CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

10 years OF PROGRESS

Economics of High-Quality Care

Chair: Dr. Terry Sullivan

Innovative Approaches to Optimal Cancer Care in Canada

April 7-8, 2017

The Westin Harbour Castle
Toronto, Ontario

ARCC
Canadian Centre
for Applied Research
in Cancer Control

McMaster University
McMaster HEALTH FORUM

BC Cancer Agency
CARE & RESEARCH
An agency of the Provincial Health Services Authority

Cancer Care Ontario
Action Cancer Ontario

SFU
SIMON FRASER UNIVERSITY
ENGAGING THE WORLD

a place of mind
UBC

UNIVERSITY OF TORONTO

Canadian Cancer Society
Société canadienne du cancer

Advancing Health Economics, Services, Policy and Ethics

SUSTAINABILITY AND FAIRNESS OF CANCER SYSTEMS IN CANADA

Stuart Peacock

Canadian Centre for Applied Research in Cancer Control (ARCC)

British Columbia Cancer Agency

Simon Fraser University

Overview

Sustainability and fairness in an era of
increasing demand and increasing costs

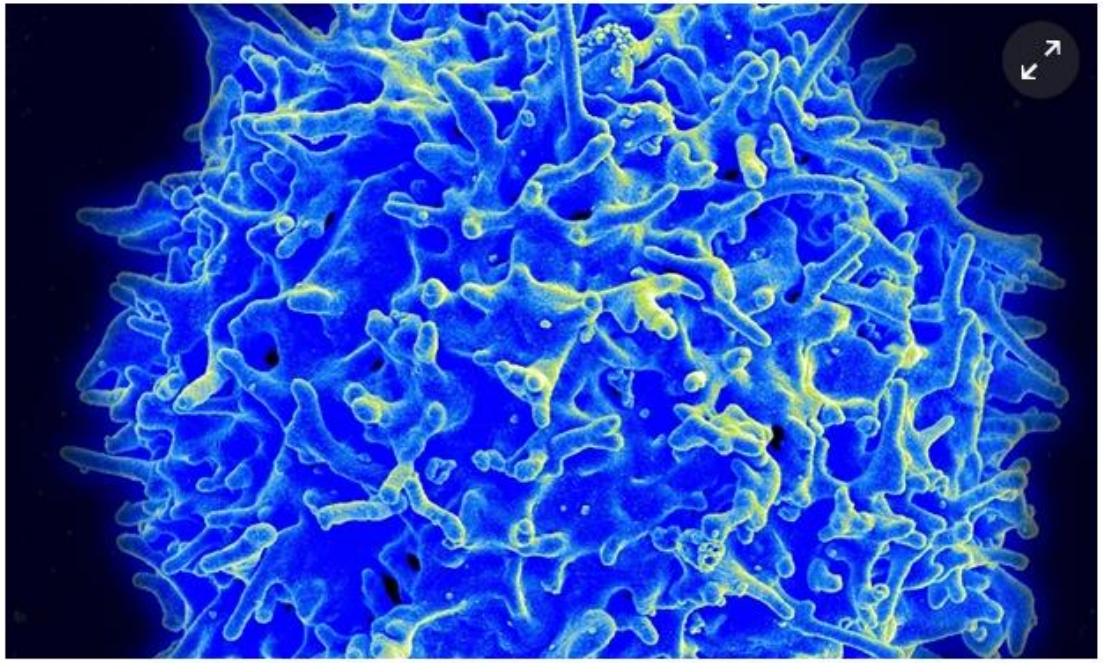
Examining evidence, trade-offs and public values
using deliberative public engagement

theguardian

ipilimumab &
nivolumab

Immunotherapy: the big new hope for cancer treatment

Analysis: A combination therapy – helping the body's own defences fight cancer cells – has shown impressive results for terminally ill melanoma patients

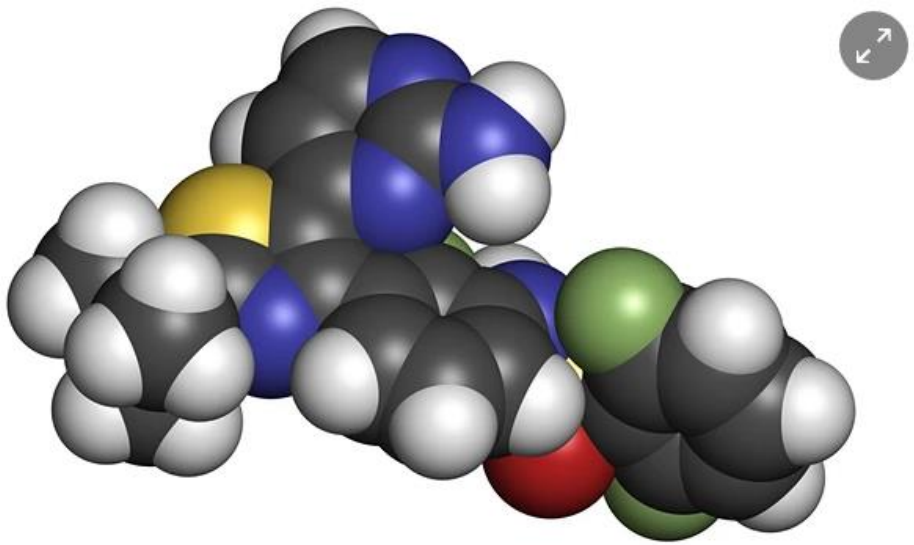


A human T-cell. The body's defences usually attack viruses; immunotherapy helps the T-cells to treat cancer cells in the same way. Photograph: Alamy

theguardian

Cancer breakthroughs trigger big pharma interest in drugs and deals

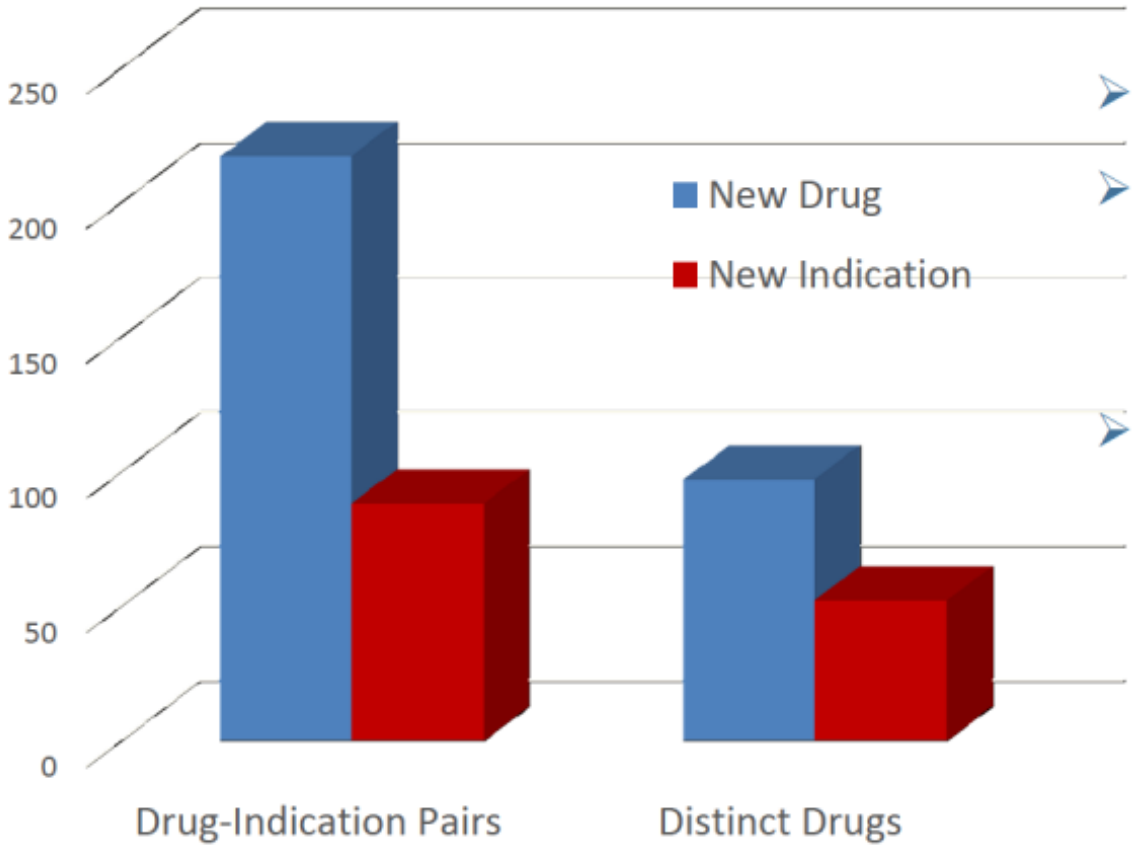
Companies are scrambling to get into the immunotherapy market, which experts think could eventually be worth up to £26bn a year in sales



Chemical structure of the dabrafenib melanoma cancer drug. Photograph: Alamy

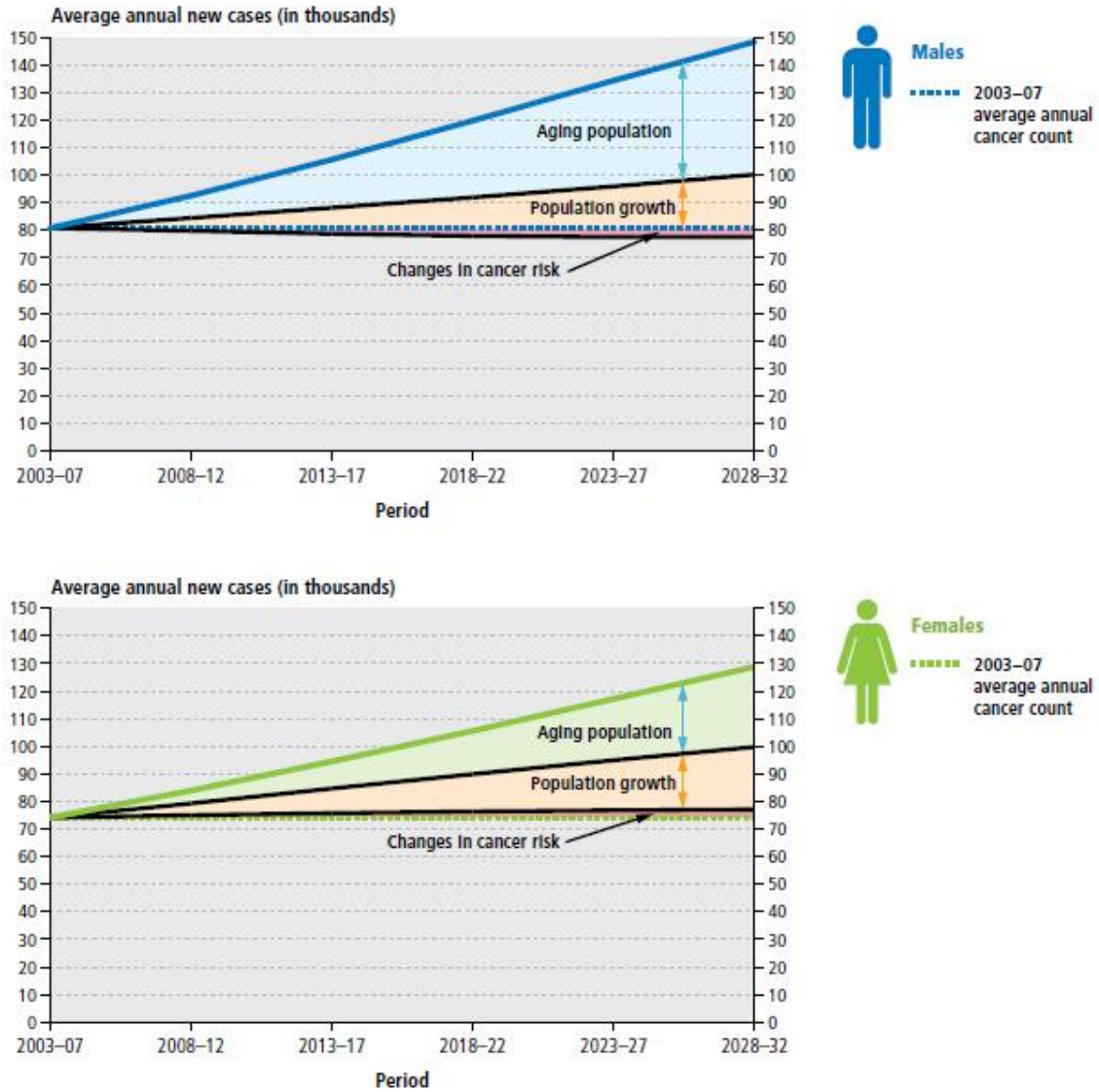
The new generation of drugs hailed as a once-in-a-generation advance in treatment for cancer patients is also viewed as good news for the pharmaceutical industry – just when analysts had started to voice concerns that the pipeline of blockbuster treatments in development was starting to run dry.

Overview of Current Pipeline Drugs Tracked by pCODR



- 32 manufacturers
- 149 distinct drugs
  - 97 new molecular entities
  - 52 pre-existing drugs
- 305 drug-indication pairs
  - 217 new molecular entities
  - 88 new indications for pre-existing drugs

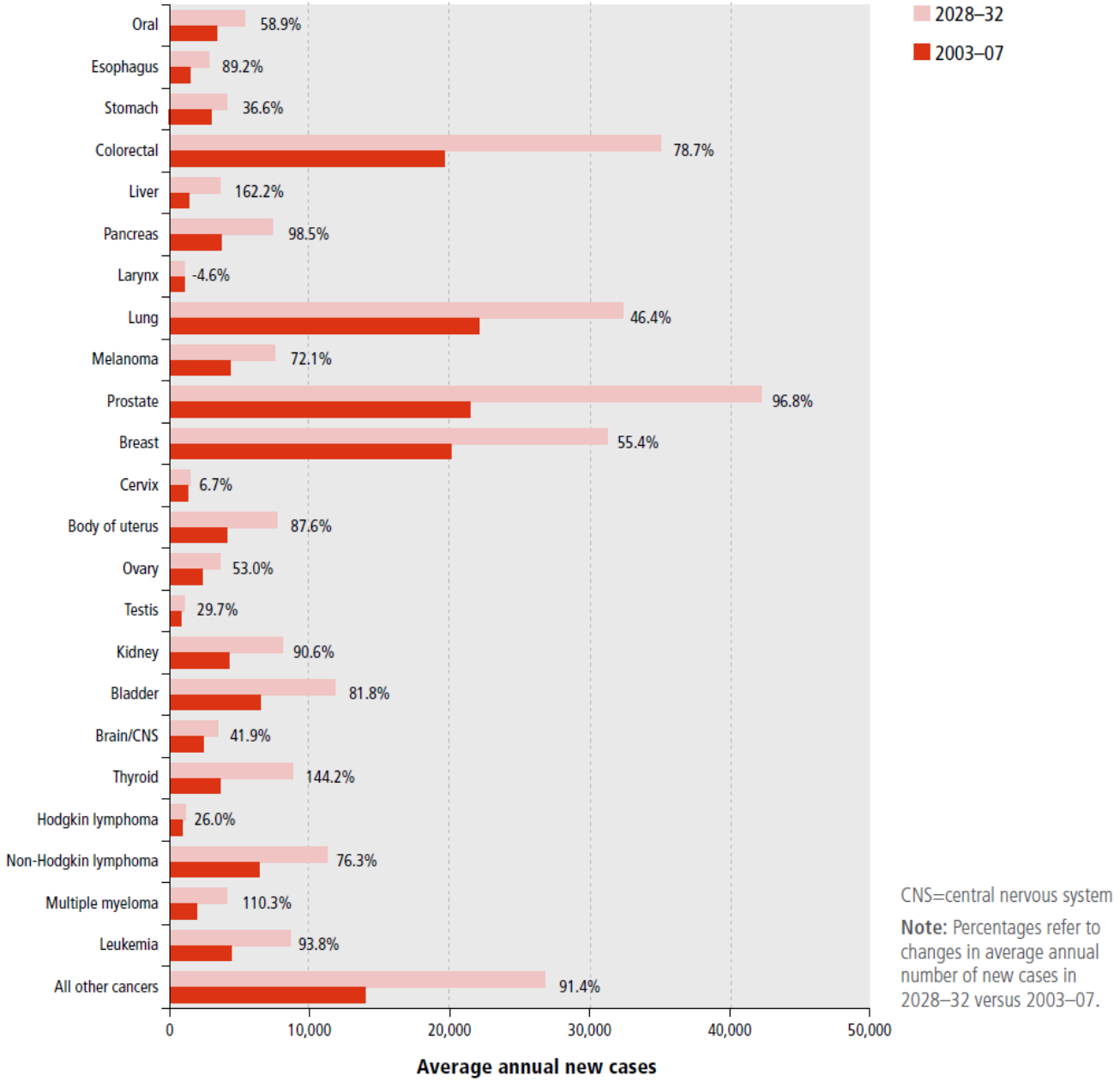
FIGURE 7.4 Trends in average annual new cases for all cancers and ages, attributed to changes in cancer risk, population growth, and aging population, Canada, 2003–2032



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

Canadian Cancer Statistics 2015

FIGURE 7.5 Average annual new cases by cancer type and percentage change, Canada, 2028–32 versus 2003–07



CNS=central nervous system

Note: Percentages refer to changes in average annual number of new cases in 2028–32 versus 2003–07.

Canadian Cancer Statistics 2015

Population projections for BC

- The BC population is both growing and aging
- Cancer rates are **highest** in the seniors population (Age ≥ 65) and this population is growing fast in BC

	Population Increase 2011 to 2027	% Increase in Population
Non-seniors (Age < 65)	+ ~400,000	+10%
Seniors (Age ≥ 65)	+ ~500,000	+72%

Projected Cancer Incidence to 2027

Cancer Site	Observed # of Cases 2011	Projected # of Cases 2027	% Increase
Breast (female)	3467	4659	34
Prostate	3397	4939	45
Colorectal	2912	3994	37
Lung	2842	3664	29
Lymphoma/Leukemia	1730	2411	39
Melanoma	1001	2137	113
Other GI	1543	2107	37
All Other Cancers	6937	10755	55
All Cancers	23829	34666	45

Other GI = Liver, Pancreas, Stomach and Esophagus

National Health Expenditure Trends, 1975 to 2015

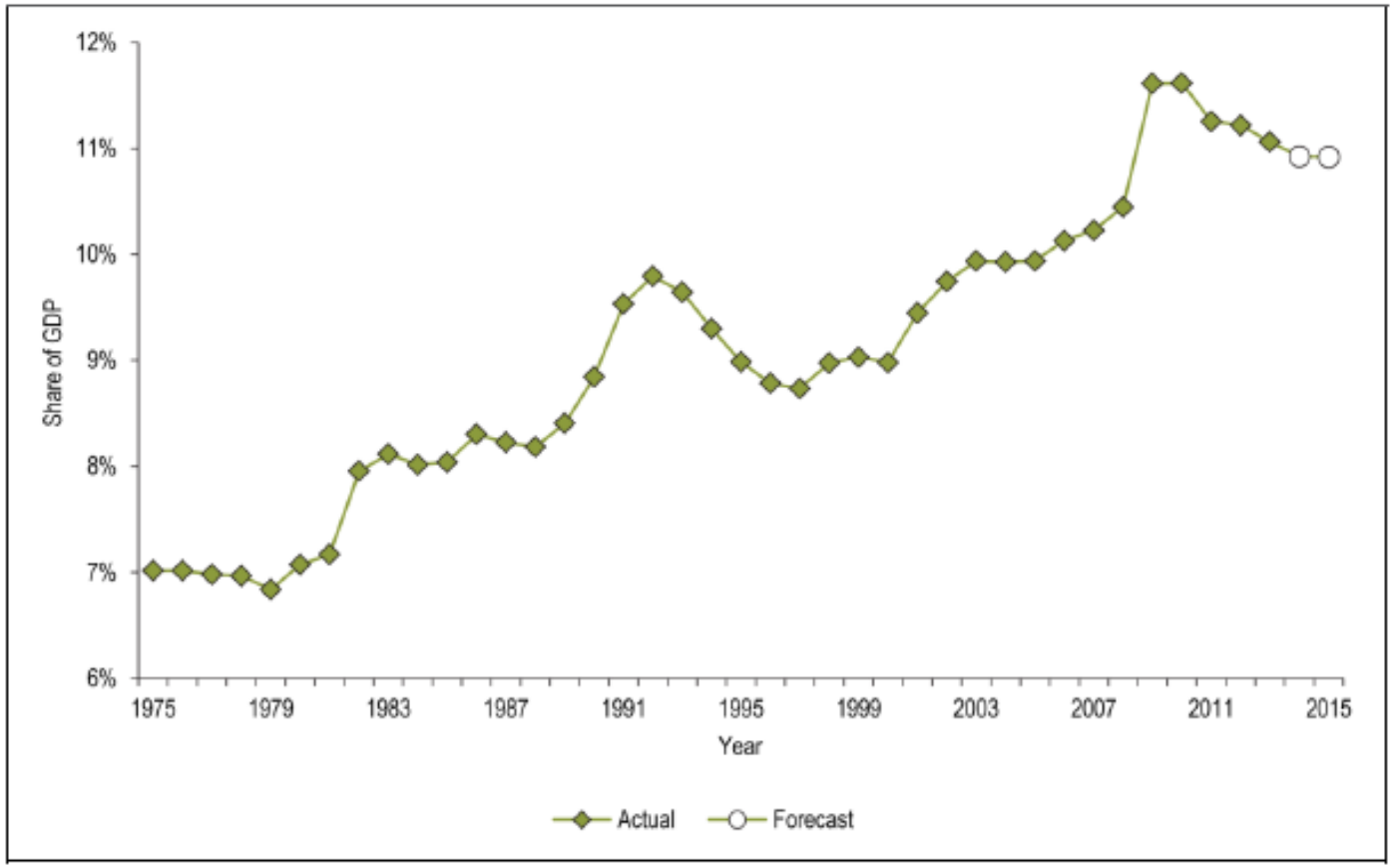
Report

October 2015

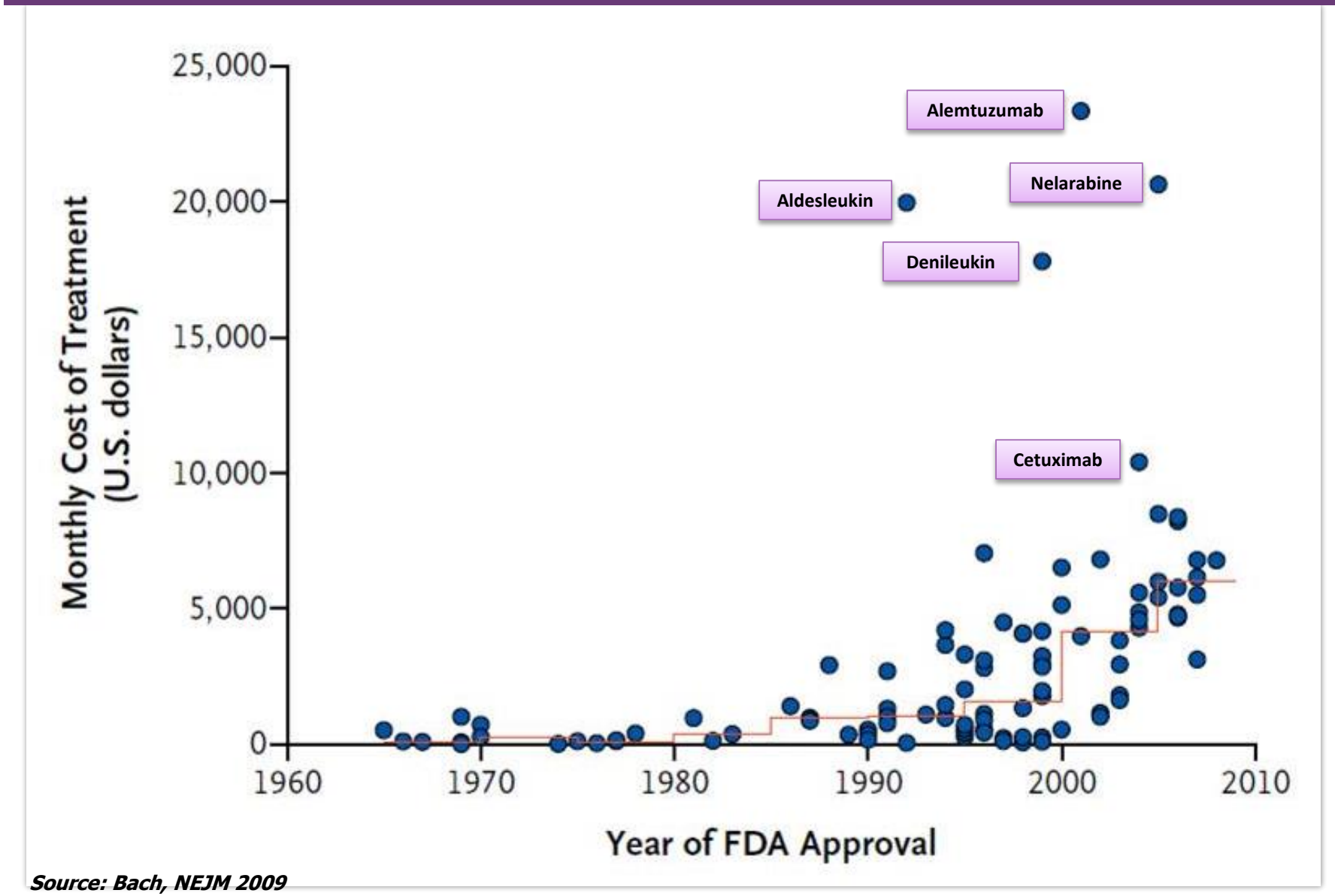
Canadian Institute for Health Information

Institut canadien d'information sur la santé

Figure 1: Total health expenditure as a percentage of GDP, Canada, 1975 to 2015

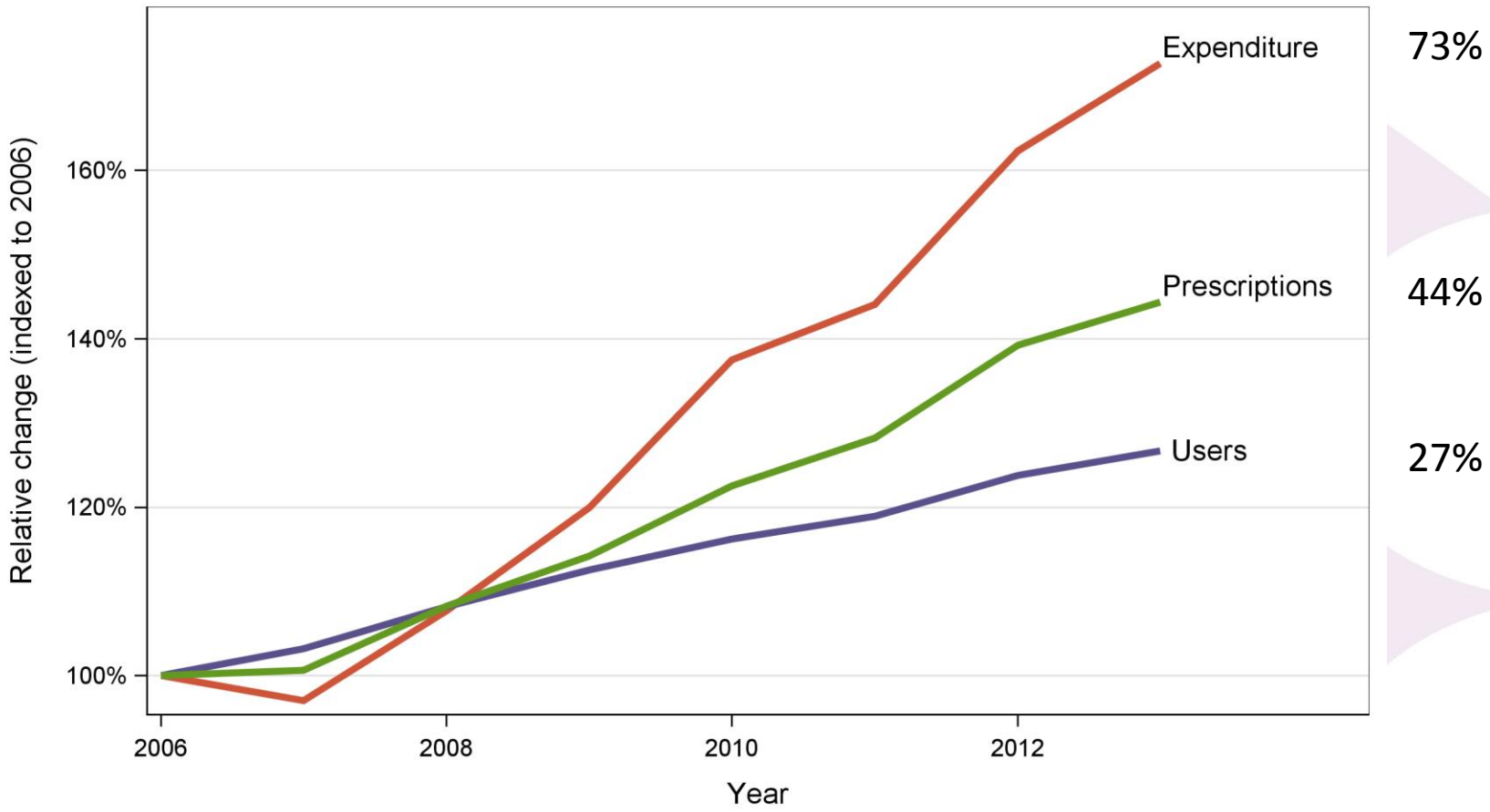


Monthly and median costs of FDA approved cancer drugs (2007 US$)

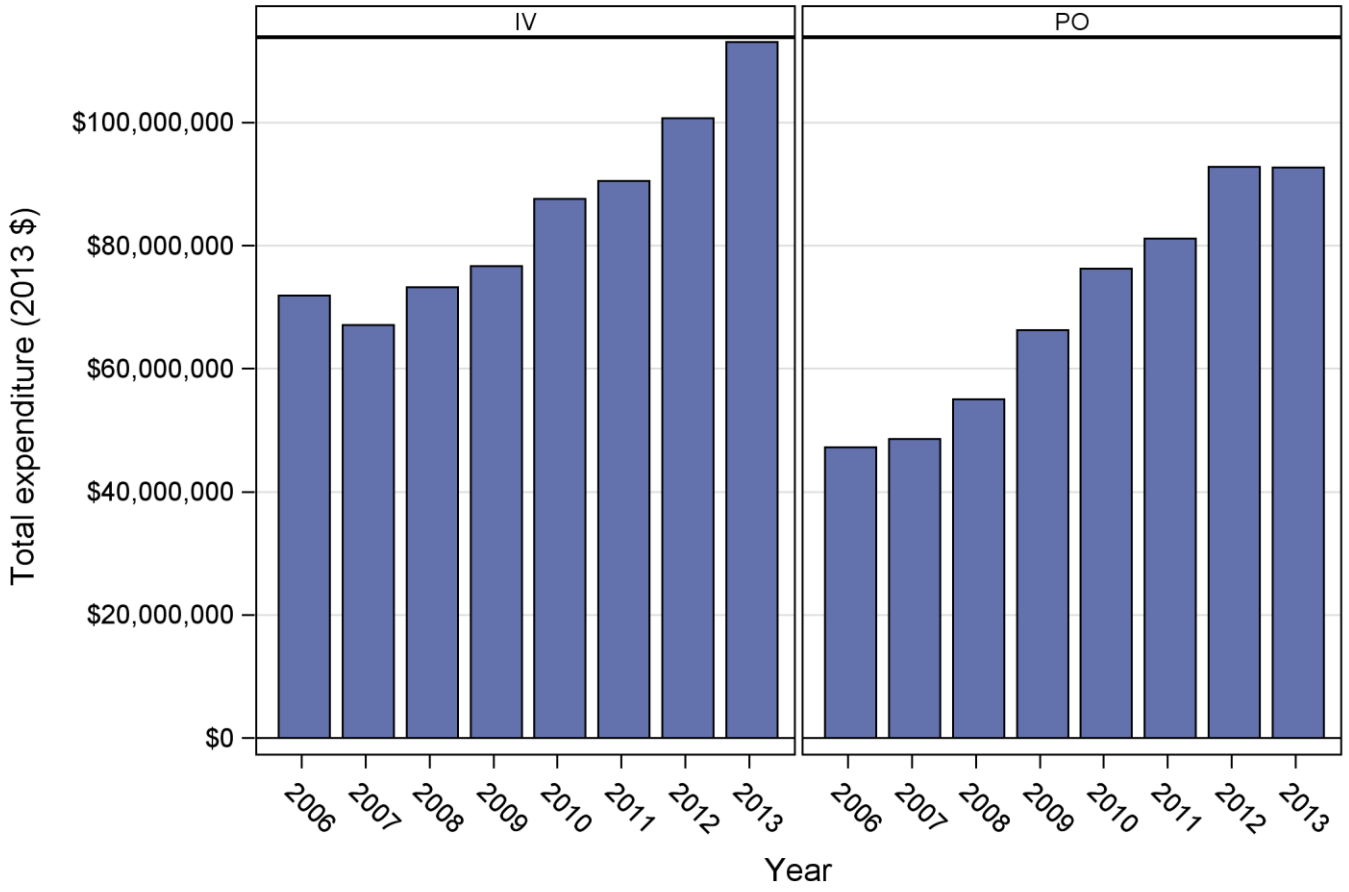


Source: Bach, NEJM 2009

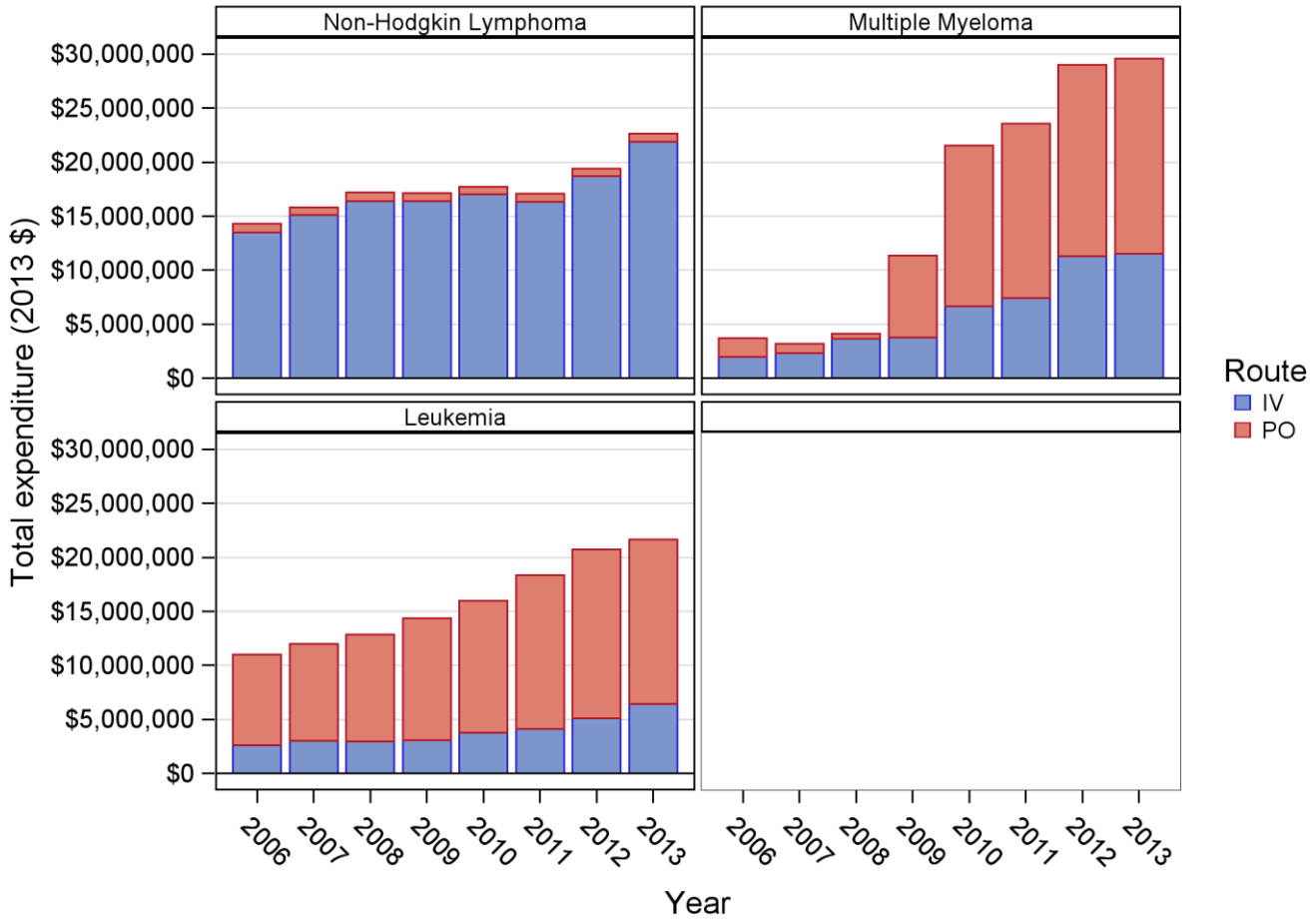
Growth in BC since 2006



Expenditure by route of administration

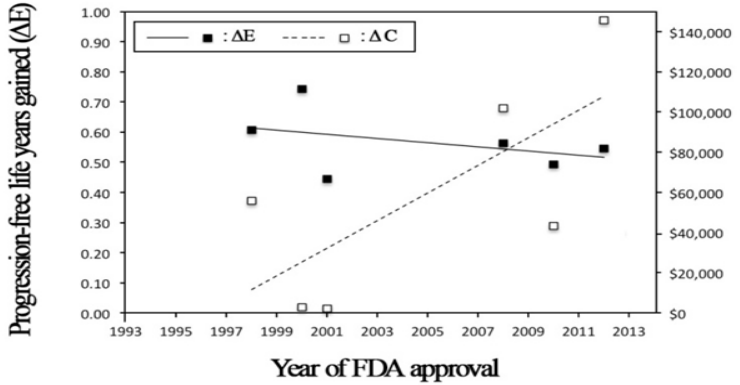


Total expenditure by site

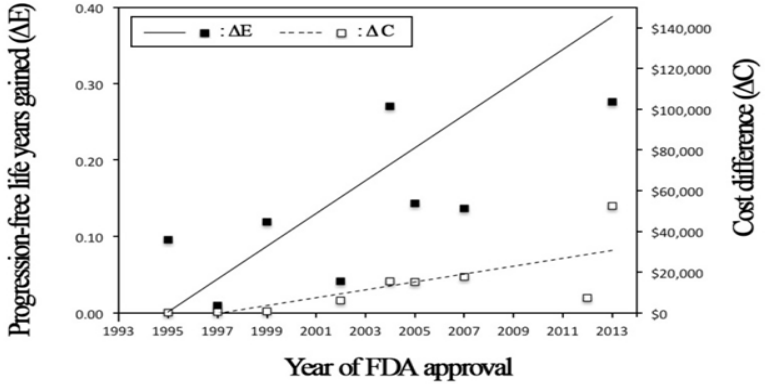


Breast

A.

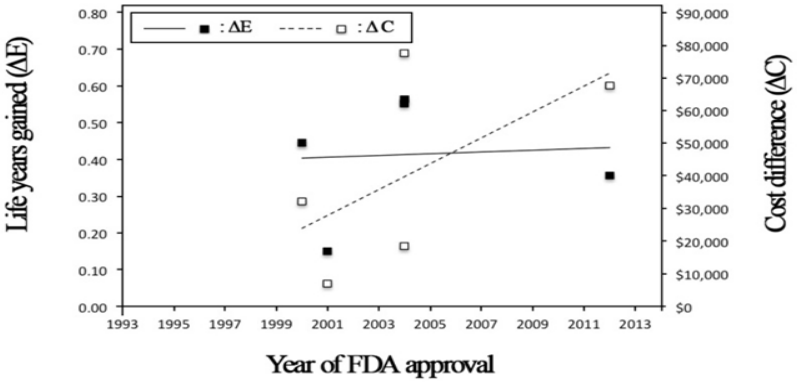


B.

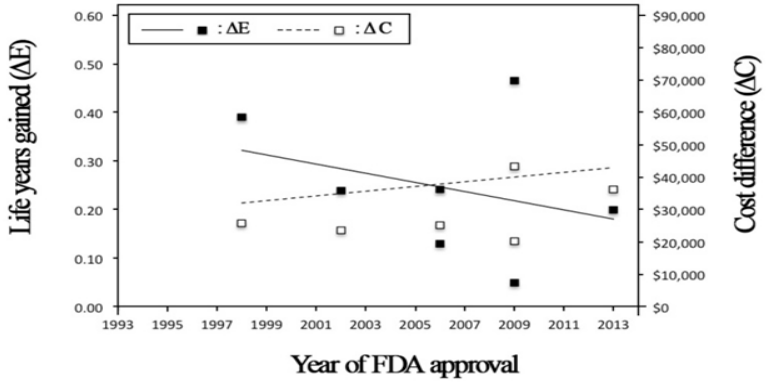


Colorectal

C.

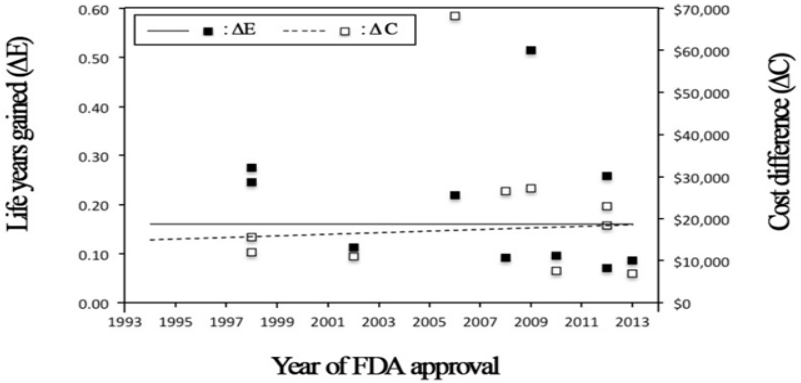


D.

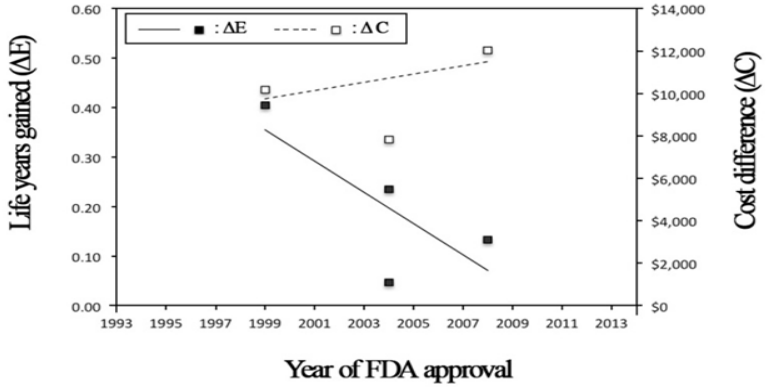


Lung

E.



F.



MORE TAKE-HOME TREATMENTS IN PIPELINE FOR MELANOMA

IT'S TIME FOR TAKE-HOME MEDS TO BE FULLY FUNDED

TAKE ACTION FOR CHANGE

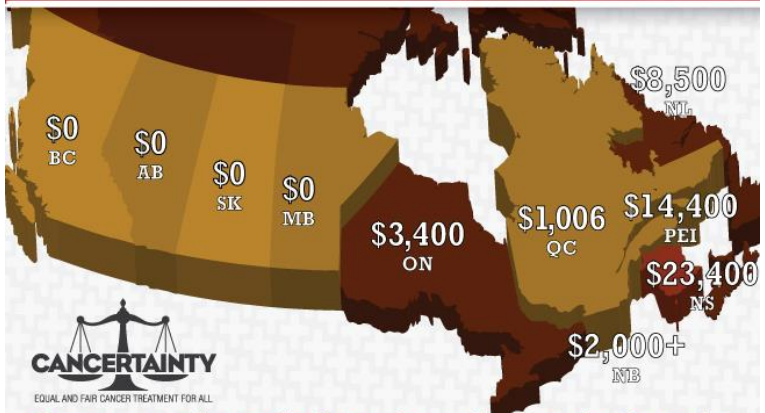
www.cancertaintyforall.ca

CANCERTAINTY
EQUAL AND FAIR CANCER TREATMENT FOR ALL

Source: https://www.cadth.ca/sites/default/files/pcodr/Communications/pCODR-CCAN_HTA_Pipeline.pdf
Not all drugs being investigated for new uses will receive Health Canada approval or be recommended for reimbursement.

ONTARIO & ATLANTIC PROVINCES ARE LETTING CANCER PATIENTS DOWN

It's Time to Level Up.



Cancer patients in Ontario and Atlantic Canada face administrative hurdles, out-of-pocket costs and delays for their take-home cancer drugs.

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CANCER IS CANCER.
TREATMENT IS TREATMENT.
WHEREVER IN CANADA YOU LIVE.
WWW.CANCERTAINTYFORALL.CA

ASSUMPTIONS

1. Based on total household income of $120,000 ($85,000 net).
2. Oral cancer medication costing $6,000 per month for 12 months.
3. No private insurance.

SOURCES

http://www.health.gov.on.ca/en/public/programs/drugs/programs/odb/opdp_trillium.aspx
http://www.ramq.gouv.qc.ca/en/citizens/prescription-drug-insurance/Pages/amount-to-pay-prescription-drugs.aspx
NS Family Pharmacare Calculator: http://novascotia.ca/dhw/pharmacare/family-calculator.asp
NS Family Pharmacare Deductible must be paid in FULL before patients start to pay "only" the copay amount of 20% per prescription.
NLPD Assurance Plan via http://www.parl.gc.ca/Content/LOP/ResearchPublications/prb0906-e.htm
New Brunswick Drug Plan Premium: http://www2.gnb.ca/content/gnb/en/departments/health/MedicarePrescriptionDrugPlan/NBDrugPlan/Premiums.html
http://healthpei.ca/catastrophic

“ The rate of introduction of new and expensive drugs has accelerated; the pace of conversion to generics is slowing; the prices of many generics are rising; and expensive drugs are now being introduced for conditions that affect millions of people rather than thousands.”

Peter Bach, NEJM 373; 19: 2015

Value Frameworks

VOLUME 33 · NUMBER 23 · AUGUST 10 2015

JOURNAL OF CLINICAL ONCOLOGY

ASCO SPECIAL ARTICLE

American Society of Clinical Oncology Statement: A Conceptual Framework to Assess the Value of Cancer Treatment Options

Lowell E. Schnipper, Nancy E. Davidson, Dana S. Wollins, Courtney Tyne, Douglas W. Blayney, Diane Blum, Adam P. Dicker, Patricia A. Ganz, J. Russell Hoverman, Robert Langdon, Gary H. Lyman, Neal J. Meropol, Therese Mulvey, Lee Newcomer, Jeffrey Peppercorn, Blase Polite, Derek Raghavan, Gregory Rossi, Leonard Saltz, Deborah Schrag, Thomas J. Smith, Peter P. Yu, Clifford A. Hudis, and Richard L. Schilsky

Value Frameworks

Annals of Oncology

special articles

Annals of Oncology 26: 1547–1573, 2015
doi:10.1093/annonc/mdv249
Published online 30 May 2015

A standardised, generic, validated approach to stratify the magnitude of clinical benefit that can be anticipated from anti-cancer therapies: the European Society for Medical Oncology Magnitude of Clinical Benefit Scale (ESMO-MCBS)

N. I. Cherny[1*], R. Sullivan[2], U. Dafni[3], J. M. Kerst[4], A. Sobrero[5], C. Zielinski[6], E. G. E. de Vries[7] & M. J. Piccart[8,9]

[1]Cancer Pain and Palliative Medicine Service, Department of Medical Oncology, Shaare Zedek Medical Center, Jerusalem, Israel; [2]Kings Health Partners Integrated Cancer Centre, King's College London, Institute of Cancer Policy, London, UK; [3]University of Athens and Frontiers of Science Foundation-Hellas, Athens, Greece; [4]Department of Medical Oncology, Antoni van Leeuwenhoek Hospital; [5]Department of Medical Oncology, IRCCS San Martino IST, Genova, Italy; [6]Division of Oncology, Medical University Vienna, Vienna, Austria; [7]Department of Medical Oncology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands; [8]Jules Bordet Institute, UniversitéLibre de Bruxelles, Brussels, Belgium; [9]Netherlands Cancer Institute, Amsterdam, The Netherlands

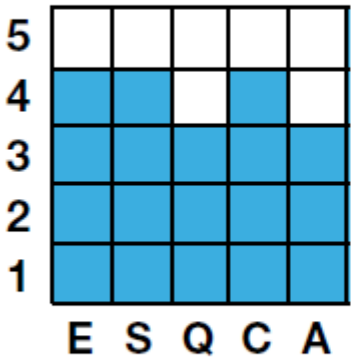
Value Frameworks

ICER
INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW

Value Frameworks

NCCN Evidence Blocks™

NCCN EVIDENCE BLOCKS CATEGORIES AND DEFINITIONS



E = Efficacy of Regimen/Agent
S = Safety of Regimen/Agent
Q = Quality of Evidence
C = Consistency of Evidence
A = Affordability of Regimen/Agent

For more information see NCCN Evidence Blocks™ User Guide >>>

“If we are ever going to get the ‘optimum’ results from our national expenditure on the NHS we must finally be able to express the results in the form of the benefit and the cost to the population of a particular type of activity, and the increased benefit that would be obtained if more money were made available.”

Cochrane AL. Effectiveness and Efficiency: random reflections on health services. Nuffield Provincial Hospitals Trust, London, 1972.

Deliberative Public Engagement

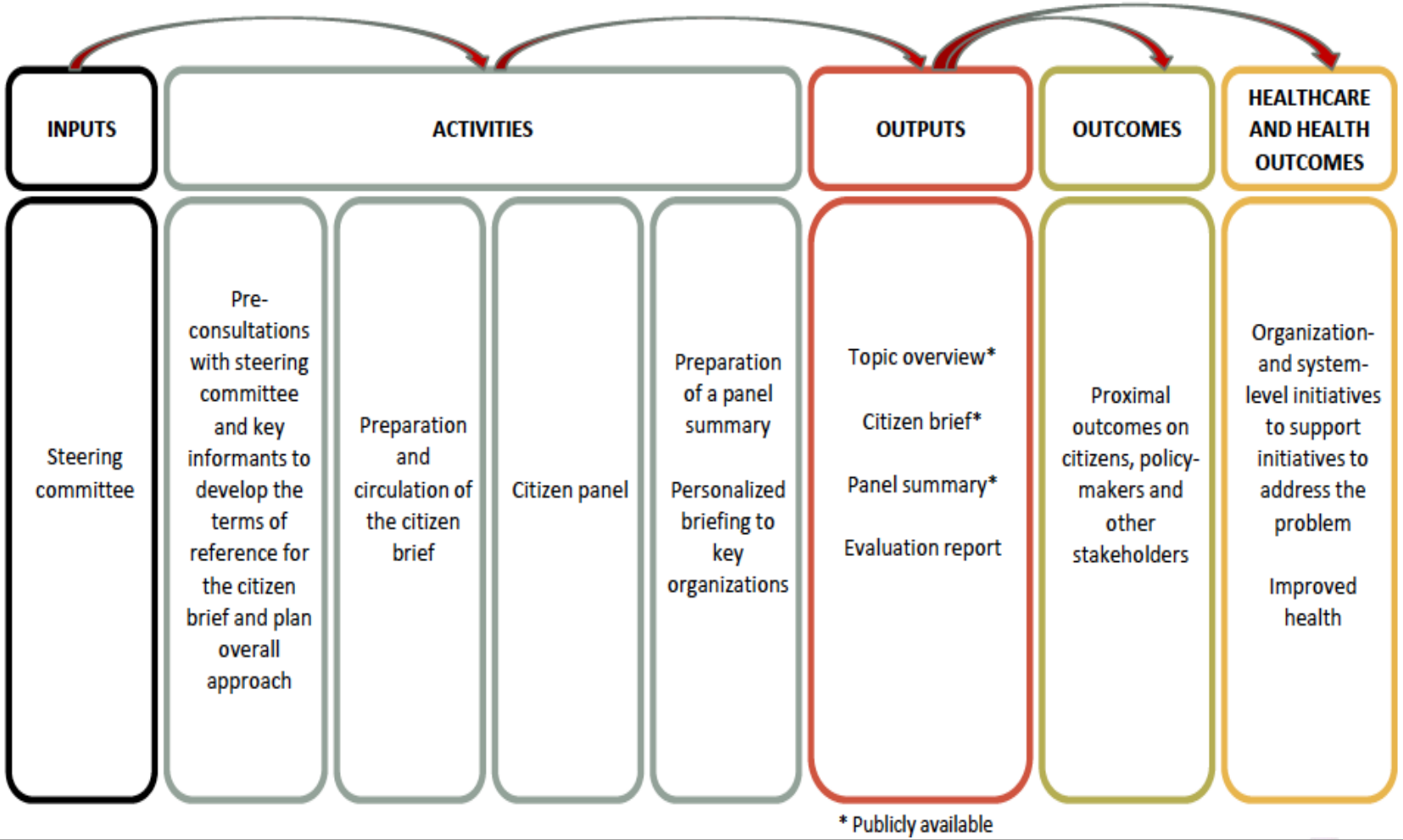
Pan-Canadian Public Engagement

- Initial Public Engagement Event: BC, September 2014
- CPAC RFP: “development of a pan-Canadian framework of public values and priorities for integration into cancer drug funding decision-making”
- 2-day deliberative public engagement events in four provinces (SK, ON, QC, NS) (Apr – June 2016)
- Pan-Canadian event (Oct 2016)
- Analysis, reporting and dissemination (Nov 2016 – May 2017)
- ARCC, McMaster Health Forum collaboration

Pan-Canadian Public Engagement

- Objectives:
  - to generate guidance and recommendations from deliberative public engagement to inform cancer drug funding decisions within different provincial jurisdictions
  - to identify common guidance across provinces
  - to explicitly address trade-offs (costs, interests) to determine what trade-offs are publically acceptable

Deliberation



Value for money

- Participants accepted the principle of resource scarcity, and decisions to fund new cancer drugs should be based on whether a drug can be shown to be good value for money
- Significant increases in spending on a drug should result in a significant benefit in return
- Participants did not support drugs offering a modest extension of life if a patient's quality of life is poor

Disinvestment

- Participants accepted the principle of disinvestment
- There is an obligation to continue to fund a cancer drug if discontinued funding would have a negative impact on populations in rural communities and others with limited access
- There is an obligation to continue to fund a cancer drug if it is significantly easier to use compared to other drugs or treatments (e.g. oral vs. IV)
- Fairness and equity are important principles

Trustworthiness and Governance

- There is a need for transparency around how drug funding decisions are made, what stakeholders are involved, and possible conflicts of interest
- There is a need for an independent body that would oversee and review drug funding decisions and involve a variety of people without political motivations
- Participants were concerned about patronage and the influence of pharmaceutical companies

Conclusions

- The public accepts budgetary limits, the need for trade-offs, and using cost to compare items across contexts; no one said “fund everything”
- The public wants high returns on investment, decision-makers should negotiate with pharmaceutical companies on costly oncology drugs
- Participants refuted concerns in the literature that the public is not objective enough to participate meaningfully in policy-type discussions

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Thank You

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Public Health England

Protecting and improving the nation's health

The promise and limitation of tracking real world evidence in cancer chemotherapy – a UK perspective

Michael Wallington
National Cancer Registration and Analysis Service
Public Health England

The promise and limitation of tracking real world evidence in cancer chemotherapy – a UK perspective

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National Cancer Registration and Analysis Service

Public Health England

Outline

Promise and limitation of tracking real world evidence in cancer chemotherapy

Pricing and procurement considerations

Background

Chemotherapy expenditure in NHS England

UK Parliament allocates £120bn to Department of Health

DH allocates £107bn to NHS England

+ £5bn to Health Education England, £4bn to Local Authorities, £1bn to PHE, CQC etc.

£72bn to CCGs, £13bn to primary care

£16bn to Specialised Commissioning

Chemotherapy: £2bn
(drug cost £1.7bn, delivery costs £0.3bn)

+ Cancer Drugs Fund: £340m

Background

New cancer drugs

Cancer drugs increasingly licensed on earlier outcome data where longer-term effectiveness often unknown

Drug and technology pipelines

- Molecular profiling with more opportunities for targeted therapies, immunotherapies
- Generics and biosimilars (rituximab, trastuzumab)

Background

The national collection of all cancer chemotherapy information in the NHS in England commenced in April 2012

The **Systemic Anti-Cancer Therapy (SACT)** Information Standard

- applies to all organisations providing cancer chemotherapy services in or funded by the NHS in England
- relates to all cancer patients, both adult and paediatric, in acute inpatient, day-case outpatient settings and delivery in the community
- covers chemotherapy treatment for all solid and haematological malignancies, including those in clinical trials

CANCER REGISTRATION (ENGLAND)

HEALTHCARE PROVIDERS

170

Data comes from all acute trusts and a range of healthcare and private providers

MULTI-DISCIPLINARY TEAMS

1,700+

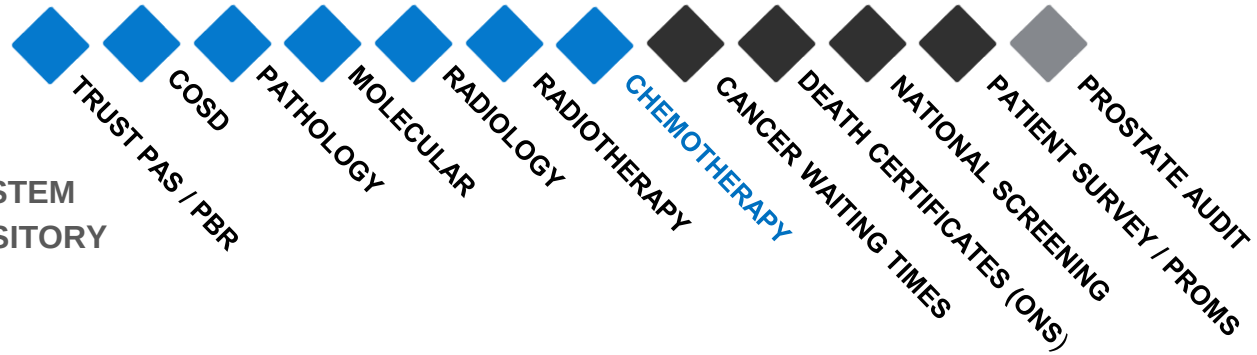
LOCAL DATA SYSTEMS

500+

DATA SOURCES

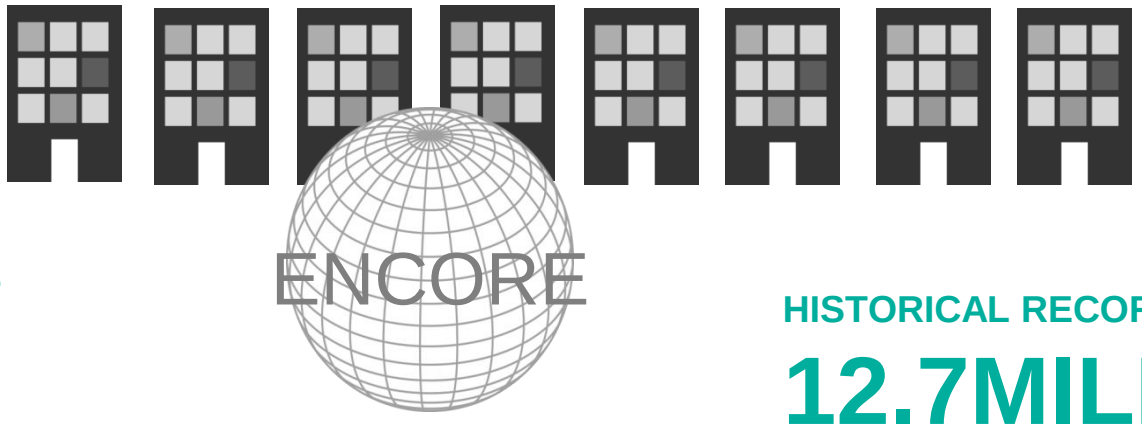
12

- LOCAL PROCESS OR SYSTEM
- OTHER NATIONAL REPOSITORY
- NATIONAL AUDITS



LOCAL OFFICES

8



ANNUAL REGISTRATIONS

473K

HISTORICAL RECORDS

12.7MILLION

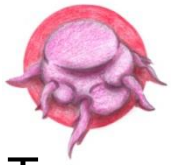
What data do we collect in SACT?

Patient

e.g. NHS number, gender, date of birth, post code

Hospital + Consultant

e.g. hospital, consultant, speciality



Tumour + Diagnosis

e.g. primary diagnosis, morphology,
intent of treatment, stage at start of treatment

Regimen

e.g. regimen name, start date, line of treatment

Cycle

e.g. number of planned cycles,
performance status, patient weight

Drugs

e.g. drug names, dose, hospital,
date of administration

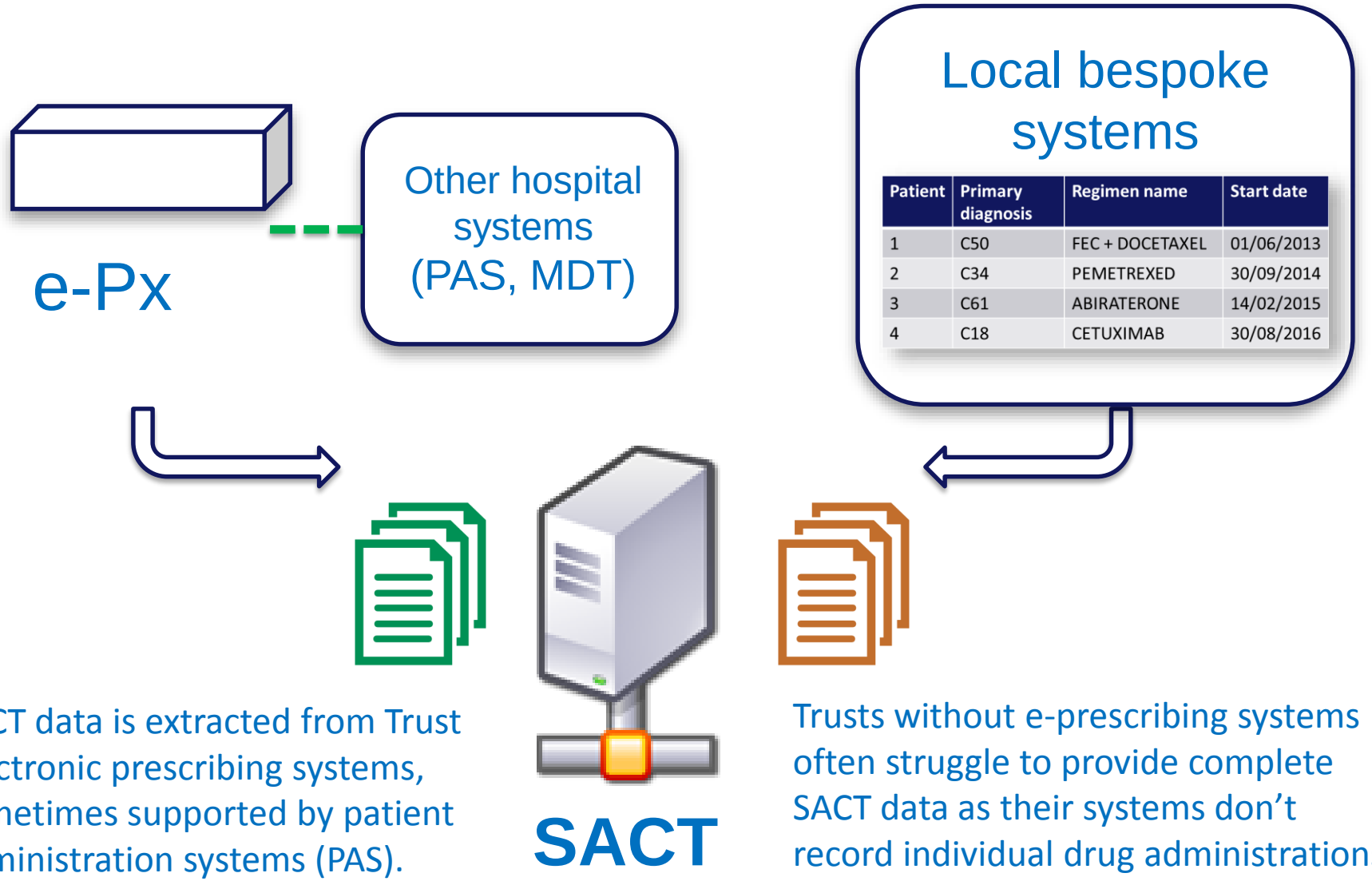
Outcome

e.g. regimen outcome summary,
dose reduction, time delay, stopped early,
date of final treatment, date of death

43 data items in total

http://www.datadictionary.nhs.uk/data_dictionary/messages/clinical_data_sets/data_sets/systemic_anti-cancer_therapy_data_set_fr.asp

How do hospitals prepare SACT data?



Patient	Primary diagnosis	Regimen name	Start date
1	C50	FEC + DOCETAXEL	01/06/2013
2	C34	PEMETREXED	30/09/2014
3	C61	ABIRATERONE	14/02/2015
4	C18	CETUXIMAB	30/08/2016

SACT data is extracted from Trust electronic prescribing systems, sometimes supported by patient administration systems (PAS).

Trusts without e-prescribing systems often struggle to provide complete SACT data as their systems don't record individual drug administrations.

SACT Data Completeness report (January 2016 to December 2016)

England

All Diagnostic Groups

Key

- ↑ Increase in completeness since comparison period
- ↓ Decrease in completeness since comparison period
- → No change in completeness since comparison period
- ✓ 100% completion (for non-mandatory items)
- M Mandatory item (always 100%)

Number of patients	% NHS Number		% Date of Birth		% Current gender		% Ethnicity		% Patient postcode	
191,755 ↑	100%	M	100%	M	100%	→	87%	→	100%	M

Number of tumour records	% GP Practice Code	% GMC Code	% Consultant Specialty	% Primary diagnosis	% Morphology	% Stage of disease at start of programme
200,228 ↑	94% →	98% →	100% →	100% →	60% →	52% ↓

Number of regimens	% Programme number		% Regimen number		% Treatment intent		% Regimen name		% Height at start of regimen		% Weight at start of regimen		% Performance Status at start of regimen	
293,309 ↑	93%	→	86%	→	91%	→	100%	M	76%	→	79%	→	69%	↑

% Comorbidity adjustment		% Date of decision to treat		% Start date of regimen		% Clinical trial		% Chemo radiation		% Number of cycles planned	
71%	→	91%	→	100%	M	97%	→	90%	→	86%	→

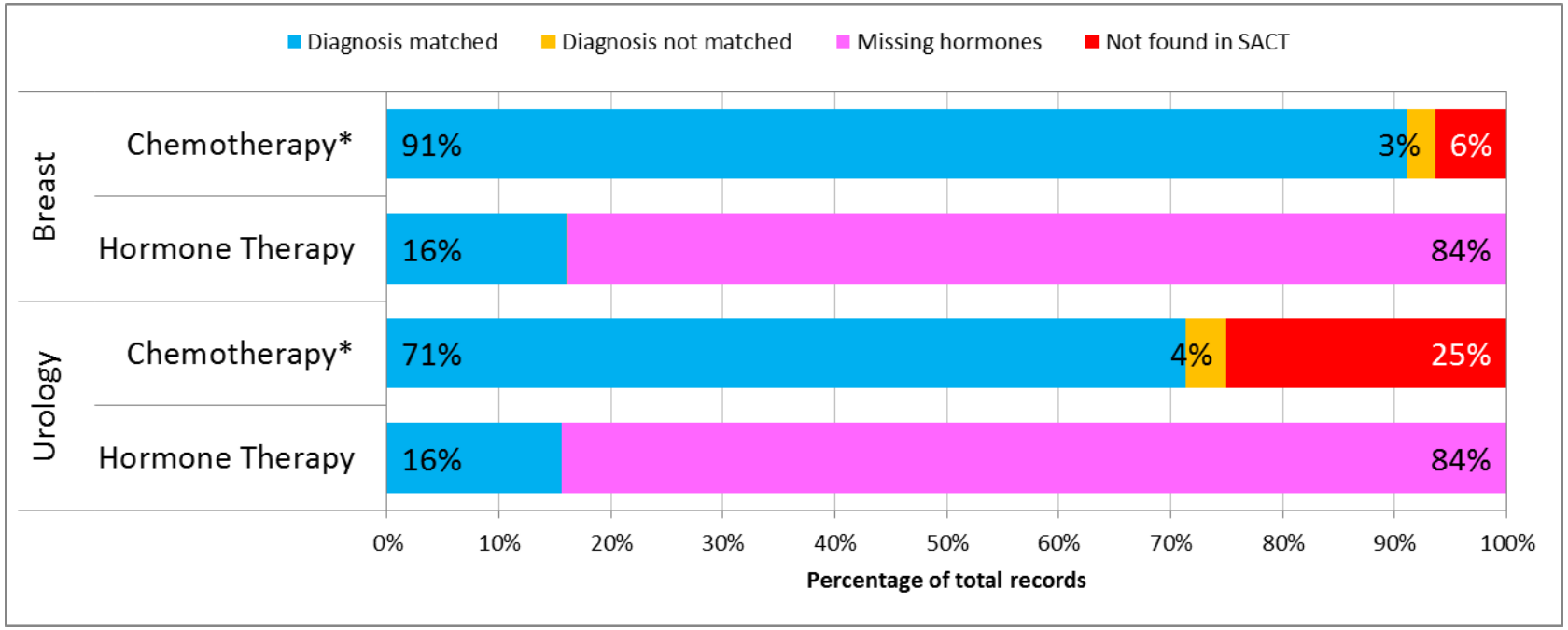
Number of cycles	% Cycle number		% Start date of cycle		% Weight at start of cycle		% Performance Status at start of cycle		% OPCS procurement code		% of Cycles with Drug records	
1,017,866 ↑	100%	M	99%	↑	76%	→	71%	→	70%	↓	98%	→

Number of drug records	% Drug name		% Actual dose per administration		% Administration route		% Administration date		% OPCS Delivery code		% Organisation code of drug provider	
2,673,553 ↑	100%	→	96%	→	98%	→	100%	→	77%	→	100%	→

Number of outcome records	% Date of Final Treatment		% Regimen modification (dose reduction)		% Regimen modification (time delay)		% Regimen modification (stopped early)		% Regimen outcome summary		% Date of death	
257,641 ↑	40%	→	76%	→	44%	→	73%	→	10%	→	15%	↓

88% of regimens

Estimating ascertainment using data on cancer waiting times

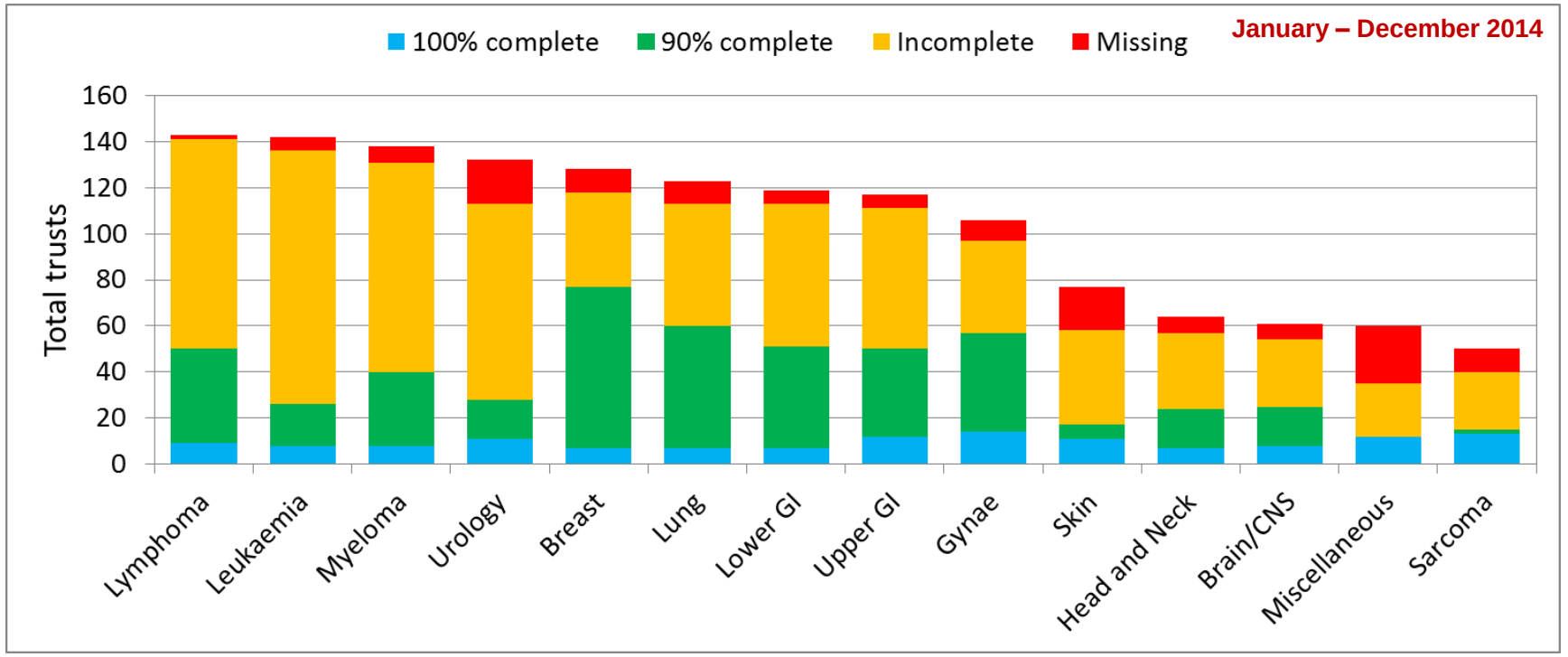


** Includes chemo-radiotherapy, immunotherapy and other*

January – December 2014

Hormonal therapies are significantly under-reported in SACT.

Estimating ascertainment using data on cancer waiting times



Complete: 100% of patients reported in CWT were matched in SACT

90% complete: At least 90% of patients reported in CWT were matched in SACT

Incomplete: Fewer than 90% of patients reported in CWT were matched in SACT

Missing (no data): none of the patients reported in CWT were matched in SACT

Why is SACT data important?

Ultimately these data are collected to improve patient care:

1. Efficacy and patient safety

2. Evaluation of clinical effectiveness using real world outcomes

3. Identify and address unwarranted variation

http://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(16)30383-7/abstract

THE LANCET Oncology

< Previous Article Volume 17, No. 9, p1203–1216, September 2016 Next Article >

Access this article on ScienceDirect

Articles

30-day mortality after systemic anticancer treatment for breast and lung cancer in England: a population-based, observational study

Michael Wallington, BA†, Emma B Saxon, PhD†, Martine Bomb, PhD, Rebecca Smittenaar, PhD, Matthew Wickenden, BSc, Sean McPhail, PhD, Jem Rashbass, PhD, David Chao, FRCP, John Dewar, FRCR, Prof Denis Talbot, PhD, Michael Peake, FRCP, Prof Timothy Perren, MD, Charles Wilson, MD, Prof David Dodwell, MD

† Both authors contributed equally

Open Access | Altmetric 818

DOI: http://dx.doi.org/10.1016/S1470-2045(16)30383-7 | CrossMark

Article Info

Summary

Background

Jump to Section Go

30-day mortality might be a useful indicator of avoidable harm to patients from systemic anticancer treatments, but data for this indicator are limited. The Systemic Anti-Cancer Therapy (SACT) dataset collated by Public Health England allows the assessment of factors affecting 30-day mortality in a national patient population. The aim of this first study based on the SACT dataset was to establish national 30-day mortality benchmarks for breast and lung cancer patients receiving SACT in England, and to start to identify where patient care could be improved.

Methods

In this population-based study, we included all women with breast cancer and all men and women with lung cancer residing in England, who were 24 years or older and who started a cycle of SACT in 2014 irrespective of the number of previous treatment cycles or programmes, and irrespective of

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England's 30-day chemotherapy mortality: a measure of quality of care?

CORRECTIONS
Correction to *Lancet Oncol* 2016; 17: 1203, 06, 08, 09, 11

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Most Read Most Cited

Most read in *The Lancet Oncology* within the past 30 days.

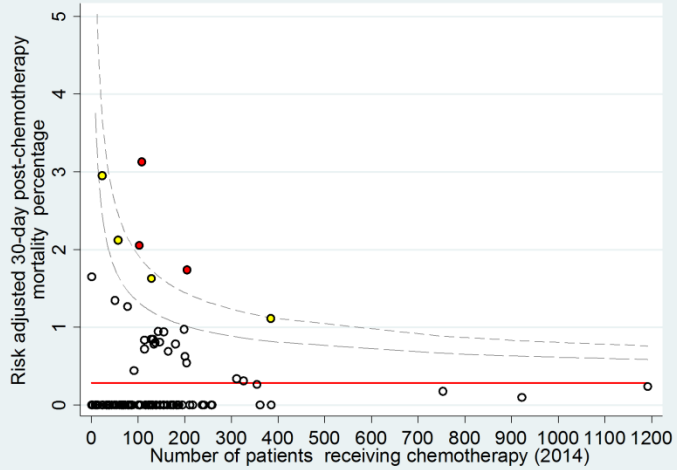
ARTICLES
30-day mortality after systemic anticancer treatment for breast and lung cancer in England: a population-based, observational study
Vol. 17, No. 9

	Total patients	30-day mortality
Breast, curative	15 626/28 364 (55%)	41 (<1%)
Breast, palliative	7602/28 364 (27%)	569 (7%)
Breast, not recorded	5136/28 364 (18%)	90 (2%)
Breast, all intents combined	28 364 (100%)	700 (2%)
Lung (all subtypes), curative	2429/15 045 (16%)	70 (3%)
Lung (all subtypes), palliative	10 587/15 045 (70%)	1061 (10%)
Lung (all subtypes), not recorded	2029/15 045 (14%)	143 (7%)
Lung (all subtypes), all intents combined	15 045 (100%)	1274 (8%)
NSCLC, curative	1961/11 199 (18%)	53 (3%)
NSCLC, palliative	7673/11 199 (69%)	720 (9%)
NSCLC, not recorded	1565/11 199 (14%)	94 (6%)
NSCLC, all intents combined	11 199 (100%)	867 (8%)
SCLC, curative	382/3352 (11%)	14 (4%)
SCLC, palliative	2582/3352 (77%)	308 (12%)
SCLC, not recorded	388/3352 (12%)	47 (12%)
SCLC, all intents combined	3352 (100%)	369 (11%)
Lung (not recorded) curative	86/494 (17%)	3 (3%)
Lung (not recorded), palliative	332/494 (67%)	33 (10%)
Lung (not recorded), not recorded	76/494 (15%)	2 (3%)
Lung (not recorded), all intents combined	494 (100%)	38 (8%)

Data are n (%) of total patients by cancer type and treatment intent; and n (%) of deaths occurring within 30 days of systemic anticancer therapy for each of those groups. NSCLC=non-small cell lung cancer. SCLC=small cell lung cancer.

Table: 30-day mortality rates in patients with breast or lung cancer by morphology and treatment intent

Risk-adjusted 30-day post-chemotherapy mortality



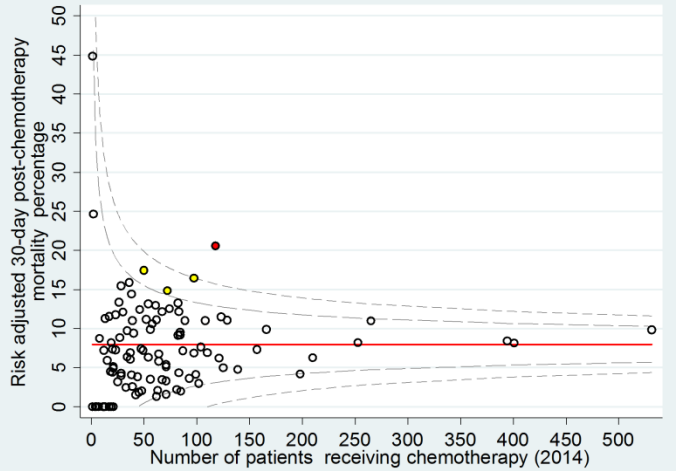
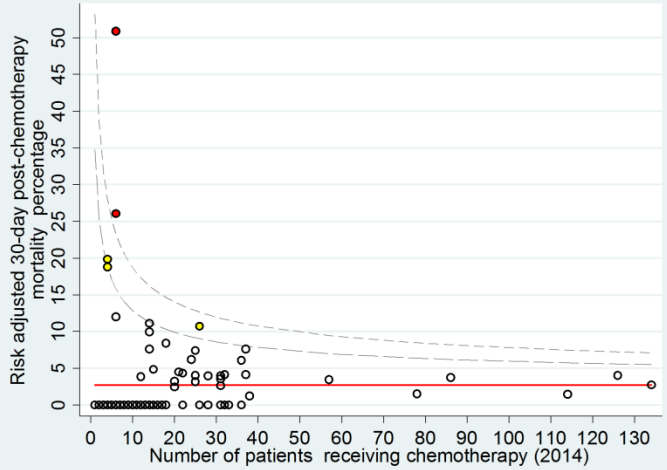


Figure 1: Funnel plot of variation in risk-adjusted 30-day mortality in patients with breast cancer given systemic anticancer therapy with curative (*top*) and palliative (*bottom*) intent, by hospital trust Each circle represents a separate hospital trust; red and yellow circles represent outliers beyond the 95% and 99·8% confidence interval boundaries that are represented as grey lines. Red line shows national risk-adjusted 30-day mortality rate.



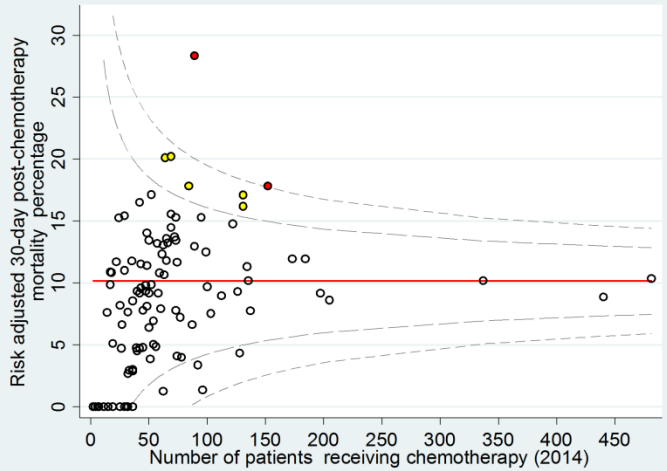


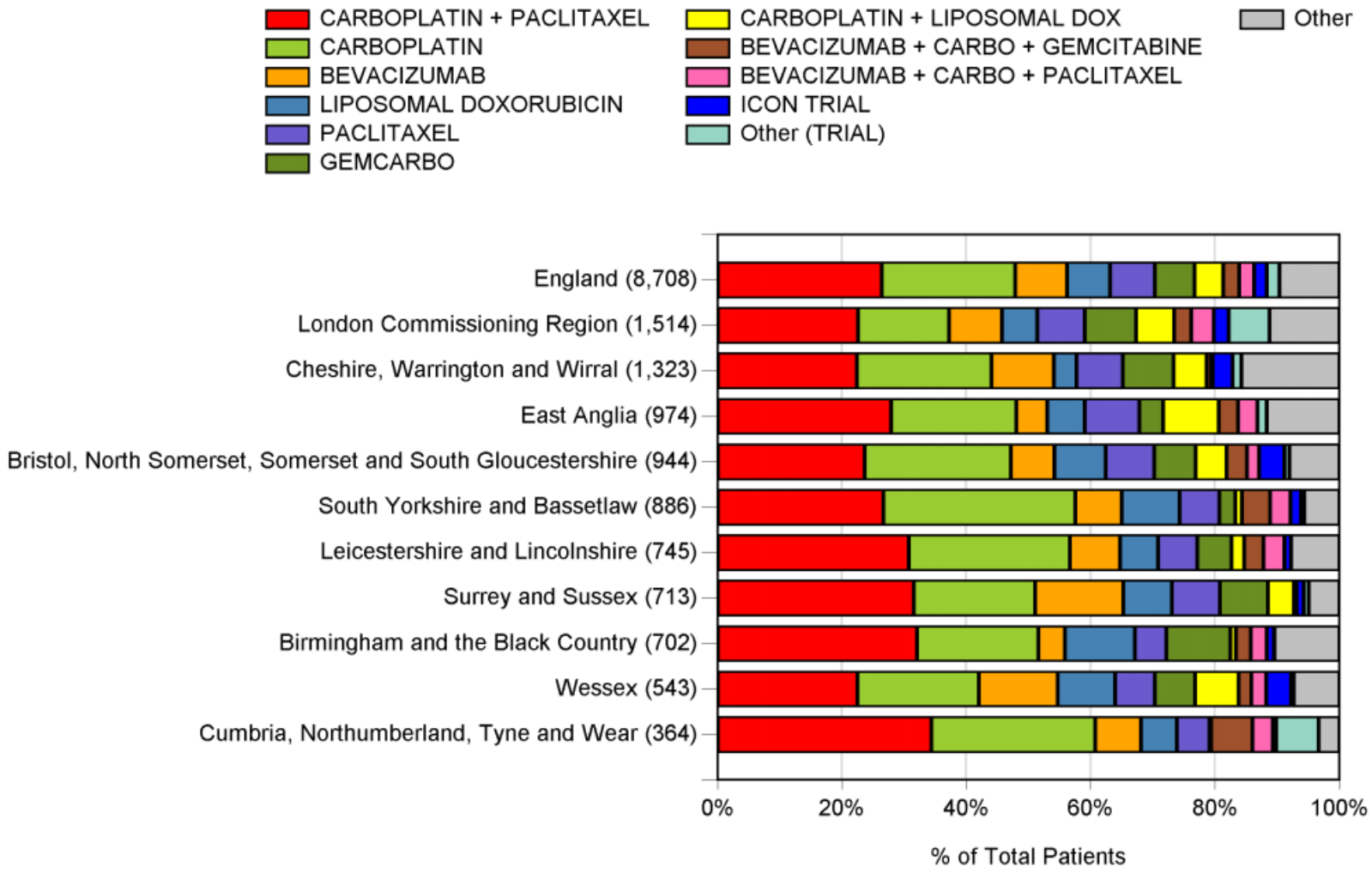
Figure 2: Funnel plot of variation in risk-adjusted 30-day mortality in patients with non-small cell lung cancer given systemic anticancer therapy with curative (*top*) and palliative (*bottom*) intent, by hospital trust Each circle represents a separate hospital trust; red and yellow circles represent outliers beyond the 95% and 99·8% confidence interval boundaries that are represented as grey lines. Red line shows national risk-adjusted 30-day mortality rate.

Regimen benchmarking

Gynae (Ovary/Fallopian Tube/Primary Peritoneal) ICD10: C56, C570

Data received for October 2013 - September 2014.

NHS England Area Team comparison; Includes activity from trusts where more than 50 patients aged 16 and over received treatment



CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

10 years OF PROGRESS

Economics of High-Quality Care

Chair: Dr. Terry Sullivan

Innovative Approaches to Optimal Cancer Care in Canada

April 7-8, 2017

The Westin Harbour Castle
Toronto, Ontario

Innovative Approaches to Cancer Care in Canada Conference

Economics of High Quality Care

Impact of economics on the cancer system: Perspectives on quality, cost and impact on outcomes

The Increasing Cost of Cancer Care

Claire de Oliveira

April 7, 2017

CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

Background

- health resource issues are a growing concern
  - cancer incidence and related costs are rising
- policy makers who fund and organize cancer care struggle to provide patients with latest therapies, given limited financial resources
  - especially in a time of cost containment
- thus, it's important to have accurate cost estimates to assess burden of care
  - help translate adverse effects of diseases into dollars → easy metric for policy makers to understand
  - can help determine budgets, aid in resource allocation, predict future costs

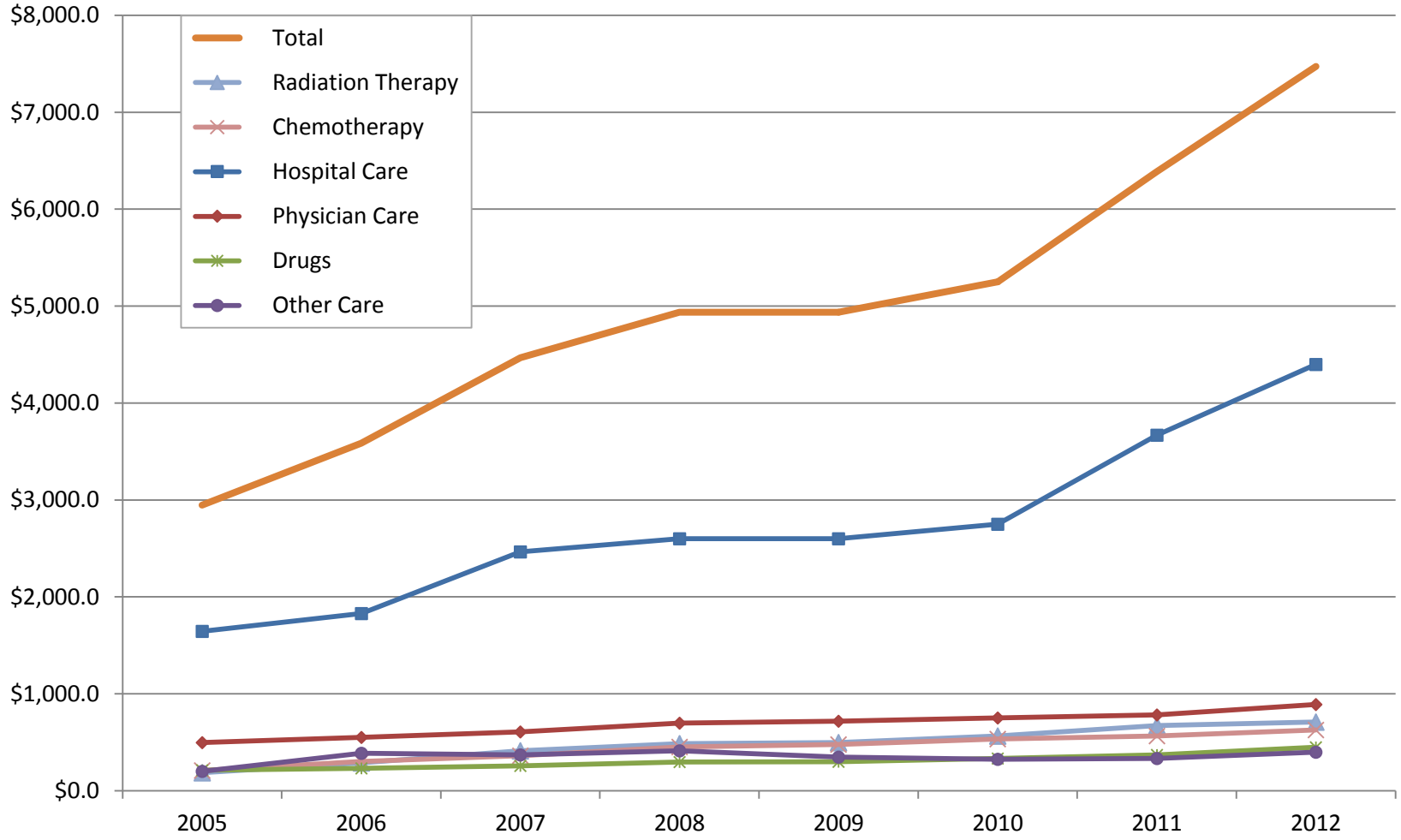
Objectives of talk

- examine the economic burden of cancer care in Canada and how it has evolved over time
- understand the drivers behind the increase and its implications
- understand how these findings can help inform cancer care system quality and sustainability

Methods

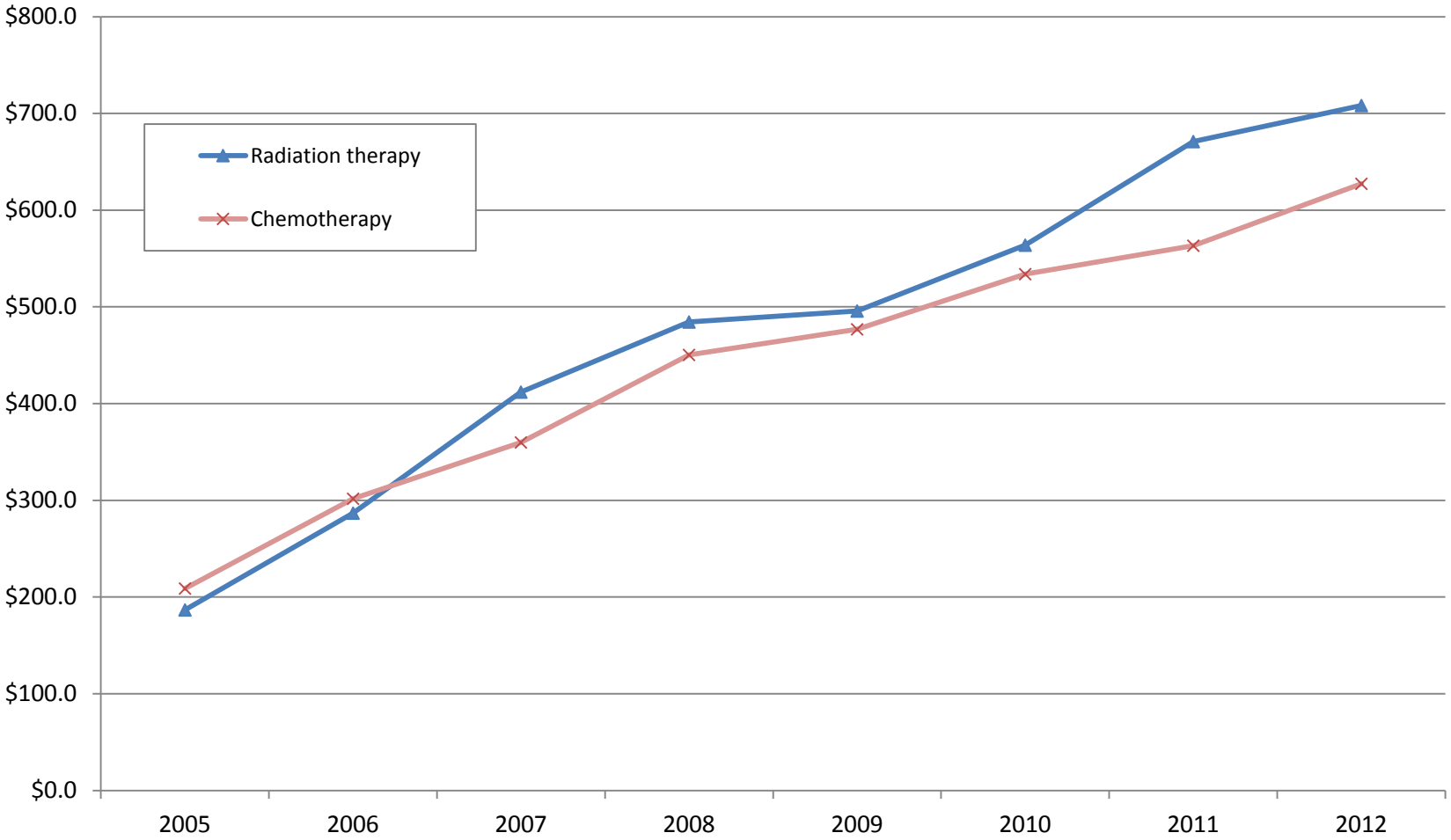
- undertook a case-control prevalence-based direct cost approach and estimated cancer costs from 2005 to 2012 to compare with and update previous work
- patient-level administrative healthcare data from Ontario used to estimate healthcare costs to cancer
  - employed the net cost method to account for costs directly and indirectly related to cancer and its sequelae
- using average patient-level cost estimates from Ontario, applied proportions from national health expenditures data to obtain the economic burden of cancer care for Canada

Economic burden of cancer care in Canada (in billion 2015 CAD)



Source: administrative health care data from Ontario, National Health Expenditures (NHEX) data from the Canadian Institute Health Institute and prevalence data from the Canadian Cancer Society and Statistics Canada

Economic burden of cancer care in Canada (in million 2015 CAD)



Source: administrative health care data from Ontario, National Health Expenditures (NHEX) data from the Canadian Institute Health Institute and prevalence data from the Canadian Cancer Society and Statistics Canada

Economic burden of cancer care in Canada

- costs of cancer care have risen steadily over the last few year → from $2.9 billion in 2005 to roughly $7.5 billion in 2012
  - includes costs from diagnosis to survivorship/death
- rise mostly due to the increase in costs of hospital-based care
  - from $1.6 billion in 2005 to $4.4 billion in 2012
  - include hospitalizations and all other institution-based care
- however, largest increases among chemotherapy and radiation therapy costs
  - chemotherapy: $209 million in 2005 to $627 million in 2012→ tripled
  - radiation therapy: $187 million in 2005 to $708 million in 2012→ more than tripled

Implications for the system

- need to think about the rising number of patients diagnosed with cancer but also survival → will impact costs of care

But also cost of health services provided:

- rising costs of technology → more sophisticated surgical procedures, more sophisticated RT equipment
- rising costs of drugs→ newer chemotherapy agents
- costs of end-of-life/palliative care → high costs in the last months before death

Acknowledgements: funding support from CCSRI, ARCC

Team: Sharada Weir, Jagadish Rangrej, Murray Krahn, Nicole Mittmann, Jeffrey Hoch, Kelvin Chan, Stuart Peacock

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CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

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The Quest for Optimal Cancer Care in Canada: Money Matters !

Tallal Younis, MBBCh. FRCP (UK). FACP.

Professor of Medicine, Dalhousie University

Medical Oncologist, QE II Health Sciences Centre

Innovative Approaches to Optimal Cancer Care in Canada Conference

Toronto. April 7th 2017

Disclosures

- *Current member of "OncoSim – breast model" and "CCTG – Committee of Economic Analyses (CEA)" and past member of CADTH' "pCODR – expert review committee".*
- *Academic grants / publications as well as pharmaceutical collaborations involving various cost-effectiveness research in Breast Cancer.*

Objectives

- To highlight the economic versus clinical end points for health technology assessments in oncology.
- To highlight “constellations of excellence” within the Canadian universe of economic modeling in oncology.
- To highlight the current versus “dream” landscape for economic modeling in Canada.

Knowledge to Action Pillars

Health Technology Assessment

Clinical Endpoints		Economic Perspective	
Liver Longer	Live Better	Value for Money	Affordability
Overall Survival	Quality of Life	CUA (ICER)	Budget Impact (Costing)
Net Clinical Benefit		Economically Favourable	

Provincial Funding Decisions

Health Technology Assessment: Value for Money

Pharma Industry	Academic Researchers	CCTG CEA	CPAC OncoSim
Reports	Publications	Guidelines	Web-Interface

pCODR	CADTH	Provincial Committees

Provincial Funding Decisions

Canadian Cancer Trials Group | Groupe canadien des essais sur le cancer

Committee on Economic Analysis

Chairs: Nicole Mittmann, Natasha Leighl

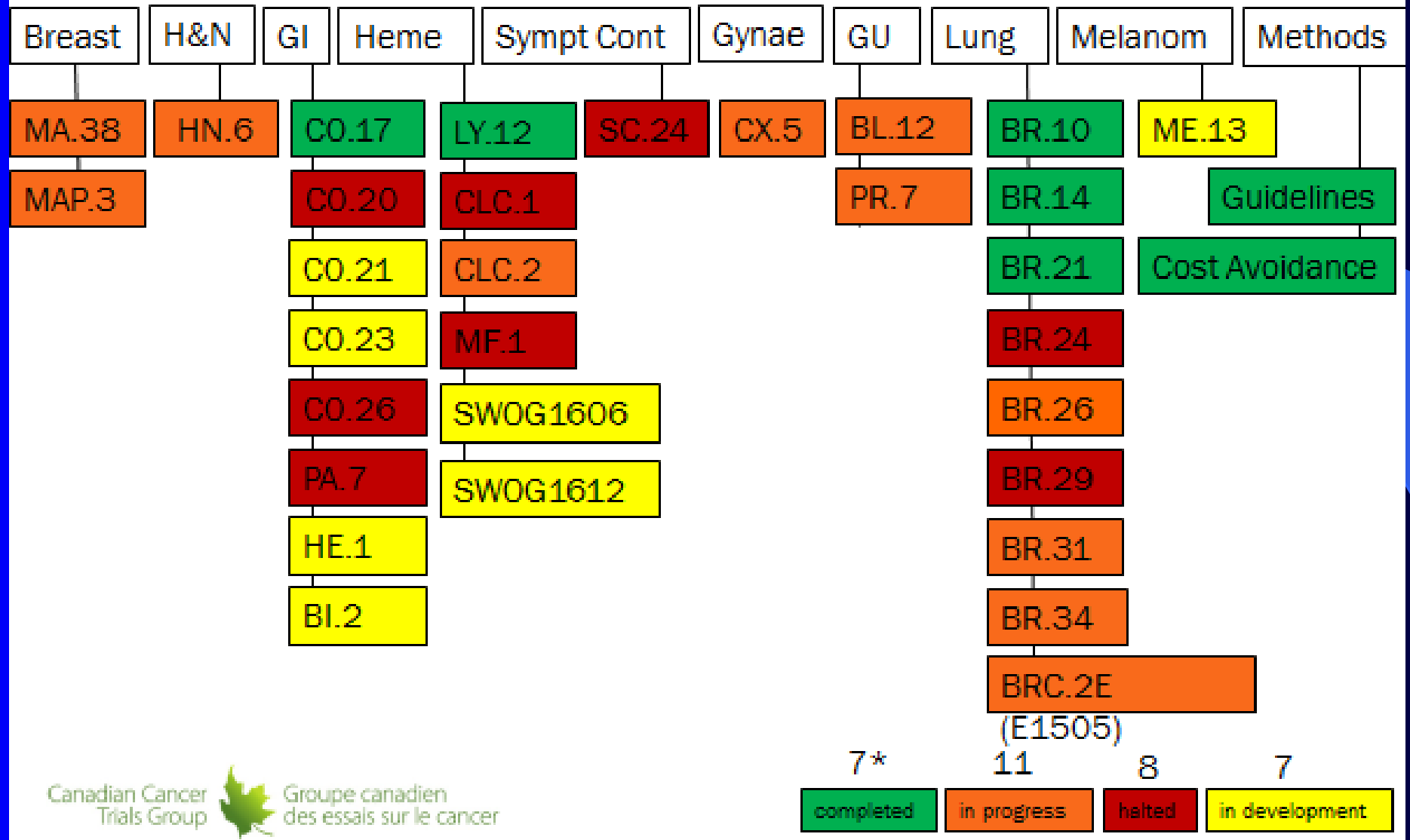
Senior Investigators: Annette Hay, Paco Vera-Badillo

Biostatisticians: Bingshu Chen, Keyue Ding

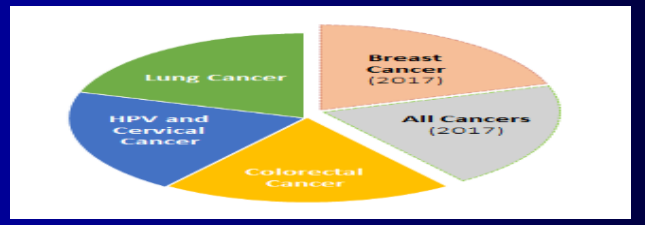
Multidisciplinary Team: health economists, statisticians, oncologists (medical, radiation and surgical), pharmacists and lay representatives;

Prospectively embedded economic parameters (resource utilization and health preference value instruments) into study protocols to determine the value of interventions

CEA Activity 2010-2016



Canadian Cancer Trials Group
Groupe canadien des essais sur le cancer



Conceptual Diagram of OncoSim

PRIMARY PREVENTION

EARLY DETECTION

SECONDARY PREVENTION

Risk Factors

Lifestyle
Environmental
Presence of virus

Screening

Target populations
Participation rates
Various modalities

New Treatment

Δ Cost
Δ Survival
Δ Health utility

Cancer

Natural history
Incidence
Treatment
Progression
Case-fatality

Outcomes

Incidence
Deaths
Resource needs
Direct health care costs
Life expectancy
Health-adjusted LE
Economic Impacts

Age

Year

Sex

Province

Incremental Cost-effectiveness Ratios (ICERs)

Other cause mortality

How the OncoSim Model Has Been Used

Canadian Task Force on Preventive Health Care Guidelines

- Colorectal cancer screening (released February 2016)
- Lung cancer screening (released March 2016)

Canadian Cancer Society, Canadian Cancer Statistics, 2016

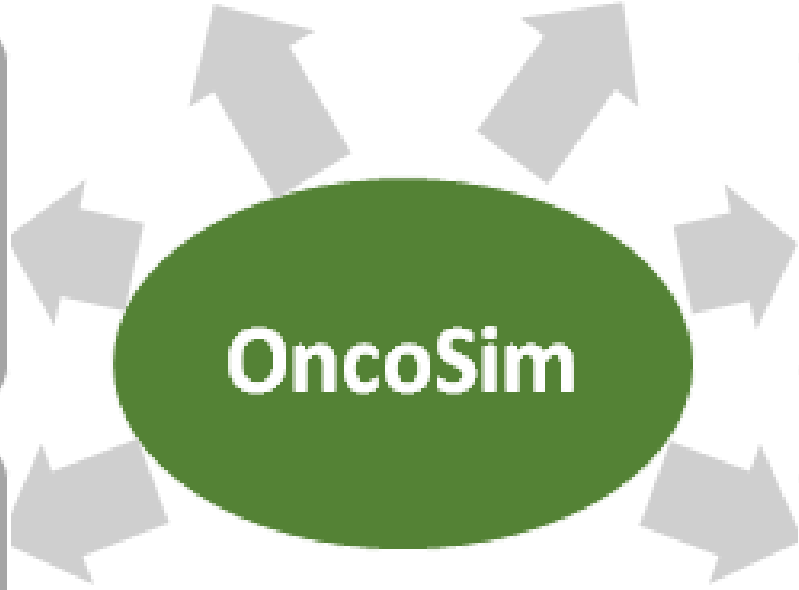
- Comparison of HPV DNA and pap testing for primary cervical cancer screening

Canadian Cancer Society, Canadian Cancer Statistics, 2015

- Projections of lung, colorectal and cervical cancer screening impact using OncoSim

Canadian Partnership Against Cancer System Performance Spotlight Report, 2016:

- "Quality and Sustainability in Cancer Control" – impacts of inappropriate surgery in stage IV breast and colorectal cancer



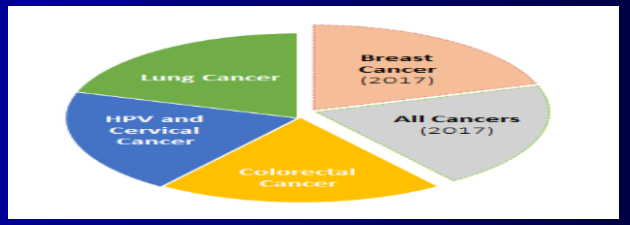
Alberta STE* Report, Institute of Health Economics

- Impact of low dose computed tomography for the screening of lung cancer in adults (2014)

Pan-Canadian screening networks support

- Cervical, Colorectal, Lung and Breast Screening Networks (ongoing)

12 peer-reviewed publications



OncoSim is available online via a secure log-in at https://cancerview.ca/oncosim

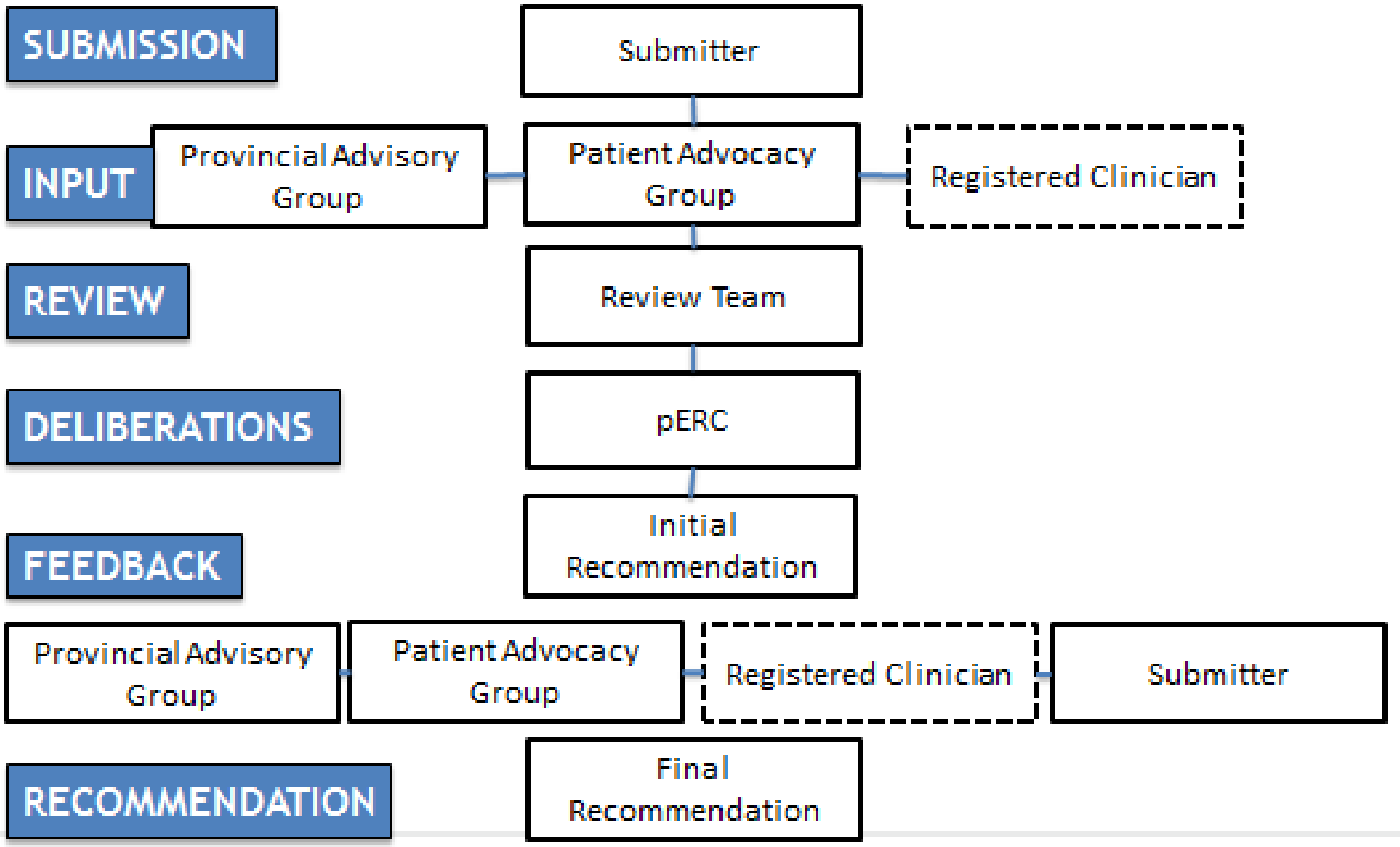
Presentations

- **CS1: Cost and sustainability**
  - Cost-effectiveness of smoking cessation within an organized CT lung cancer screening program: Implications for clinical intervention opportunities (Dr. William Evans)
  - Impacts of American Society Clinical Oncology (ASCO) versus Canadian Task Force on Preventive Health Care (CTFPHC) guidelines for cervical cancer screening (Dr. Cathy Popadiuk)
- **CS3: Improving the diagnostic process**
  - Effect of screening test choice on colorectal cancer (CRC) risk and colonoscopy use (Dr. Andy Coldman)

Poster

- Impacts on follow-up procedures, treatments, and costs of screening Canadian women 18 to 20 years of age (Kathleen Decker)

pCODR Review Process

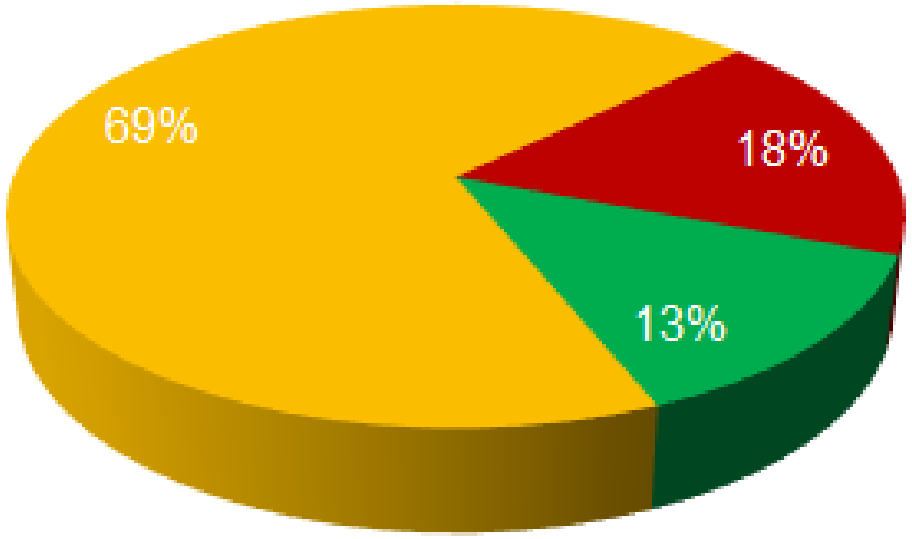


CADTH Evidence Driven.

CADTH – pCODR Deliberation Framework

Net Clinical Benefit	Yes	Yes	NO
Patient Values	-	-	-
Value for Money	Yes	NO	?
Adoption Feasibility	-	-	-
Decision	Positive	Conditional	Negative

pCODR Final Recommendation



- Positive Recommendation
- Conditional Recommendation
- Negative Recommendation

pCODR issued 72 notification to implement as of September 30, 2016
9 (13%) recommend to reimburse
50 (69%) conditional recommendation to reimburse (? Drug Cost)
13 (18%) do not recommend to reimburse

CADTH Evidence Driven.

Health Technology Assessment: Value for Mon

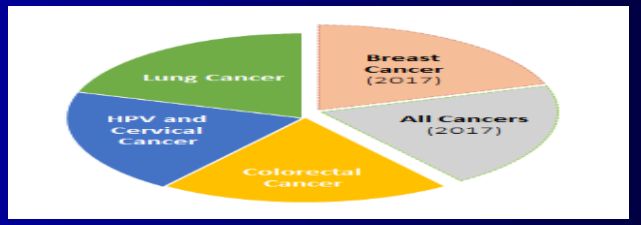
Pharma Industry	Academic Researchers	CCTG CEA	ncoSim
Reports	Publications	s	Web-Interface
pCODR	TH		Provincial Committees
Pro	nding Decisions		
eliness	Equity		Harmony

One Universe or Various Constellations of Excellence !

Take Home Message

- Economic modeling (value for money) is pivotal to optimal cancer care in Canada.
- Various “constellations of excellence” for economic modeling currently exist in Canada.
- CPAC may be uniquely poised to address challenges of economic modeling landscape in Canada.

Questions ?



FOUNDATIONAL

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LUNG CANCER

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CERVICAL CANCER / HPV

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CANADIAN PARTNERSHIP AGAINST CANCER | PARTENARIAT CANADIEN CONTRE LE CANCER

10 years OF PROGRESS

Economics of High-Quality Care

Chair: Dr. Terry Sullivan

Innovative Approaches to Optimal Cancer Care in Canada

April 7-8, 2017

The Westin Harbour Castle
Toronto, Ontario

Ontario

Ontario Public Drug Programs Division

Innovative Approaches to Optimal Cancer Care in Canada

April 7th 2017

Access to Cancer Products in Ontario

Cancer drugs in Ontario are funded through two programs:

i. The Ontario Drug Benefit (ODB) Program which funds oral cancer drugs for ODB-eligible recipients
   - Over 65 – Seniors Program
   - Under 65 – Trillium Program

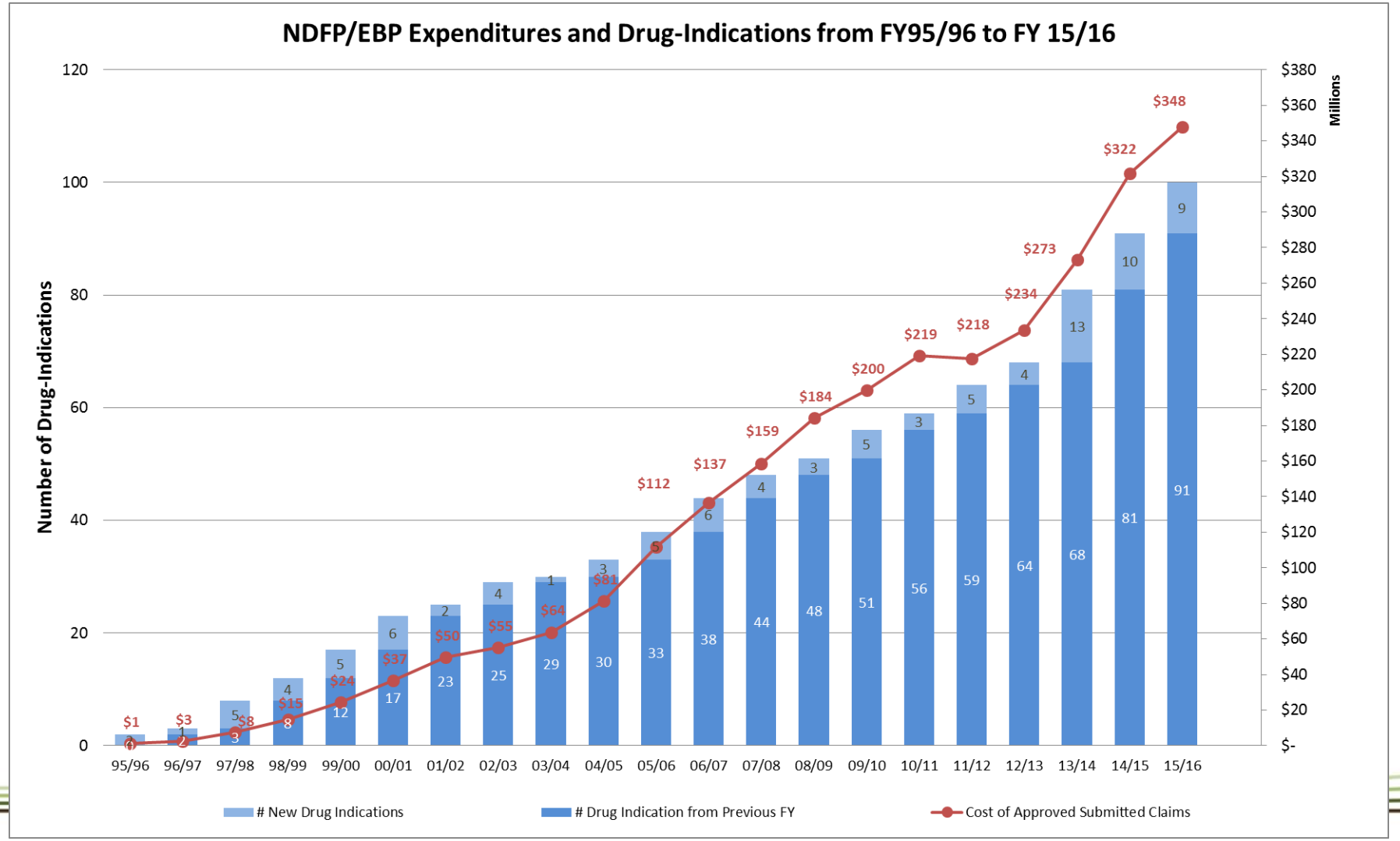
ii. The New Drug Funding Program (NDFP) funds injectable cancer drugs for Ontario residents

Expenditures for Cancer Drugs FY2015/16 were $730M

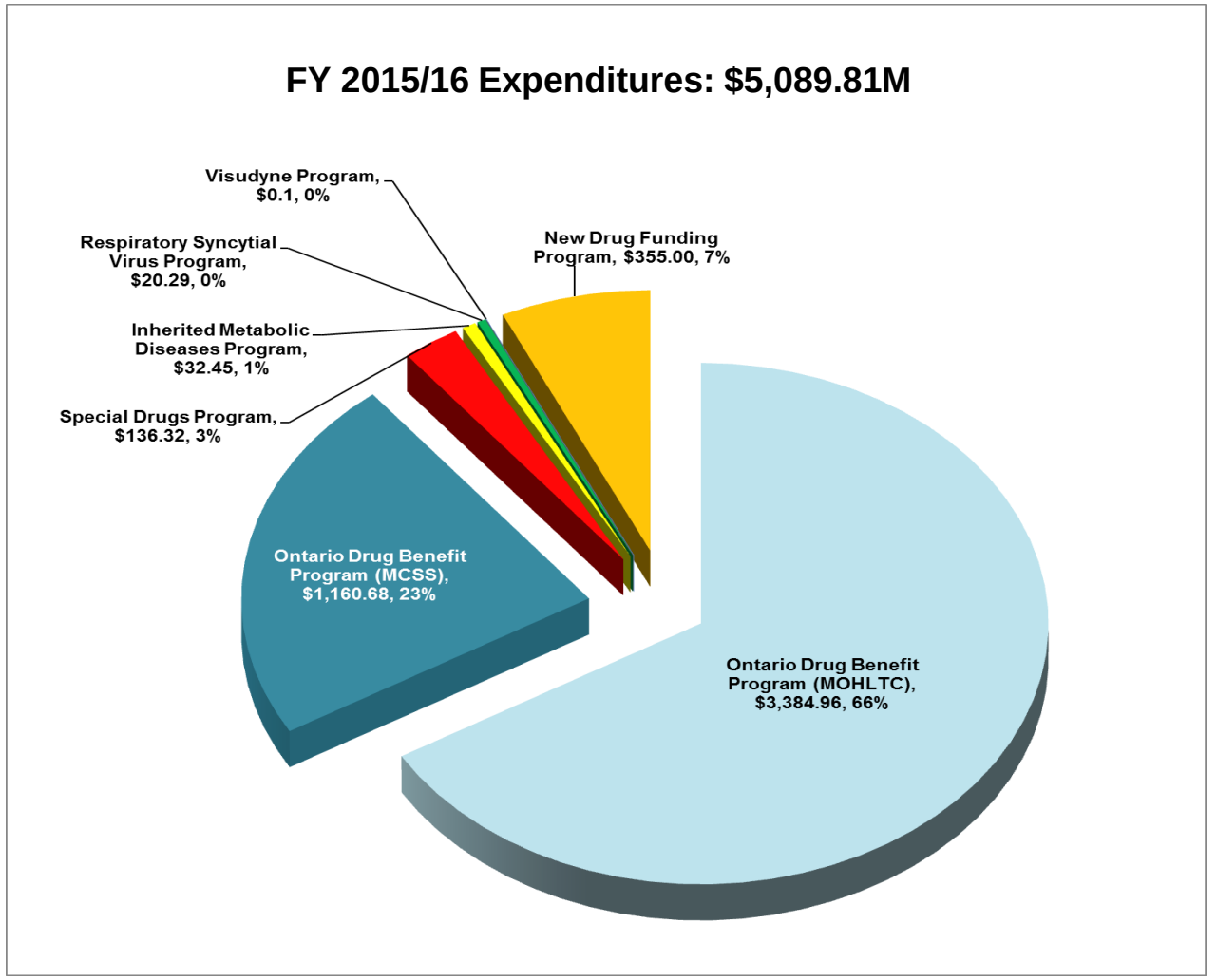
- Oral Cancer Drugs $375M (increase of 16% over FY14/15, and over 30% since FY13/14)
- Injectable Cancer Drugs (NDFP) were $355M (increase of 8% over FY14/15 and nearly 30% since FY13/14)

At March 31, 2017, there are 15 Cancer Products with the pan-Canadian Pharmaceutical Alliance (pCPA) (15 more reviews at CADTH already scheduled for Apr-Sept)

NDFP covers majority of hospital-administered cancer drug costs



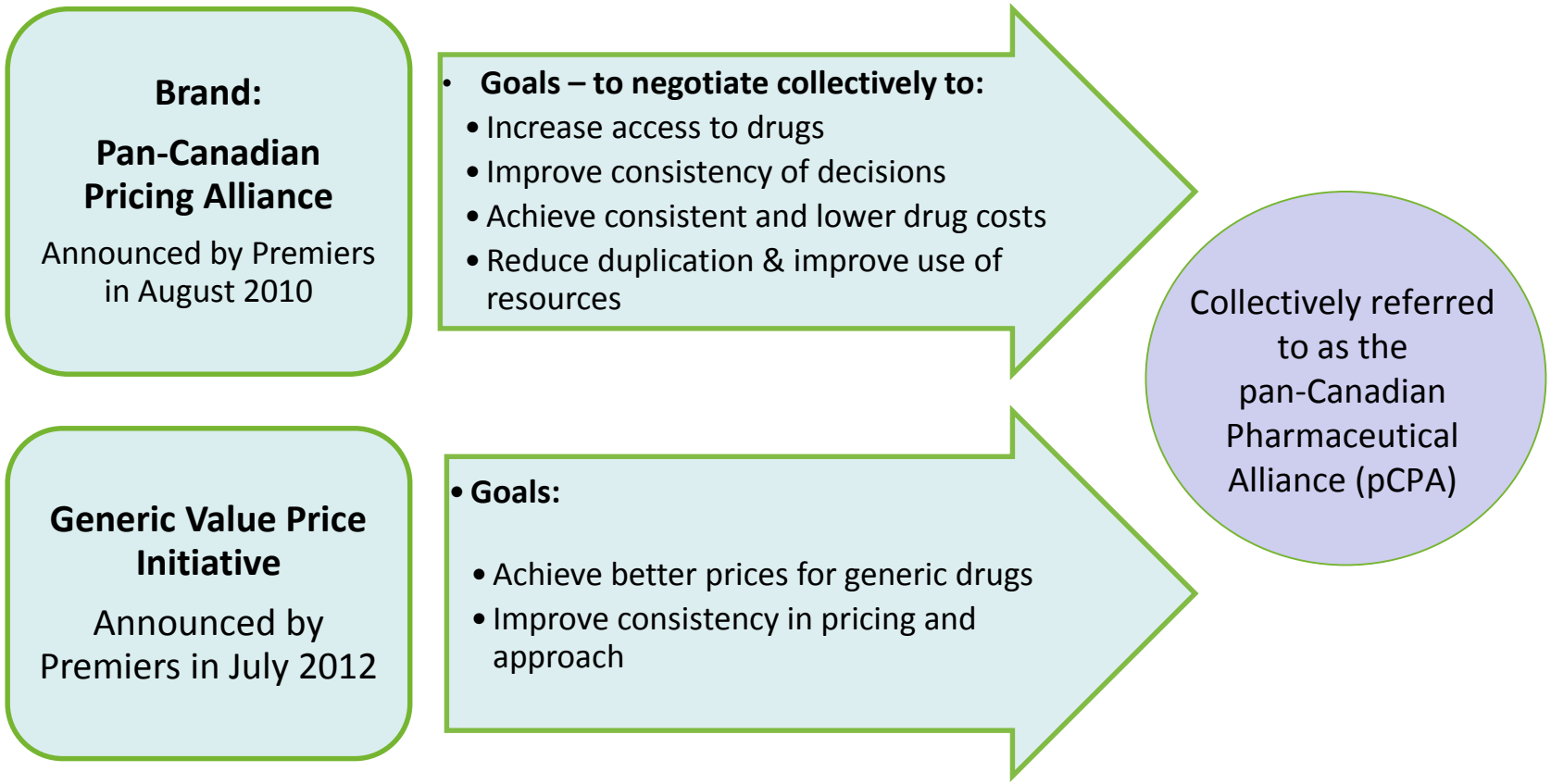
Financial Snapshot ($M)



Source: Public Accounts 2015/16

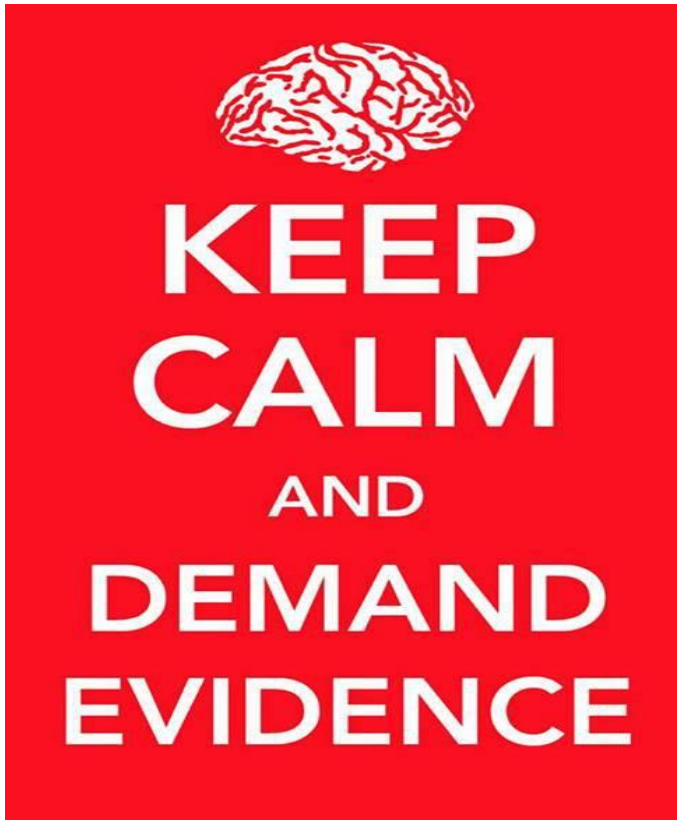
ODB Includes Core Seniors Programs (High and Low Income Seniors), Trillium Drug Program, Long-Term Care, Homes for Special Care, Home Care Program and Rebates

pCPA Streams



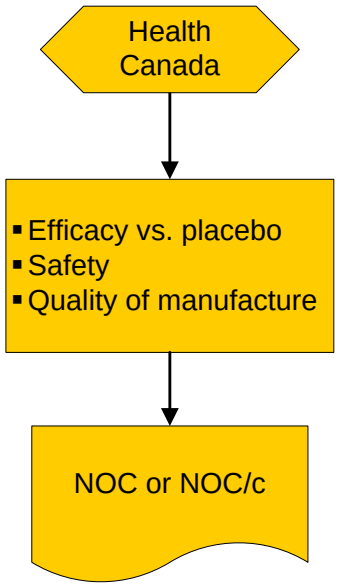
- Capitalizing on the combined "buying power" of drug plans across multiple provinces and territories is benefitting all Canadians through increased access and consistency in coverage.
- Members include all 13 Provinces and Territories and Federal Drug Plans.
- Quebec and the Federal Government joined in October 2015 and January 2016, respectively.

Evidence Informed Process
Objective: Select the best drugs for the best value

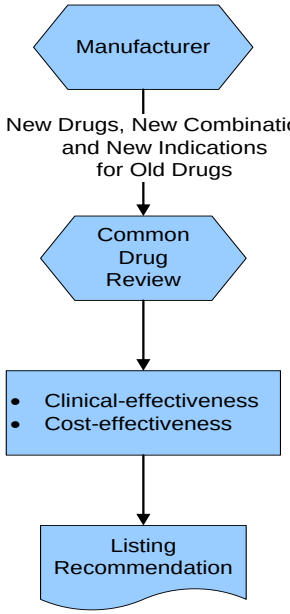


Drug Review Process

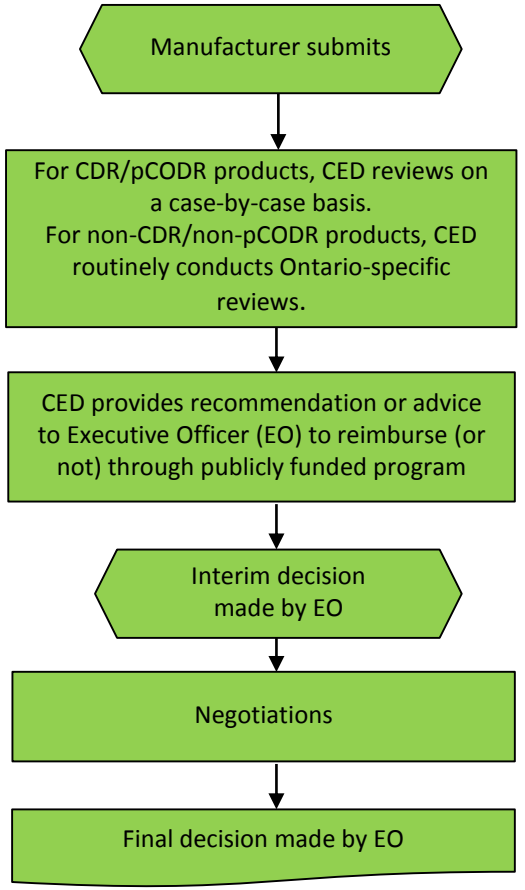
I. Health Canada



II.CDR/pCODR (CADTH)



III. CED



IV. Pan Canadian Pharmaceutical Alliance (pCPA)

pCPA Activity

	Brand*	Biosimilars*
2010 - 2014	**55** (completed)	0
2015	**41** (completed)	**1** (completed)
2016 (at Dec 31, 2016)	**97** **(31 completed + 41 active + 25 post-HTA)**	**4** (2 completed + 2 active)
2017 (at Mar 31, 2016)	**68** **(16 completed + 21 active + 29 post-HTA)**	**2** (2 active)

CADTH Recommendations
2013/14: 53
2014/15: 47
2015/16: 71

***Brand /Biosimilars** – number of products negotiated.
Note - does not include ALL negotiation activity of pCPA (i.e. other activity includes decisions to not negotiate collectively after consideration of a product and negotiations for products that are not based on recent HTA recommendation).

You already have in you what you need to do great things.
Work with the assets around you

Ontario