The Provincial Breast Health Strategy

Working together to improve breast cancer prevention, screening and diagnosis in BC

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Digital Mammography Project

Co-Chairs:

Karim Karmali, Chief Operating Officer, BCCA
Heather Gibson, Director of Medical Imaging, VIHA

Team Members:

Mary-Anne Dedora, LMC IMS
Lisa Kan, BCCA
Anne McLaughlin, PHSA
Lynn Pelletier, PHSA
Sue Sepa, LMC IMS
Dr. Cathy Staples, IHA
Dr. Terry Warner, BCRS
Dr. Christine Wilson, BCCA

David Grimm, VIHA
Dr. Heather MacNaughton, FHA
Shelley Moen, MoHS
Janette Sam, BCCA
Richard Simson, PHSA
Russell Stead, VCH
Dr. Linda Warren, BCCA

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Digital Mammography Project

Purpose: Plan & implement digital equipment & related IS infrastructure in screening mammography sites across BC (integrated with diagnostic services)
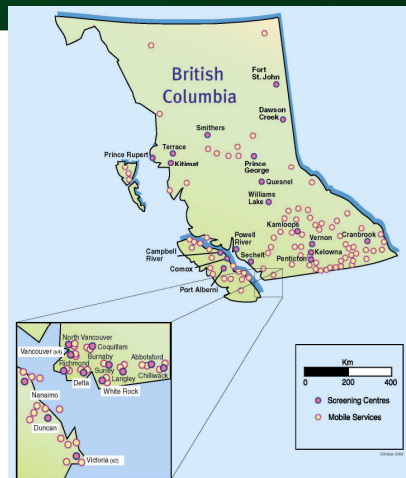
Presentation Outline

1. Screening Mammography Program Overview
2. Status of Digital Mammography Implementation in BC
3. Equipment & Workflow
4. Objectives for Provincial Digital Screening Plan
5. Presentation of Options for Discussion at Breakout

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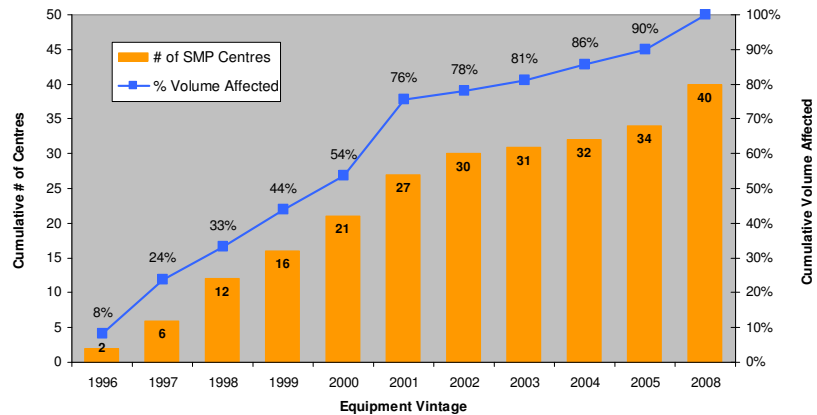The Best Place on Earth

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Screening Mammography Program of BC

- Available to women ages 40-79 without doctor's referral
- Mammography services are provided by Health Authority and Community Imaging Clinics
- There are 37 fixed location clinics:
  - 29 in hospital clinics
  - 8 in community clinics
- There are 3 mobile units visiting over 100 communities
- 304,012 exams were provided in 2009/2010
- FMM target:70% of women ages 50-69 participating in biennial screening mammography

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Equipment Vintage in SMP Clinics

Standard replacement planning time frame = 10 years

Digital Mammography

Over the last 3 years, digital mammography has evolved from being an emerging technology to the standard for new equipment.

VIHA	Screening and diagnostic (5) - *Campbell River, Comox, Duncan, Port Alberni, Victoria* Diagnostic only (1) – *Nanaimo*
IHA	Screening and diagnostic (1) – *Penticton* Diagnostic only (1) – *Kamloops*
LMC	Screening and diagnostic (5) – *Abbotsford, BC Women's (2011), Chilliwack (Jan 2011), Mt. St. Joseph Hospital (adding screening Nov 2010), SMH Out Patient Facility (Jun 2011)* Diagnostic only (4) – *BCCA-Vancouver Cancer Clinic, Royal Columbian Hospital, North Shore Radiology, Canada Diagnostic Center*

- Processors are becoming obsolete.
- Work Safe injury prevention – limiting exposure to chemical hazards

What Equipment Are Needed for Digital Mammography?

- Mammography machine
- Reading workstation

- Laser printer (for hard copy)
- Digitizer (for previous films)

Digital Mammography Workflow

- Patient check-in
- Creation of worklist for modality
- Image acquisition

- Image storage and retrieval management
- Access management for images acquired with multiple modalities and multiple sites

- Reporting

RIS and PACS are the "glue" that tie these steps together.
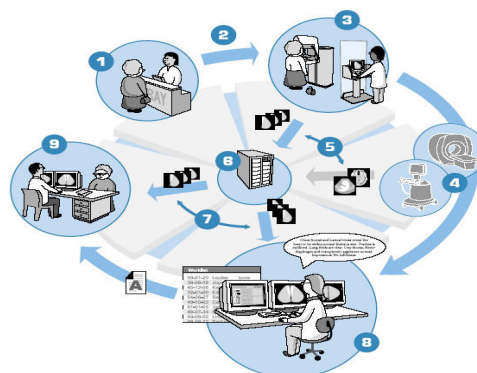
Objectives for the Provincial Digital Screening Mammography Strategy

- **Enable efficiency and automation**
  - Maintain provincial appointment booking and result reporting capabilities
  - Maintain use of standardized reporting
  - Enable distributed reading (not constraint by where images are acquired)
  - Filmless & paperless
  - Facilitate sharing of images across SMP and Diagnostic Assessment clinics
- **Leverage on local service providers**
  - Minimize disruption to "normal" workflow at the local level
  - Leverage on existing local technology to perform local exams
- **Reduce duplication of efforts**
  - Patient and provider identification
  - Patient scheduling
  - Result reporting

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Conceptual Architecture Options

Two main options have emerged from consultant reports, and from discussions with VIHA staff and other experts:
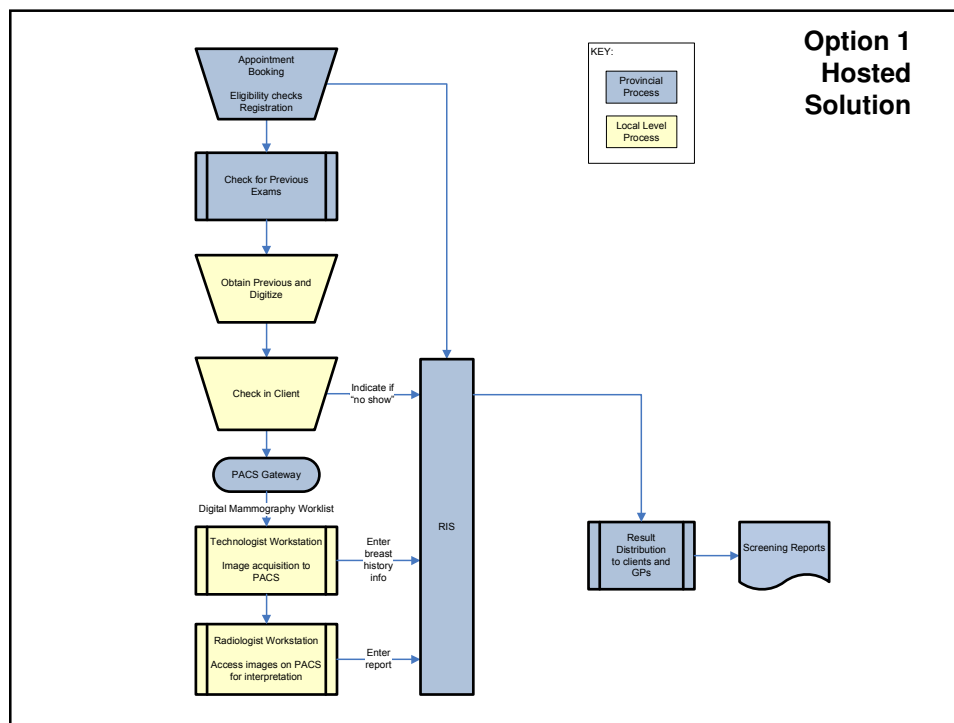
Option 1 –Hosted Provincial Screening Solution

Option 2 - Integrated Screening Solution

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Option 1 - Hosted Provincial Screening Solution

Description
- Appointment booking on the provincial system
- The provincial system to support local workflow from client check-in to reporting
  - The provincial system sends worklist to the local digital mammography modality
  - SMP images and reports are archived on the provincial system
- Radiologist accesses SMP images and any previous SMP reports from the provincial system
- Radiologist interprets current images and enters the report on the provincial system
- Result letters for clients and GPs are generated by the provincial system

- Clinicians for diagnostic work-up or treatment that are not on the hosted system will need to obtain SMP studies through their current process or the PHSA transfer grid (until a provincial DI solution is implemented)

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Option 1 Hosted Solution

KEY:
Provincial Process
Local Level Process

Appointment Booking
Eligibility checks
Registration

Check for Previous Exams

Obtain Previous and Digitize

Check in Client

Indicate if "no show"

PACS Gateway

Digital Mammography Worklist

Technologist Workstation
Image acquisition to PACS

Enter breast history info

Radiologist Workstation
Access images on PACS for interpretation

Enter report

RIS

Result Distribution to clients and GPs

Screening Reports

Option 1 - Hosted Provincial Screening Solution

Pros
- Screening radiologists can access images and reports from all SMP clinics
- No system integration/interface challenges
- "Cookie stamp" implementation
- Reading of SMP images can be done anywhere in the province

Cons
- Not leveraging RIS and PACS investment in all Health Authorities
- Feasibility of sharing equipment with diagnostic imaging – can the digital mammography modality work with two different RIS and PACS?
- Challenges with local equipment set-up and maintenance when RIS and PACS are under another organization
- Clinicians who are not on the hosted system will not be able to directly access SMP images and reports on their local system (even when SMP exams are performed in the same facility).

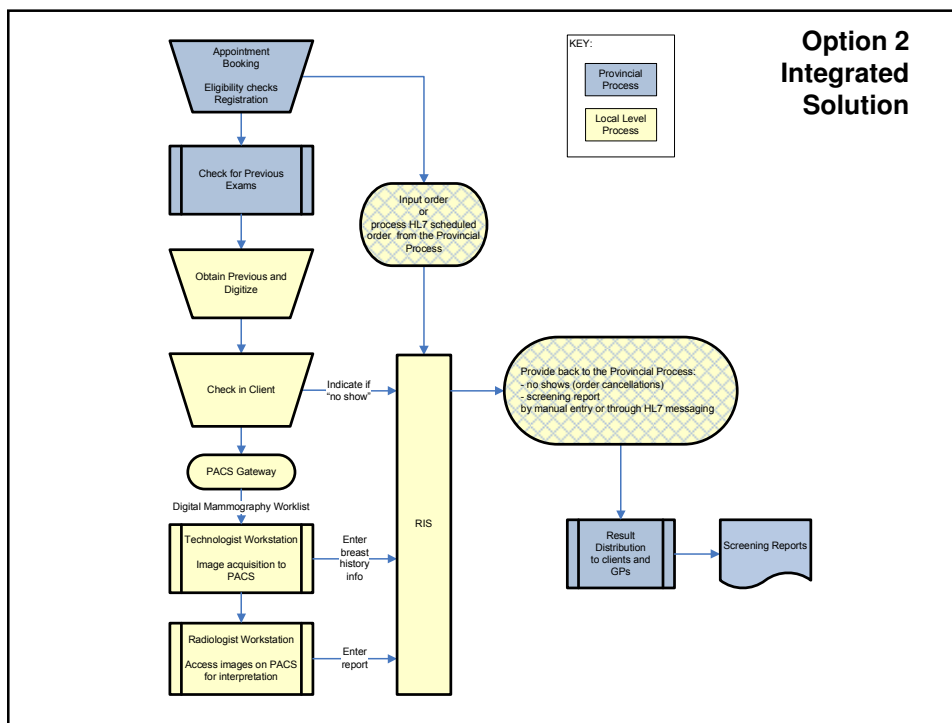## Option 2 - Integrated Screening Solution

Description
- Appointment booking on SMP-IS
- Use local RIS and PACS to support workflow from client check-in to reporting
    - Test is ordered on the local system either by manual entry, or electronically using a new process to receive (industry standard) HL7 messaging from SMP-IS
    - Worklist is sent by the local system to the local digital mammography modality
    - Screening images and reports are archived on the local system
- Radiologist can access all images and reports available on the local system (both SMP and diagnostic).
- Radiologist will interpret current images and enters the report on the local system.
- Local process will provide screening reports back to SMP-IS either by manual data entry or electronically using HL7 messaging.
- Result letters for clients and GPs are generated by the SMP hosted system.

Option 2 - Integrated Screening Solution

Description (continue)

- Clinicians for diagnostic work-up or treatment will be able to access all images and reports for tests that are done locally.

- Studies done outside of the local system will be obtained through the current process or the PHSA transfer grid (until a provincial DI solution is implemented).

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Option 2 - Integrated Screening Solution

Pro
- Radiologists can access both SMP and diagnostic images and reports on the same local system
- Digital equipment can be shared locally for screening and diagnostic work
- Digital equipment set-up and maintenance are handled locally
- Leverage on RIS and PACS investment in Health Authorities
- Clinicians for diagnostic work-up or treatment can access all images and reports on procedures done locally
- Reading can be organized across clinics with local system access

Con
- Requires cross-system integration (sending and receiving HL7 messaging)
- Community imaging clinics without a local system will need to be connected to a HA-hosted system
- Reading would need to be organized among clinics with local system access

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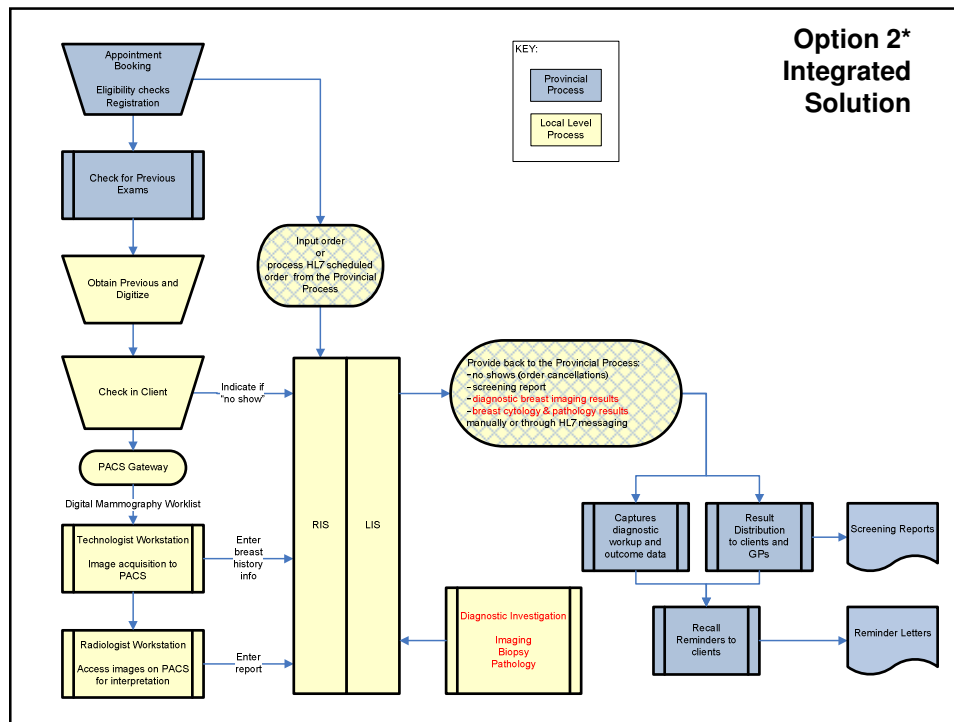## Option 2 - Integrated Screening Solution

Technical Challenges
- HL7 interfaces are highly recommended – to reduce errors associated with manual data entry
- Process to resolve mismatched patient identifiers (e.g. same PHN and dob, but different surnames) between the provincial and the local systems?
- HA readiness to handle digital mammography workflow
- Availability of RIS and PACS in community imaging clinics
- Feasibility of providing HA system access to community imaging clinics

Further Opportunity
- Performance monitoring along the Screening Pathway - local interface engine can be expanded to send all breast related test results from the local system to the SMP Registry, thus eliminating the current manual data process.

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Option 2*
Integrated
Solution

Breakout Session Questions

Each group to review the assigned option and discuss:
- Strengths
- Weaknesses
- Opportunities and Threats

Group 1 – Option 1
Group 2 & 3 – Option 2