health Minister Terry Lake. "Health care professionals are able to communicate instantly using the app instead of a pager, meaning they can increase efficiency, which helps to provide improved patient care."

Victoria and Campbell River. Participants sent and received messages and alerts using a secure smartphone app or desktop computer instead of sending and receiving information through traditional paging.

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Evaluation of a Secure Mobile Clinical Communication Solution (SMCCS) in Acute and Community Practice Settings on Vancouver Island

Dr. Sean Spina
(February 2018)

Dr. Peter Loewen (University of British Columbia)
Dr. Kristin Atwood (Victoria Divisions of Family Practice)

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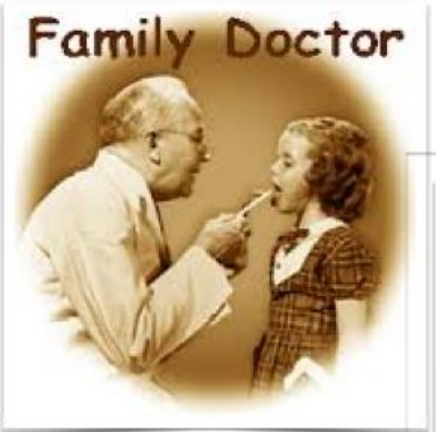
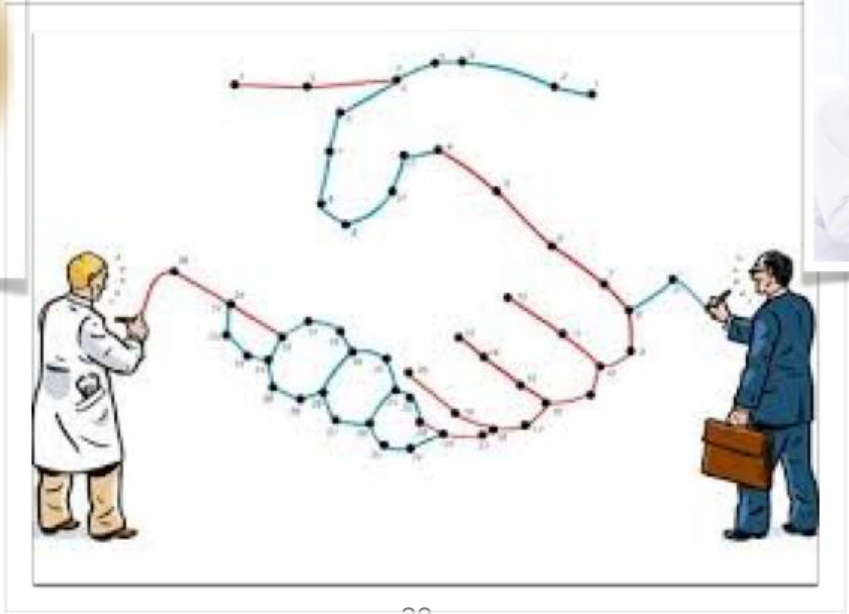
Victoria Divisions of Family Practice & Island Health





Study Design

P	~350 Pharmacists, Family MDs, Hospitalists, Switchboard, Orthopedics, Radiology, Pediatrics, Internal Medicine, Plastics, Emergency, Switchboard, Neurology, Microbiology
I	Secure Mobile Clinical Communication Solution (SMCCS) (Smartphone app on iPhone or Android and on web console)
C	Baseline data, baseline survey
O	1: Number of successful contacts made 2: Survey Responses / Subjective Feedback
T	February – August 2018

Objectives

To evaluate the impacts of introducing the SMCCS on switchboard operators, pharmacists, and physicians using a quality of experience framework to examine:

- The degree and nature of adoption of the SMCCS
- Effects on user workflow and experience
- Effects on care provision

Secondary Endpoint

- ***Degree and Nature of Adoption***
  - Facilitators and barriers to adoption and integration into work practices
  - Use
  - Types of use

- ***Effects on User Workflow and Experience***
  - Perceived impact on relationships
  - Perceived impact on workflow
  - User experience

- ***Effects on Care Provision***
  - Provider perception of clinical value
  - Provider perception of impact on quality in transitions in care

Implementation

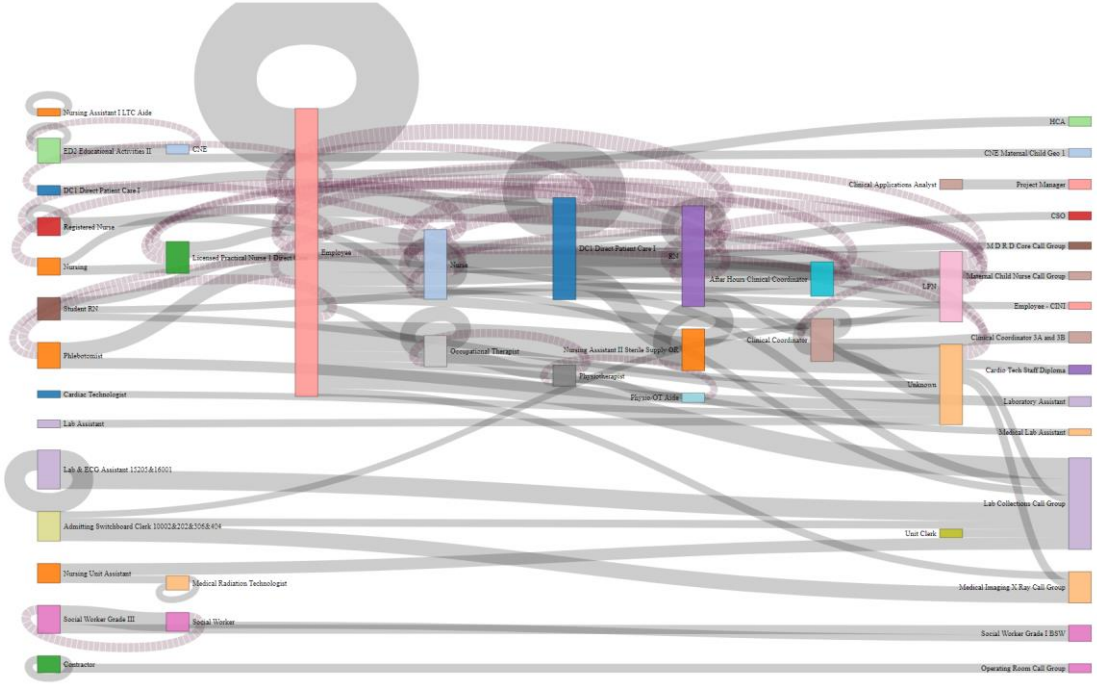
BYOD Security - Technical Controls

- No integration with Island Health systems or data sources
- Documentation handled by the system is transitory and purged at regular intervals
- Messages are not stored on the device
  - Messages are stored on the messaging server and in the SQL database and message content is encrypted at rest and when being transmitted.

Device Security - Technical Controls

1. A device trying to connect must have the valid device validation certificate
2. The Secure Mobile Clinical Communication Solution has a series of MDM like capabilities that it can enforce on the device:
   - *Application level and device level PIN/Passcode*
   - *Auto Lock*
     - Set to 15 minutes until the device auto locks
   - *Enforce Change Password and Change Frequency*
   - *Unique password before reuse permitted*
     - set at 3
   - *Maximum failed attempts before data wipe*
     - set at 4
   - *Minutes of inactivity before user is logged out (of application)*
     - set to 30 minutes
   - *Days of inactivity before user is put in to warning state*
     - set to 15 days
   - *Days of inactivity before user is put in to locked state*
     - set to 30 days

Current Communication Practices



Current Communication Practices

- Medical Office Assistant / Hospitalist Office Assistant
  - Interdependence to physician to MOA
- Switchboard
  - Templates
  - 2 way communication
- BYOD
  - Security / user preferences
- Pharmacists
  - 1-way vs 2-way

Future

- Critical lab values to mobile
- Discharge alerts to mobile
- Integrated electronic health record
- Uploads (image/consults) into EHR
- Use of Apple Watch for communication
- Understanding clinical communications

Successful Implementation of Smartphone Technology

1. Use formal project protocol
2. Use scientific rigor
3. Involve key stakeholders
4. Start small, keep it simple
5. Choose intuitive technology and educate
6. Measure, measure, measure
7. Publish and share

International Interest

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Questions

Dr. Sean P Spina

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- LinkedIn: SeanSpinaRx
- Mobile: +1(250)216-9203

Please complete online session evaluation

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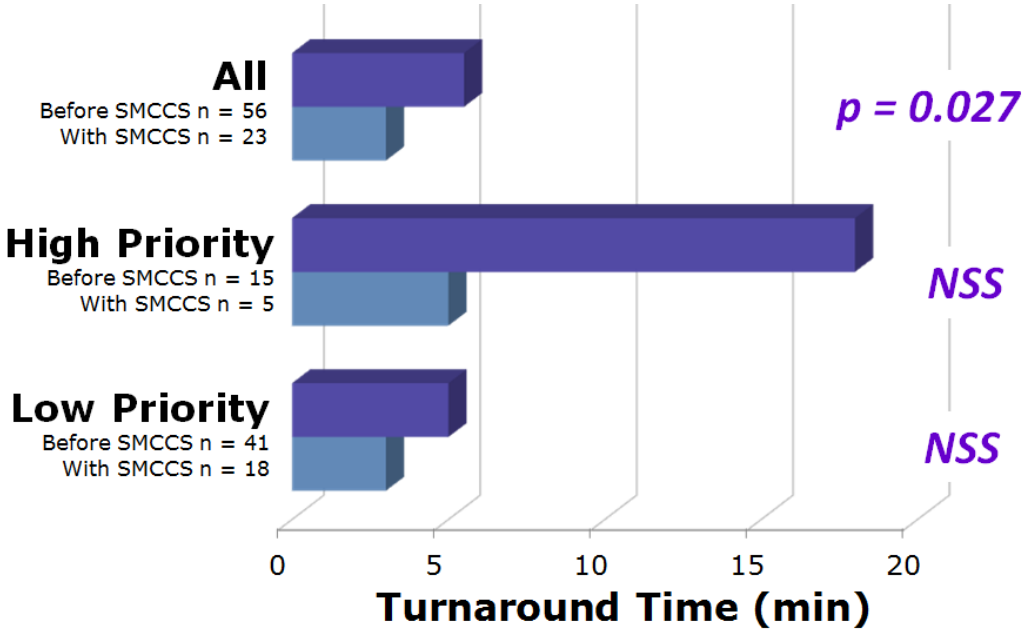
Victoria Division of Family Practice
A GPSC initiative

UBC

Results - Primary



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