



Canada's  
Drug and Health  
Technology Agency

# Medical Devices & Clinical Interventions

**Lesley Dunfield**

VP, Medical Devices & Clinical Interventions



## Anticipate

- Horizon Scanning

## Innovate

- Health Technology Reviews

## Transform

- Engagement
- Digital Health
- Canadian Medical Imaging Inventory
- Condition-level Reviews



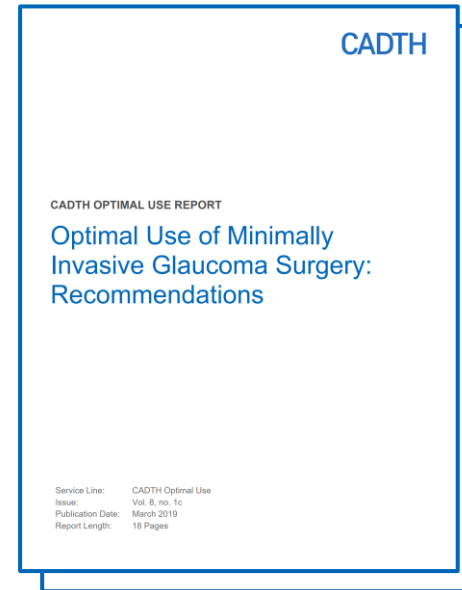
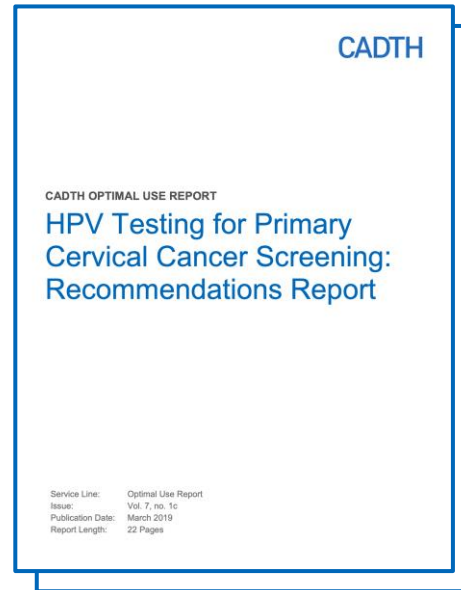
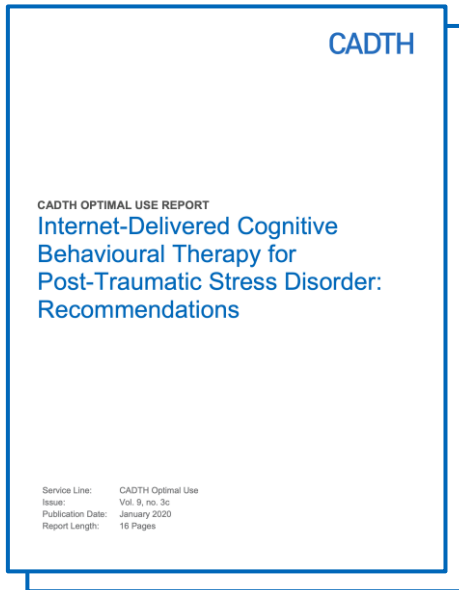
# Device Committees



- Device Advisory Committee
- Health Technology Expert Review Panel
- Pan-Canadian HTA Collaborative



# Informing Decisions About Devices, Tests, Procedures, and Other Interventions





# Lifecycle Approach

## 2017

- Horizon scan newsletter
- Emerging technology

## 2019

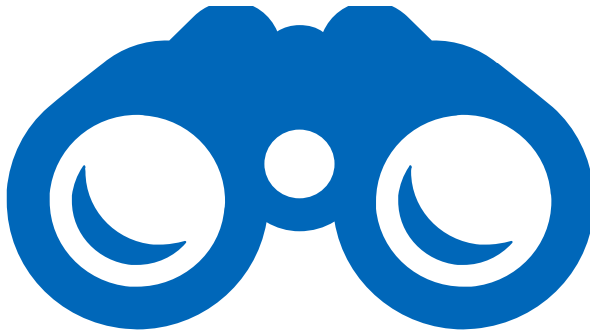
- Recommendations for cervical cancer screening
- HPV an option
- Uncertain evidence for self-sampling

## 2021

- Early assessment bulletin



# Anticipate: Horizon Scanning



- **Health System Planning**
- **HTA Topic Development**
- **Overviews**
- **Early Assessments**

# Top 10 Technology Trends to Watch



1. Remote diagnostics, remote monitoring, and remote care management



2. Point-of-care testing



3. Molecular and genomic testing



4. Health apps and wearable technologies (mHealth)



5. Companion diagnostics



6. Voice technology



7. Artificial intelligence for diagnostics and public health



8. Advanced closed-loop insulin pumps



9. Portable dialysis machines



10. Artificial intelligence for health care professionals



# Next Steps for CADTH



- Horizon scanning
- Topic identification for HTA
- Follow trends and technologies
- Planning for future Technology Trends





# Following the Trends

Issues in Emerging Health Technologies  
Portable Home Hemodialysis for Kidney Failure

Issue 108 • November 2007

**Summary**

- Home hemodialysis has been in use in Canada for some time. Now, portable hemodialysis machines that are not attached to a dialyzer are becoming available.
- The portable system is also referred to as the "Pocket Dialyzer." The machine operates on standard dialysis and requires a standard dialyzer. It is small, light, and easy to travel with.
- It is not yet clear whether the use of home hemodialysis is better than conventional in-center programs, but it is a promising new approach to dialysis for patients with kidney failure.

**Background**

The kidneys filter wastes and excess fluid from the blood. They also produce hormones that regulate blood pressure and blood calcium levels. Kidney failure leads to a buildup of wastes and excess fluid in the blood, which can lead to serious complications.

The number of Canadians with kidney failure has increased from 1997 to 2007. The number of Canadians with kidney failure who are on dialysis has increased from 1997 to 2007.

**The Technology**

Hemodialysis is a medical procedure that filters wastes and excess fluid from the blood. It is done in a dialysis center or at home. The machine used in home hemodialysis is called a dialyzer. The dialyzer is connected to the patient's blood vessels and filters the blood. The dialyzer is then discarded.

The Canadian Society of Nephrology is funded by Canadian Institutes of Health Research.

Service Line: O  
Issue Number: H  
Publication Date: H  
Report Length: H

CADTH OPTIMA  
Dialysis Treatment  
Kidney Recovery

CADTH

**SC\*: A Portable Hemodialysis System for Integrated Home and In-Centre Treatment**  
Traditionally done in a health care setting and more recently at home, hemodialysis is a common treatment for end-stage renal disease. SC\* provides a new option for self-administered hemodialysis at home.

Health & Welfare  
SC\* is a small hemodialysis system designed for both residential and non-residential use. It is a portable hemodialysis system that is used in the home. It is a small, light, and easy to travel with. It is designed to be used in the home and in a dialysis center. It is a portable hemodialysis system that is used in the home. It is a small, light, and easy to travel with.

Who Might Benefit?  
As of 2010, a million Canadians have kidney failure. SC\* is intended for people with end-stage renal disease (ESRD). Hemodialysis is a common treatment for ESRD. Hemodialysis is a common treatment for ESRD. Hemodialysis is a common treatment for ESRD.

HEALTH TECHNOLOGY UPDATE

CADTH Horizon Scan  
2022 Health Technology Trends to Watch: Top 10 List

Round Up

Canadian Journal of Health Technologies

CADTH

January 2021 Volume 1 Issue 1

CADTH Horizon Scan  
List of 2021 Health Technology Trends to Watch

A Compilation of Emerging Health Technology Trends and Devices to Watch in 2021

Round Up



Canadian Journal of Health Technologies

CADTH

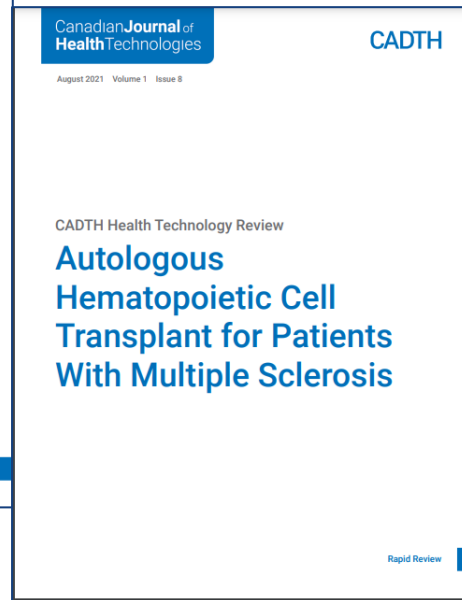
September 2019  
July 2021  
November 2021  
August 2021  
October 2021

CADTH Horizon Scan  
Neurotechnology for Treatment of Disease  
Autonomous Home Treatment Scales  
An Open Point of Difference  
Barrier to Device  
Adaptive Deep Brain Stimulation for the Treatment of Parkinson Disease and Essential Tremor

Health Technology Update



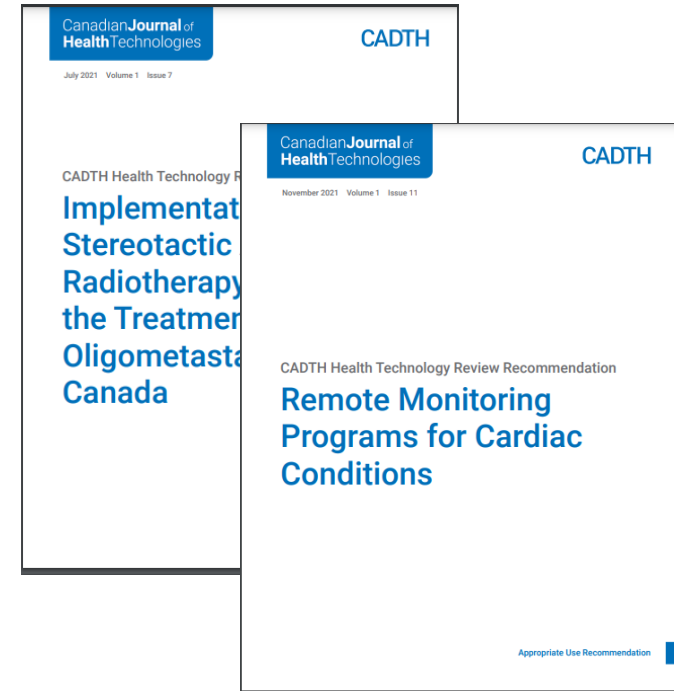
# Information Session

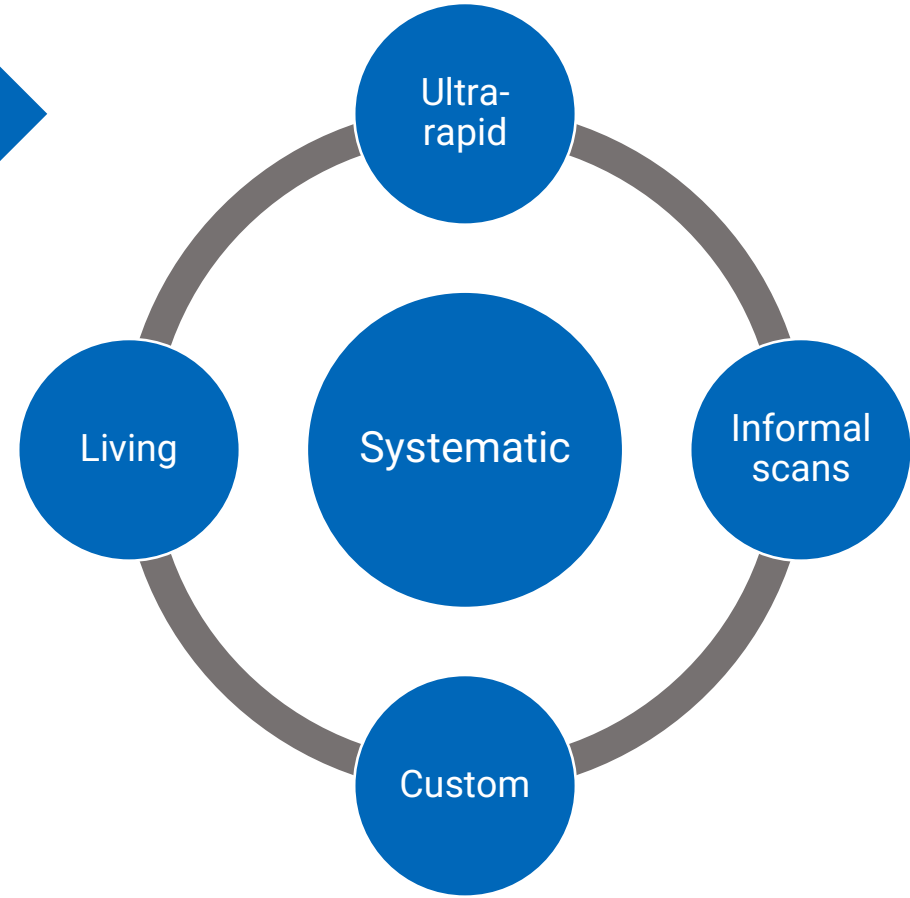
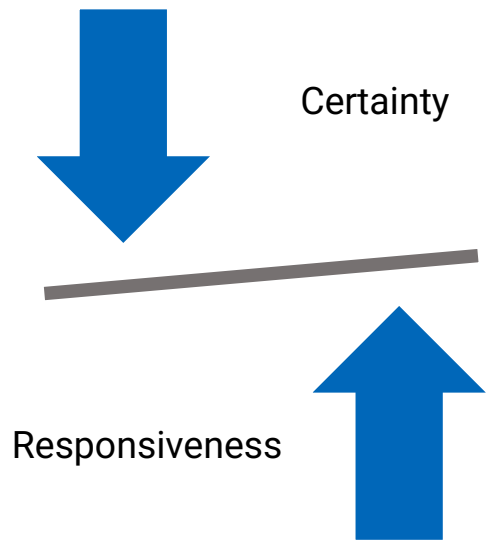


## Recommendations



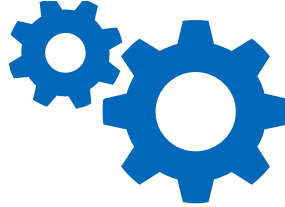
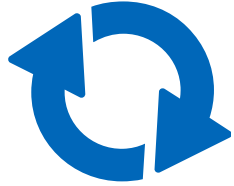
# Information Session







# Information Session



Canadian Journal of Health Technologies **CADTH**

March 2021 Volume 1 Issue 3

CADTH Health Technology Review  
**Stereotactic Ablative Radiotherapy for the Treatment of Oligometastatic Cancer: A Clinical Review as Part of a Health Technology Assessment v1.0**

PROSPERO Registration Number: CRD42020167767  
This is the baseline clinical review for a living systematic review. Please see the [CADTH project page](#) to access the latest version of the report and for the version history.

Clinical Review

Canadian Journal of Health Technologies **CADTH**

September 2021 Volume 1 Issue 9

CADTH Health Technology Review  
**Remote Monitoring Programs for Cardiac Conditions**

PROSPERO Registration Number:  
Realist Review: CRD42021229271  
Perspectives and Experiences Review: CRD42020211271

Health Technology Assessment

**CADTH**

CADTH Health Technology Review  
**Internet-Delivered Cognitive Behavioural Therapy for the Management of Chronic Non-Cancer Pain: Project Protocol**

PROSPERO Registration Number: CRD42021283994

Project Protocol

**CADTH**

CADTH Health Technology Review  
**Peer Support Programs for Youth Mental Health — Project Protocol**

PROSPERO REGISTRATION NUMBER: CRD42022299556

Service Line: Health Technology Review  
Version: 1.0  
Publication Date: January 2022  
Report Length: 38 Pages



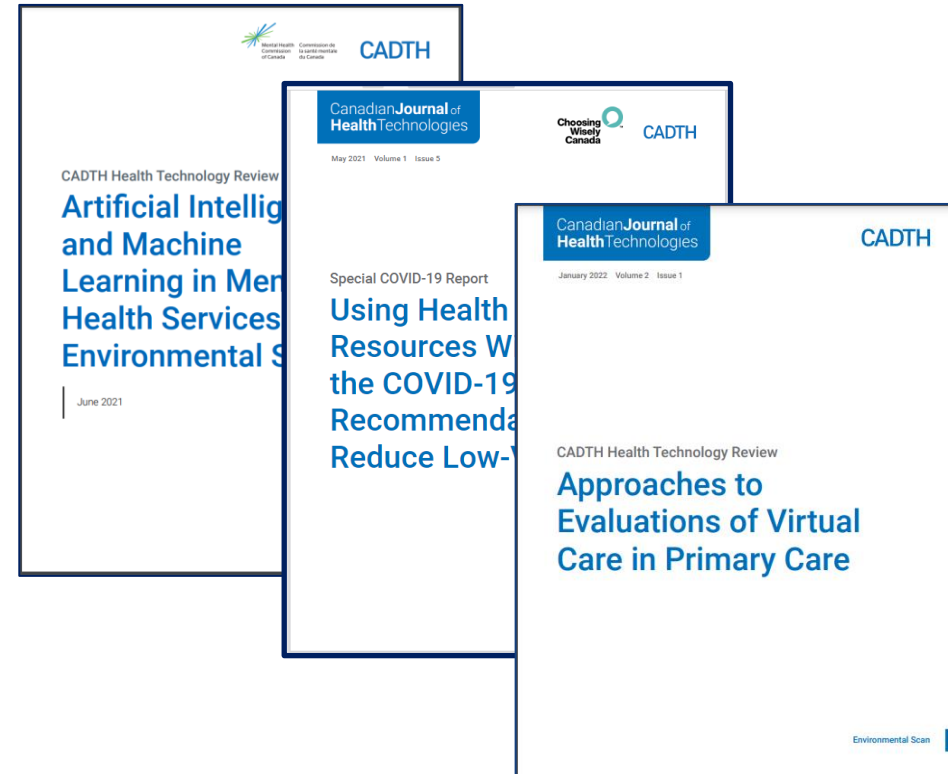
# Transform: Collaboration & Engagement

## Summits

- Health system priorities
- Challenges and gaps

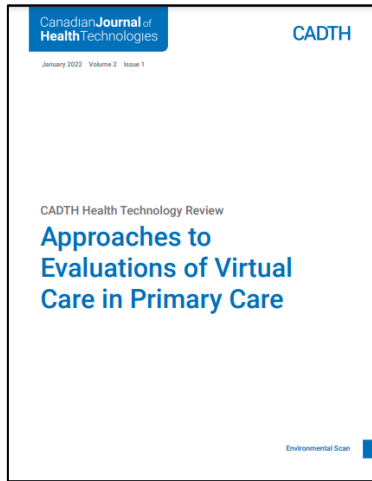
## Topic Specific Roundtables

- Artificial intelligence
- Post-COVID-19 Condition
- Genetic Testing
- Environmental impact assessment





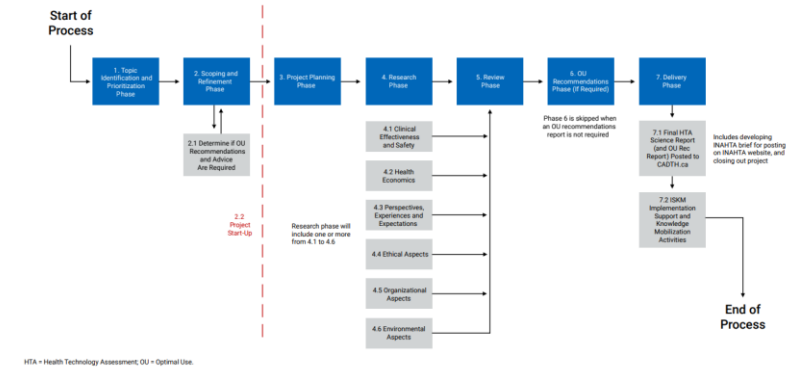
# Digital Health



An Overview of Continuous Learning Artificial Intelligence and Medical Devices  
(in progress)

## Overview of HTA and OU Medical Devices and Clinical Interventions

CADTH



NICE National Institute for Health and Care Excellence



Evidence standards framework for digital health technologies

Corporate document  
Published: 10 December 2018  
www.nice.org.uk/corporate/ecd7

## Guidance Document

Software as a Medical Device (SaMD):  
Definition and Classification

Date adopted: 2019/10/03  
Effective date: 2019/12/18





# Medical Devices & Clinical Interventions



## Anticipate

- Horizon Scanning

## Innovate

- Health Technology Reviews

## Transform

- Engagement
- Digital Health
- **Canadian Medical Imaging Inventory**
- **Condition-level Reviews**





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Technology Agency

# Canadian Medical Imaging Inventory

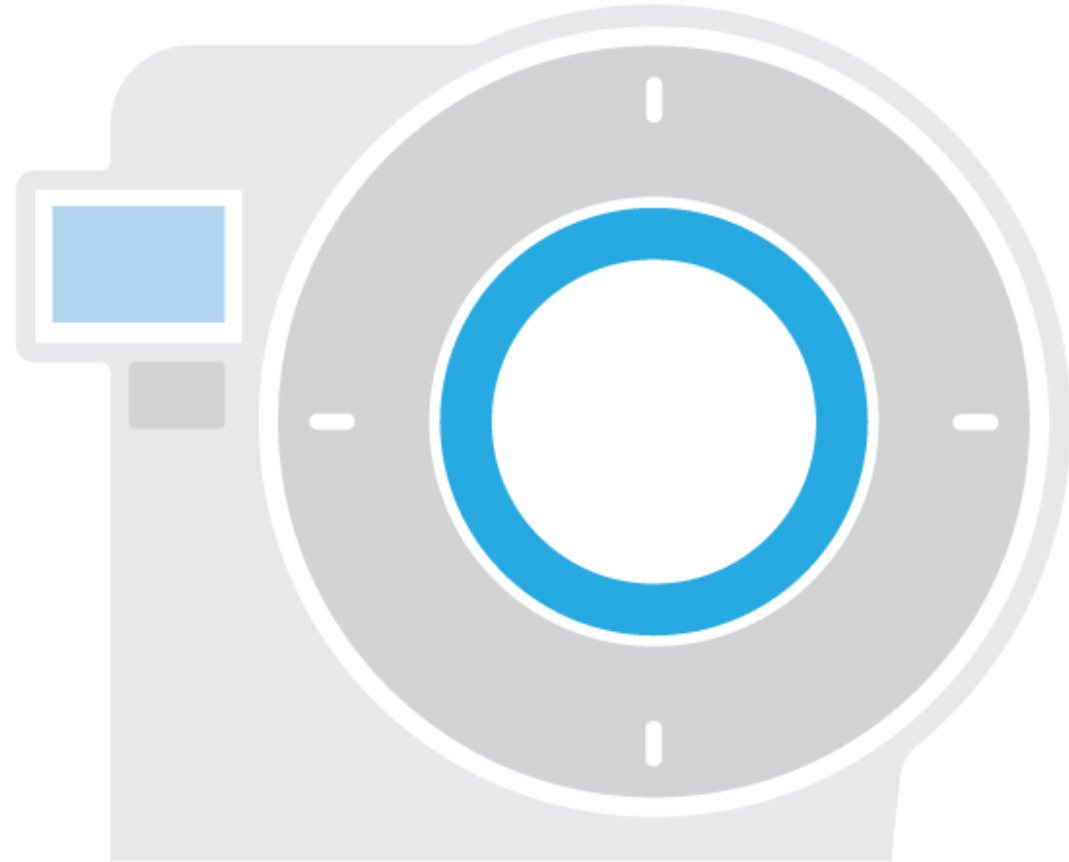
**Andra Morrison**

Medical Devices Directorate



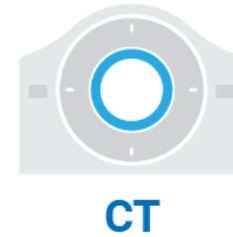
# Objective

- What is it
- Service
- Next steps



## What is It?

- Web-based survey
- Advanced imaging equipment
- Real world data





# Real World Data

## Access Data

- Number and location of modalities

## Usage Data

- Exam volume, hours of operation, type of use

## Supportive Tools and Services Data

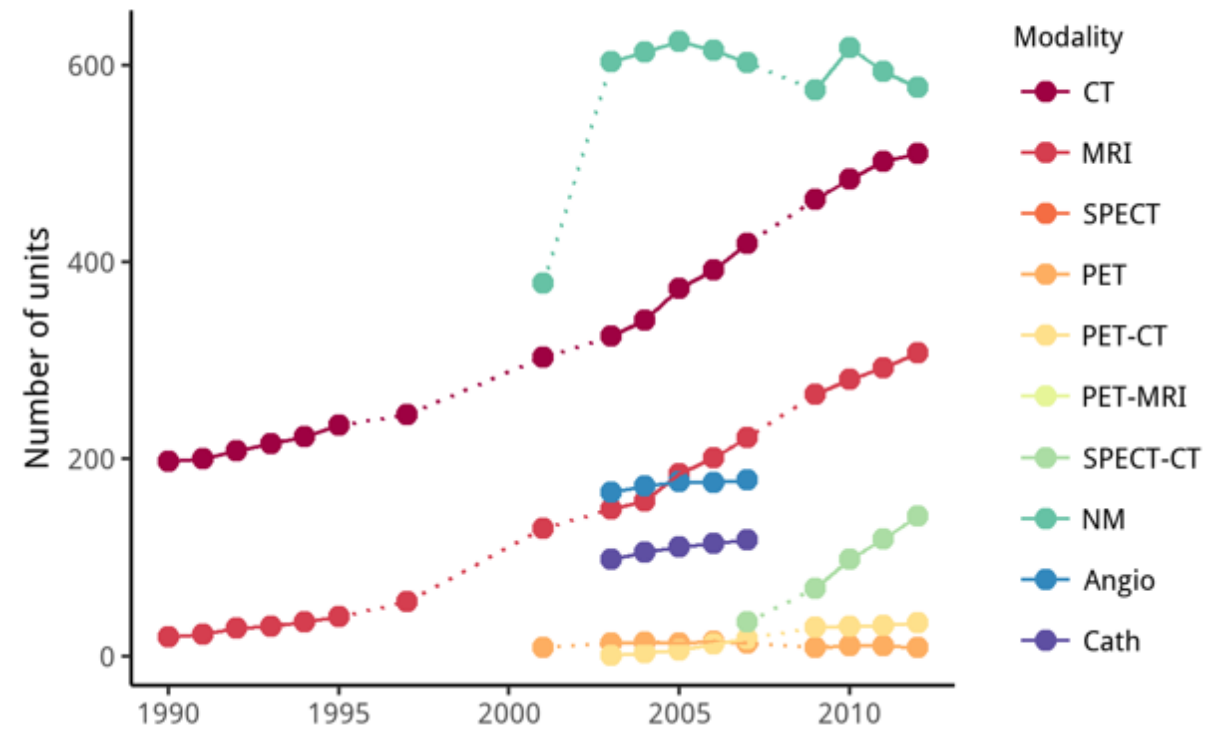
- AI, AU, CDST, COE, PR

## Technical Data

- Unit specifications, PACS access, maintenance service agreements

# Monitor Trends and Developments

- Monitor the adoption/disinvestment of advanced medical imaging
- Track the integration of support tools (AI, CDST)
- Forecast future demand



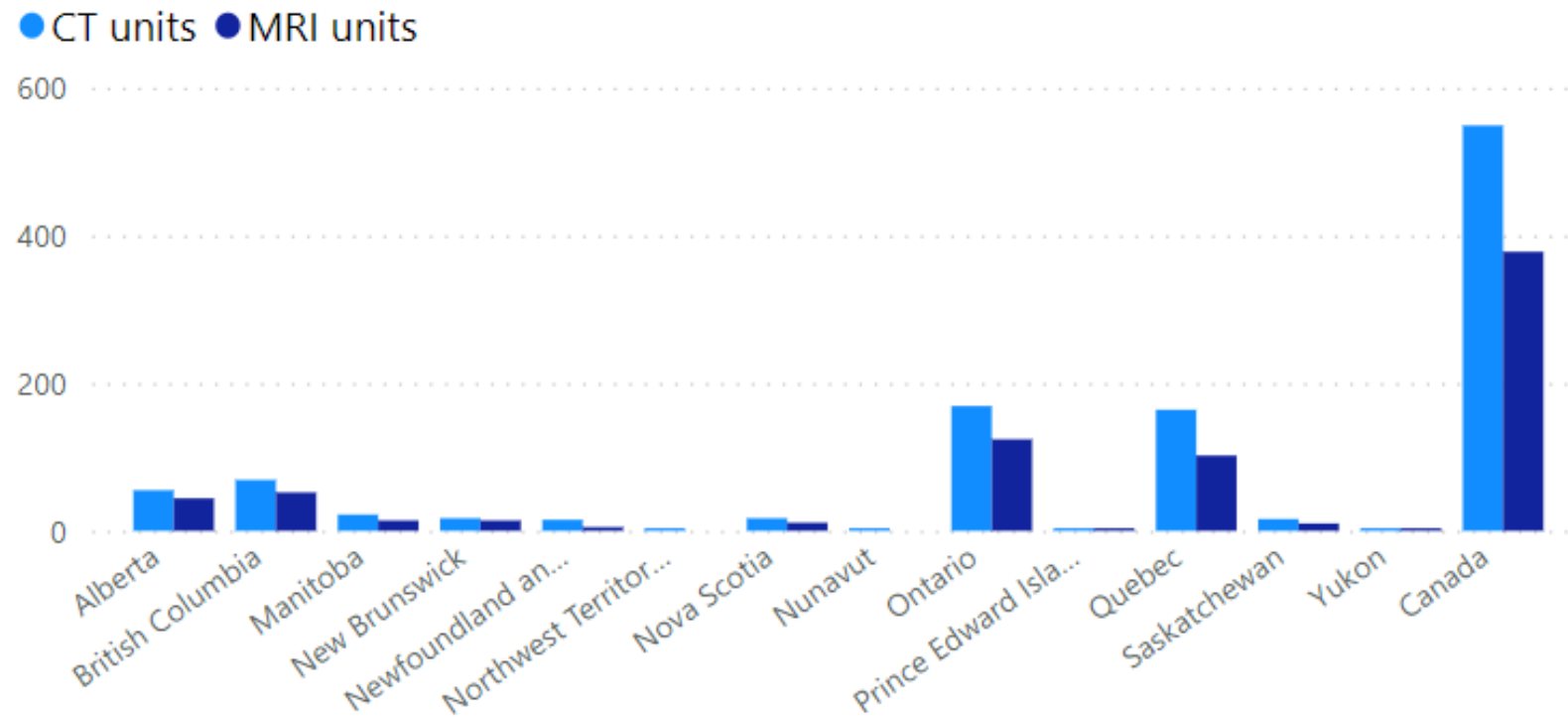
## How the CMI is Used

- Guide strategic planning
- Identify gaps in service
- Informs purchasing decisions
- Rationalize the replacement of aging infrastructures
- Anticipate HR requirements
- Informs HTA agendas



# CMII Products

- Quick Facts Dashboard
- Provincial Summaries
- Previous CMII Reports
- In-Brief





# Request Service

- Pilot launch January 2021
- Over 40 requests fulfilled
- 13 reports publicly posted

[cadth.ca/other-cmii-related-reports](https://cadth.ca/other-cmii-related-reports)





# Evolving Scope

- Examination of data captured in database
- Short surveys and seeking targeted expert advice
- Prepare short reports on imaging-related practices and technological innovations



## Emerging Themes

- Imaging related innovations intended to limit the spread of infection (i.e. CT-in-a-box and bedside MRI)
- Mobile imaging (i.e., the extend of its use in Canada, its benefits and weaknesses)
- PET-CT (i.e., comparison of exam volumes and publicly funded indications within Canada and international, the future of PET-CT, implementation considerations)



## Next Steps

- Launch CMII4
- Expanding Service Scope: interventional imaging, image-guided radiotherapy, and mammography



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# Post COVID-19 Condition Condition-Level Review

**Gino De Angelis**

Manager, Clinical Research CADTH



**“Long COVID is a modern medical challenge of the first order.”**

– The Lancet Editorial, August 28, 2021



# Preparing for Long COVID

New condition – need new pathways, new guidelines for case management

Affects many organs – need multidisciplinary and multispecialty approaches

Wider consequences for more than just health – emerging questions re: benefits etc.

Awareness and patient empowerment – learning about a brand new condition

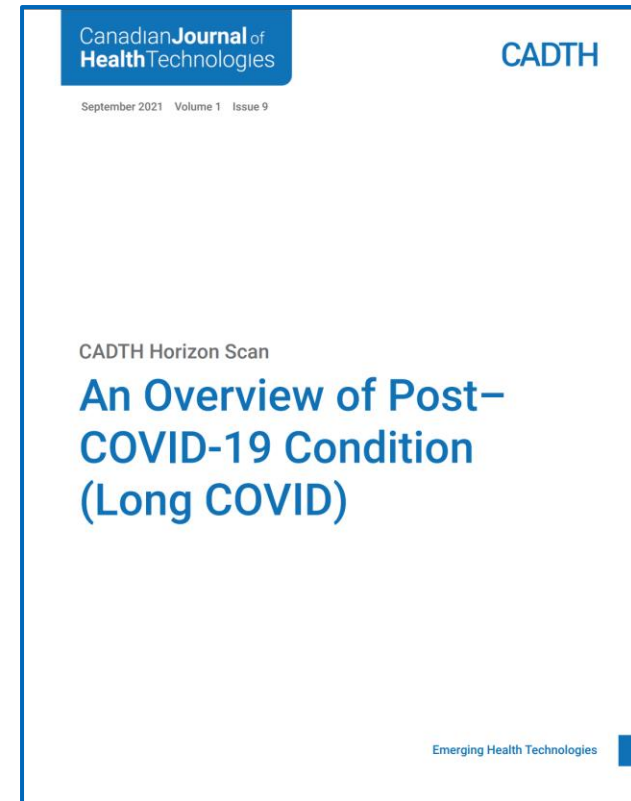
Capturing data – registries, surveillance, follow up to understand and treat



# Early Awareness

## CADTH Horizon Scan

Classification, symptoms, diagnosis, prevalence, risk factors, prevention, treatment and management, models of care, system considerations





# Condition Level Review

- Inform appropriate use of health technologies and interventions to support prevention, classification, identification, treatment and rehabilitation
- Assessment focus on drug and non-drug technologies and interventions

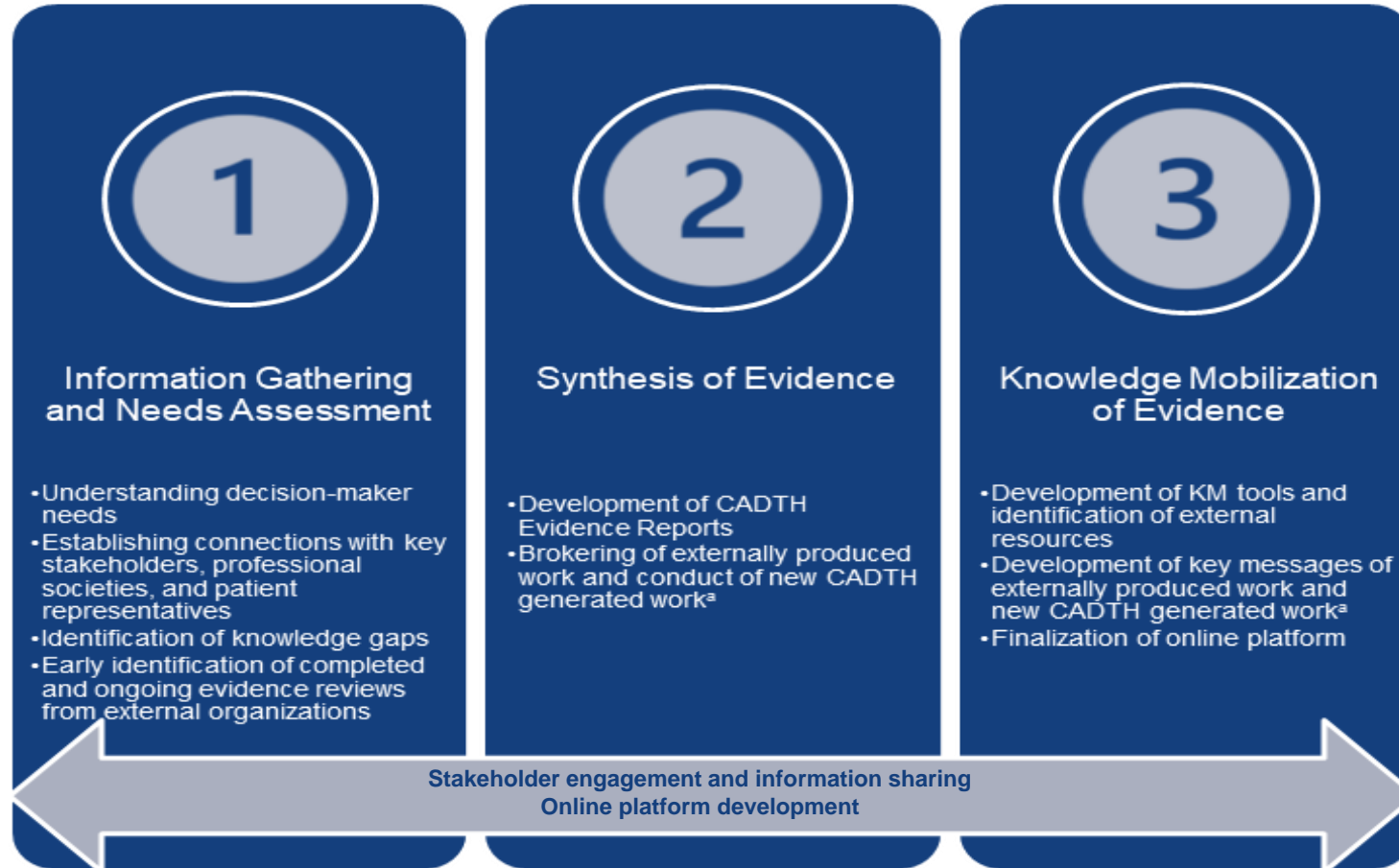
CADTH's First Condition Level Review  
**Tuberculosis**

Lessons learned, different context



CADTH's Second Condition Level Review  
**Post COVID-19 Condition**







# Phase 1: Engagement Listening, Connecting, Identifying Needs

- Implementation Support and Knowledge Mobilization team
- Engagement with national and international
  - Evidence synthesis, guideline development and HTA organizations
  - Research community – funders and academics
- CADTH post-COVID condition Stakeholder Panel



## Post COVID-19 Condition Stakeholder Panel

- Inform the overall direction of the condition-level review and help ensure relevant stakeholder and jurisdictional perspectives are considered and prioritized
- Identify and prioritize evidence related research questions
  - Collaborate, reduce duplication
- Cross-jurisdictional decision makers, clinical experts, patient representatives, researchers, and other subject matter experts



# Phase 1 Results: Identified Needs and Priorities

- Supporting and collaborating
- Evidence generation and brokering
- Information hub
- Convene and connect



# Supporting & Collaborating

- Early identification of needs → establishing connections
- Supporting and collaborating





# Evidence Generation and Brokering

## Scoping Review – A CADTH First

- Current evidence landscape
- Knowledge gaps and uncertainties
- Foundation for future rapid evidence queries

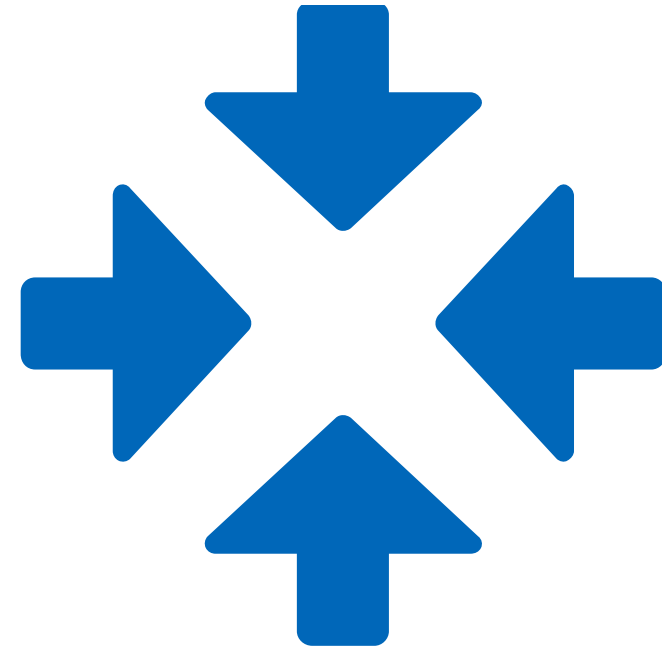
## Rapid Response (initiated, ongoing):

- post COVID-19 subtypes

## Identification, appraisal, description of post COVID-19 guidelines

# Information Hub

- Share information, provide evidence to inform decision-making, increase awareness of ongoing initiatives, reduce duplication of effort, support connection and collaboration
  - Leverage not reproduce existing efforts, focus on identified needs
  - Mapped evidence syntheses, guidelines, ongoing initiatives, rapid query based service
- October 2021 Webinar: Implications of Long Covid (Drs. Angela Cheung, Jesse Greiner, Emilia Liana Falcon)
  - More Webinars proposed for 2022





## Convene and Connect

- Implementation Support and Knowledge Mobilization Team
  - Stakeholder map
- Roundtable – Models of Care
- Continued engagement, evidence needs and prioritization
- CADTH Stakeholder Panel





# Moving Forward

- Ongoing support of evidence needs – rapid query service, continued brokering and knowledge mobilization
- Continue to develop information platform
- Continue to convene and connect
- Renewed focus on no duplication and collaboration

