

MIIRC@M

Medical Imaging Informatics
Research Centre at McMaster

Rationale for DI-r

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Purpose of the Presentation

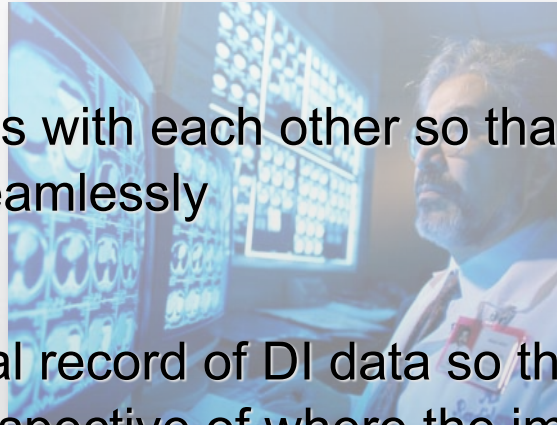
- Present the original rationale for why Canada embarked on and invested in the deployment of Diagnostic Imaging Repositories across the country

Image Enabled the pan-Canadian EHR

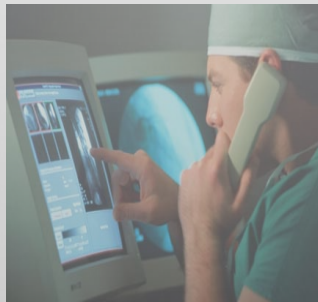
- Connecting radiologists with DI departments so that all facilities within Canada have access to radiologist coverage



- Connecting physicians with each other so that they can view DI results quickly and seamlessly



- Creating a longitudinal record of DI data so that physicians can see the full DI history, irrespective of where the images were acquired and the report transcribed



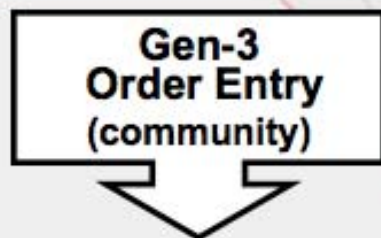
✓ Quality of care ✓

✓ Productivity ✓

✓ Cost reduction ✓



What are the benefits?

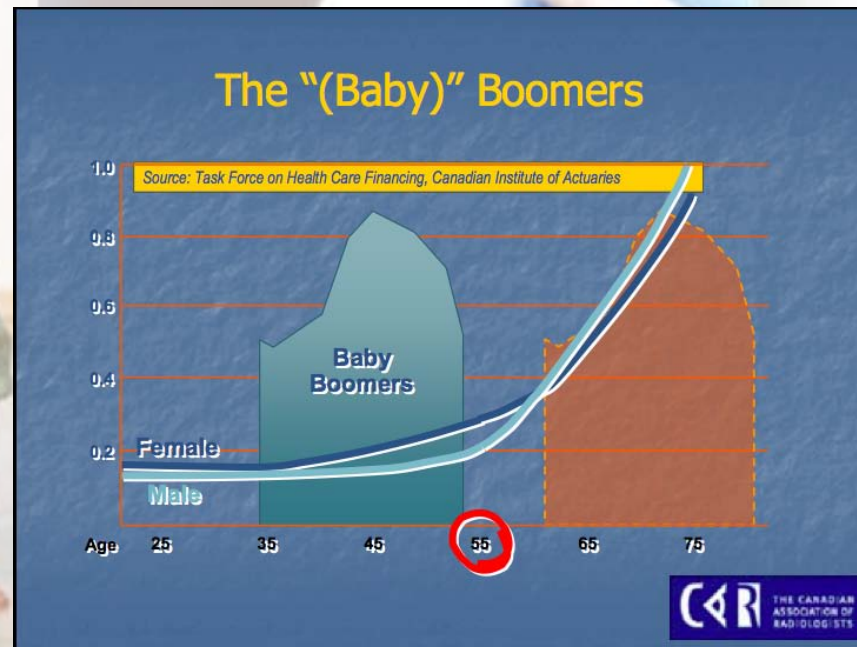


	View Access (specialists)	Shared DI Services	Gen-3 Order Entry (community)
Care Quality (consumer)	<ul style="list-style-type: none"> ■ Faster turnaround for results (reports and images) ■ Access to longitudinal record 	<ul style="list-style-type: none"> ■ Improved access ■ Specialty interpretations ■ Regional longitudinal records 	<ul style="list-style-type: none"> ■ Right procedure the first time (decision support) ■ Improved waitlist management
Service Level (physician)	<ul style="list-style-type: none"> ■ Convenience – immediate access anywhere, anytime ■ Increases productivity - eliminates "hunting" for films ■ Better access to radiologists 	<ul style="list-style-type: none"> ■ More affordable for <250 bed facilities ■ Mitigates radiologist shortage ■ Increases radiologist productivity 	<ul style="list-style-type: none"> ■ Improves patient management – tracks order status ■ Faster order and schedule ■ Improves physician adoption
Cost (facilities)	<ul style="list-style-type: none"> ■ Minimizes/eliminates duplicate procedures ■ Eliminates film duplication 	<ul style="list-style-type: none"> ■ Reduces storage and technology costs ■ Reduces patient transfer costs 	<ul style="list-style-type: none"> ■ Increases front desk productivity ■ Simplifies EHR integration ■ Reduces misuse of modalities ■ Improves capacity management

Emerging Challenges in Canadian Radiology

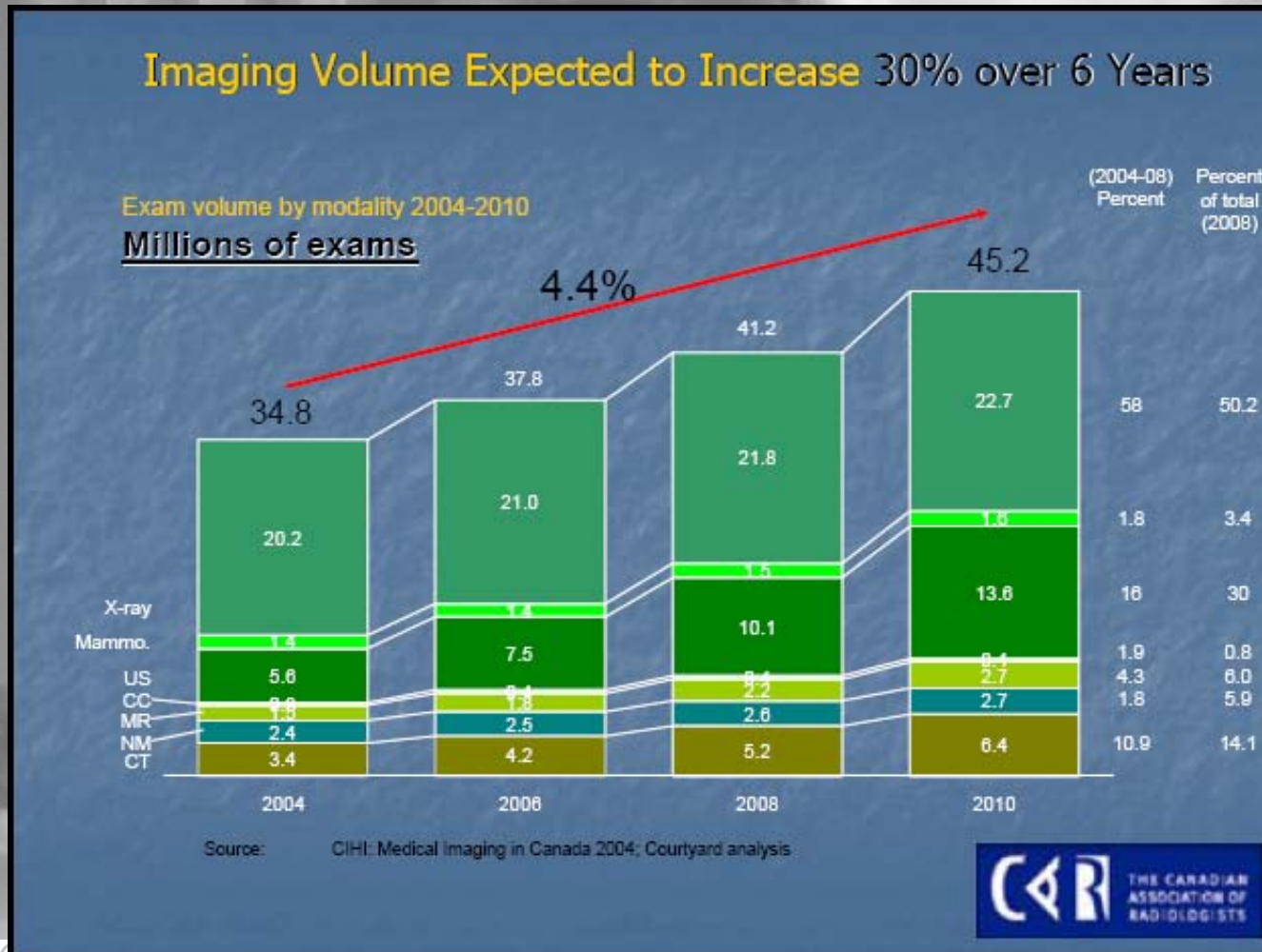
Changing environment increases DI capacity requirements

- Populations are growing and getting older
 - 9.8 million baby boomers in Canada
 - 80% of illness in the last 16 years of life
- Cohorts change the “sick care” emphasis: heart disease, cancer, etc.



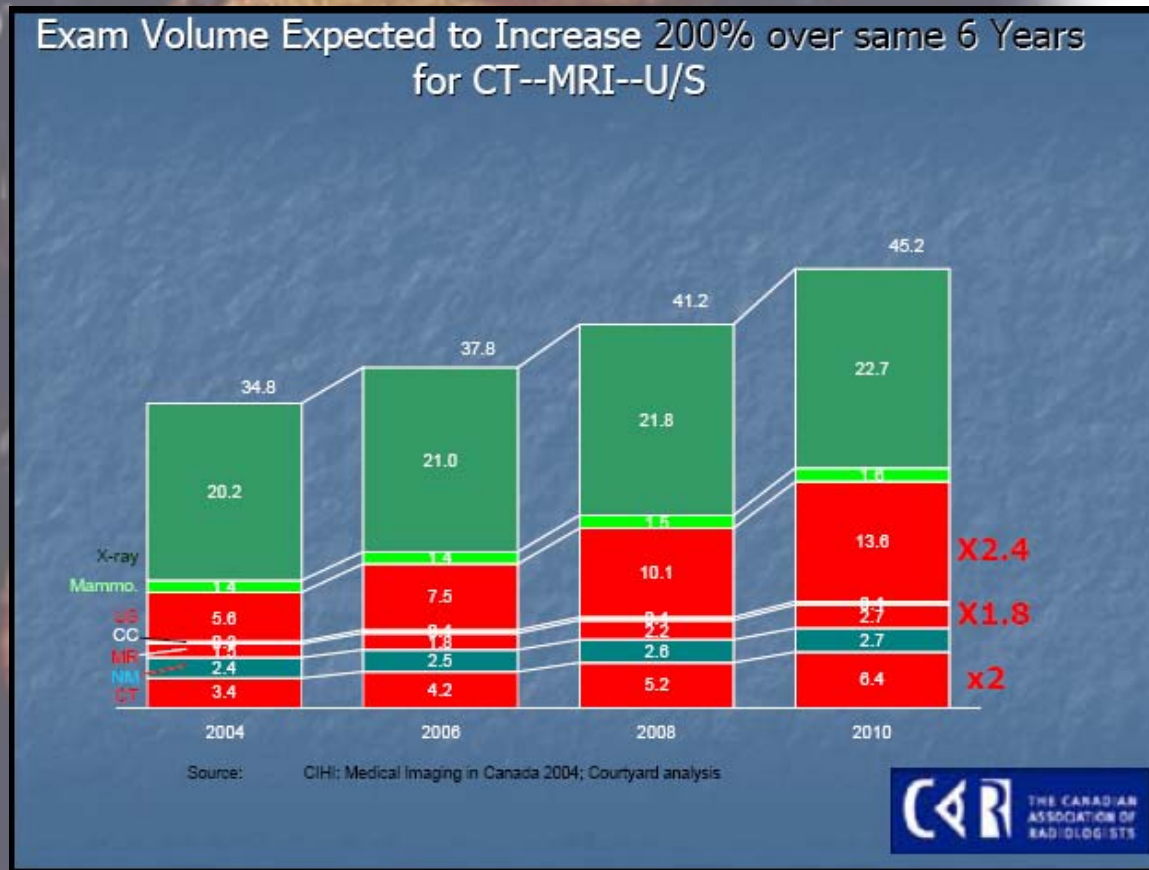
Changing environment increases DI capacity requirements

- Number of DI exams increases yearly



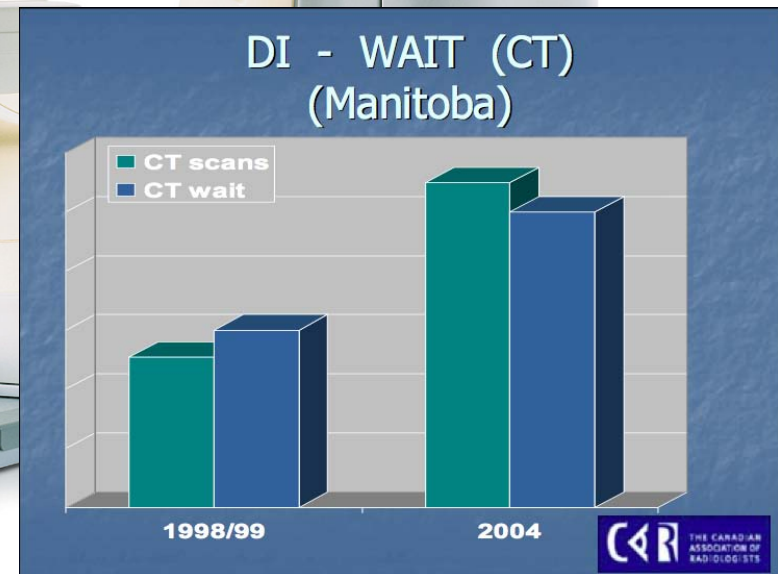
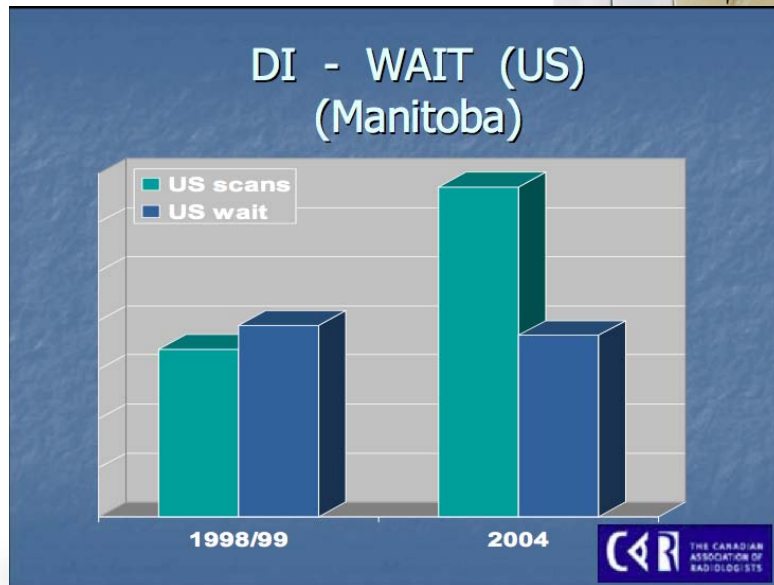
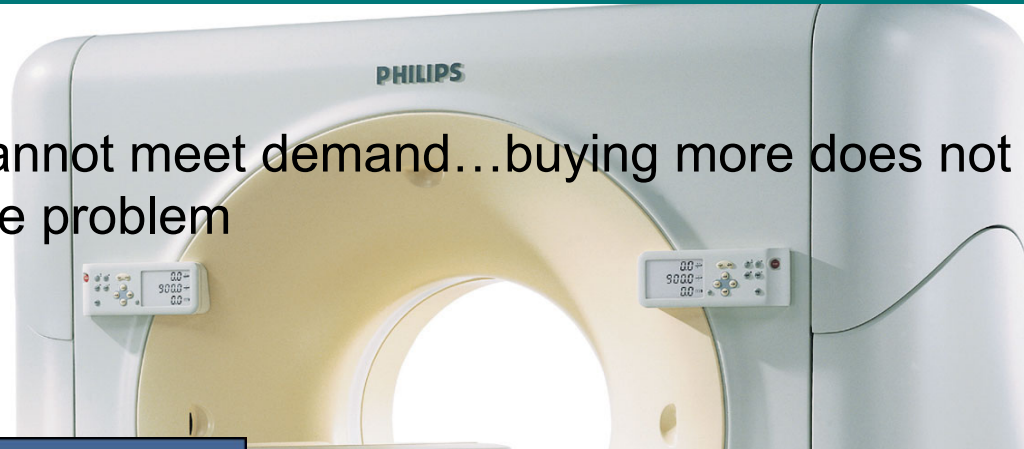
Changing environment increases DI capacity requirements

- New diagnostic procedures drive the use of imaging e.g. CT angiogram & colonoscopy, MRI as “first test” for abdominal and cardiac diagnosis, etc.



DI demand outstripping ability to supply

- Modality capacity cannot meet demand...buying more does not necessarily solve the problem



DI demand outstripping ability to supply

- Canada is short of ~580 radiologists (CAR)

Recent British Columbia DI Human Resource Study

“As one looks to the 2020 projections the province essentially has to double the number of FTE to maintain work activities”

INSITE Consultancy

Emerging Challenges in Canadian Radiology

Provide more capacity with fewer resources!

- As capacity is outstripped...increased pressure to manage supply and demand
 - 1 million Canadians are waiting...30% for DI services
 - Lagging behind in modality capacity...1.7 MRI / million population (average across Europe is 4.3 MRI / million population)

(Stats Canada & Robert Miller, CAR)

Provide better service!

- As complexity of care increases...require better medical management
 - Wrong diagnosis can lead to the wrong therapy
 - Chasing incidental findings leads to more invasive tests and risks
 - Patients are becoming more involved in their healthcare and more “aware” of errors



Solutions to the Emerging Challenges in Canadian Radiology

Managing Supply

Optimize Radiologist resources through Regional Workflow

- Objective:

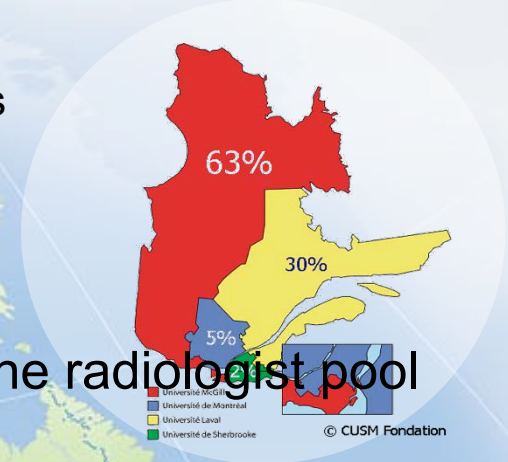
- Share reporting workload among radiologists within a region (or the country)
- Optimize radiologist work environment through “virtualization”
- Leverage under utilized resources (due to location...not desire)

- Benefit:

- Increased access to specialist radiologists
- Increased coverage to 24/7
- Faster and more consistent reporting
- Supports sub-specialization on a regional/national scale

Regional Workflow in Montreal McGill DI-r Project

- Implement a regional shared DI service that will provide PACS and storage to all acute care facilities in 68% of Quebec
 - Integrating existing PACS from 6 different vendors in 21 sites
 - Shared PACS for 34 Greenfield sites
 - Single DI repository (DI-r) to host ~6 million studies annually
 - Leverage EHR/XDS-I architecture
- Facilitate cross-site interpretation workflow so that the radiologist pool can be leveraged fully
 - 300 radiologists/nuclear medicine physicians
 - Share the reading load to improve
 - Report turn around time
 - On-call scheduling and off-hours coverage
 - Access to specialists



Managing Supply

Optimize modality capacity through centralized scheduling

- Objective:
 - Allow referring physicians to order and schedule on-line across all treatment facilities within a region
 - Given referring physician and patients flexibility in where they go for exams
- Benefit:
 - Reduce delays for imaging services and level out wait times
 - Eliminate wasteful, repeat and/or inappropriate procedures
 - Provide a better experience for patients and referring physicians
 - Improve productivity and reduce administrative overhead



Medical Imaging Centralized Scheduling & Decision Support BC Lower Mainland

RFP# 028RFP09JAT

June 16 2009



health solutions | backed by Emergis

Managing Demand

Reduce unnecessary and inappropriate exams

- Objective:
 - Measure appropriateness of exams through outcomes analysis
 - Influence ordering practices by referring physicians
- Benefit:
 - Reduce inappropriate ordering and free up capacity for appropriate exams
 - Reduce unnecessary exams

Improving Medical Management

Improve the quality of medical decision making through collaboration

- Objective:

- Enable multi-disciplinary teams to consult synchronously/asynchronously in regional settings

- Benefit:

- Immediate access to specialist services
- Increased coverage to 24/7
- Reduce unnecessary patient transfers
- Improve outcome for the patient

Collaboration for Stroke Management in Ontario

- Provide neurologist consultation to ER physicians 24/7
 - Patients presenting with stroke are CT scanned
 - Images are immediately sent to neurologist
 - Neurologist advises on the use of t-PA
- **Benefits:**
 - Immediate medical management that reduces the impact of stroke – every minute counts!
 - Avoid emergency patient transfer – costly and not timely enough
 - Saves lives!
- **Expansion to include Neurosurgeons**
 - Reduced wait times for the diagnosis and treatment of neurosurgical conditions
 - Clinical decisions informed by viewing of digital images; improve quality of consults
 - Fewer unnecessary patient transfers
 - Useable for urgent/emergent transfer consults for other clinical specialties

Improve Medical Management

Facilitate critical findings communication

- Objective:

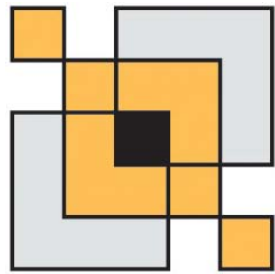
- Ensure that critical findings and other urgent information is reliably sent to the circle of care and the patient

- Benefit:

- Immediate notification of issues
- More appropriate and timely treatment
- Improved outcome for the patient
- Reduced costs

Foundation for Success

DI-r



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Thank you!