CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

10 years OF PROGRESS

Improving the Quality of Cancer Diagnosis

Chair: Dr. Christian Finley

Innovative Approaches to Optimal Cancer Care in Canada

April 7-8, 2017

The Westin Harbour Castle
Toronto, Ontario

HQCA
Health Quality Council of Alberta

hqca.ca

CPAC – IACCC
Expanding the role of primary care in cancer control

Eric Wasylenko MD CCFP (PC) MHSc (bioethics)

April 7, 2017

Disclosure

No financial COI

- no industry support
- not on a speaker’s bureau

No funded research

Contracted to Health Quality Council of Alberta

- attribution of work of the team from HQCA

Objectives

- Referring to a tragic outcome arising from systemic challenges in continuity of care, understand elements of health systems that will improve continuity of care

- Describe opportunities for systematic introduction of closed loop referral mechanisms, clinical information systems, patient access to records and advance care planning as tools for optimal cancer care in Canada

One man’s tragic journey

- used with permission from Greg’s family

Greg Price

Claims about fatal flaws in the system

- Good people can work around fatal system flaws – but good outcomes often depend on good luck
- Less than diligent care exposes system weaknesses
- System weakness always confounds the efforts of providers and the experience of patients

Analysis and report 2013, follow-up report 2016

- In-depth study of the experience of an individual patient
  - Info from:
    - Patient health records
    - Interviews
    - Detailed flow mapping
    - Literature review
    - Review of leading practices (Mayo, Geisinger, Kaiser)
    - Information technology experts
    - Published documents (e.g., CPSA Standards of Practice)
  - Analysis to broadly inform recommendations that will improve continuity of patient care
  - Focus was the system

Experience of continuity of care

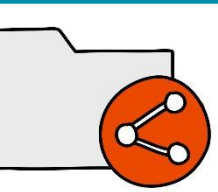
- Definitions
  - A series of healthcare events is experienced as coherent, connected, and consistent with healthcare needs and personal context (Haggerty et al., 2003)
  - Perceived quality of patient care over time and how patient care is connected across healthcare events and between providers (Gulliford et al., 2006)

Experience of a seamless patient journey

- International literature reviews:
  - Three subtypes of continuity across healthcare settings:

Relationship continuity:
Relationship with trusted provider(s)

Information continuity:
Timely availability of relevant information



Management continuity:
Communication of patient information

Experience of a seamless patient journey

- Literature on continuity of care suggests a strong link to primary healthcare generally, and primary care medical homes more specifically.

- The medical home is an entry point and central hub for providing and coordinating care including needed access to healthcare services.

CanIMPACT

- Canadian Team to Improve Community-Based Cancer Care along the Continuum
  - Several articles published in *Can Fam Physician* 2016;62 (Easley *et al* and Brouwer *et al*)

Dynamic mixed-methods study (Jackson)

- Literature review
- Qualitative information:
  - Conversational interviews with patients
  - Interactive feedback sessions and focus groups with more than 50 primary care professionals
  - Conversations with HQCA's Patient/Family Safety Advisory Panel, and with 10 individuals in leadership roles
- Provincial patient experience survey (N=4424)
  - Cognitive testing
  - Psychometric testing
  - Structural equation modelling

Information continuity:
Timely availability of relevant information

PATIENT

Patients and their caregivers were often described as the only source of information continuity

- Timely access to their own information
- Online access to test results

Management continuity:
Communication of patient information

*Ideally this includes a **partnership or shared responsibility (continuum)***

PATIENT

PRIMARY HEALTHCARE PROVIDER

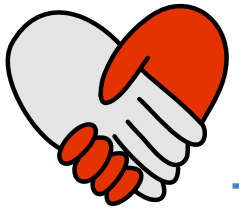
Management continuity:
Communication of patient information

PATIENT

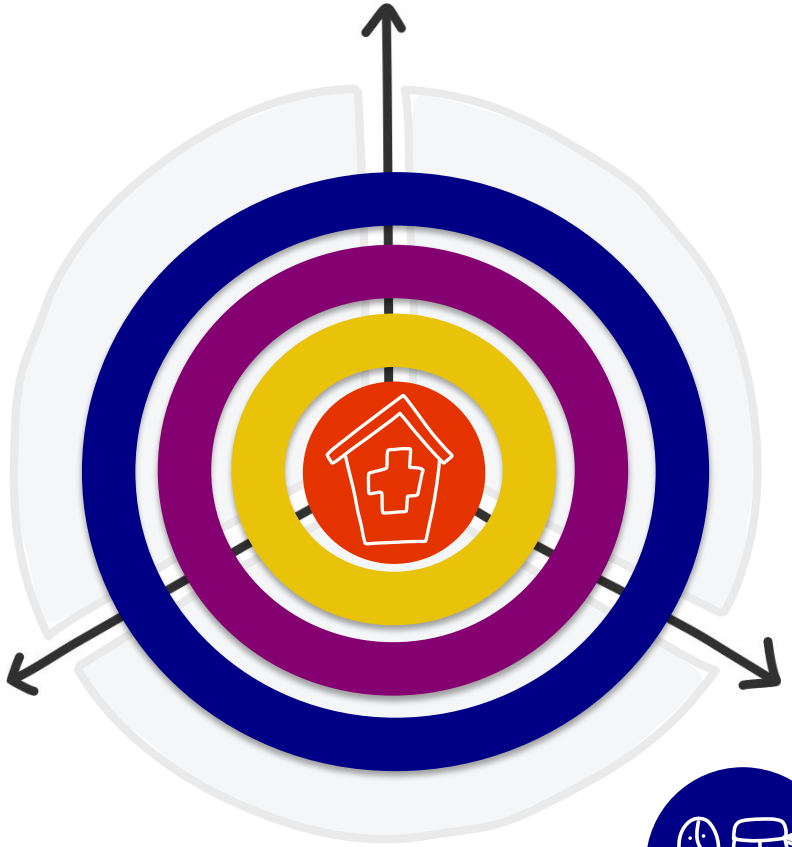
Patients and caregivers feel ill prepared to take on more responsibility

- **Cost and travel** from rural and remote areas

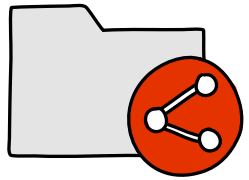
Continuity of care hub: process & people



Relationship Continuity:
Relationship with
trusted provider(s)



Information continuity:
Timely availability of
relevant information



Management continuity:
Communication of patient information

Relationship continuity:

Relationship with trusted provider(s)

Improve patient access to family doctors and to team-based care

Improve coordination and teamwork *between the* ***family doctor*** *and* ***specialists***

PATIENT

PRIMARY HEALTHCARE PROVIDER

Information continuity:
Timely availability of relevant information

Ensure access to information *through the implementation of a* ***single universal EHR***

PRIMARY HEALTHCARE PROVIDER

Facilitate active patient engagement *through a* ***patient portal***

PATIENT

Summary of key strategies (1)

- Medical home/hub concept
  - Organize the medical home
  - Connect it to specialty services
- All patients registered with a primary care team
- Practice standards
  - Direct hand-off of patient care responsibilities

Summary of key strategies (2)

- Integrated clinical information system
- Provider Registry, continuously updated

Summary of key strategies (3)

- Closed loop referral system to specialty care
- Personal health portal (including access to the closed loop referral system)
- Critical test results management system

Cancer in 2017

- For many people, cancer is now a chronic disease
- Cancer diagnosis and treatment intersects a person’s overall health journey
- Coordinated and cooperative care provision must entail both primary care and cancer care as a starting assumption for improved outcomes, optimal experience and for most resource-appropriate care

HQCA Report references

- Health Quality Council of Alberta. Understanding patient and provider experiences with relationship, information and management continuity. Calgary, Alberta, Canada: Health Quality Council of Alberta; August 2016 (accessible from info@hqca.ca)

- Health Quality Council of Alberta. Improving continuity of care: key opportunities and a status report on recommendations from the *2013 continuity of patient care study.* Calgary, Alberta, Canada: Health Quality Council of Alberta; April 2016 (accessible from info@hqca.ca)

Discussion

hqca.ca

Promoting and improving patient safety and health service quality across Alberta

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Cancer diagnosis and beyond: a Canadian perspective

Eva Grunfeld, MD, DPhil, FCFP

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Chair, Chronic Conditions Institute Advisory Board, Canadian Institutes for Health Research

Conflicts of Interest and Acknowledgements

No conflicts of interest to disclose.

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These datasets were linked using unique encoded identifiers and analyzed at the Institute for Clinical Evaluative Sciences (ICES).

This study was approved by the institutional review board at Sunnybrook Health Sciences Centre, Toronto, Canada. (Add other REB approvals, as applicable.)

CCO Acknowledgement: "Parts of this material are based on data and information provided by Cancer Care Ontario (CCO). The opinions, results, view, and conclusions reported in this paper are those of the authors and do not necessarily reflect those of CCO. No endorsement by CCO is intended or should be inferred."

CIHI Acknowledgement: "Parts of this material are based on data and information compiled and provided by CIHI. However, the analyses, conclusions, opinions and statements expressed herein are those of the author, and not necessarily those of CIHI."

This study was approved by the University of Manitoba's Health Research Ethics Board and Manitoba Health's Health Information and Privacy Committee.

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Objectives of Presentation

- Compare findings from studies examining diagnostic intervals in Canada
- Explore complexities of diagnosing cancer
- Present some Canadian initiates to improve cancer diagnosis

Objectives of Presentation

- **Compare findings from studies examining diagnostic intervals in Canada**
  - **ICBP**
  - **CanIMPACT**
  - **CCE**
- Explore complexities of diagnosing cancer
- Present some Canadian initiates to improve cancer diagnosis

ICBP: International Cancer Benchmarking Project

- ICBP Objective: To investigate differences in cancer outcomes and factors that affect them in 10 comparable jurisdictions
- Module 4: Focuses on diagnostic time intervals for breast, colorectal, lung and ovarian.
- Ontario: patients diagnosed between April 2014 and Oct 2015 drawn from cancer registry; within 3 to 6 months from diagnosis
  - Consenting through CCO's patient contact process
  - Also asked for consent to contact their PCP and secondary care provider

ICBP
International Cancer Benchmarking Partnership

CanIMPACT: Canadian Team to Improve Community-based Cancer Care along the Continuum

- Multidisciplinary, pan-Canadian team studying how to improve cancer care to patients in the primary care setting.
- Funded by CIHR: April 2013 to April 2020
- PI: Eva Grunfeld; Leads: Patti Groome and Marcy Winget
- Design: Population-based retrospective cohort study
- Provinces: BC, Manitoba, Ontario, Nova Scotia
- Study Population: All women diagnosed with incident invasive breast cancer from 2007 to 2011/2012

Cancer Diagnostic Research Program, Cancer Care and Epidemiology (CCE), Cancer Research Institute, Queen's University

Dr. Patti Groome and colleagues:

- Breast Cancer Diagnostic Intervals:
  - Understanding Diagnostic Episodes of Care. PI, Patti Groome
  - Ontario Diagnostic Assessment Units and the Breast Cancer Diagnostic Interval. MSc thesis, Li Jiang
- Colorectal Cancer Diagnostic Intervals
  - Availability and Quality of Colonoscopy Resources and the Colorectal Cancer Diagnostic Interval . PhD Thesis: Colleen Webber
  - The Diagnostic Interval of Colorectal Cancer Patients in Ontario by Degree of Rurality. MSc Thesis: Leah Hamilton

ICES Data Discovery Better Health

CCE Cancer Care and Epidemiology Cancer Research Institute Queen's University

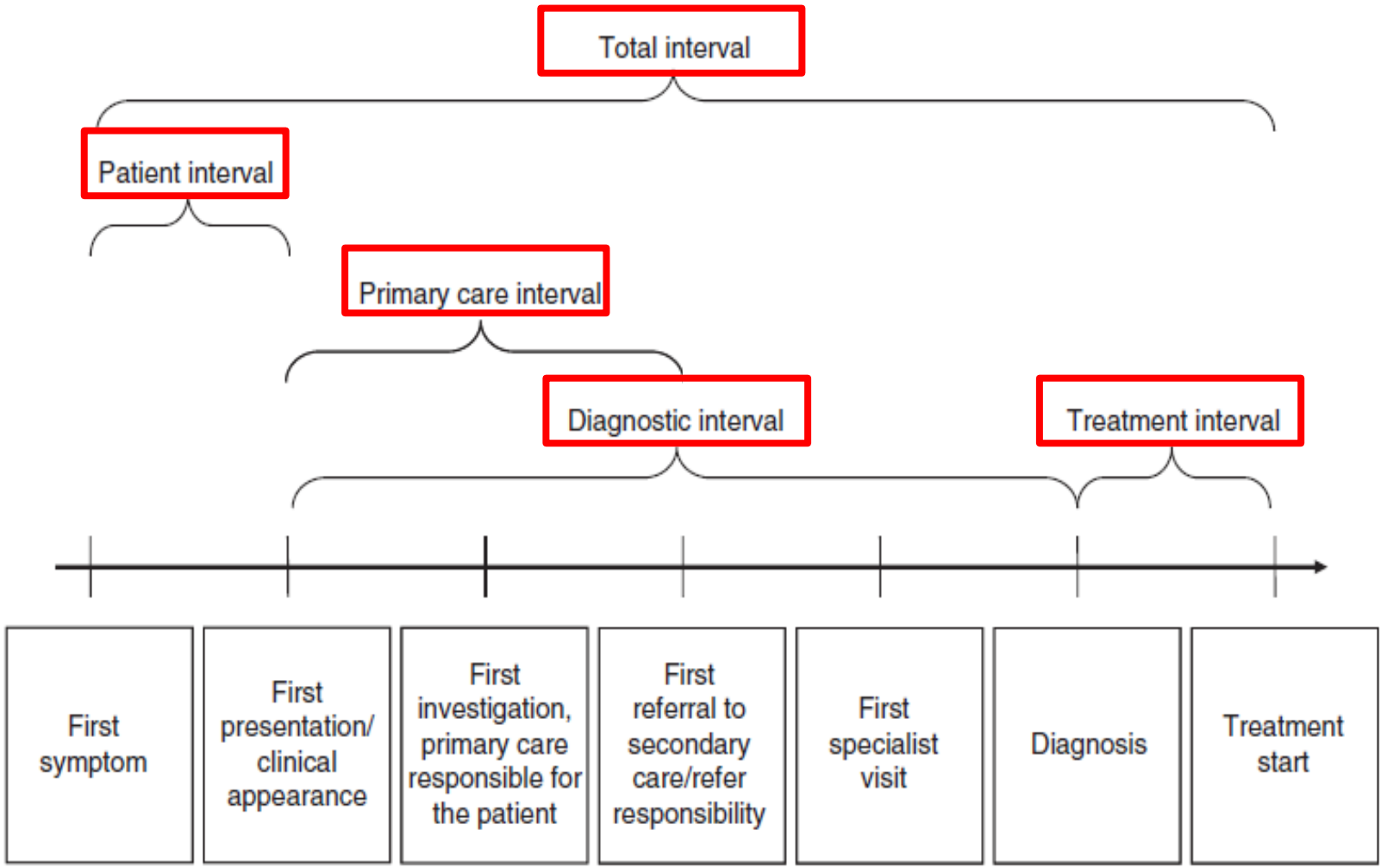
Legend and study samples

- ICBP = International Cancer Benchmarking Partnership
  - Sample: from cancer registries April 2014 to Oct 2015;
    - 3 to 6 months from diagnosis;
    - self-completed survey from patients and their physicians
    - Ontario patient contact process: 22.7% consenting, variation by disease site
    - Ontario Breast: N=403; Manitoba N=368
    - Ontario Colorectal: N=321; Manitoba N=258
- CanIMPACT = Canadian Team to Improve Community-based Cancer Care along the Continuum
  - Ontario Sample: population-based sample
    - breast cancer from registries 2007 to 2012
    - N=46,966

Legend and samples con't

- CCE = Cancer Diagnosis Research Program, Cancer Care and Epidemiology, Cancer Research Institute, Queen's University
  - Breast samples: population-based from Ontario cancer registry
    - Patti Groome – 2007 to 2011; N=33,752
    - Li Jiang – 2011; N=6,880
  - Colorectal samples: population-based from Ontario cancer registry
    - Colleen Webber – 2009 to 2012; N=23,961
    - Leah Hamilton – 2007 to 2012; N=27,942

ICBP: Time intervals



Source: Weller D et al. BJC 2012;106:1262–7

ICBP Breast: Patient interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median days	11	7	7	8	3	12	14	19	7	29
75th percentile	34	30	30	31	22	48	47	58	31	56
90th percentile	73	92	88	114	63	157	86	142	117	90

Definition: First symptom to first presentation to primary care

Primary care interval

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	0	0	0	0	0	0	17	20	7	n/a
75th centile	0	0	1	0	0	0	30	37	15	
90th percentile	3	7	6	3	10	14	82	75	38	

Definition: First presentation to primary care to first referral to secondary care

CANCER RESEARCH UK

ICBP International Cancer Benchmarking Partnership

ICBP Breast: Diagnostic interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	29	12	19	14	8	20	28	25	13	13
75th percentile	54	18	35	21	26	37	42	56	21	24
90th percentile	92	36	49	49	49	71	79	202	46	48

Definition: First presentation to primary care to diagnosis.

Treatment interval (all patients)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	25	30	29	22	20	15	39	35	15	22
75th percentile	35	41	41	31	29	24	54	48	27	29
90th percentile	46	57	61	41	41	33	71	65	36	41

Definition: From diagnosis to first treatment date (usually biopsy or lumpectomy for breast)

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ICBP International Cancer Benchmarking Partnership

ICBP Breast: Total interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	70	57	58	50	42	54	92	92	42	71
75th percentile	96	82	99	78	73	121	128	158	89	101
90th percentile	218	138	149	147	170	231	188	273	170	169

Total interval (all patients)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	60	52	55	46	44	48	76	78	42	42
75th percentile	81	70	84	69	68	79	116	116	63	68
90th percentile	123	114	129	127	118	168	182	209	120	101

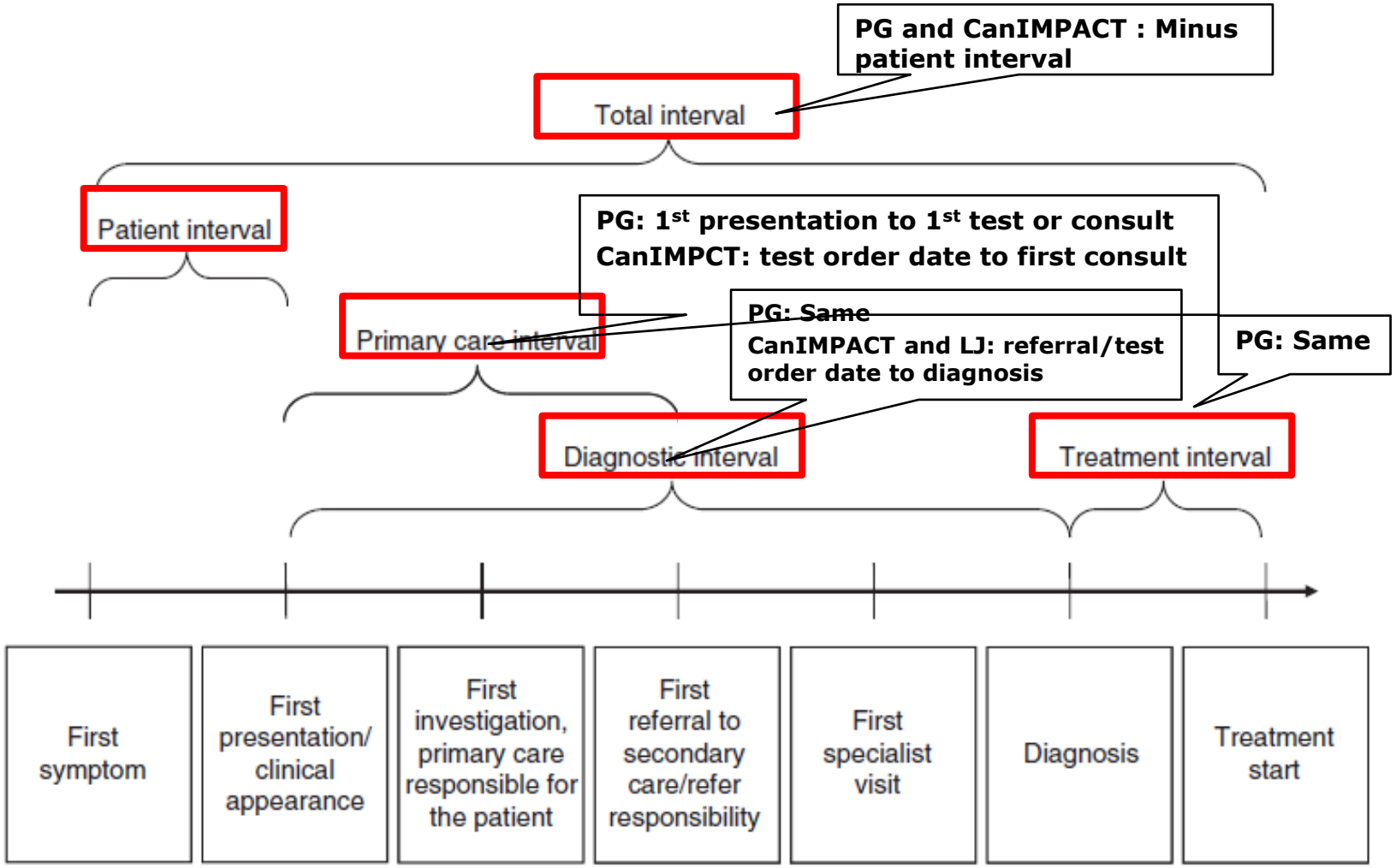
CANCER RESEARCH UK

ICBP International Cancer Benchmarking Partnership

Possible interpretations

- Small sample size
- Selection bias – CCO patient contact process
- Recall bias
- Are these results an accurate representation of the diagnostic intervals in Ontario?

Breast Diagnostic Intervals: comparison of ICBP to CCE and CanIMPACT



Weller D et al. BJC 2012;106:1262–7

Breast Diagnostic Intervals: median (days)

Diagnostic Interval	ICBP Ontario	CCE/PG	CanIMPACT	CCE/LJ DAU	CCE/LJ NON-DAU
Primary care					
Unscreened	20	13			
Diagnostic					
Unscreened	25	47	34	28	40
Screened		33	28	26	35
Overall		40	31		
Treatment					
Unscreened		30			
Screened		33			
Overall	35	31			
Total					
Unscreened	92	85			
Screened		71			
Overall	78	78			

ICBP Colorectal Cancer: Patient interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median days	49	34	30	35	21	36	35	31	22	31
75th percentile	92	118	73	88	62	92	90	96	63	92
90th percentile	249	2346	181	312	180	218	214	334	234	201

Primary care interval

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	3	2	4	0	1	12	4	1	9	n/a
75th centile	20	21	28	14	10	39	31	23	32	n/a
90th percentile	78	54	93	54	51	82	163	72	128	n/a

*Manitoba: N = 258
*Ontario: N = 321

CANCER RESEARCH UK

ICBP International Cancer Benchmarking Partnership

ICBP Colorectal Cancer: Diagnostic interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	60	48	38	64	27	37	76	54	28	36
75th percentile	155	86	91	111	66	85	148	147	66	82
90th percentile	284	201	164	238	129	222	298	312	200	196

Treatment interval (all patients)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	41	34	37	27	14	18	35	34	15	36
70th percentile	63	47	63	42	19	28	60	54	29	53
90th percentile	80	61	87	59	27	43	88	82	44	65

CANCER RESEARCH UK

ICBP International Cancer Benchmarking Partnership

ICBP Colorectal: Total interval (non-screened route)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	168	145	120	138	77	108	153	124	90	127
75th percentile	304	248	184	235	146	203	262	251	182	224
90th percentile	365	365	326	365	248	312	365	365	357	365

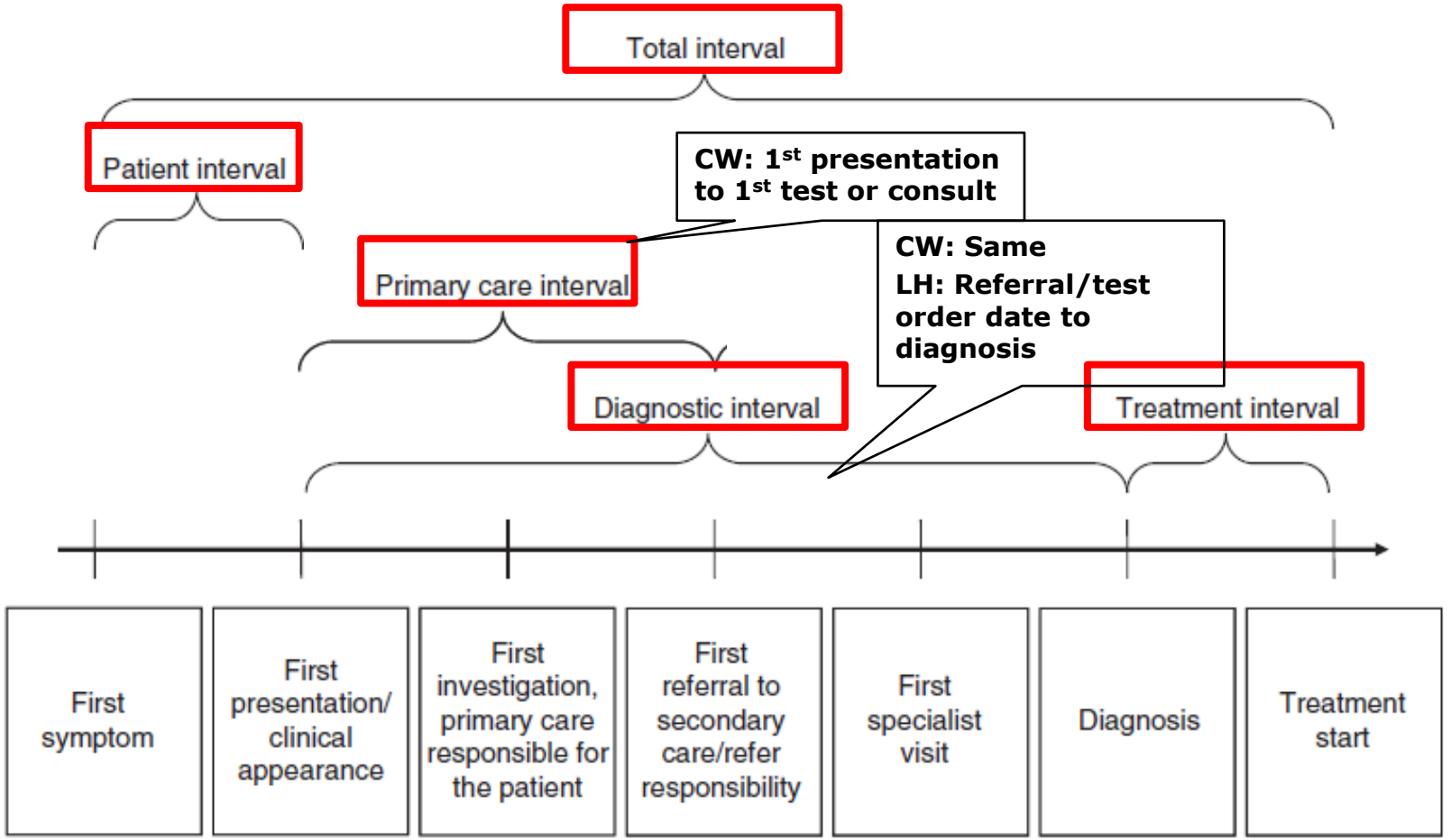
Total interval (all patients)

Jurisdiction	A	B	C	D	E	F	G Manitoba	H Ontario	I	J
Median	128	112	103	111	77	105	151	104	74	127
75th percentile	239	201	159	211	146	194	260	230	153	224
90th percentile	365	365	253	365	248	307	365	365	320	365

CANCER RESEARCH UK

ICBP International Cancer Benchmarking Partnership

Colorectal Diagnostic Intervals: Comparison of ICBP with CCE



Source: Weller D et al. BJC 2012;106:1262–7

Colorectal Diagnostic Intervals: median (days)

	ICBP Ontario N=321	CCE/CW N=23,961	CCE/LH N=27,942
Primary care			
Unscreened	1	24	
Diagnostic			
Unscreened*	54	92	
Screened		68	
Overall		84	64
Treatment			
Unscreened			
Screened			
Overall	34		
Total			
Unscreened	124		
Screened			
Overall	104		

*In CW and LH studies we were unable to definitively assign screening status. Symptomatic presentation labelled 'unscreened' versus screen-related test labelled 'screened.

Colorectal: Diagnostic Interval* by Stage (days)

	CCE/CW (median)	CCE/CW (90th)	CCE/LH (median)	CCE/LH (90th)
Overall:				
Stage I	104	329	98	315
Stage II	83	319	60	284
Stage III	80	318	60	283
Stage IV	62	305	37	252

ICBP Comparison by Cancer Site: total interval (days)

	Ontario	Manitoba	Best Jurisdiction
Breast			
Median	76	76	44*
75th	116	116	68
90th	209	182	119
Colorectal			
Median	104	151	74**
75th	230	260	153
90th	365	365	320
Lung			
Median	130	127	67*
75th	216	216	116
90th	339	365	210
Ovarian			
Median	117	90	57**
75th	176	172	139
90th	282	299	261

- *Jurisdiction E
- **Jurisdiction I

Source: ICBP unpublished data, 2017

Objectives of Presentation

- Compare findings from studies examining diagnostic intervals in Canada
- **Explore complexities of diagnosing cancer**
- Present some Canadian initiates to improve cancer diagnosis

FIGURE 1.2 Percent distribution of estimated new cancer cases, by sex, Canada, 2016

Males
102,900
New cases

Prostate	21.0%
Colorectal	14.1%
Lung and bronchus	14.0%
Bladder	6.4%
Non-Hodgkin lymphoma	4.3%
Kidney and renal pelvis	4.0%
Melanoma	3.6%
Leukemia	3.4%
Oral	3.1%
Pancreas	2.5%
Stomach	2.1%
Esophagus	1.7%
Liver	1.7%
Brain/CNS	1.7%
Multiple myeloma	1.6%
Thyroid	1.5%
Testis	1.1%
Larynx	0.9%
Hodgkin lymphoma	0.5%
Breast	0.2%
All other cancers	10.7%

Females
99,500
New cases

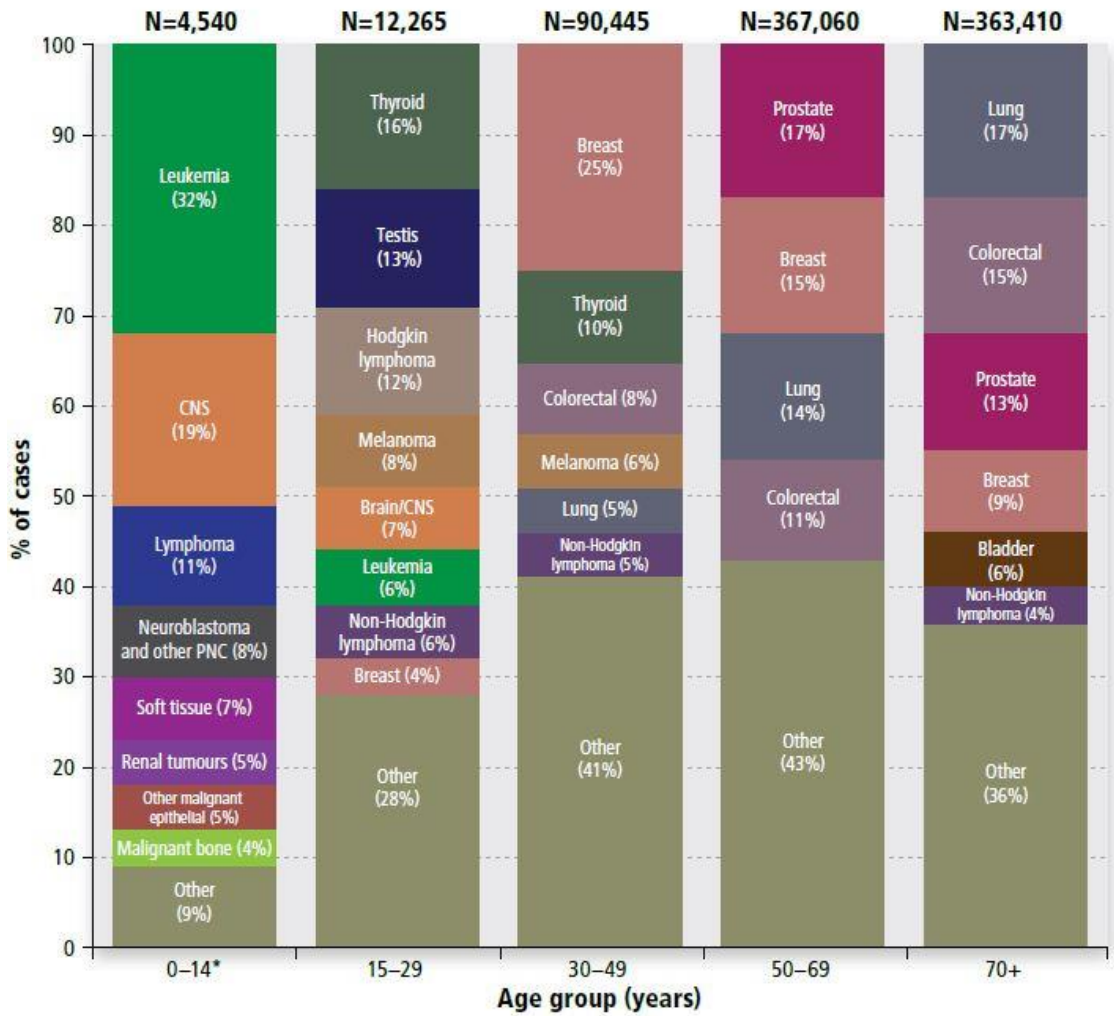
Breast	25.8%
Lung and bronchus	14.1%
Colorectal	11.7%
Body of uterus and uterus NOS	6.6%
Thyroid	5.3%
Non-Hodgkin lymphoma	3.6%
Melanoma	3.1%
Ovary	2.8%
Pancreas	2.6%
Leukemia	2.4%
Kidney and renal pelvis	2.3%
Bladder	2.1%
Cervix	1.5%
Oral	1.5%
Stomach	1.3%
Brain/CNS	1.3%
Multiple myeloma	1.2%
Liver	0.6%
Esophagus	0.5%
Hodgkin lymphoma	0.5%
Larynx	0.2%
All other cancers	8.9%

CNS=central nervous system, NOS=not otherwise specified

Note: The complete definition of the specific cancers listed here can be found in Table A8.

Analysis by: Surveillance and Epidemiology Division, CCDP, Public Health Agency of Canada
Data sources: Canadian Cancer Registry and National Cancer Incidence Reporting System databases at Statistics Canada

FIGURE 2.2 Distribution of new cancer cases for selected cancers by age group, Canada, 2006–2010



N is the total number of cases over 5 years (2006–2010) for each age group; CNS=central nervous system; PNC=peripheral nervous cell tumours.

* Cancers in children (ages 0–14 years) are classified according to ICCC-3. The complete definition of the specific cancers listed here can be found in Table A8.

Analysis by: Surveillance and Epidemiology Division, CCDP, Public Health Agency of Canada
Data source: Canadian Cancer Registry database at Statistics Canada

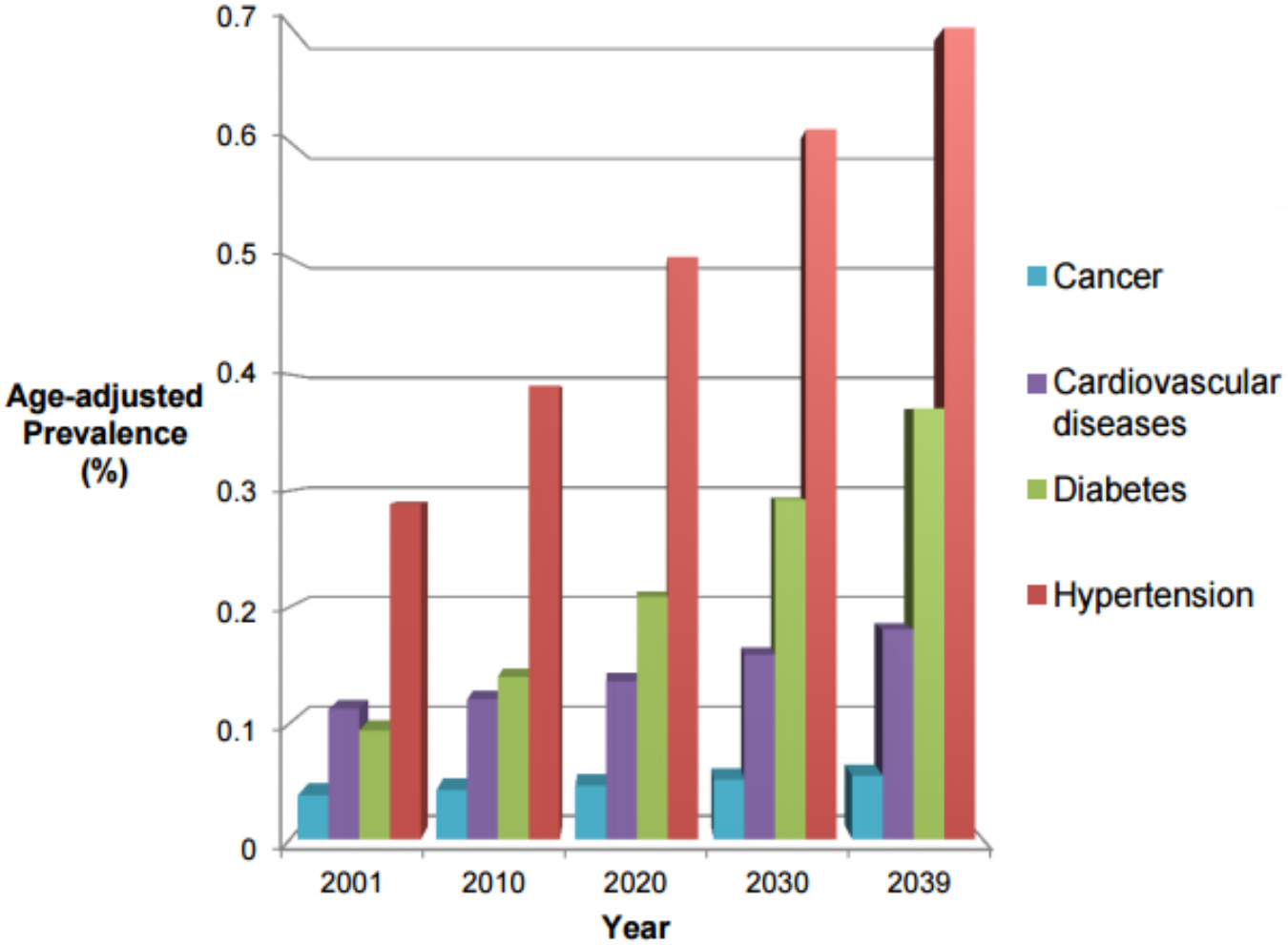
Prospective cohort study of patients with **suspected** cancer

	Colorectal[1] n = 133	Prostate[1] n = 116	Lung[1] n = 101
Confirmed Cancer	**9 (6.8%)**	**41 (35%)**	**81 (79%)**
Time to Diagnosis[2], days (SD)			
No Cancer	**85 (68)**	**77 (45)**	**52 (35)**
Cancer	**34 (49)**	**91 (37)**	**43 (32)**
Time to Surgery [2], days (SD)	**65 (42)**	**134 (62)**	**55 (39)**

1. Over all acceptance rate = 80%
2. From date of referral to diagnosis communicated to the patient; closes to ICBP secondary care interval

Grunfeld et al, Brit J Cancer 2009

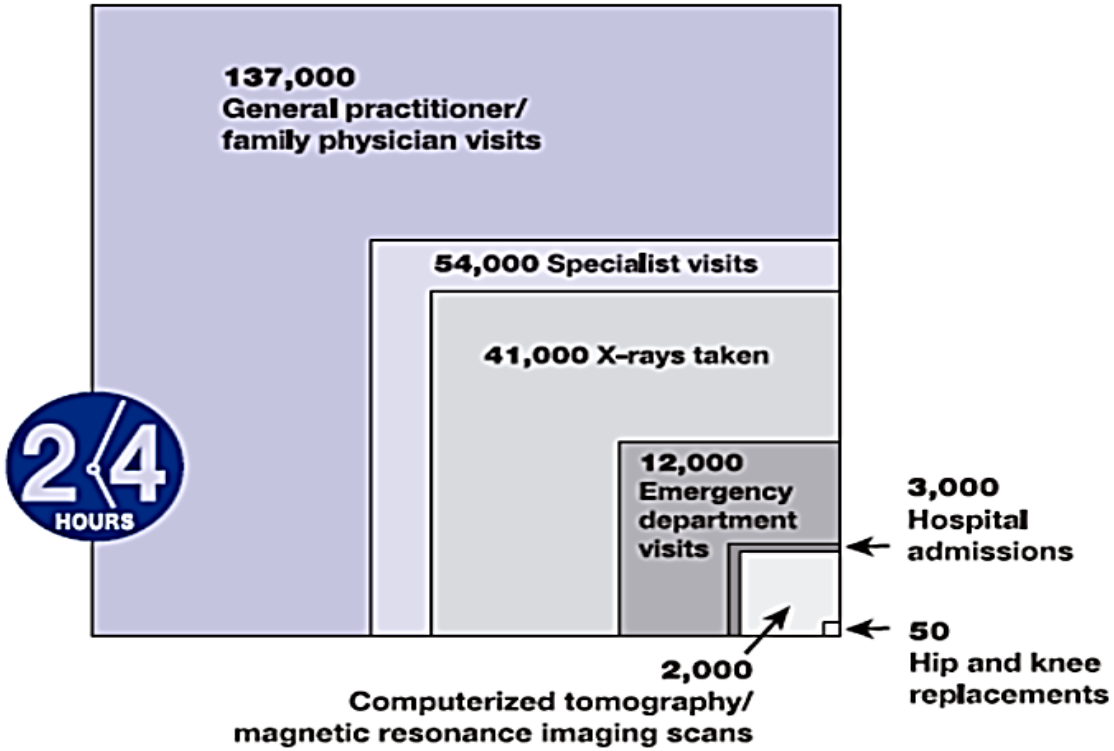
Caution: cancer is not the only problem



Source: K Emslie Public Health Agency of Canada 2015

Health Services Accessed Each Day: ICES Primary Care Atlas

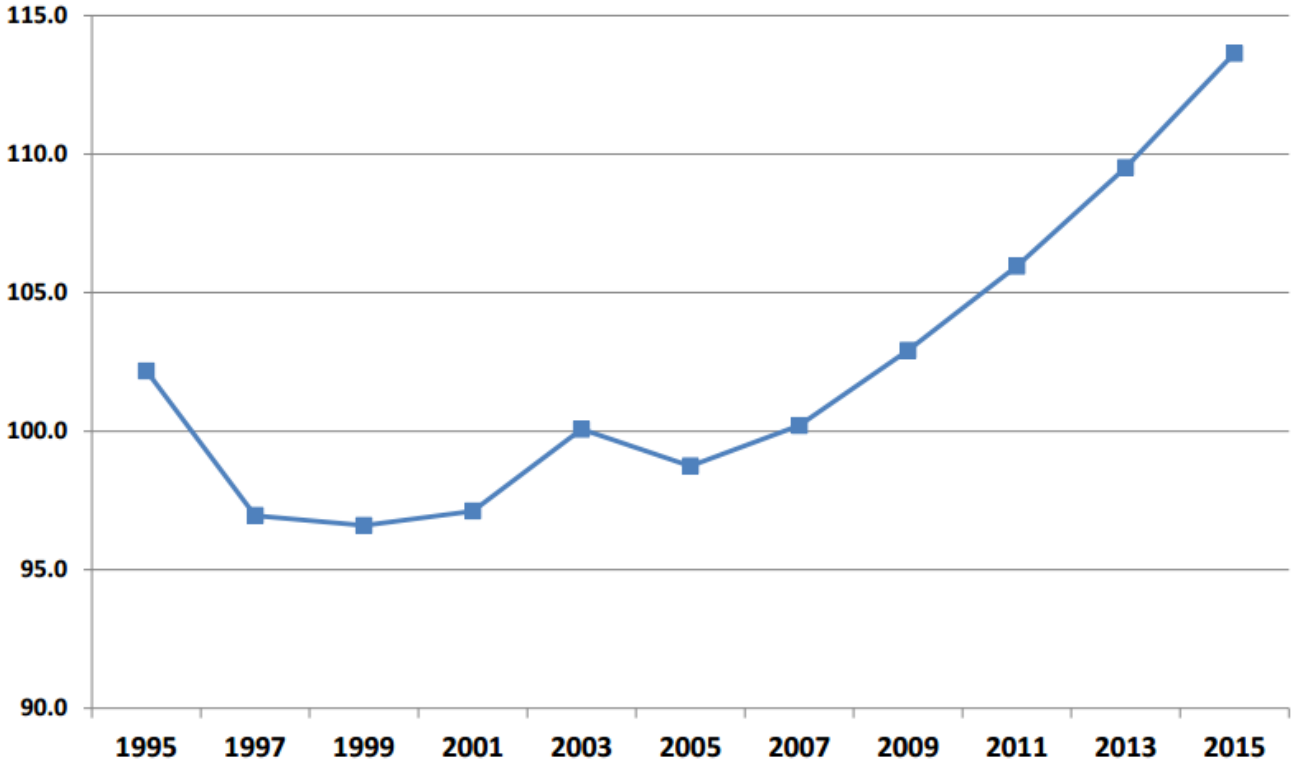
Exhibit 1.1 Average number* of various health care services accessed each day, in Ontario, 2002/03



*Values rounded to the nearest thousand with the exception of hip and knee replacements, which were rounded to the nearest 10.

Issues for sustainability: workforce

Physicians/100,000 population in Family medicine* in Canada, 1995 to 2015



*Includes General practitioners
Source: CMA Masterfile

40,517 family physicians in Canada in 2015

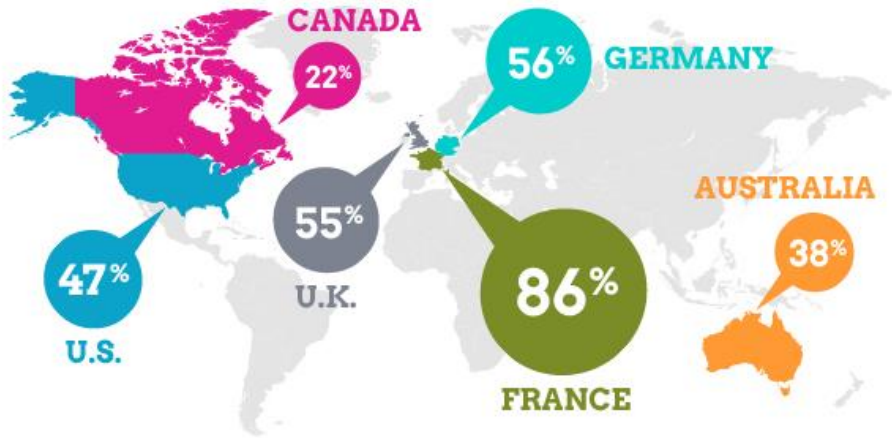
114 per 100,000

111 per 100,000

59 per 100,000

Canadian Medical Association 2015

Percentage of family doctors who report their patients can get a same- or next-day appointment



(Source: The Commonwealth Fund, 2012 International Health Policy Survey)

Percentage of Canadians without a regular doctor

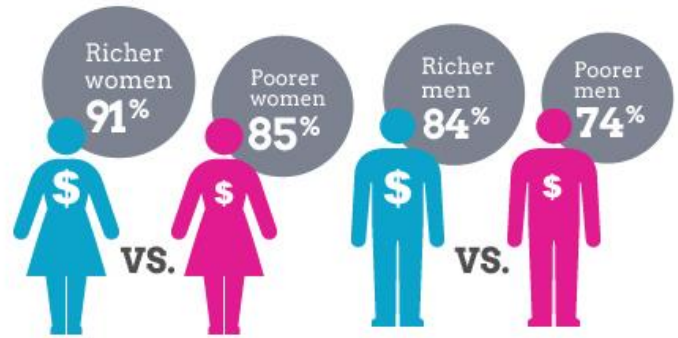
(Source: Statistics Canada)

Family doctors per 100,000 Canadians

but the percentage of Canadians with a regular doctor has not improved

(Source: CIHI, 2014)

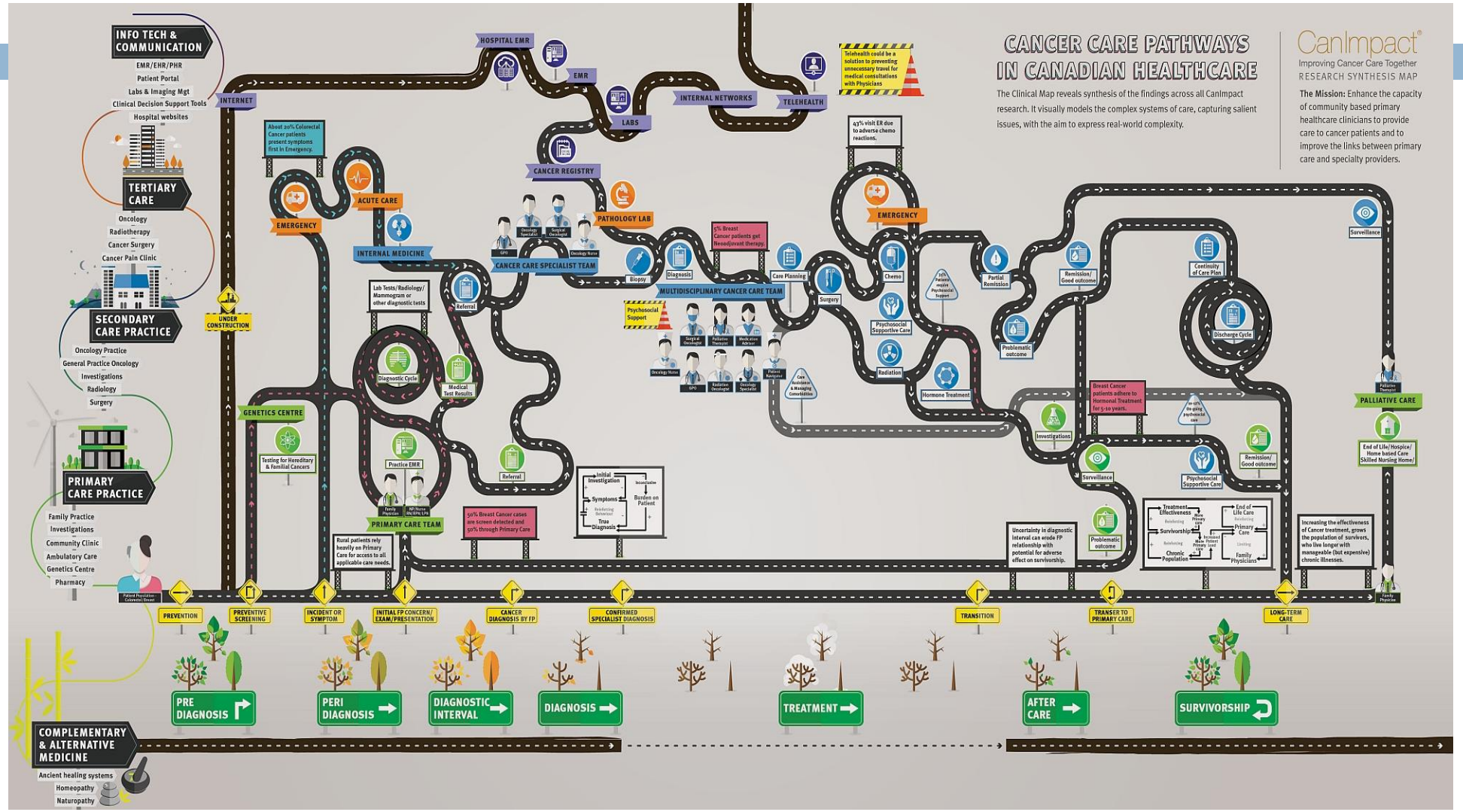
Income and sex gap



have a regular doctor

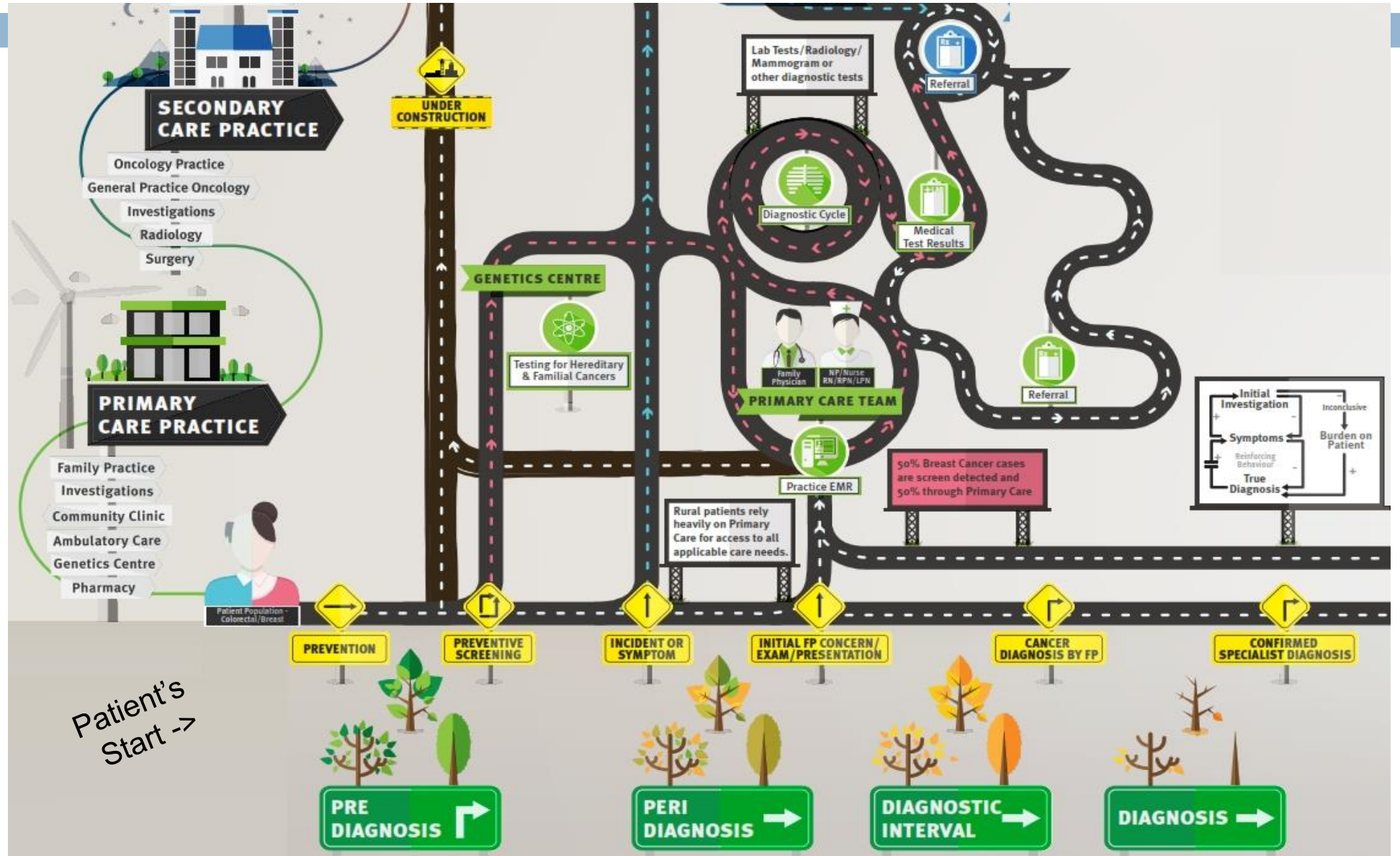
(Source: CCHS, Statistics Canada, 2011)

Cancer Care Pathways

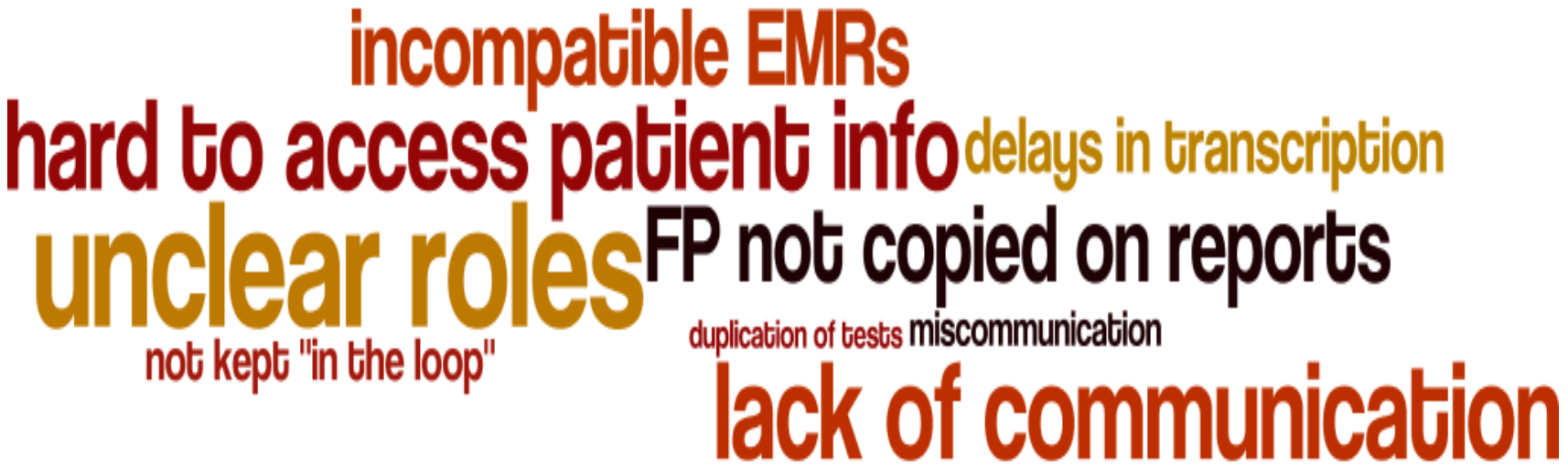


CanIMPACT Gigmap. Jones et al Curr Oncol 2017 in press

Primary Care – Diagnostic Phase



CanIMPACT Qualitative Studies with Patients, Primary Care Physicians, Oncologists
Theme: Communication Issues



Source: Easley et al. Curr Oncol 2017

Objectives of Presentation

- Compare findings from studies examining diagnostic intervals in Canada
- Explore complexities of diagnosing cancer
- **Present some Canadian initiates to improve cancer diagnosis**

CanIMPACT: pan-Canadian environmental scan of initiatives

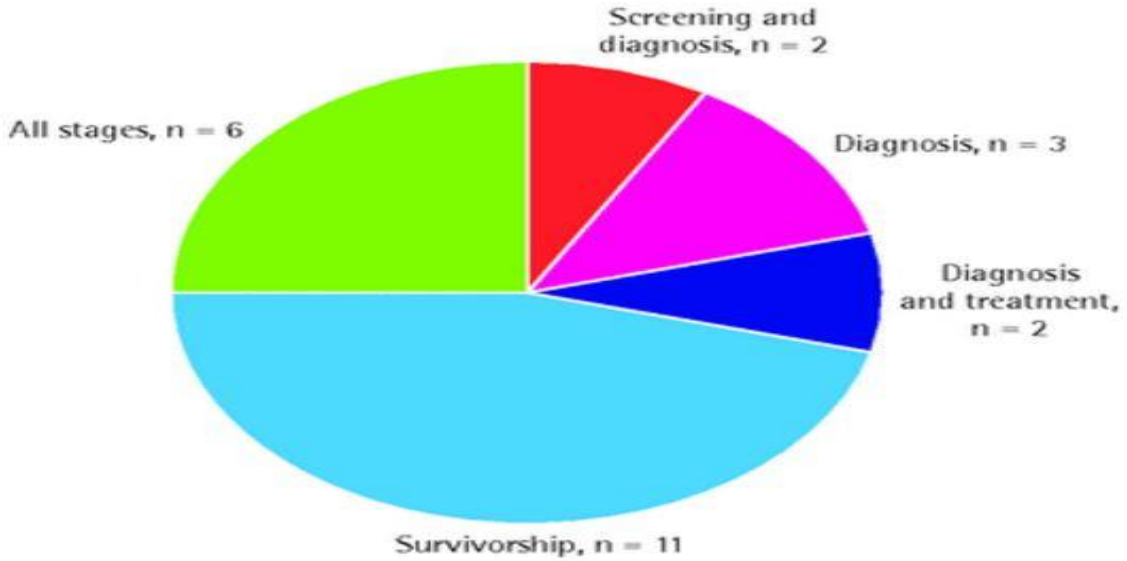
- CASE BOOK - Demographics
  - Most Canadian regions represented
  - Most target survivorship phase
  - Most target breast cancer and/or CRC
  - Intensity of engagement
    - Moderate > Low > High

Source: Melissa Brouwers and Jennifer Tomasone

CanIMPACT: Significant Findings & Insights

- CASE BOOK – Types of initiatives
  - Nurse navigator
  - Multidisciplinary team
  - Information system/communication system
  - Education for primary care
  - Multicomponent
- High quality robust evaluation is lacking

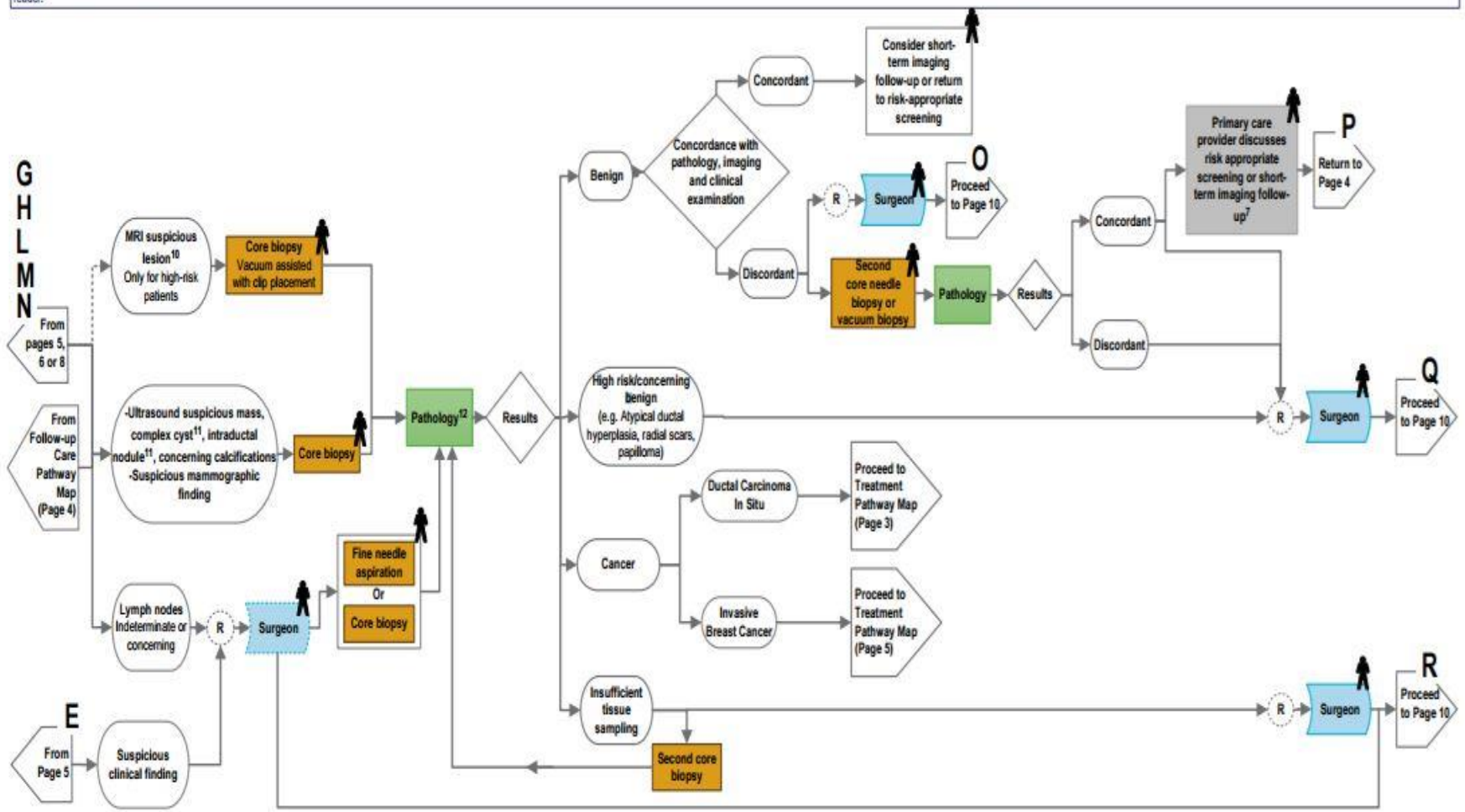
Figure 2. Profile representation, by targeted stage of the cancer care continuum



Source: Brouwers for CanIMPACT, Can Fam Phys 2016

Initiatives across Canada to improve integration

Breast Cancer Screening & Diagnosis Pathway Map



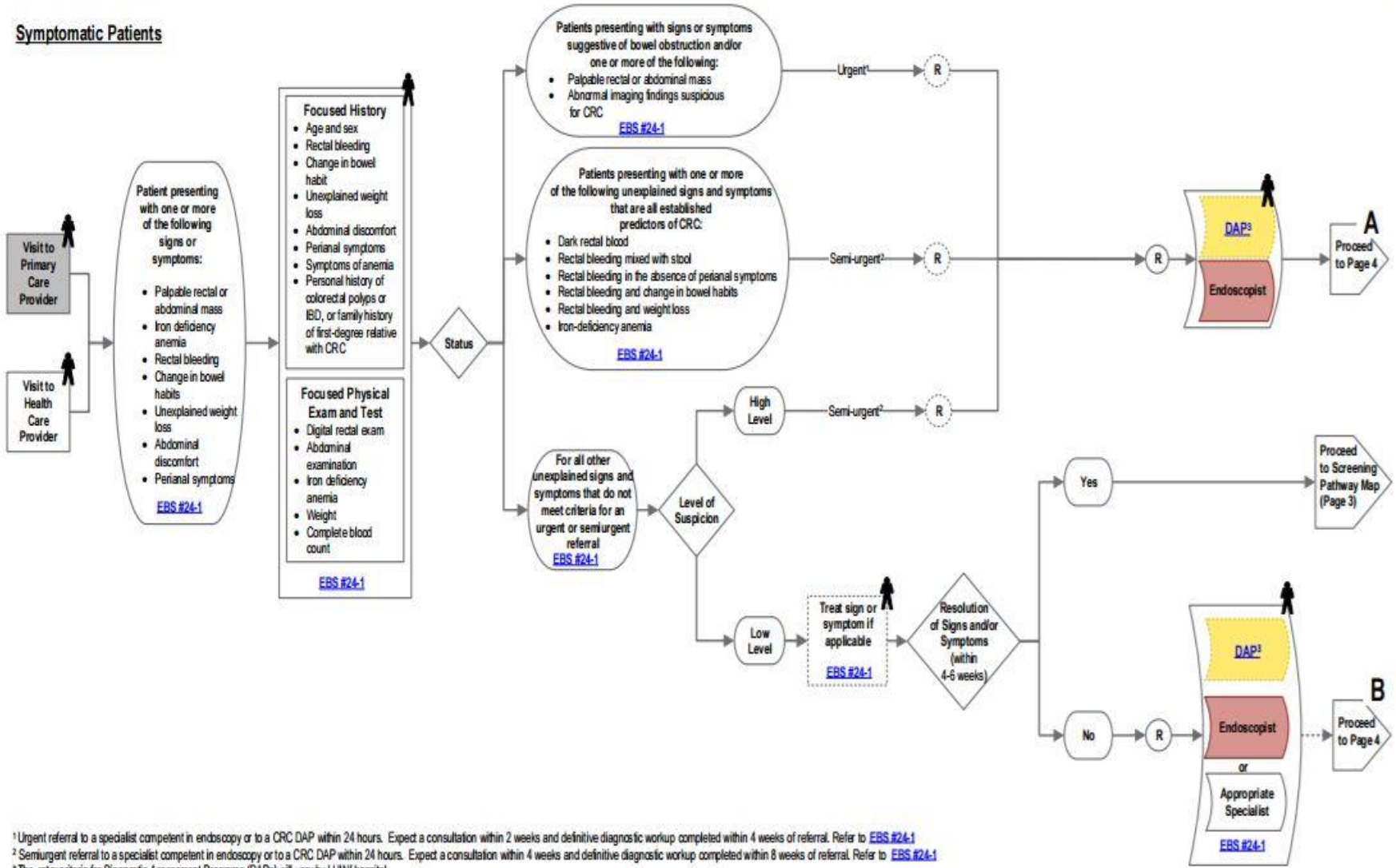
[7] There is insufficient evidence to recommend appropriate screening guidelines for some risk categories (e.g. a 40 year old woman at increased but not high risk). Risk appropriate screening in these cases is a personalized decision made between the woman and her healthcare provider.

[10] In rare circumstances a breast MRI may be used as a problem solving tool

[11] An excisional biopsy may be considered for presumed isolated papillary lesions in the appropriate clinical context.

[12] Biomarkers should be performed on core biopsies showing invasive cancer.

Symptomatic Patients

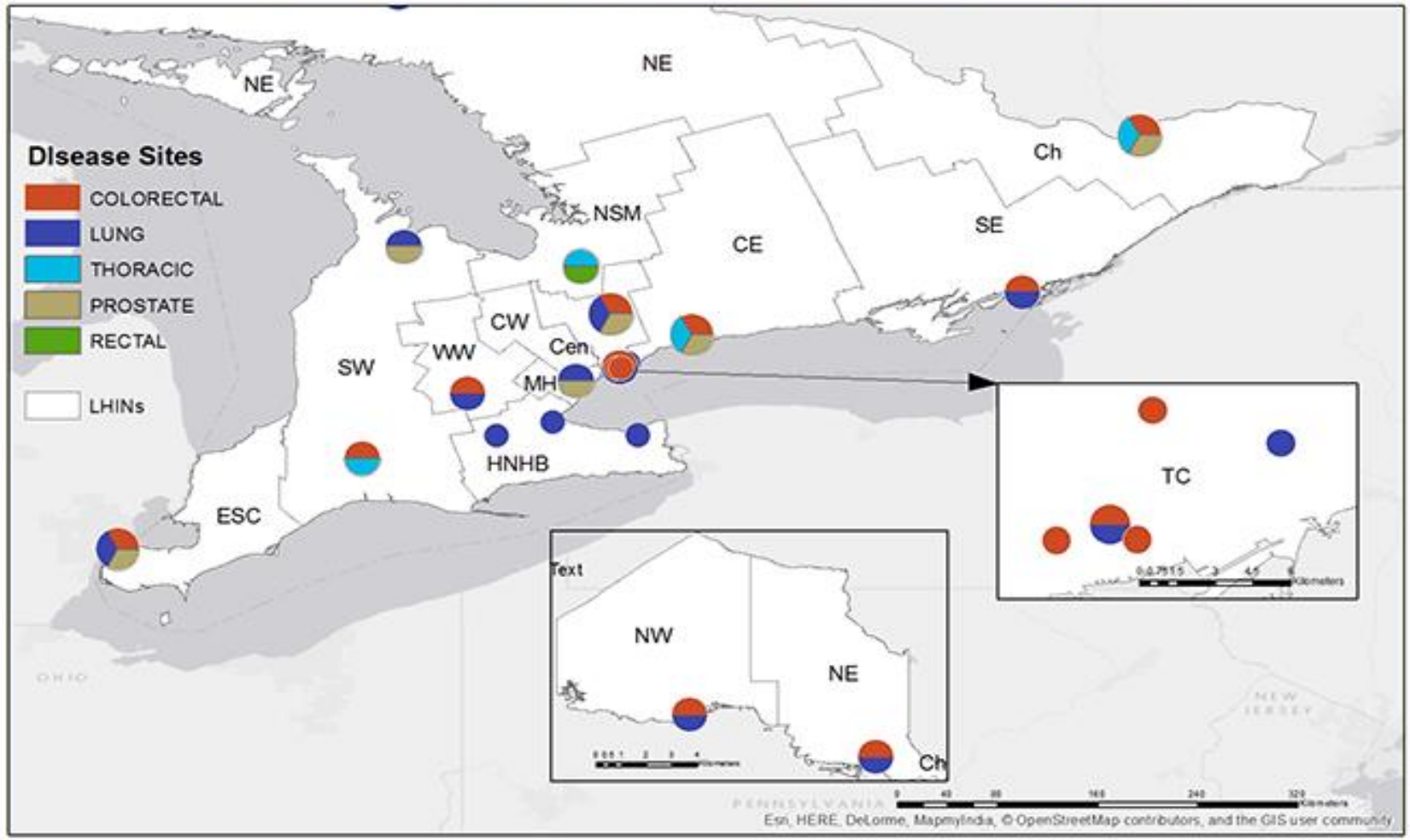


[1] Urgent referral to a specialist competent in endoscopy or to a CRC DAP within 24 hours. Expect a consultation within 2 weeks and definitive diagnostic workup completed within 4 weeks of referral. Refer to EBS #24-1

[2] Semiurgent referral to a specialist competent in endoscopy or to a CRC DAP within 24 hours. Expect a consultation within 4 weeks and definitive diagnostic workup completed within 8 weeks of referral. Refer to EBS #24-1

[3] The entry criteria for Diagnostic Assessment Programs (DAPs) will vary by LHIN/ hospital.

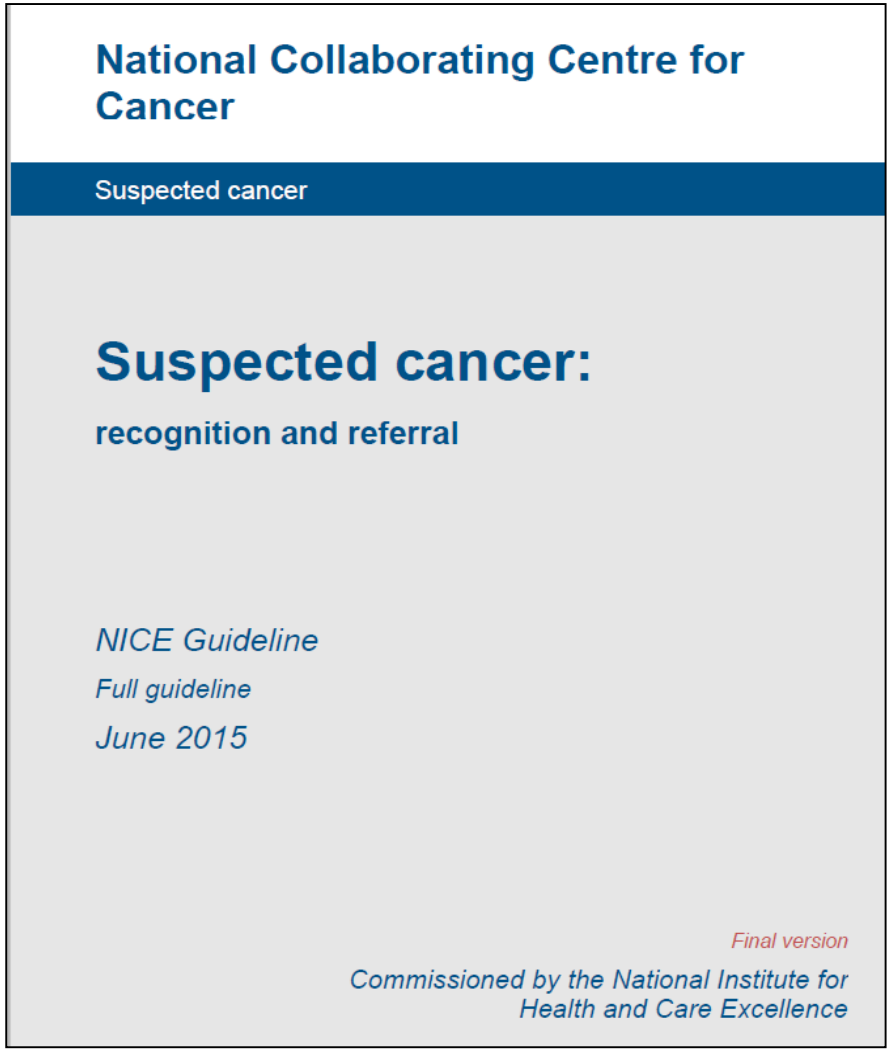
Cancer Care Ontario DAP Centre Locations Across Ontario



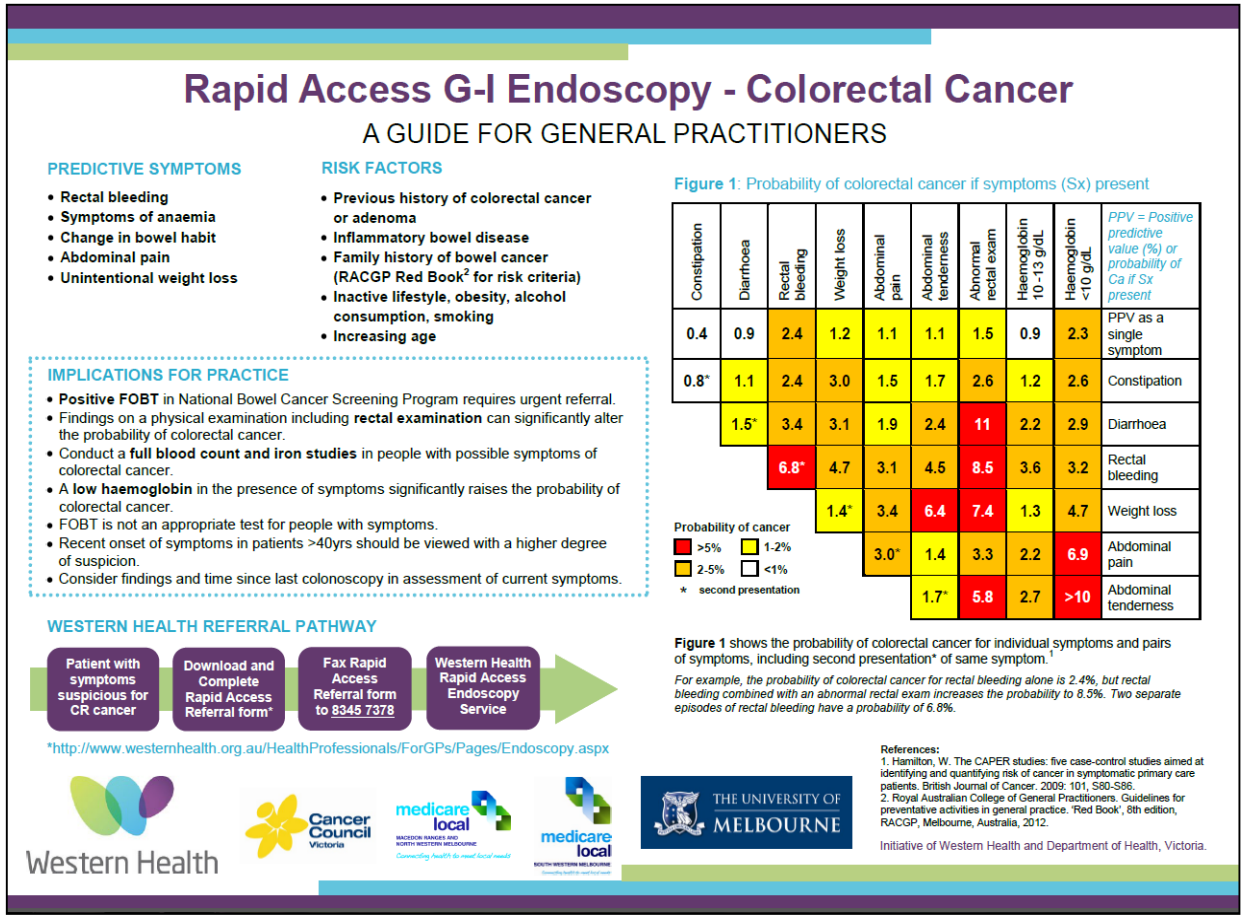
Report Date: March 2016
Data Source: Diagnostic Assessment Programs
Prepared by: Analytics and Informatics, Cancer Care Ontario
Note: Locations are geocoded using Postal Code Conversion File Plus (PCCF+), 2014

Applying risk thresholds for urgent cancer diagnostic tests

Explicit 3% risk of undiagnosed cancer as threshold for urgent referral



Diagnostic pathways and risk assessment tools



Rapid Access G-I Endoscopy - Colorectal Cancer

A GUIDE FOR GENERAL PRACTITIONERS

PREDICTIVE SYMPTOMS

- **Rectal bleeding**
- **Symptoms of anaemia**
- **Change in bowel habit**
- **Abdominal pain**
- **Unintentional weight loss**

RISK FACTORS

- **Previous history of colorectal cancer or adenoma**
- **Inflammatory bowel disease**
- **Family history of bowel cancer (RACGP Red Book[2] for risk criteria)**
- **Inactive lifestyle, obesity, alcohol consumption, smoking**
- **Increasing age**

IMPLICATIONS FOR PRACTICE

- **Positive FOBT** in National Bowel Cancer Screening Program requires urgent referral.
- Findings on a physical examination including **rectal examination** can significantly alter the probability of colorectal cancer.
- Conduct a **full blood count and iron studies** in people with possible symptoms of colorectal cancer.
- A **low haemoglobin** in the presence of symptoms significantly raises the probability of colorectal cancer.
- FOBT is not an appropriate test for people with symptoms.
- Recent onset of symptoms in patients >40yrs should be viewed with a higher degree of suspicion.
- Consider findings and time since last colonoscopy in assessment of current symptoms.

WESTERN HEALTH REFERRAL PATHWAY

Patient with symptoms suspicious for CR cancer → Download and Complete Rapid Access Referral form* → Fax Rapid Access Referral form to 8345 7378 → Western Health Rapid Access Endoscopy Service

*http://www.westernhealth.org.au/HealthProfessionals/ForGPs/Pages/Endoscopy.aspx

Figure 1: Probability of colorectal cancer if symptoms (Sx) present

Constipation	Diarrhoea	Rectal bleeding	Weight loss	Abdominal pain	Abdominal tenderness	Abnormal rectal exam	Haemoglobin 10 -13 g/dL	Haemoglobin <10 g/dL	PPV = Positive predictive value (%) or probability of Ca if Sx present
0.4	0.9	2.4	1.2	1.1	1.1	1.5	0.9	2.3	PPV as a single symptom
0.8*	1.1	2.4	3.0	1.5	1.7	2.6	1.2	2.6	Constipation
	1.5*	3.4	3.1	1.9	2.4	11	2.2	2.9	Diarrhoea
		6.8*	4.7	3.1	4.5	8.5	3.6	3.2	Rectal bleeding
			1.4*	3.4	6.4	7.4	1.3	4.7	Weight loss
				3.0*	1.4	3.3	2.2	6.9	Abdominal pain
					1.7*	5.8	2.7	>10	Abdominal tenderness

Probability of cancer: >5% | 1-2% | 2-5% | <1%

* second presentation

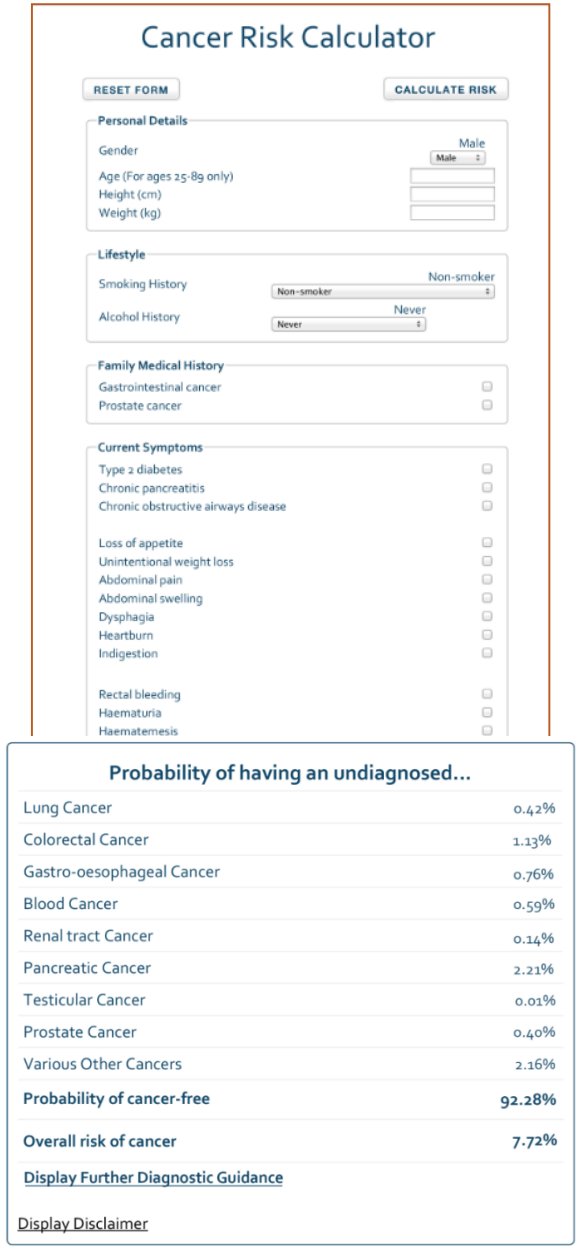
Figure 1 shows the probability of colorectal cancer for individual symptoms and pairs of symptoms, including second presentation* of same symptom.[1]

For example, the probability of colorectal cancer for rectal bleeding alone is 2.4%, but rectal bleeding combined with an abnormal rectal exam increases the probability to 8.5%. Two separate episodes of rectal bleeding have a probability of 6.8%.

References:
1. Hamilton, W. The CAPER studies: five case-control studies aimed at identifying and quantifying risk of cancer in symptomatic primary care patients. British Journal of Cancer. 2009: 101, S80-S86.
2. Royal Australian College of General Practitioners. Guidelines for preventative activities in general practice. 'Red Book', 8th edition, RACGP, Melbourne, Australia, 2012.

Initiative of Western Health and Department of Health, Victoria.

Western Health | Cancer Council Victoria | medicare local | medicare local | THE UNIVERSITY OF MELBOURNE



Cancer Risk Calculator

RESET FORM | CALCULATE RISK

Personal Details

Gender: Male
Age (For ages 25-89 only)
Height (cm)
Weight (kg)

Lifestyle

Smoking History: Non-smoker
Alcohol History: Never

Family Medical History

Gastrointestinal cancer
Prostate cancer

Current Symptoms

Type 2 diabetes
Chronic pancreatitis
Chronic obstructive airways disease
Loss of appetite
Unintentional weight loss
Abdominal pain
Abdominal swelling
Dysphagia
Heartburn
Indigestion
Rectal bleeding
Haematuria
Haematemesis

Probability of having an undiagnosed...

Lung Cancer	0.42%
Colorectal Cancer	1.13%
Gastro-oesophageal Cancer	0.76%
Blood Cancer	0.59%
Renal tract Cancer	0.14%
Pancreatic Cancer	2.21%
Testicular Cancer	0.01%
Prostate Cancer	0.40%
Various Other Cancers	2.16%
Probability of cancer-free	**92.28%**
Overall risk of cancer	**7.72%**

Display Further Diagnostic Guidance

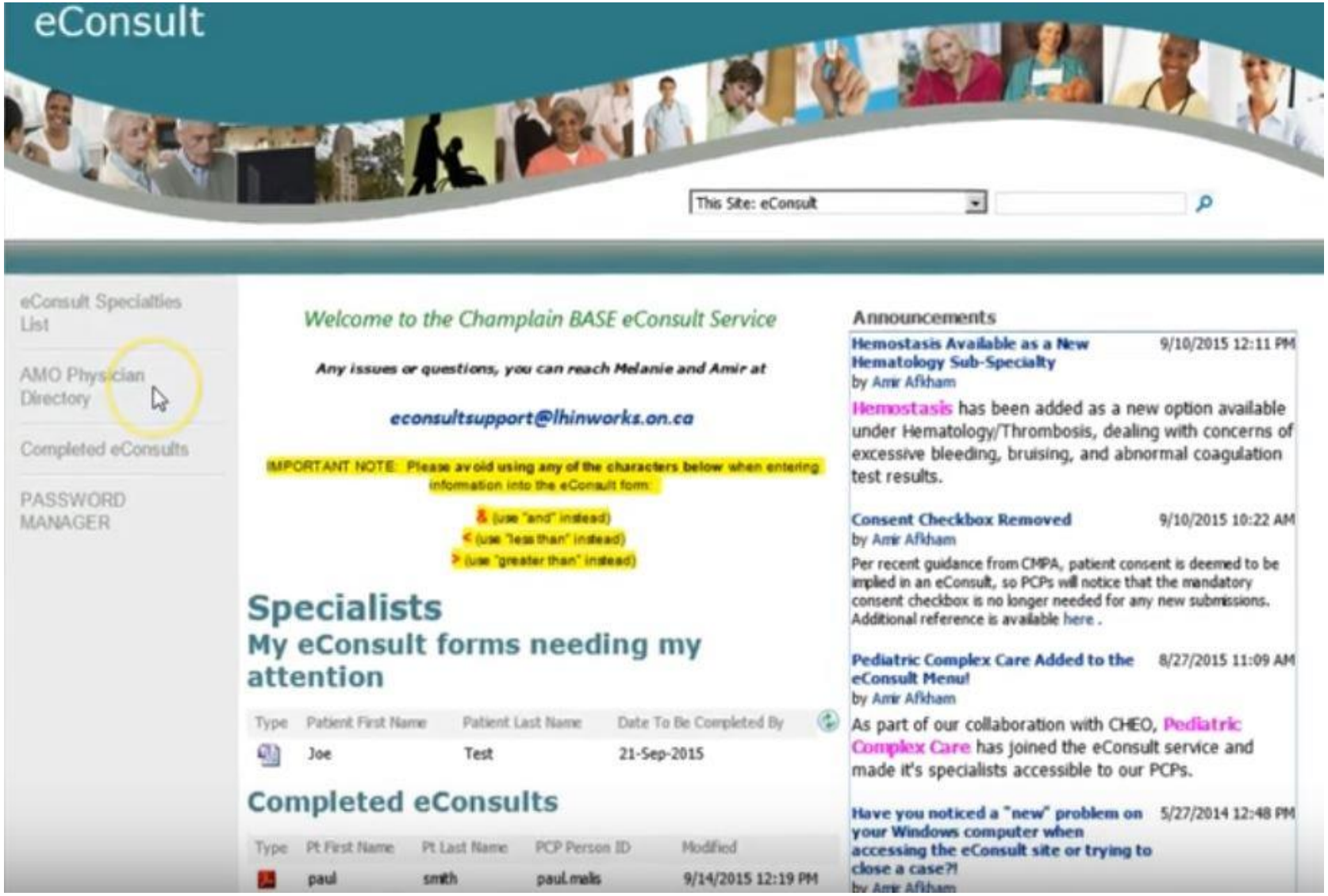
Display Disclaimer

Emery et al BMJ Open 2014; Chiang, Emery BJC 2015

Manitoba: cancer patient journey

- Initiative to reduce delays
- Goal: Interval from suspicion to first treatment in 60 days
- See presentation by Oliver Bucher (Session:CS2)

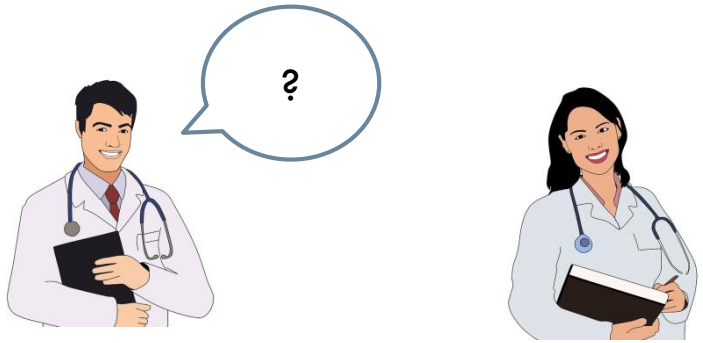
eOncoNote: Facilitating rapport between providers



CanIMPACT: Trial of eOncoNote

Champlain BASE eConsult

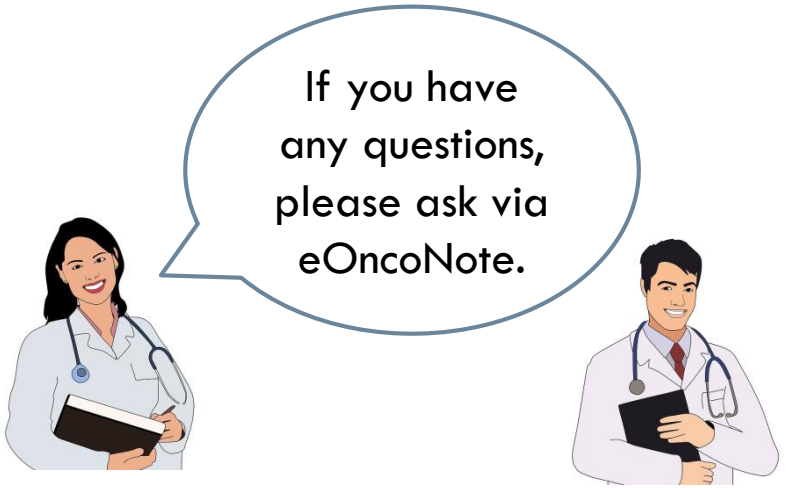
Primary Care Provider → Specialist



- *Personalized medicine/genetics*

eOncoNote

Oncology → Primary Care Provider



- *Diagnosis, treatment, survivorship*

CanIMPACT Dedicated Issue of Can Family Physician

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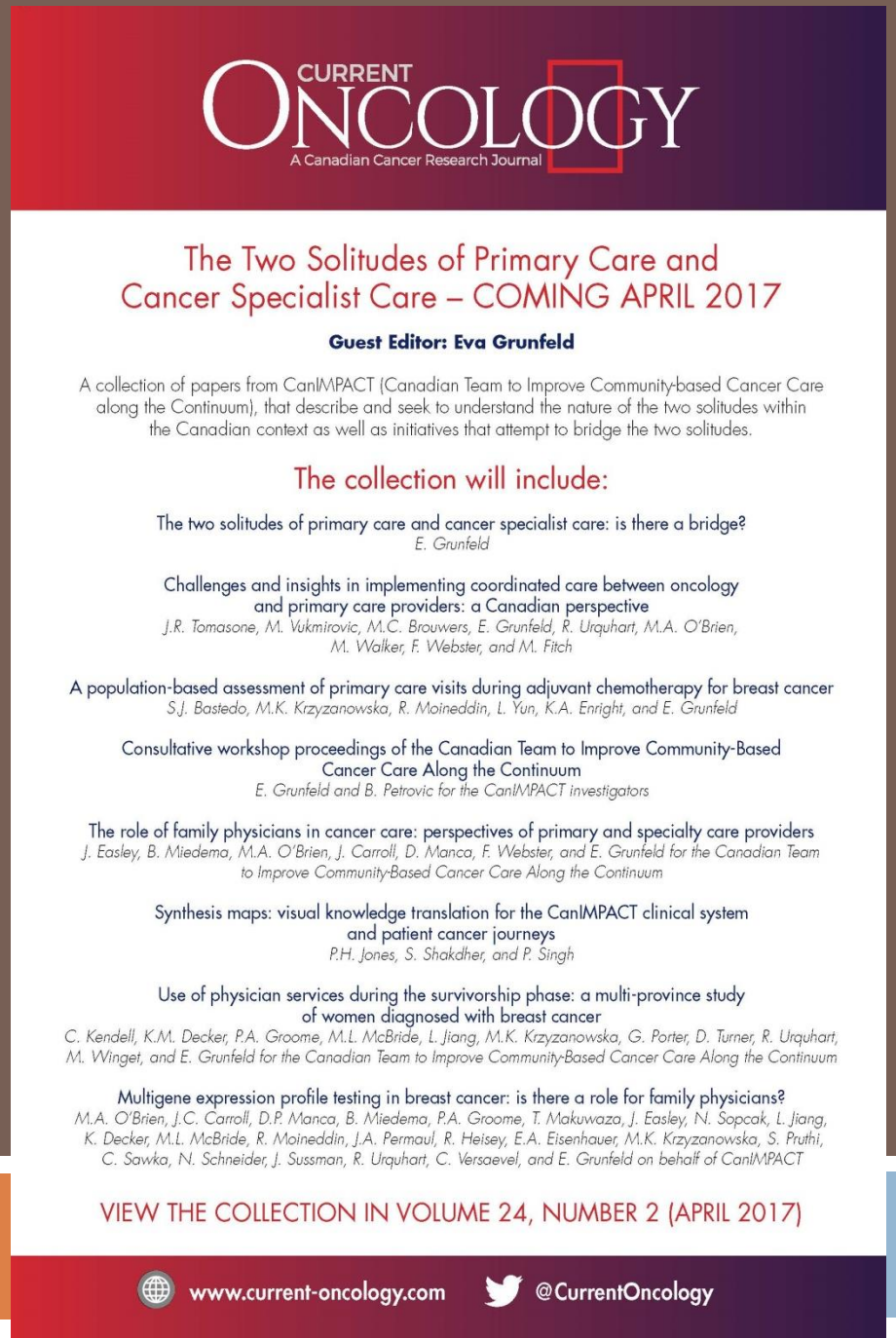

CURRENT ONCOLOGY
A Canadian Cancer Research Journal

The Two Solitudes of Primary Care and Cancer Specialist Care – COMING APRIL 2017

Guest Editor: Eva Grunfeld

A collection of papers from CanIMPACT (Canadian Team to Improve Community-based Cancer Care along the Continuum), that describe and seek to understand the nature of the two solitudes within the Canadian context as well as initiatives that attempt to bridge the two solitudes.

The collection will include:

The two solitudes of primary care and cancer specialist care: is there a bridge?
E. Grunfeld

Challenges and insights in implementing coordinated care between oncology and primary care providers: a Canadian perspective
J.R. Tomasone, M. Vukmirovic, M.C. Brouwers, E. Grunfeld, R. Urquhart, M.A. O'Brien, M. Walker, F. Webster, and M. Fitch

A population-based assessment of primary care visits during adjuvant chemotherapy for breast cancer
S.J. Bastedo, M.K. Krzyzanowska, R. Moineddin, L. Yun, K.A. Enright, and E. Grunfeld

Consultative workshop proceedings of the Canadian Team to Improve Community-Based Cancer Care Along the Continuum
E. Grunfeld and B. Petrovic for the CanIMPACT investigators

The role of family physicians in cancer care: perspectives of primary and specialty care providers
J. Easley, B. Miedema, M.A. O'Brien, J. Carroll, D. Manca, F. Webster, and E. Grunfeld for the Canadian Team to Improve Community-Based Cancer Care Along the Continuum

Synthesis maps: visual knowledge translation for the CanIMPACT clinical system and patient cancer journeys
P.H. Jones, S. Shakdher, and P. Singh

Use of physician services during the survivorship phase: a multi-province study of women diagnosed with breast cancer
C. Kendell, K.M. Decker, P.A. Groome, M.L. McBride, L. Jiang, M.K. Krzyzanowska, G. Porter, D. Turner, R. Urquhart, M. Winget, and E. Grunfeld for the Canadian Team to Improve Community-Based Cancer Care Along the Continuum

Multigene expression profile testing in breast cancer: is there a role for family physicians?
M.A. O'Brien, J.C. Carroll, D.P. Manca, B. Miedema, P.A. Groome, T. Makuwaza, J. Easley, N. Sopcak, L. Jiang, K. Decker, M.L. McBride, R. Moineddin, J.A. Permaul, R. Heisey, E.A. Eisenhauer, M.K. Krzyzanowska, S. Pruthi, C. Sawka, N. Schneider, J. Sussman, R. Urquhart, C. Versaevel, and E. Grunfeld on behalf of CanIMPACT

VIEW THE COLLECTION IN VOLUME 24, NUMBER 2 (APRIL 2017)

www.current-oncology.com @CurrentOncology

Visit related posters:

P.040 - Factors associated with screen-detected breast cancer across five provinces (Groome)

P.079 – Phase 1 results from CanIMPACT

P.080 – Phase 2 intervention from CanIMPACT

P.103 – Synthesis maps of patient cancer journeys (Matthias)

Thank you

THANK YOU

http://canimpact.utoronto.ca

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10 years OF PROGRESS

Improving the Quality of Cancer Diagnosis

Chair: Dr. Christian Finley

Innovative Approaches to Optimal Cancer Care in Canada

April 7-8, 2017

The Westin Harbour Castle
Toronto, Ontario

Health Technology Evaluation of Diagnostic Processes: The Case for Pathway Modelling

Stirling Bryan, PhD

Professor, School of Population & Public Health UBC

Director, Centre for Clinical Epidemiology & Evaluation, VCH

Disclosures and Acknowledgements

- I am not aware of any actual or potential conflicts of interest in relation to this presentation
- Some of my relevant current activities:
  - Chair, CADTH's Health Technology Expert Review Panel
  - Member, CADTH's Economic Evaluation Guidelines Working Group
  - Scientific Director, BC SPOR SUPPORT Unit
- Lung cancer screening evaluation
  - Funding: BC Ministry of Health
  - Colleagues: Tanya Conte, Mohsen Sadatsafavi

CENTRE for Clinical Epidemiology and Evaluation

Proposition

- ***Decisions to adopt new technologies, or to change clinical pathways, should be based on high quality evidence, synthesized as a pathway model***

- Case-study:
  - Screening for lung cancer

- Model of choice:
  - OncoSim, developed by the Canadian Partnership Against Cancer (formerly the Cancer Risk Management Model, CRRM)

HEALTH ECONOMICS
Health Econ. **23**: 379–383 (2014)
Published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/hec.3034

EDITORIAL

BREAKING THE ADDICTION TO TECHNOLOGY ADOPTION

STIRLING BRYAN[a,b,c,*], CRAIG MITTON[a,b] and CAM DONALDSON[d]

[a]*School of Population & Public Health, University of British Columbia, Canada*
[b]*Centre for Clinical Epidemiology & Evaluation, Vancouver Coastal Health Research Institute, Canada*
[c]*Health Economics Research Unit, University of Aberdeen, UK*
[d]*Yunus Centre for Social Business & Health, Glasgow Caledonian University, UK*

ABSTRACT

A major driver of cost growth in health care is the rapid increase in the utilisation of existing technology and not simply the adoption of new technology. Health economists and their health technology assessment colleagues have become obsessed by technology adoption questions and have largely ignored 'technology management' questions. Technology management

Our argument is that, in order to achieve the goals of efficiency and equity through technology use, much greater analytic emphasis is required on the technology management issue, with analysts breaking out of the adoption 'addiction'. This issue will grow more and more in importance as entities, such as clinical care groups

1. BACKGROUND

The focus of this paper is healthcare technology (drugs, devices, procedures and screening) and, specifically, its adoption and use in the system. Our premise is that health economists and their colleagues in the health technology assessment (HTA) 'industry' have become obsessed by adoption questions – that is, should a new technology be available for routine use in the healthcare system? – and have largely ignored the 'technology management' questions – that is, once in the system, how do we ensure cost-effective utilisation?

Our argument is that, in order to achieve the goals of efficiency and equity through technology use, much greater analytic emphasis is required on the technology management issue, with analysts breaking out of the adoption 'addiction'. This issue will grow more and more in importance as entities, such as clinical care groups in England and integrated care networks more globally, find that budget restrictions mean that service developments cannot simply be 'added-on' to their portfolios without consideration of from where, within such budgets, the required resources will come.

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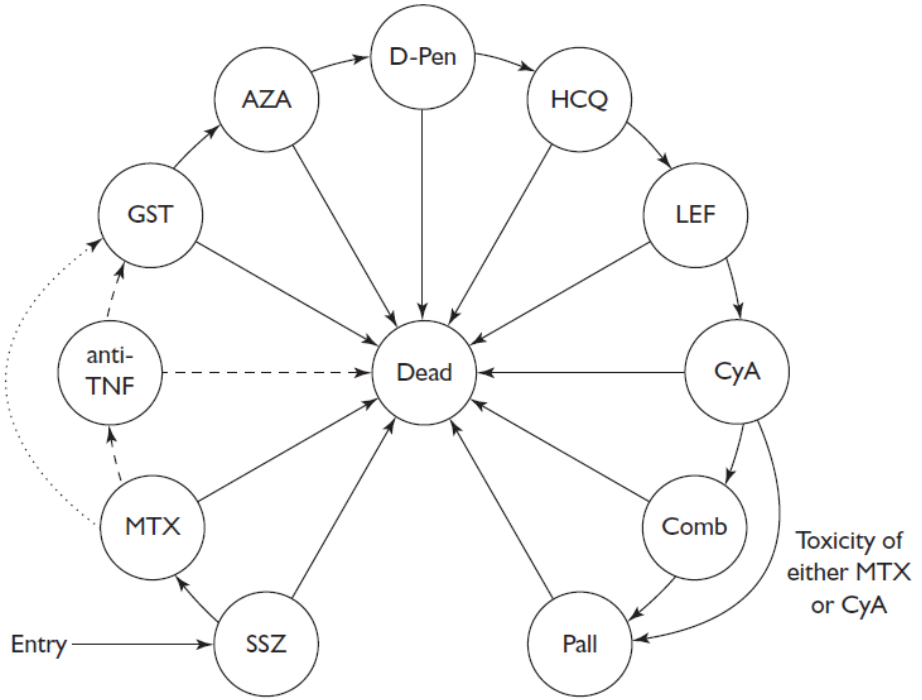
Pathway modelling

- Clinical pathway: defined sequence(s) of use of alternative health technologies
- Pathway modelling becomes the foundation of HTA activity



Barton et al, 2004

Pathway modelling and 'resource stewardship'

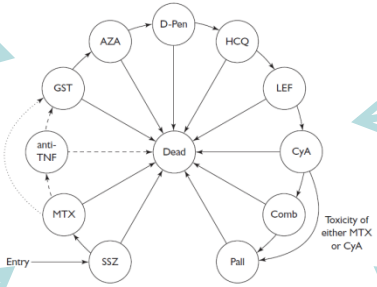
- 'Resource stewardship'
  - A culture where resource scarcity is openly acknowledged and recognized as a shared responsibility
- Pathway model development must be a collaborative effort
  - Active engagement of, and ownership by, key stakeholders, including clinical leaders, policy makers, patients and analysts

Stewardship facilitated through pathway modelling

Clinical leaders and care teams

HTA analysts

Policy makers and managers



Industry

Patients and carers

Pathway modelling and 'resource stewardship'

- 'Resource stewardship'
  - A culture where resource scarcity is openly acknowledged and recognized as a shared responsibility
- Pathway model development must be a collaborative effort
  - Active engagement of, and ownership by, key stakeholders, including clinical leaders, policy makers, patients and analysts
- The reference pathway model defines the resource envelope
  - Constraints on pathway reconfiguration are transparent
- Proposed changes to the clinical pathway, including diagnostic technologies, evaluated using the reference model
  - Opportunity cost considered explicitly

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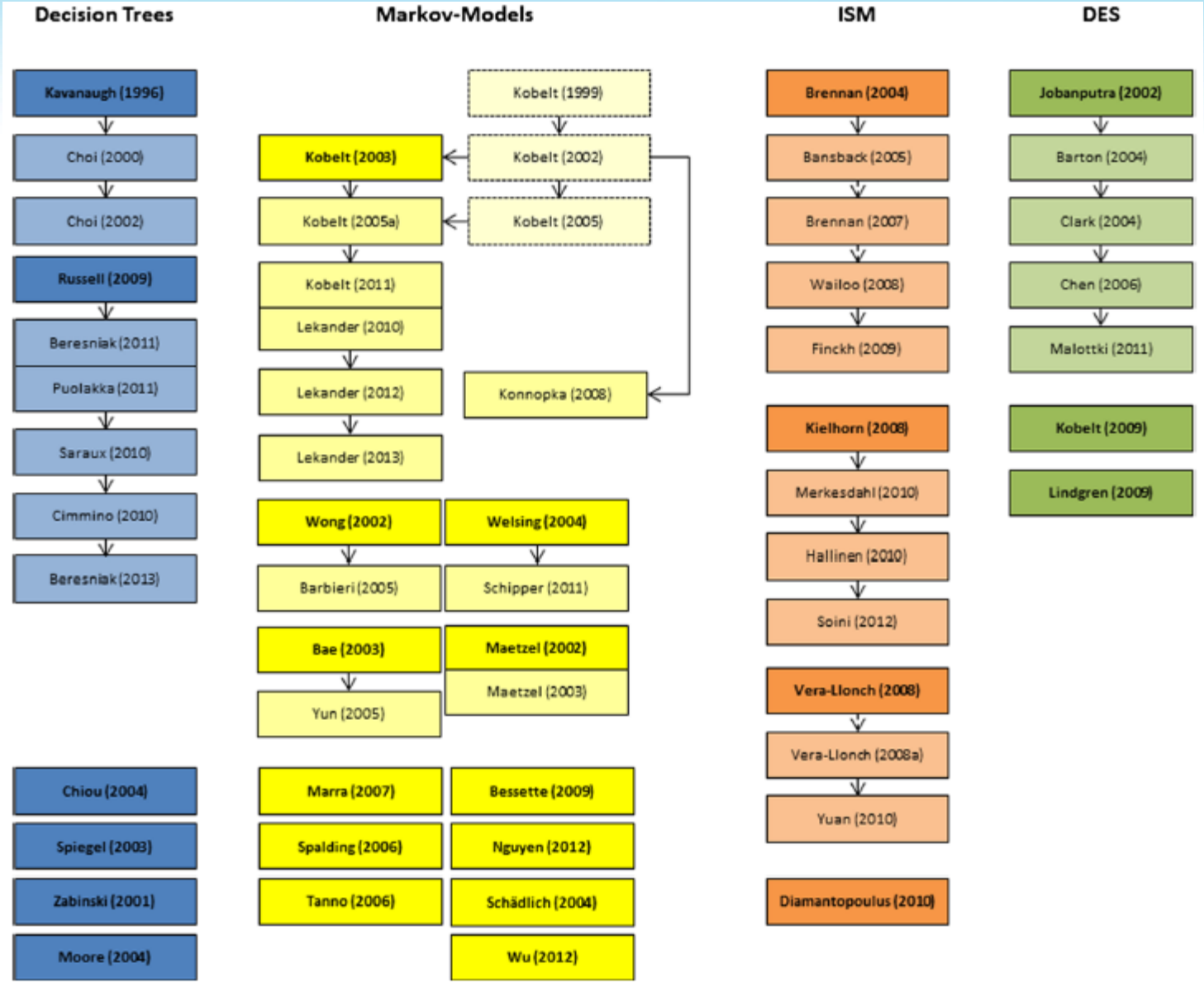

Figure 2 Family tree of analyzed publications. Background colors represent the different modeling techniques (blue = decision trees, yellow = Markov models, orange = ISM, green = DES) and bold letters and bright colors indicate an independently developed model.

Scholz & Mittendorf, 2014

Case-study: LDCT for lung cancer screening

- Lung cancer is the leading cause of cancer-related death worldwide
- Studies have shown screening with is associated with decreased mortality
- LDCT screening programs can be formulated in different ways:
  - Screening frequency
  - with/without smoking cessation interventions
  - use of risk stratification tools pre- or post-screening
- Aim: to assess cost-effectiveness and budget impact of alternative options in BC

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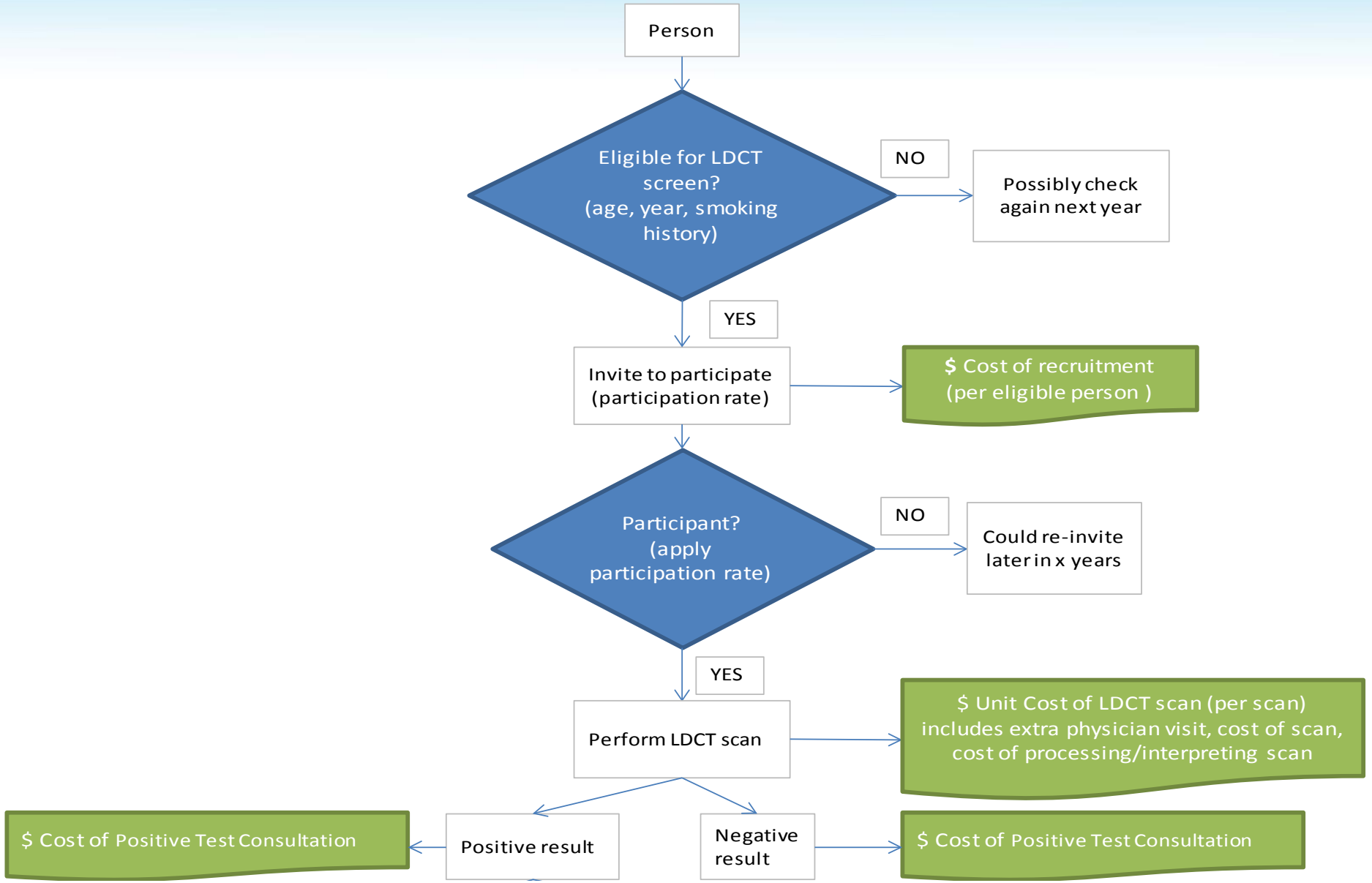
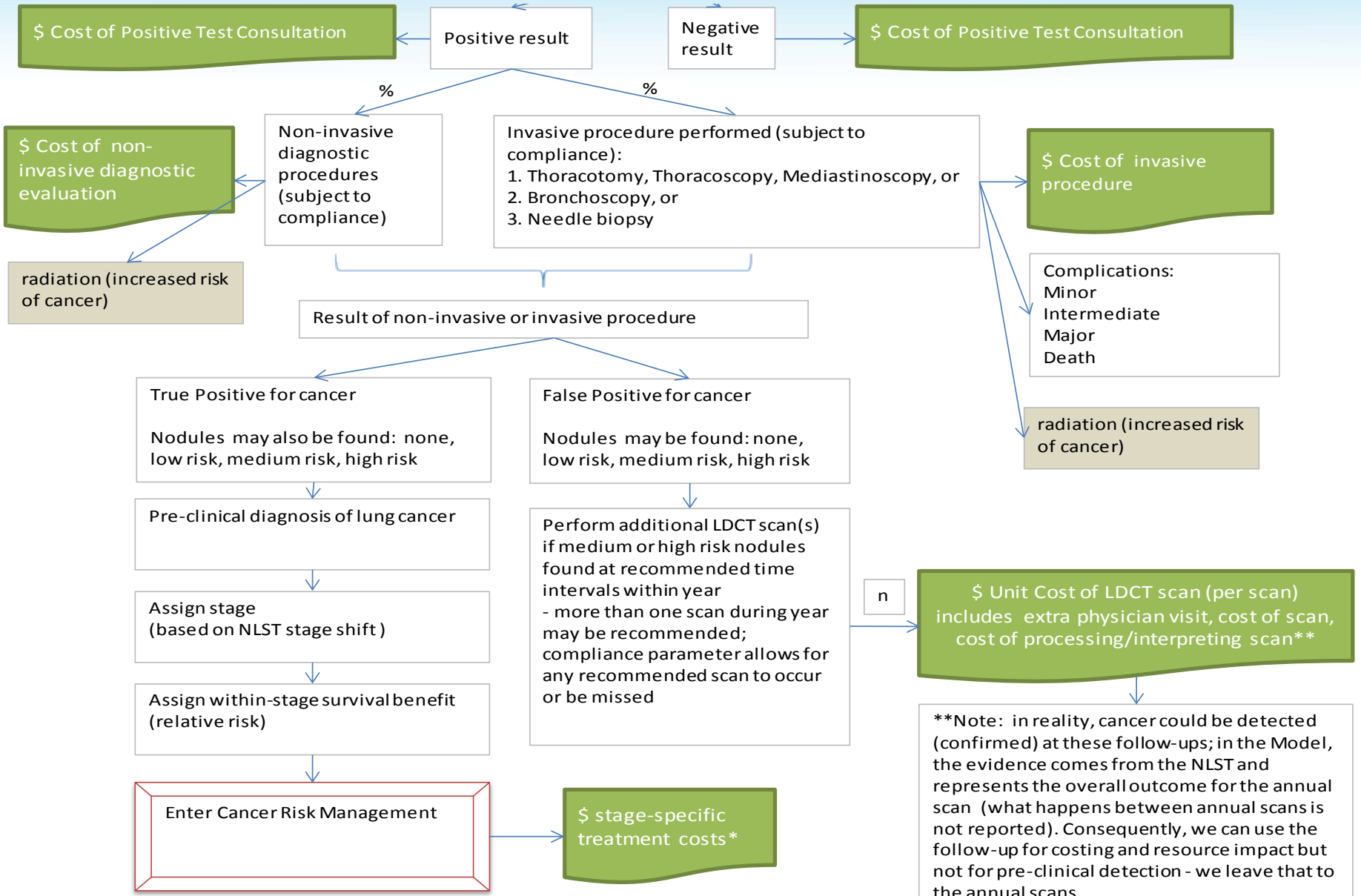
Methods

- Used OncoSim, a previously developed and validated Canadian model
- Parameterized for BC, and some updates
- Estimated outcomes of 22 alternative LDCT-based screening scenarios
  - Scenarios based on: frequency/number of screening rounds, concomitant smoking cessation, pre-/post-screening risk stratification
- Calculated incremental cost, quality-adjusted life years (QALYs), and cost-effectiveness ratios
- Time horizon: 20 years


Person
Eligible for LDCT screen? (age, year, smoking history)
NO
Possibly check again next year
YES
Invite to participate (participation rate)
$ Cost of recruitment (per eligible person)
Participant? (apply participation rate)
NO
Could re-invite later in x years
YES
Perform LDCT scan
$ Unit Cost of LDCT scan (per scan) includes extra physician visit, cost of scan, cost of processing/interpreting scan
$ Cost of Positive Test Consultation
Positive result
Negative result
$ Cost of Positive Test Consultation

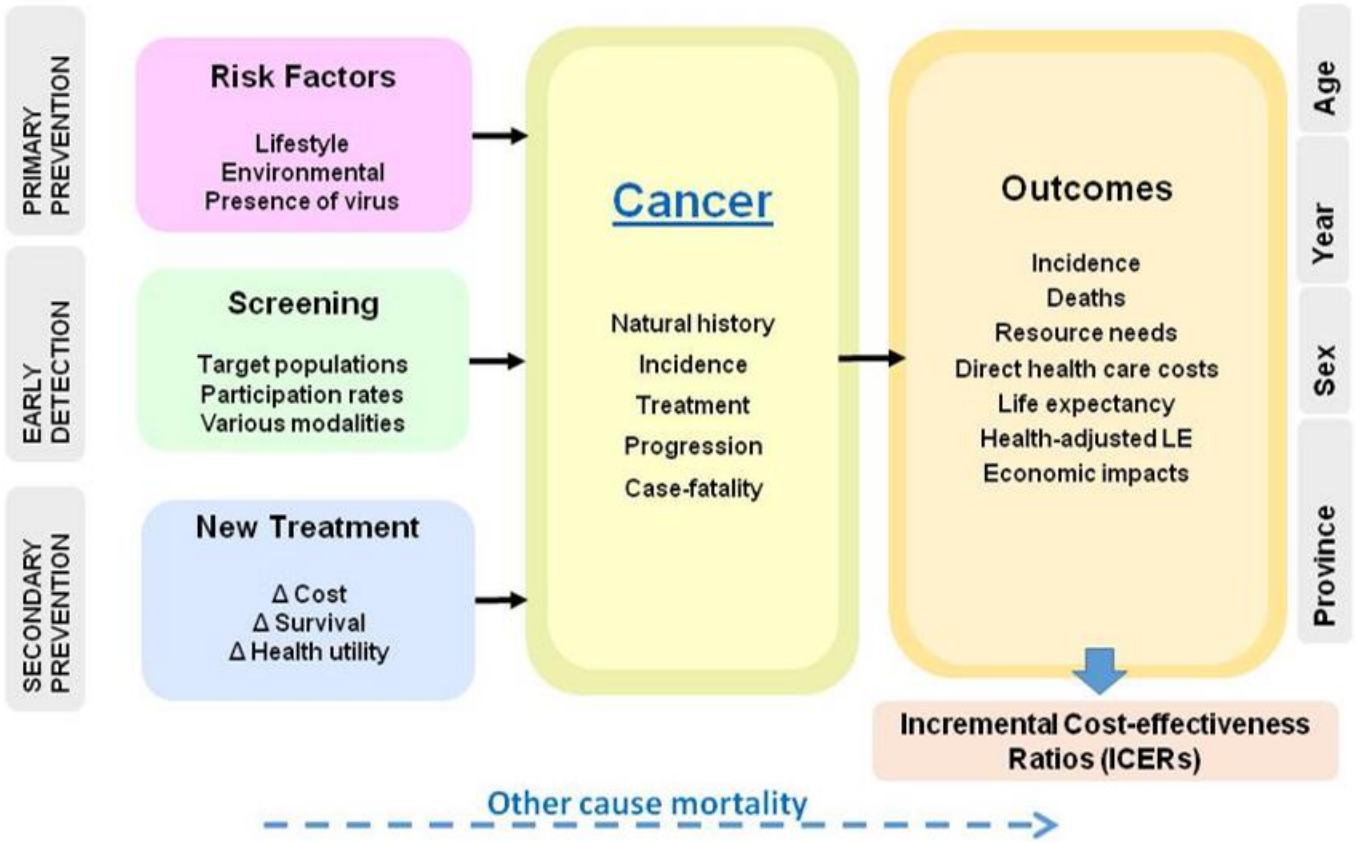

$ Cost of Positive Test Consultation
Positive result
Negative result
$ Cost of Positive Test Consultation
%
%
$ Cost of non-invasive diagnostic evaluation
Non-invasive diagnostic procedures (subject to compliance)
Invasive procedure performed (subject to compliance):
1. Thoracotomy, Thoracoscopy, Mediastinoscopy, or
2. Bronchoscopy, or
3. Needle biopsy
$ Cost of invasive procedure
radiation (increased risk of cancer)
Complications:
Minor
Intermediate
Major
Death
Result of non-invasive or invasive procedure
radiation (increased risk of cancer)
True Positive for cancer
Nodules may also be found: none, low risk, medium risk, high risk
False Positive for cancer
Nodules may be found: none, low risk, medium risk, high risk
Pre-clinical diagnosis of lung cancer
Assign stage
(based on NLST stage shift)
Assign within-stage survival benefit
(relative risk)
Perform additional LDCT scan(s) if medium or high risk nodules found at recommended time intervals within year
- more than one scan during year may be recommended;
compliance parameter allows for any recommended scan to occur or be missed
n
$ Unit Cost of LDCT scan (per scan) includes extra physician visit, cost of scan, cost of processing/interpreting scan**
**Note: in reality, cancer could be detected (confirmed) at these follow-ups; in the Model, the evidence comes from the NLST and represents the overall outcome for the annual scan (what happens between annual scans is not reported). Consequently, we can use the follow-up for costing and resource impact but not for pre-clinical detection - we leave that to the annual scans
Enter Cancer Risk Management
$ stage-specific treatment costs*

OncoSim

Formerly the Cancer Risk Management Model

Informing decisions in cancer control

CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER



OncoSim conceptual framework

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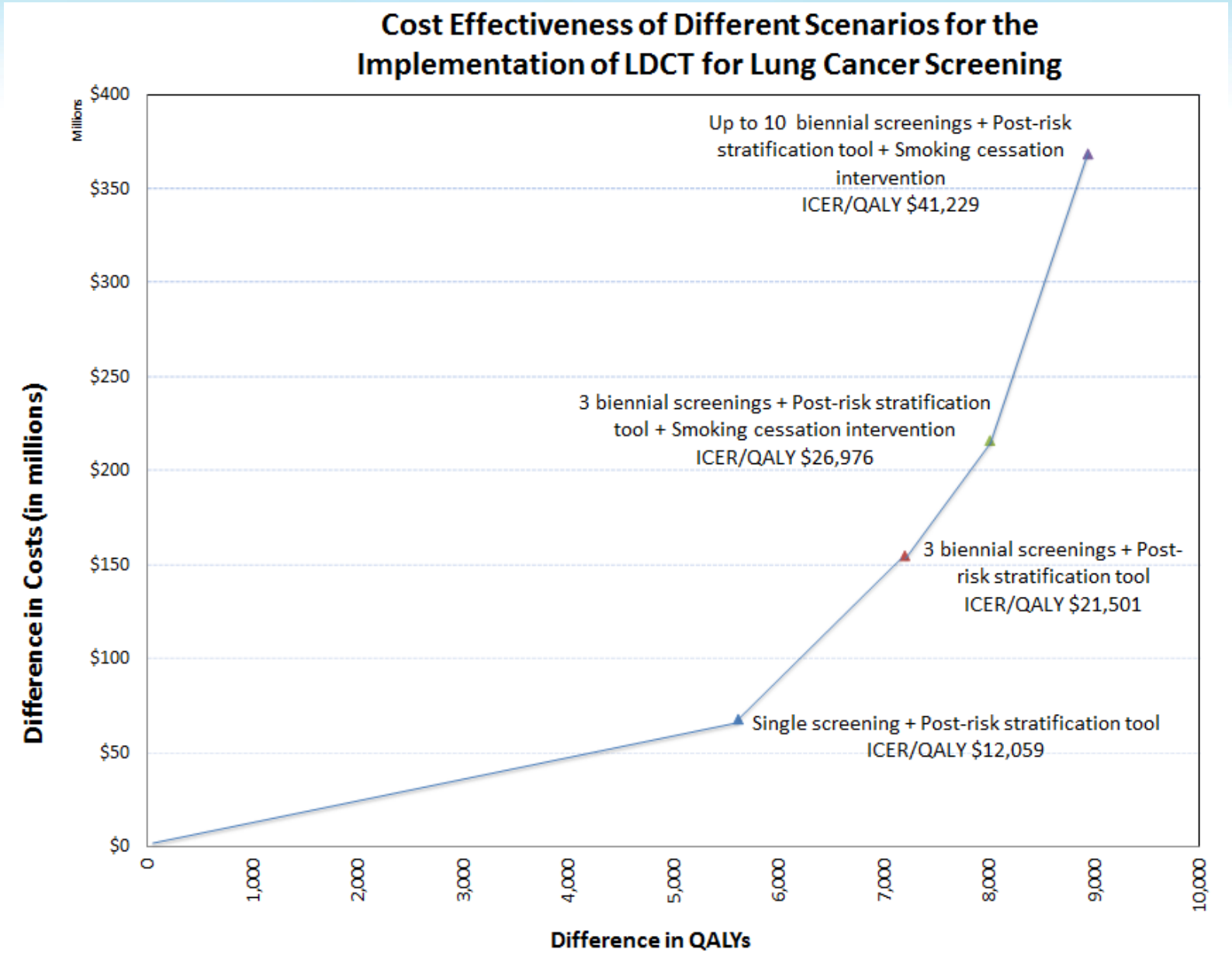

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In conclusion

- ***Decisions to adopt new technologies, or to change clinical pathways (including diagnostics), should be based on high quality evidence, synthesized as a pathway model***

- We encourage analysts to:
  - Use modelling to help identify/highlight inefficiencies in current care pathways
  - Adopt a broader analytic perspective to inform the efficient reconfiguration of clinical pathways
  - Move to working with 'reference' pathway models

- Model of choice:
  - OncoSim, developed by the Canadian Partnership Against Cancer
  - www.cancerview.ca/

stirling.bryan@ubc.ca

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CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

10 years OF PROGRESS

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Toronto, Ontario

Alberta Thoracic Oncology Program

Expediting Lung Cancer Diagnosis and Management for Patients with Suspected Lung Cancer

Nadine Strilchuk

April 7, 2017

I have no conflicts of interest associated with my presentation

Alberta Thoracic Oncology Program (ATOP)

Primary Goal:

*To **address time delays**:*

- *developed innovative approaches to expedite the detection, diagnosis, and speciality consultation for patients with suspected lung cancer.*

ATOP aims to improve the efficiency & accuracy of lung cancer diagnosis and treatment

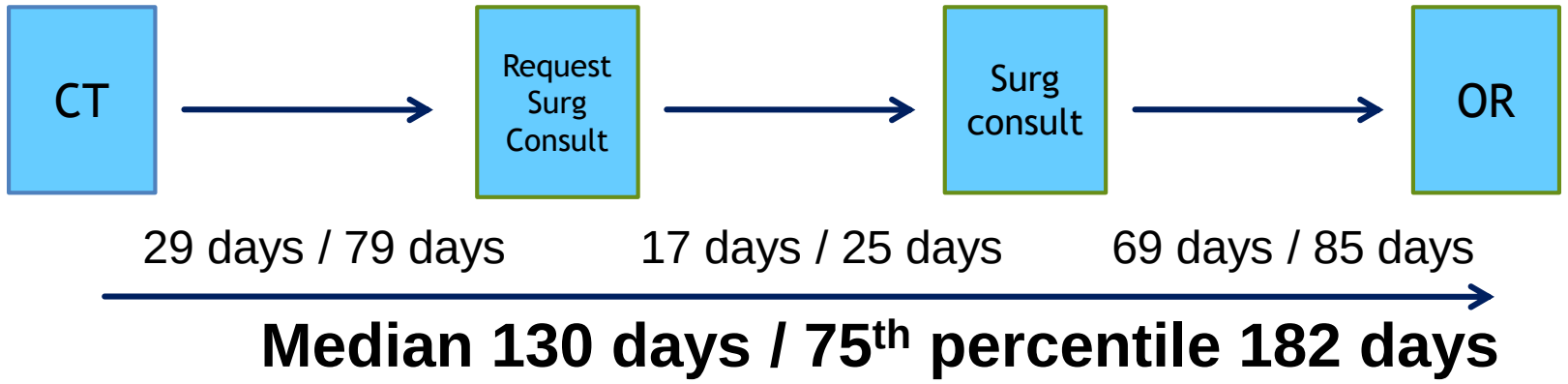
- **Coordination** of lung cancer diagnosis
  - Provincial development of rapid access clinics → ATOP
- **Timely access** to critical diagnostic tests
  - EBUS bronchoscopy, PET/CT, CT/US guided bx, sx staging

Cancer survival in Australia, Canada, Denmark, Norway, Sweden, and the UK, 1995–2007 (the International Cancer Benchmarking Partnership): an analysis of population-based cancer registry data

Lancet 2011; 377: 127–38

	Canada				
Lung cancer	Canadian registries	Alberta	British Columbia	Manitoba	Ontario
1 year					
1995–99	38·7%	36·4%	36·6%	41·7%	39·6%
2000–02	39·7%	36·3%	37·5%	44·1%	40·5%
2005–07	43·1%	41·5%	43·0%	42·7%	43·4%
5 years					
1995–99	15·7%	13·8%	13·9%	16·6%	16·6%
2000–02	15·9%	13·1%	14·0%	19·4%	16·7%
2005–07	18·4%	15·1%	17·7%	20·1%	19·1%

Alberta Lung Cancer Thoracic Surgery Timelines 2011



- International guidelines suggest target of 60 days from referral to surgery

Delays in Diagnosis

- **Reducing delays** between lung cancer **diagnosis to treatment**
  - may increase the number of **resectable** lung tumors and may ultimately improve prognosis (Salomaa, et. al., 2005).

- **Dx in late stage of lung cancer = poor prognosis**

Expediting Lung Cancer Diagnosis in Alberta

- NP led triage to ATOP
- Increase availability
  - PET CT scans
  - CT/US guided biopsy
- Radiology referral process
- SCM order set
- Development of a provincial database

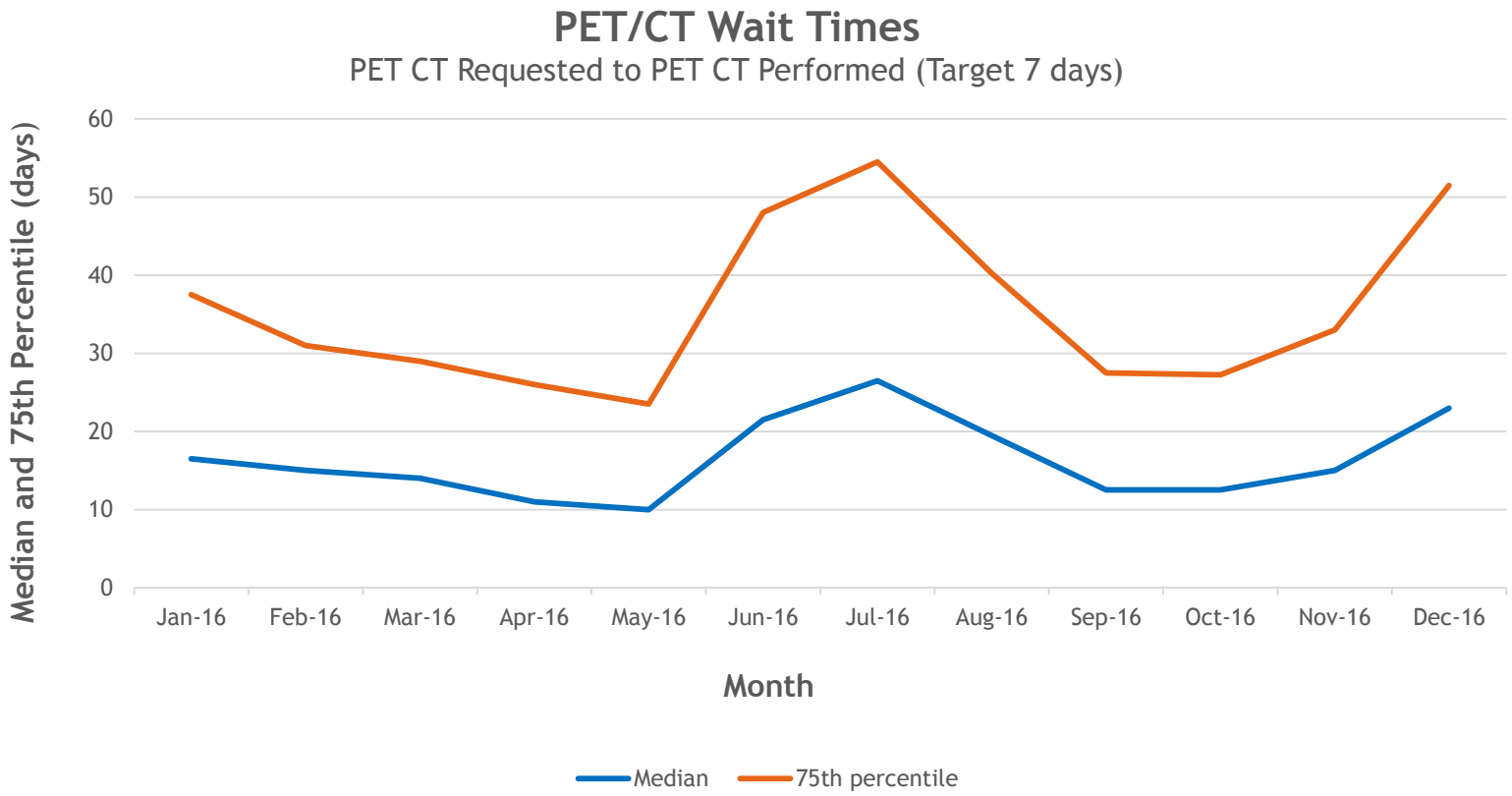
Diagnostic Imaging

PET/CT scans

- 2011 - evaluated delays in obtaining timely scans
- Limited access
  - 38% of Calgary surgical patient had a PET(62% did not!)
  - Median wait time was 40 days, (90th 65)[2]

- Problem:
  - One scanner/one shift/no local isotope
  - 500 additional scans required for lung cancer (only 300 scans possible/year).

Diagnostic Imaging: PET/CT Scan

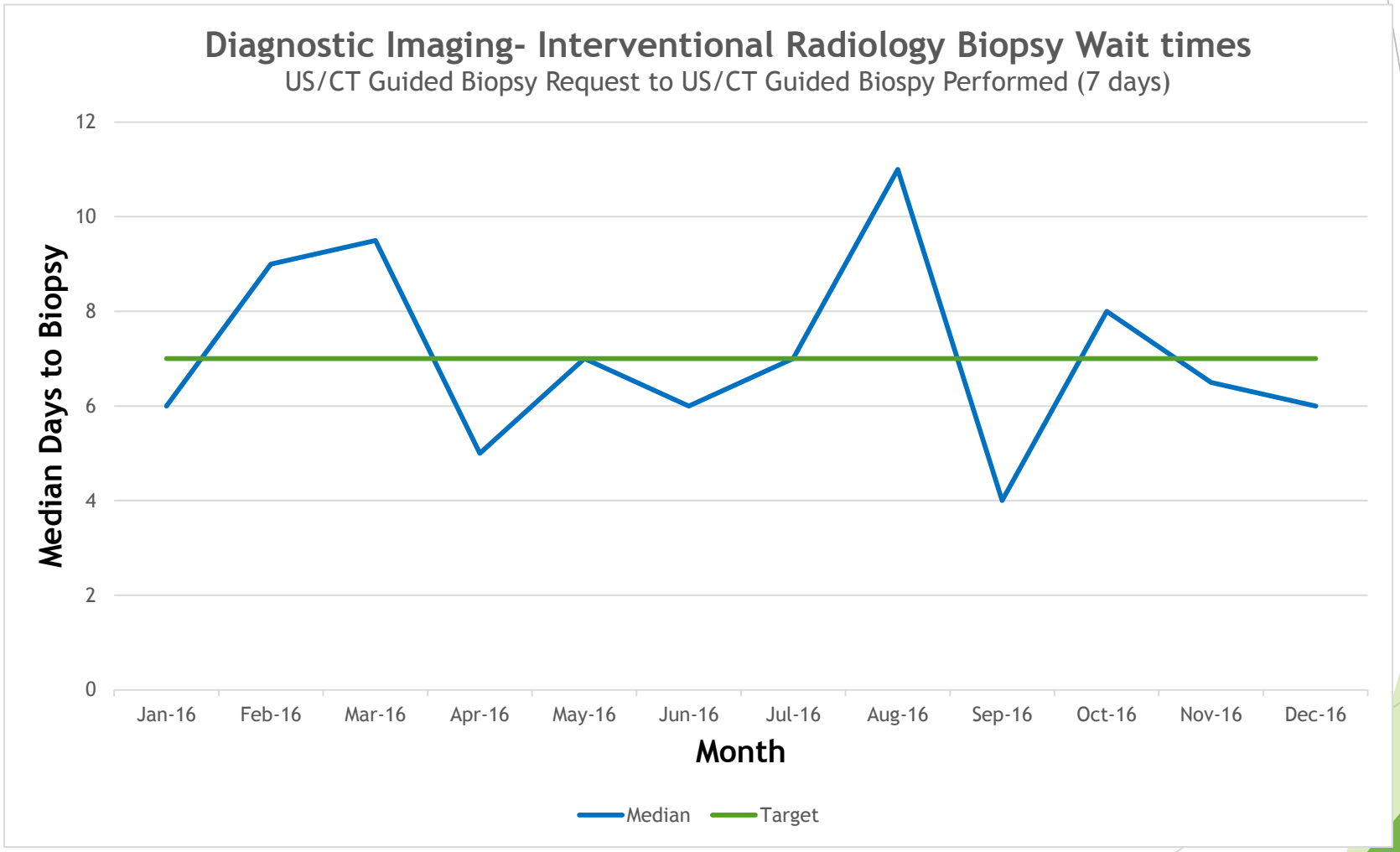


- Improvement from median of 40 days to < 20.
- Initially we had an additional shift added, now we have 2 PET scanners.
- Downtime for maintenance of cyclotron leads to increased wait times.

Diagnostic Imaging – IR Guided Biopsies

- CT/US guided biopsies
  - Significant delay in Calgary patients
  - Median 17 days / 90th P 23 days (2011)
- Primary choke point → unstaffed Day Surgery beds
  - Funded 0.4 nurse to recover patients post- biopsy.

Diagnostic Imaging: US/CT Guided Biopsies



Radiologist Initiated Specialty Referral for Patients Suspected of Having a Thoracic Malignancy

Alain Tremblay[1], MDCM, Nadine Strilchuk[1], NP, Niloofar Taghizadeh[1], DVM, Marc Fortin[1],MDCM, Paul Burrowes[2] MD, Laura Hampton[1], NP, Alex Chee[1] MD, Paul MacEachern[1]MD, Rommy Koetzler[1], MD-PhD, Sean McFadden[3] ,MD.

- CT to ATOP referral → too long.
  - ~ 35 days
- Radiologists are “first to know” of potential lung cancer
- Can we reduce the time interval from CT scan interpretation to referral?
- Reduce multiple points of delay

Radiologist Initiated Specialty Referral for Patients Suspected of Having a Thoracic Malignancy

Our study:

- Group 1: 75 patients in radiology referral group
- Group 2: 836 patients in standard referral group

The radiographic criteria for radiology initiated referrals:

- CT scan with non-calcified nodule > 8 mm without prior evidence of stability
- Growing nodule of any size
- Persistent (≥ 2 CTs) focal ground glass opacification
- Mediastinal mass or mediastinal adenopathy not typical for sarcoidosis.

Results: Radiologist Initiated Specialty Referral

Table 1. Subjects demographics and main results

	Radiology referral (n=75)	Standard referral (n=836)
Age, years, median (range)	70 (37-89)	66 (17-94)
CT –R, days, median (75-90th p)*	4 (8-13)	8 (19-37)
CT –A, days, median (75-90th p)*	14 (19-26.4)	20 (32-52.3)
CT –D, days, median (75-90th p)*	26 (40-63)	32 (48.8-71)

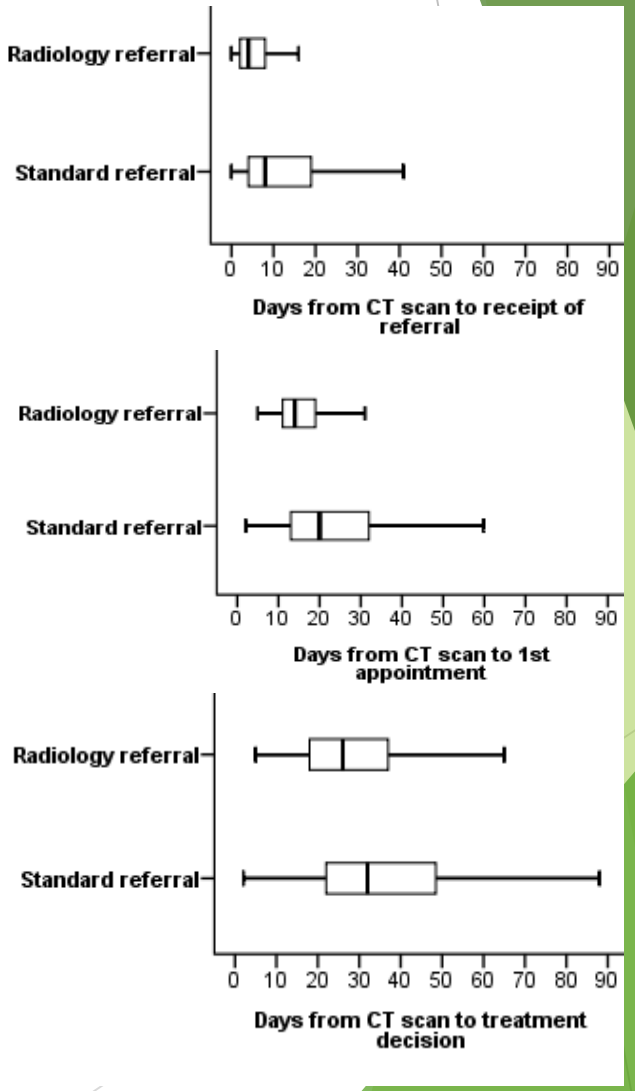
p represents percentile

CT-R: Time from CT scan to receipt of referral.

CT-A: Time from CT scan to 1st appointment

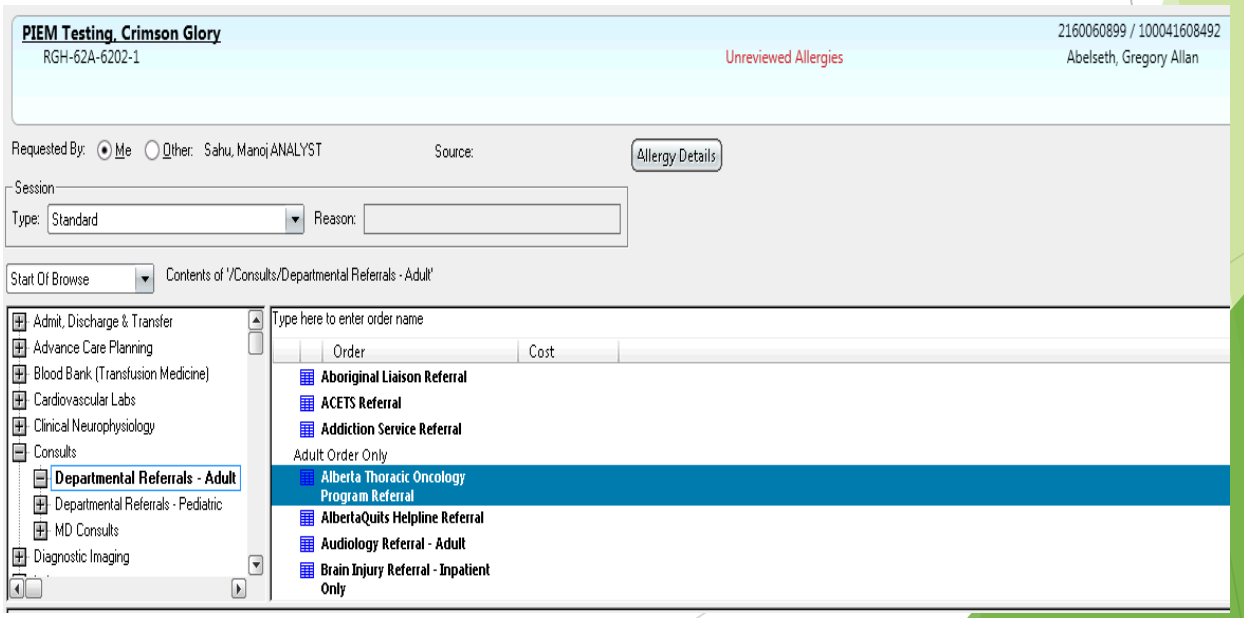
CT-D: Time from CT scan to treatment decision.

*p<0.05. Calculated by Mann-Whitney U test.



SCM (EMR) Process

- Ordering provider in ER or hospital → direct referral at discharge to ATOP
- Developed to address potential patients lost to follow-up
  - No family physician
  - Admitting for another non-malignancy related issue
- Rec'd in ATOP via fax



Take Home Message

We can expedite lung cancer diagnosis for patients:

- NP driven triage
- Timely access to dx investigations
  - PET and CT/US guided bx
- Patients seen sooner
  - a radiology driven referral process
- Novel use of Electronic Medical Record

Thank you!

Lung Cancer: High-level Clinical Pathway