COVID-19 and Cancer Taskforce

COVID-19 and Cancer Global Modelling Consortium (CCGMC)

Whole Consortium Call
21st /22nd April 2021

The call will start at 03:00 ET / 08:00 BST / 09:00 CEST / 10:00 EAT / 17:00 AEST
While waiting, please introduce yourself via the comments - including your name, institution, country, and professional background.

Secretariat email: covidandcancer@nswcc.org.au

COVID-19 and Cancer Taskforce

COVID-19 and Cancer Global Modelling Consortium (CCGMC)

Whole Consortium Call
21st /22nd April 2021

The call will start at 16:00 US ET / 21:00 BST / 22:00 CEST / 23:00 EAT / 06:00 AEST
While waiting, please introduce yourself via the comments - including your name, institution, country, and professional background.

Secretariat email: covidandcancer@nswcc.org.au

Aims of today's call

1. **Updates from each working group on activities and emerging findings**
2. **Open discussion on establishing a CCGMC 'COVID & cancer observatory'**
3. **Flag new opportunities to participate in SR projects**

> **Please use the chat function to log questions and comments through the session for later consideration**

Agenda (session 1)

1. **Welcome and Introductions – 5mins**
   Dr Freddie Bray (IARC), Dr Isabelle Soerjomataram (IARC) & Prof Karen Canfell (Daffodil Centre, University of Sydney/CCNSW)

2. **Update on COVID-19 & Cancer Taskforce, snapshot of the impact on cancer patients – 5mins**
   Prof Richard Sullivan (KCL)

3. **Overview of current consortium status – 5 mins**
   Prof Karen Canfell (Daffodil Centre, University of Sydney/CCNSW)

4. **Update on Working Group activities - 20 mins**
   a. **Working Group 1 – Treatment**
      I. **Key available data**
      II. **SurvMark analysis**
      III. **Covid and cancer SRs results**
      IV. **Global modelling platform progress update**
         - **Data mapping exercise/ inputs plan across cancers, countries & data sources**
         - **Joint presentation with WHO: modelling work on COVID and cancer**
   b. **Working Group 2 – Screening**
      I. **ICSN update –** A/Prof Iris Lansdorp Vogelaar (Erasmus University)
      II. **Project team updates (CRC, Cervix, Breast)**
   c. **Working Group 3 – Prevention**

5. **Open discussion: Proposed CCGMC 'COVID & cancer observatory' – 15mins**
   Moderated by Prof Karen Canfell & Dr Isabelle Soerjomataram

Agenda (session 2)

1. **Welcome and Introductions**
   Prof Karen Canfell (Daffodil Centre, University of Sydney/CCNSW), A/Prof Iris Lansdorp-Vogelaar (Erasmus University),
   Dr Ophira Ginsburg (NYU) & Rami Rahal (CPAC)

2. **Overview of current consortium status and update**
   Prof Karen Canfell (Daffodil Centre, University of Sydney/CCNSW)

3. **Update on Working Group activities**
   a. **Working Group 1 – Treatment**
      I. **Key available data**
      II. **SurvMark analysis**
      III. **Covid and cancer SRs results**
      IV. **Global modelling platform progress update**
         ▪ **Data mapping exercise/ inputs plan across cancers, countries & data sources**
         ▪ **Joint presentation with WHO: modelling work on COVID and cancer**
   b. **Working Group 2 – Screening**
      I. **ICSN update**
      II. **Project team updates (CRC, Cervix, Breast)**

   c. **Working Group 3 – Prevention**

4. **Update on COVID-19 & Cancer Taskforce, snapshot of the impact on cancer patients – 5mins**
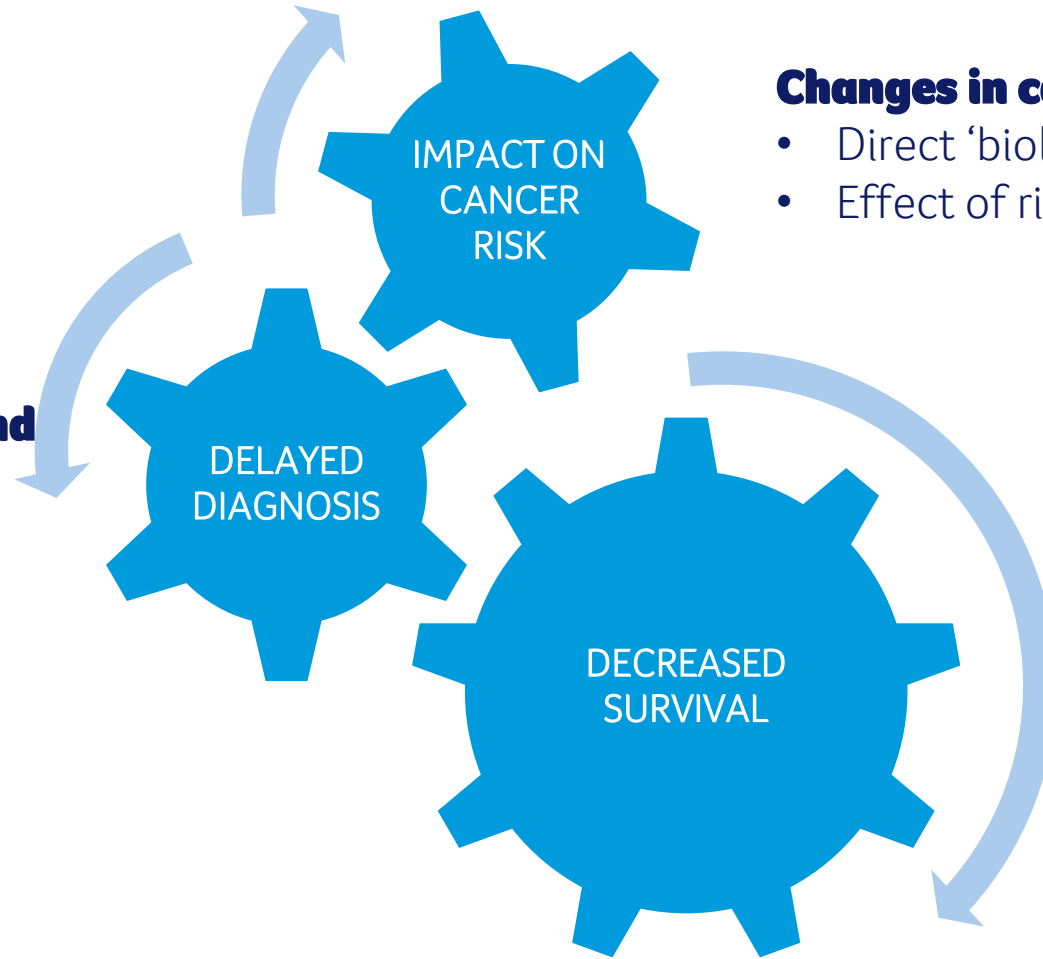   Prof Richard Sullivan (KCL)

5. **Next steps**

2. Overview of current Consortium status.

Overview of working groups

Changes in cancer risk (WG3):
- Direct 'biological' impact on risk
- Effect of risky behaviours during the crisis

Changes in cancer detection and staging (WG1&2):
- Disruptions to screening programs (WG2)
- Delays in symptomatic presentation (WG1)

Changes in cancer outcomes (WG1):
- Impact of treatment disruptions
- Direct 'biological' impact on survival
- Effects on co-morbid conditions
- Competing mortality risk from infection

IMPACT ON CANCER RISK

DELAYED DIAGNOSIS

DECREASED SURVIVAL

Key publications to highlight

de Jonge, L.*, Worthington, J.* et al. (2021). **Impact of the COVID-19 pandemic on faecal immunochemical test-based colorectal cancer screening programmes in Australia, Canada, and the Netherlands: a comparative modelling study.** The Lancet Gastroenterology & Hepatology. http://doi.org/10.1016/S2468-1253(21)00003-0 (*joint first authors)

Ginsburg O., Basu P., Kapambwe S., & Canfell K.(2021) **Eliminating cervical cancer in the COVID-19 era.** Nature Cancer, 2(2), 133-134. http://doi.org/10.1038/s43018-021-00178-9

For CCGMC-related publication updates please visit:
https://ccgmc.org/publications/

Publications in draft/under review

- Editorial/perspective piece – rationale and aims of the CCGMC (targeted at Lancet Oncology)
- ***Working Group 1:***
  - International SRs of COVID risk and mortality for people with pre-existing cancer diagnosis
- ***Working Group 2:***
  Invited overview of screening impact across programs (Prev Med)
  - Cervical HIC (Prev Med)
  - Breast (Prev Med)
  - CRC (Project 2: Lancet Public Health)
- ***Working Group 3:***
  - International SR on smoking behavior change

Establishing a CCGMC 'COVID & cancer' observatory

Initial systematic reviews and modelling & potential extensions to current work

Risk of death from COVID for people with cancer

Risk of infection with COVID for people with cancer

Smoking behaviour

Screening-related disruptions & recovery strategies

COVID vaccine impact and outcomes in cancer patients (?)

Impact of diagnostic and treatment delays(?)

Alcohol, obesity and other risk factors (?)

Other topics to consider?

Update with continually refined inclusion criteria designed to capture only best evidence

Facility to track other relevant SRs and activities underway by other groups

CCGMC Observatory
Living systematic reviews and modelling results
Provide ongoing live evidence assessments

Opportunities for engagement

Setting up new SR working group:

- Phase 2 for SRs:
  1. Impact of COVID on mortality for people with cancer
  2. Risk of Infection of COVID for people with cancer
  3. Lifestyle changes during pandemic (smoking behaviour)

- Current # of members signed up: ~40 members
- Proposed frequency & timing of meeting: every fortnight
- Expected time commitments

SR under consideration: Vaccine & cancer, Impact of diagnostic and treatment delay for cancer patients (based on Hanna et al BMJ 2020)

If you are interested in participating and haven't completed an EOI yet, please contact: covidandcancer@nswcc.org.au

Any further comments/suggestions?

Inputs welcome

❖ Suggestions for priority topics for the CCGMC Observatory

❖ Configuring capacity building and training opportunities

Please use the chat box for comments or contact the Secretariat

3.Update on Working Group activities.

WG1 – Treatment & outcomes

Overview

1. **Key available data**
2. **SurvMark analysis**
3. **Covid and cancer SRs results**
4. **Global modelling platform progress update**
   - Data mapping exercise/ inputs plan across cancers, countries & data sources
   - Joint presentation with WHO: modelling work on COVID and cancer

COVID-19 and Cancer Systematic Reviews

Two systematic reviews, including critical appraisal, of the early literature:

1. Do people with a pre-existing cancer diagnosis have a higher risk of contracting SARS-CoV-2 or developing COVID-19 ?

2. Do COVID-19 patients with cancer have a higher risk of COVID-19 death than those without cancer?

Methods:

Literature searched to July 01, 2020:

- Published: Medline, Embase

- Preprint: MedRxiv, BioRxiv, SSRN

- + citations identified

COVID and Cancer

Data and Models
to support decision-making

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Root Causes, Data and Parameterization

Root Causes
What are the ways COVID-19 has impacted cancer patients

Delays in diagnosis

Treatment services not accessible

Optimal treatment not available

Treatment abandoned

↑ risk of death for cancer patients contracting COVID-19

Collecting Data

(1) From WHO

3 pulse surveys
→ **Cancer significantly impacted**
but only high-level estimates & response

(2) From Studies

2 systematic reviews
→ **Substantial impact** on services
(but only 10 countries, limited strategies)

(3) From partners

eg, childhood cancer database

Model

Health impact

System impact

Financing considerations

Mitigation strategies

World Health Organization

Modelling for Impact, Decision-Making

User inputs *(baseline assumptions provided)*

- Country cancer profile
- COVID-19 timeline
- Impact per cancer sites (14)

- Disruption (reduced coverage/abandon)
- Alterations in care (eg, reduced XRT)
- Delays in care stage distribution
- Recovery after pandemic

Modelling for Impact, Decision-Making

Country Estimate
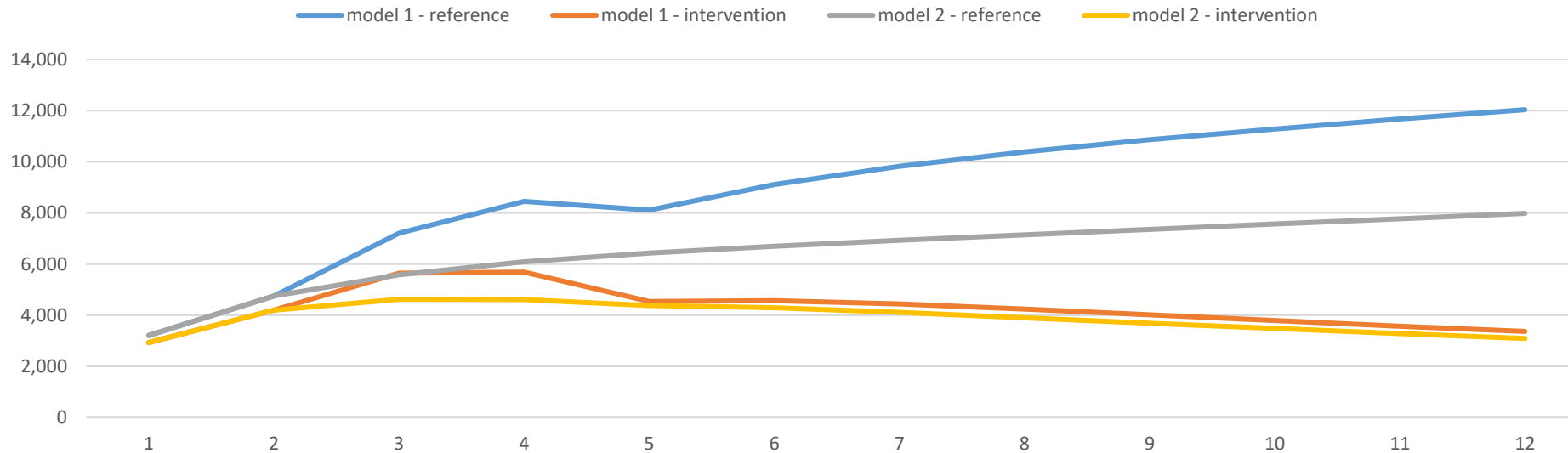
Benefit Package 1→2
30% delivery red.

Comparing deaths
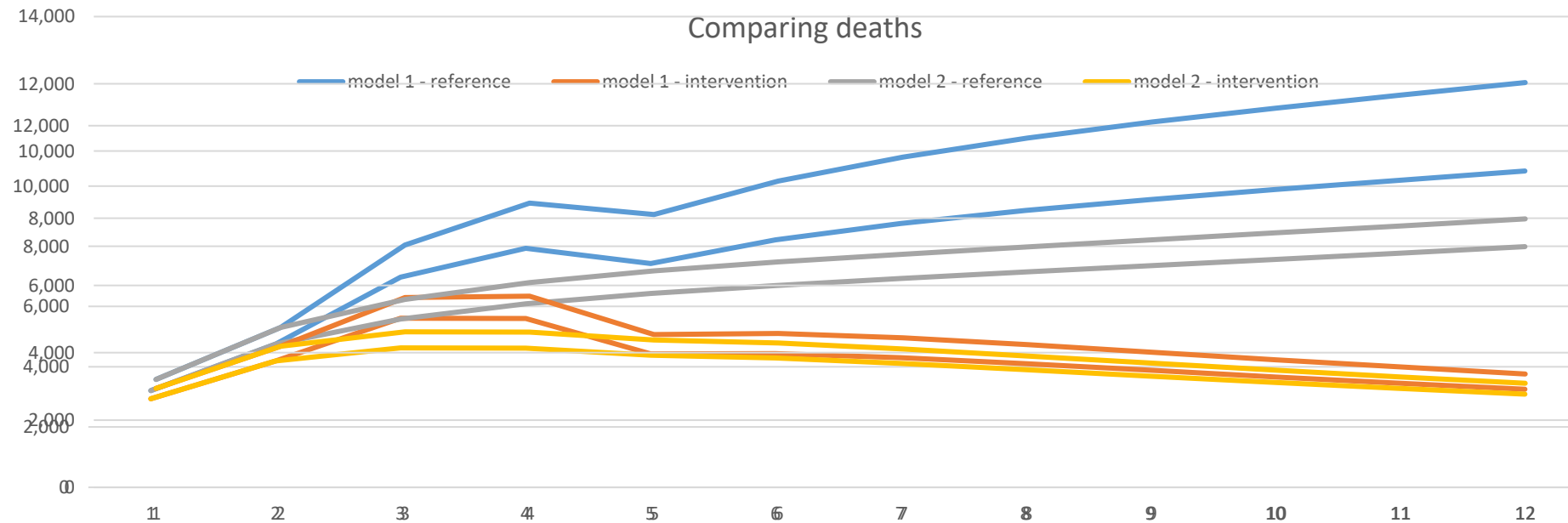
Benefit Package 1→2
50% delivery red.
Benefit Package 1
30% delivery red.

Translating the Evidence
Customize and Tailor

Country Cancer Profile

Download the file (Excel Format)

- Covid-19 burden
- Cancer Sites
- Disruption (delay/abandonment)
- Stage Distribution
- Time Horizon

Sample WHO Guidance

✓ Define and maintain or modify essential services to mitigate impact

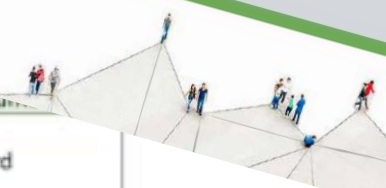✓ **Adapt treatment** services for different phases

✓ Organize committee for **rapid review and improvement** cycles during pandemic phases

COVID-19

Considerations for the Reorganization of Cancer Services during the COVID-19 Pandemic

Maintaining essential health services: operational guidance for the COVID-19 context

Interim guidance
1 June 2020

	Types of cancer, complications, and treatm...
High	Rapidly evolving and lethal cancer. Imminent risk of death (acute leukemias, aggressive lymphomas, metastatic germ cell tu...
	Potential high morbidity and/or impaired quality of life (refractory pain crisis, radiation therapy for soft tissue spinal cord compression), oncological emergencies.
	Definitive curative treatments (concurrent chemotherapy for head and neck, cervical, or rectal cancer. Categorically prioritize Hodgkin's disease, diffuse large B-cell lymphoma, acute promyelocytic leukemia.
	Neoadjuvant or adjuvant treatment indications with substantial benefits in terms of overall disease-free survival (adjuvant chemotherapy for stage III colon cancer, chemotherapy or radiation therapy for high-risk breast cancer)
	Neoadjuvant or adjuvant treatment indications with modest survival benefits (adjuvant chemotherapy for bladder cancer)
	Palliative indications with substantial survival benefits (immunotherapy for melanoma, systemic therapy for metastatic breast cancer)
	Palliative indications with modest survival benefits and/or symptom control (palliative chemotherapy for gastrointestinal cancer, radiation therapy for metastatic bone cancer that is unresponsive to other treatments)
	Palliative indications with no benefits in terms of overall survival or symptom control (second- and third-line chemotherapy for solid tumors)
Low	Alternative treatments that do not affect the principal health outcomes

World Health Organization

Conclusion and Next Steps

- ***Data***: ongoing collection of data (WHO, IARC, childhood cancer), systematic reviews (eg, with CCGMC)

- ***Dialogue***: publishing results from model with positive messaging, in context of mitigation strategies

- ***Support***: ongoing dialogues with governments

- ***Collaboration***: strong **partnerships** appreciated to advance dialogue, support patients
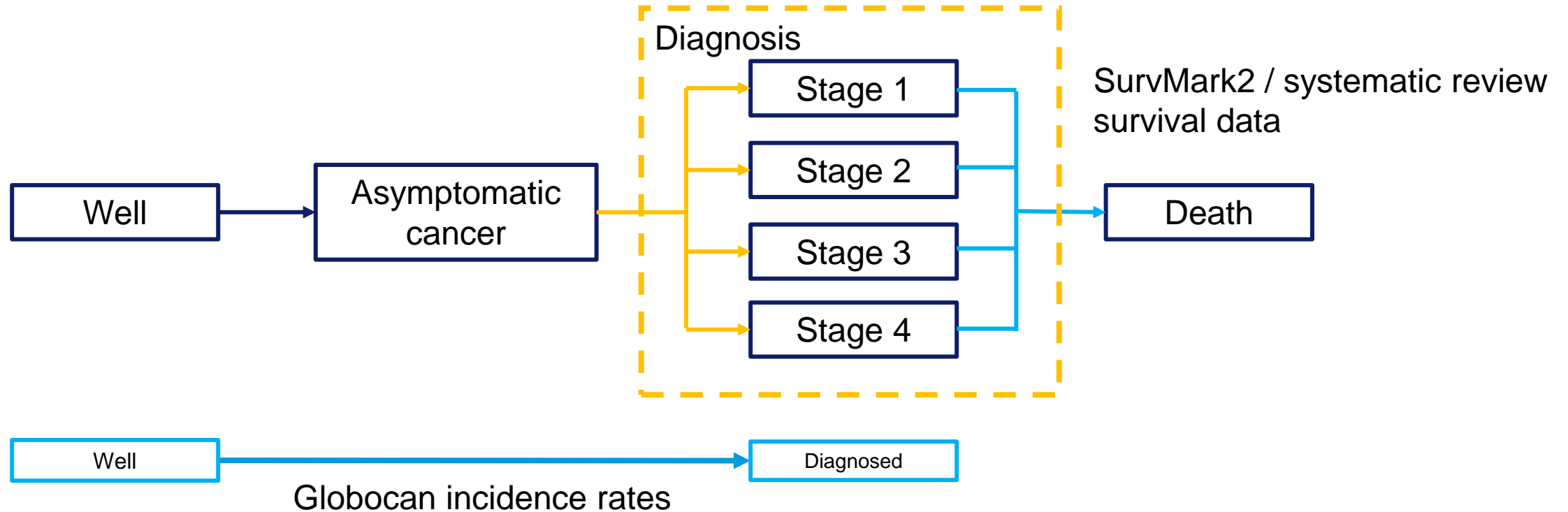
THANK YOU

Global Modelling Platform

Policy1-COVID19: A survival-based simulation of cancer burden across the globe.

Spanning multiple countries and cancers.

Implementation phase 1:

- Breast cancer
- Colorectal cancer
- Lung cancer
- Cervical cancer

Model Structure & Data Sources

We will explore different **screening**, **diagnostic** & **treatment** delay scenarios for the COVID-19 pandemic.

WG2 – Screening

ICSN update.

A/Prof Iris Lansdorp Vogelaar (Erasmus University)

WG2 – Project team updates

Overview

1. CRC project team update
2. Cervix (HIC) project team update
3. Breast project team update

CCGMC WG2
Colorectal cancer screening project team update.

CRC Screening Project 1

CRC screening Project 2

Aim: to evaluate strategies that clear the CRC screening backlog due to the COVID-19 pandemic using limited colonoscopy resources, including:

1. Performing catch-up screening at regular FIT threshold in 6, 12 & 24 months
2. Performing catch-up screening at increased FIT threshold in 6, 12 & 24 months
   - Netherlands: 47, 50, 55, 60, 70, 80 µg HB/g faeces
   - Canada & Australia: 20, 25, 30, 40, 50, 60 µg HB/g faeces

Using 4 microsimulation models (ASCCA, MISCAN-Colon, OncoSim, Policy1-Bowel) to evaluate the programs in the Netherlands, Canada and Australia.

Project 2 – selected results

A. ASCCA - the Netherlands
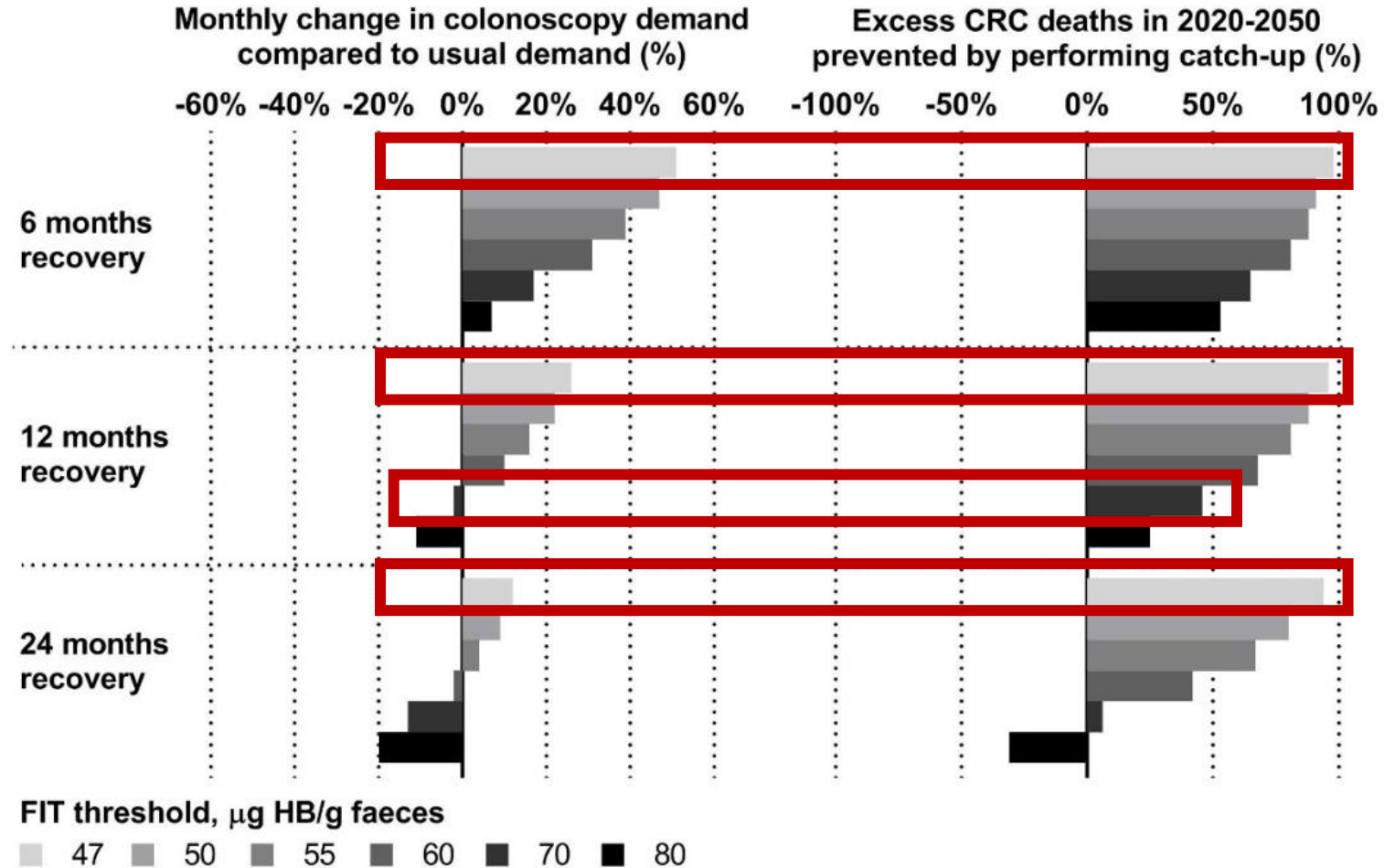
CRC screening Project 3

- Extension of <u>Project 1</u>, which used hypothetical screening pauses
- Detailed <u>real-world screening data</u> is becoming available, in both the modelled countries as well as other countries with comparable FIT-based screening programs (ICSN survey, information from local programs)
- We plan to expand previous analyses using this new, real-world data
- If you have any additional sources of detailed screening data that cover the period from March 2020, or other relevant data, <u>please let us know</u> by emailing the secretariat (<u>covidandcancer@nswcc.org.au</u>)

CCGMC WG2
Cervical Screening in high income countries.

Team Members

Co-chaired by Dr Megan Smith, Dr Emily Burger and Dr Alejandra Castanon
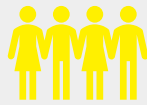
About 20 people showed interest in being involved with this groups. Half join on a regular basis

Fortnightly meetings

Outputs (1)

Original research

- **Impact of disruptions and recovery for established cervical screening programs across a range of program designs, using COVID-19 as an example: a modelled analysis** Smith M.A, Burger E.A, Castanon A, de Kok I.M.C.M, Hanley J.B, Rebolj M, Hall M.T, Jansen E.E.L, Killen J, O'Farrell X, Kim J.J, Canfell K.

- *Preventive Medicine* special issue on Covid 19 and Cancer Screening, due to be published July (under review)

Outputs (2)

Viewpoint

- **Optimal cervical screening COVID-19 recovery strategies in high-income countries depend on context of current programme organisation** Castanon A, Rebolj M, Burger EA, de Kok I.M.C.M, Smith MA, Hanley S.J.B., Carozzi FM, Peacock S, and O'Mahony JF.

- *Lancet Public Health (Accepted)*

Outputs (3)

Other dissemination opportunities

- HPV Board Meeting

- ICSN seminar

- Satellite symposium at IPV

Future directions

Current themes we are exploring

Quantify the variation in expected health gain from risk-based targeting of routine cervical screening (e.g., age and time since last screening test).

- **Limited 'real world' data on which to base simulations**
- **Still in the process of brain storming – ideas welcome**

CCGMC WG2
Breast cancer screening project team update.

WG2 – Screening: breast cancer

- 18 members, from 15 countries
- Joint chairs: Jonine Figueroa (U Edinburgh), Carolyn Nickson (The Daffodil Centre/University of Melbourne), Karen Canfell (The Daffodil Centre)

Group-specific aims
For various settings, in a comparative framework:

1. **Document/estimate the disruption** to breast screening due to COVID

2. **Use existing well calibrated and validated model platforms** to estimate the impact of this disruption on breast cancer incidence, delayed diagnosis (esp. staging via tumour size, nodal involvement) and mortality (additional deaths)

3. Characterise impact on **referrals to treatment services**, e.g. rates and case-mix

4. Estimate the impact and cost-effectiveness of **catch-up/adaptation strategies**

WG2 – Screening: breast cancer

Countries	Screening pauses
Australia	1 month (March-April)
Canada	~4 months (March-June), with regional variation
Germany	2 months (March- April)
Italy	2 months (March-April) – with regional variation
The Netherlands	4 Months (March- June)
United Kingdom	6 Months; March-August

Analysis (submitted as a WG manuscript):

- Summary of disruptions by country
- Summary of modelled evaluations of COVID impact on breast screening, noting differences in approach.
- Common themes - range of assumed pauses to organised breast screening (e.g. 3, 6, 9 or 12 months), focus on tumour staging and mortality as outcomes.
- Emerging cancer registry and screening program data will be valuable for future modelling
- Priorities for future modelling exercises include population level outcomes, treatment intensity, inequities within populations, high-level modelling in LMIC settings, stakeholder engagement

WG2 – Screening: breast cancer

Next steps

For various settings, in a comparative framework:

1. Document/estimate the disruption to breast screening due to COVID

2. Continue reporting and consolidating results on modeling estimates on the impact of this disruption on breast cancer incidence, delayed diagnosis (esp. staging via tumour size, nodal involvement) and mortality (additional deaths)

3. Characterise impact on referrals to treatment services, e.g. rates and case-mix

4. Estimate the impact and cost-effectiveness of catch-up/adaptation strategies

Next meeting May 2021 (TBD)

WG3 – Prevention

Overview

1. **Systematic review of smoking behavior changes during the pandemic – progress update**
2. **Call for collaboration on lifestyle change surveys & data sources**

Systematic review question and PECO

Research question:
Is the COVID-19 pandemic associated with changes in tobacco smoking behaviour?

Population	Exposure	Comparator	Outcome	Study design
General population/anyone or Smokers or Former-smokers or Never-smokers	COVID-19 pandemic/ lockdown	Pre COVID-19 pandemic/ lockdown	**Change in tobacco smoking**, e.g., Intensity or Prevalence or Frequency or Uptake/initiation or Cessation/quitting or Increase/decrease or Patterns Quit attempts and intention to quit	Cohort studies Controlled and uncontrolled before and after studies Cross-sectional studies

PROSPERO 2020 CRD42020206383 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42020206383

Systematic review progress

Academic literature progress

	Aug 20	Sept	Oct	Nov	Dec	Jan 21	Feb	Mar	Apr	May
Protocol development and PROSPERO registration	✓						✓			
Literature search (Medline, Embase, PsychInfo, medRxiv and SSRN to 6th November)		✓					✓			
Title/abstract screening of >17000 records		✓	✓				✓			
Full text screening of 122 articles			✓				✓	✓		
Data extraction 47 articles				✓	✓	✓	✓	✓	✓	
Risk of bias assessment					✓	✓	✓	✓	✓	
Meta-analyses and synthesis						✓	✓	✓	◉	
Manuscript drafting and journal submission										

Data extraction: Citadel Cabasag, Erica Liebermann, Peter Sarich, Pavla Vaneckova, Isabelle Soerjomataram, Allini Mafra.

Call for data sources on behaviour changes and collaboration on future reviews

- At last CCGMC meeting, asked for information on local lifestyle surveys and studies
  - 26 submissions, data sources in 31 countries
  - Tobacco, alcohol, diet, physical inactivity, body fatness, diet, mental health, others
- Additional submissions very welcome through https://form.jotform.com/203067806435051

- Currently open call for collaboration on future reviews (with WG1)

One survey
Multiple surveys
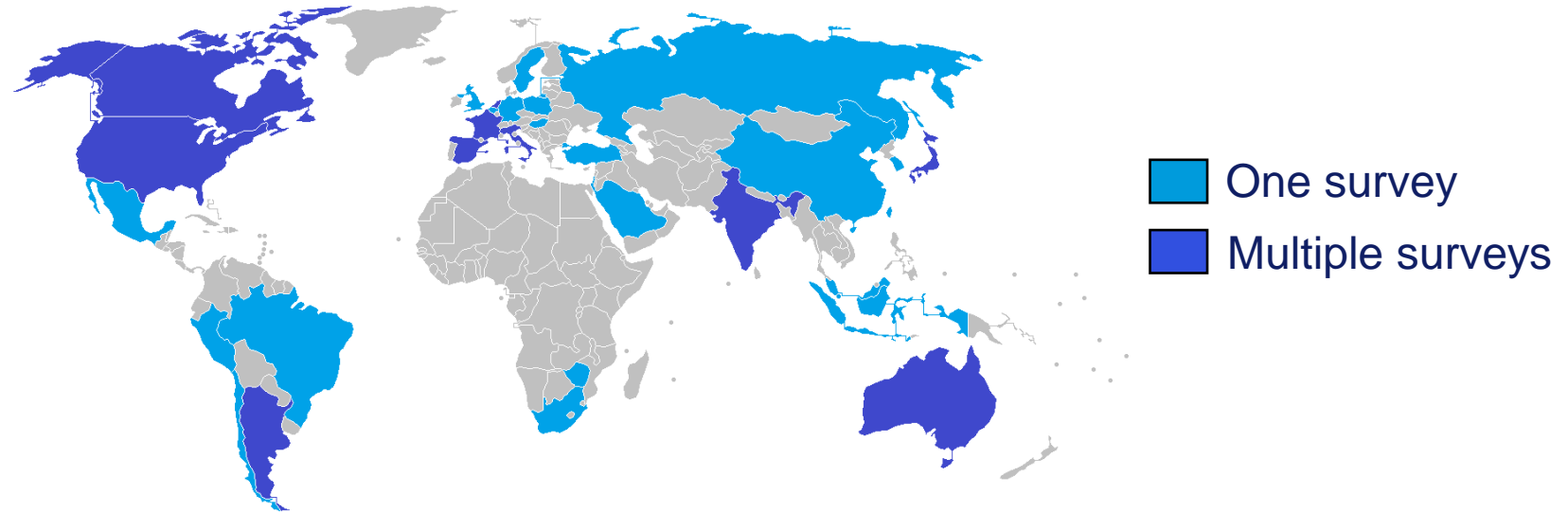
Update on Covid-19 & Cancer Taskforce, snapshot of the impact on cancer patients.

Prof Richard Sullivan

uicc global cancer control
A MEMBERSHIP ORGANISATION FIGHTING CANCER TOGETHER

International Agency for Research on Cancer
World Health Organization

CANADIAN PARTNERSHIP AGAINST CANCER
PARTENARIAT CANADIEN CONTRE LE CANCER

ICSN
International Cancer Screening Network

The Daffodil Centre
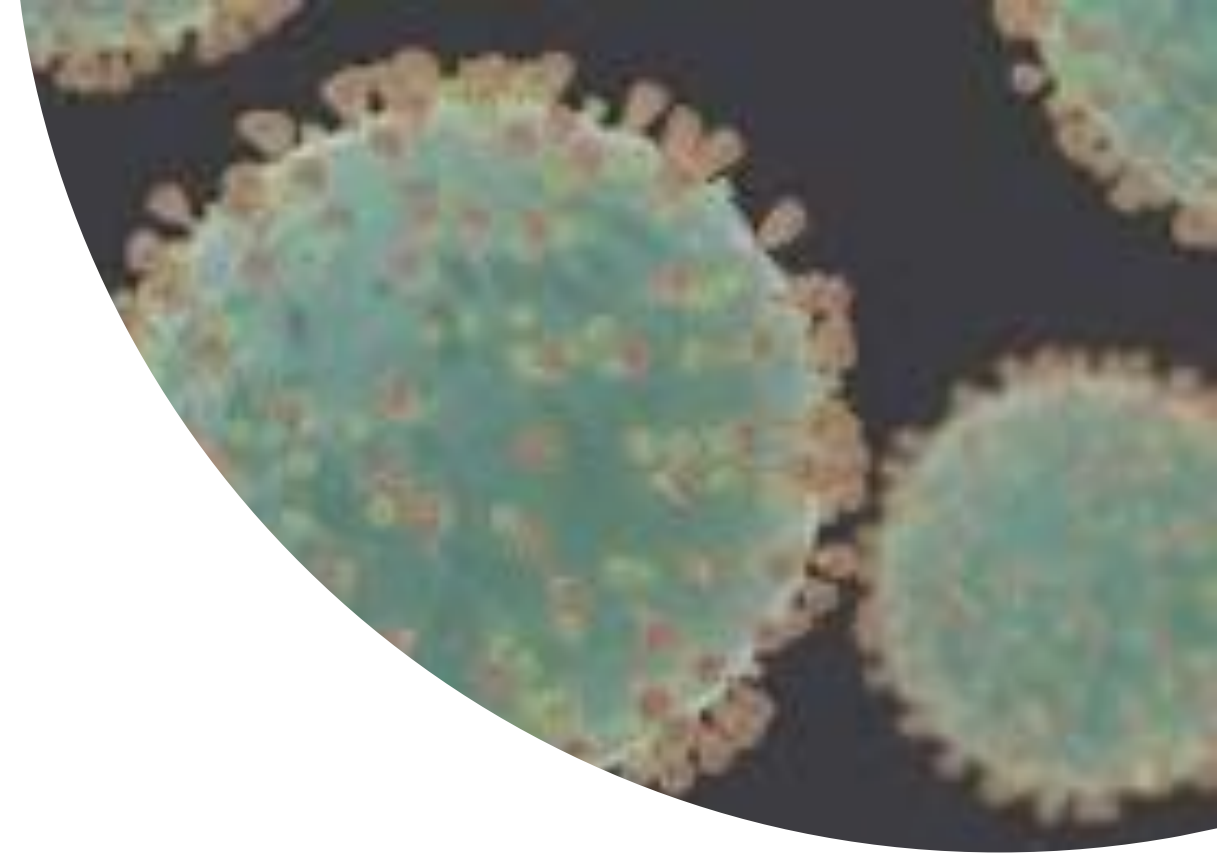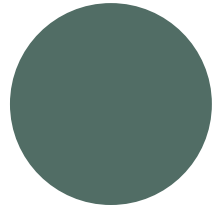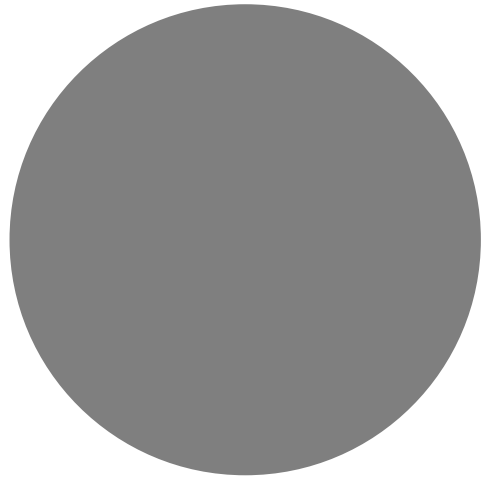
Covid-19 and Cancer Taskforce

Prof Richard Sullivan

April 2021 Update

Engagement: national and international

- Webinar series: NCG India; King's Queens, etc
- 3 symposiums to date

Overview

- Grown to 72 members across 47 countries

- Nine projects of varying size

- Longest running collaborative network

- 30 publications with estimated 11 near completion

OBJ 1
Assess the immediate impacts on cancer patients, services, and healthcare workers

OBJ 2
Address risks for longer term impacts on cancer outcomes, inequalities, research and affordability

OBJ 3
Develop an integrated approach to build resilient cancer services with readiness to respond to new pandemics

Shared learnings and cross-collaborations
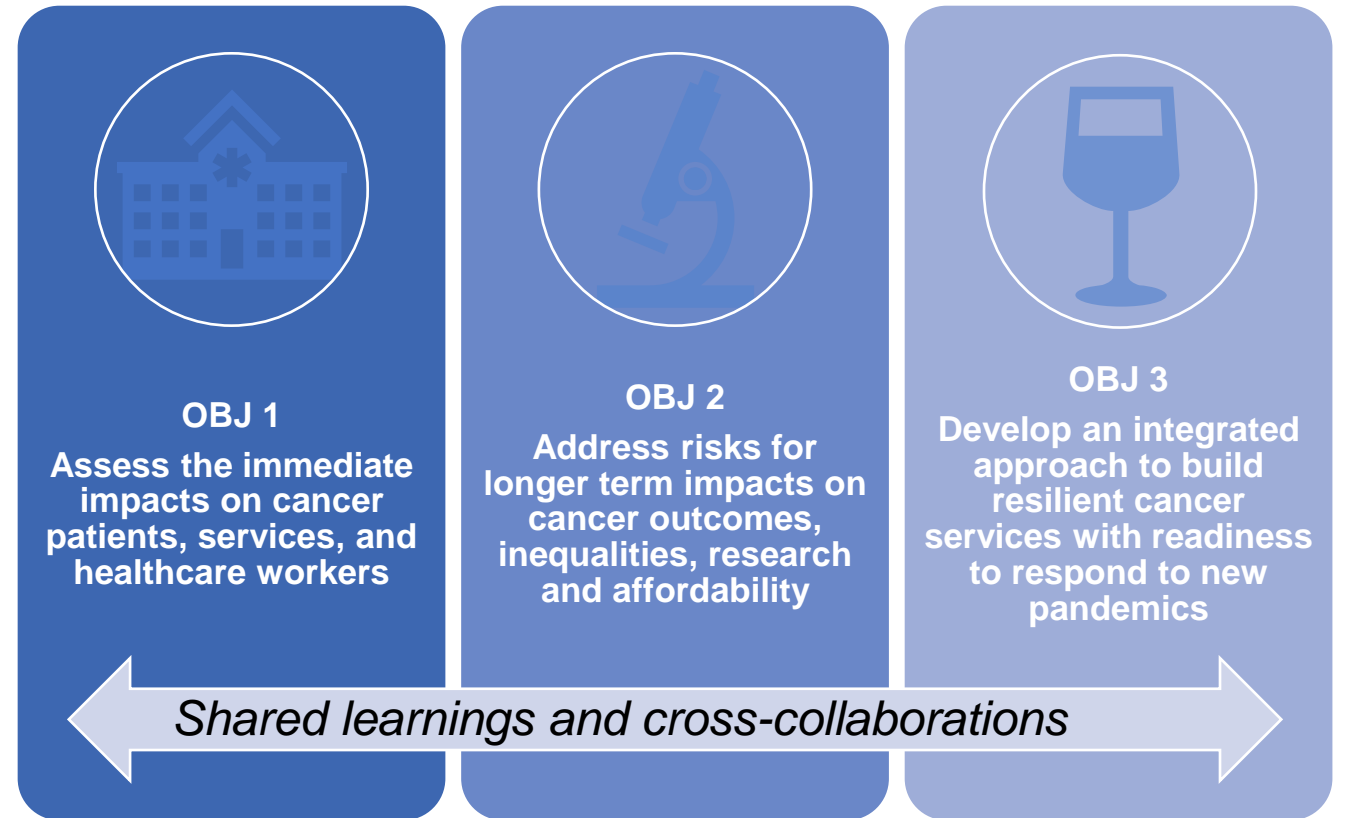
Health worker survey WG

- Led by Chris Booth (Canada, UK, Malaysia, Pakistan, Jordan, Colombia, Rwanda/Boston, Australia, Japan

- Individual analysis & publication f/b meta-analysis

- Quantifying perceived stress & resilence to inform organisational strategies supporting mental health of HCW

- Japan has most complex and complete study: 2 waves (n=566, n=336) with third wave planned.

Silver linings WG

ecancermedicalscience

Silver linings: a qualitative study of desirable changes to cancer care during the COVID-19 pandemic

Dorothy Lombe[1] (iD), Richard Sullivan[2], Carlo Caduff[3], Zipporah Ali[4], Nirmala Bhoo-Pathy[5], Jim Cleary[6], Matt Jalink[7], Tomohiro Matsuda[8], Deborah Mukherji[9], Diana Sarfati[10], Verna Vanderpuye[11], Aasim Yusuf[12] and Christopher Booth[7]

- Semi-structured interviews (n = 20) were conducted with key opinion leaders from 14 countries

- 10 themes of positive changes

- In depth survey based study; meta-analysis with other work in this area. Will report Qtr 3 2021

Economic impact WG

ecancermedicalscience

Cancer and COVID-19: economic impact on households in Southeast Asia

Yek-Ching Kong[1], Veni-Venusha Sakti[1], Richard Sullivan[2] and Nirmala Bhoo-Pathy[1]

- EJC about to publish economic impact of delayed diagnosis for cancer in England & Wales; same model being applied to other EU datasets

- Michael Schlander working on major German study with DKFZ

- Briefed OECD (Laurence Boone)

Research Impact WG

Impact of COVID-19 on Global Cancer Research: an opportunity to redefine priorities (REPRISE)

- Mieke v H, Debbie Mukherji, Louis Fox & Verna Vanderpuye
- Survey and bibliometric analysis
- Publishing Qtr 3 2021

Table 2. Outputs of papers on COVID by the leading 12 countries (N), COVID research in cancer (C + O) (N), and percentage of these papers, integer counts, as a proportion of countries overall COVID research output over this period.

Country	ISO	COVID	C+O	%		Country	ISO	COVID	C+O	%
USA	US	15418	499	3.2		Spain	ES	2533	102	4.0
Italy	IT	5072	298	5.9		India	IN	3416	100	2.9
UK	UK	5148	188	3.7		Canada	CA	2503	90	3.6
China	CN	8725	180	2.1		Switzerland	CH	1119	62	5.5
France	FR	2147	112	5.2		Turkey	TR	1471	60	4.1
Germany	DE	2822	110	3.9		Australia	AU	2059	54	2.6

'No cancer studies suspended to my knowledge'
29%

'Some cancer studies are/were suspended'
48%

'All cancer research studies are/were suspended'
23%
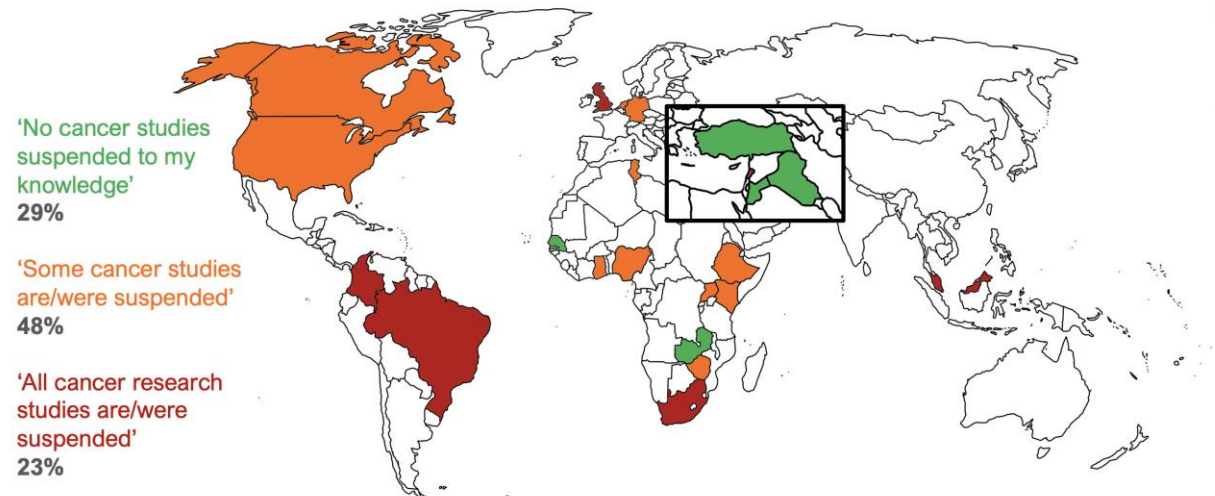
COVID-19 Risk and Indirect Impact WG

- A lot underway in high income settings (quant) but mainly from single centres, in LMIC mostly qualitative / narrative

- Risk picture is very complicated – publications from hospital cohorts, global cancer surgery etc; but huge problem with ascertainment bias and variations in methods used to calculate risk to cancer patient

ecancermedicalscience

The impact of national non-pharmaceutical interventions ('lockdowns') on the presentation of cancer patients

Arnie Purushotham[1,2], Graham Roberts[2], Kate Haire[2], Joanna Dodkins[2], Elizabeth Harvey-Jones[2], Lu Han[3], Anne Rigg[2], Claire Twinn[2], Conjeevaram Pramesh[4], Priya Ranganathan[4], Richard Sullivan[1] and Ajay Aggarwal[1,2,3]

COVID-19 Vaccines

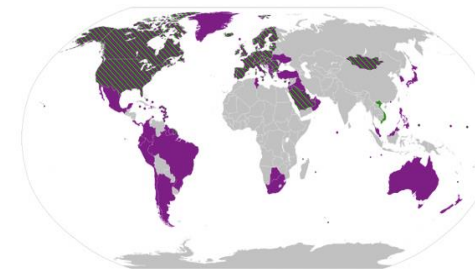## Cancer and COVID-19 vaccines: a complex global picture

Patients with cancer can be at high risk of severe COVID-19 due to their age, disease, cancer treatment, and medical co-morbidities.[1] The pandemic has also led to substantial disruptions to diagnosis and treatment in many parts of the world.[2,3] Patients with cancer in low-income and middle-income countries (LMICs) are further disadvantaged compared with those in high-income settings because of unequal access to COVID-19 vaccines in already fragile health-care systems.

What do we know so far about the safety and efficacy of COVID-19 vaccines for patients with cancer? Notably, the published data only reflect certain vaccines in specific, mostly high-income, settings. With this caveat resources, especially if vaccines become available in the private sector, rather than exclusively through government-led national programmes.

In light of the challenging and rapidly changing vaccine landscape for patients with cancer, the COVID-19 and Cancer Taskforce undertook a rapid assessment of the current global availability of COVID-19 vaccines and their strategies for covering cancer patients and health-care workers, up to and including March 31, 2021. We surveyed members of the Taskforce from 38 countries covering the full spectrum of development from low-income to high-income settings and received completed responses from

| Country	Pfizer BioNTech	Moderna	Covaxin	Sputnik V	Sinopharm (WB/WIBP)	CoronaVac	Convidecia	Johnson & Johnson	Oxford Astra-Zeneca	Healthcare workers	Cancer patients
Low and Middle Income Countries											
Argentina					X				X	2nd Dose	2nd Dose
Bolivia					X				X		
Brazil			X						X	2nd Dose	
Colombia								X	X	1st Dose	
Costa Rica									X	2nd Dose	
El Salvador											
Ghana			X	X						1st Dose	
Guatemala											
India										2nd Dose	1st Dose
Iraq											
Jordan				X						Mixed	1st Dose
Kenya										1st Dose	
Lebanon				X					X	1st Dose	1st Dose
Malaysia										2nd Dose	
Mexico				X	X		X			1st Dose	
Myanmar				X					X	1st Dose	
Nigeria											
Pakistan										2nd Dose	
Peru	X									NA	
Philippines						X			X		
Rwanda								X	X	Mixed	
South Africa	X								X	1st Dose	
Sri Lanka	X									1st Dose	
Turkey										2nd Dose	1st dose
Uruguay						X					
Venezuela										Mixed	
Zambia											
High Income Countries											
Canada										1st dose	1st dose
Chile									X	Mixed	1st Dose
NZ								X	X	1st dose	
Singapore		X				X				Mixed	
UK										1st Dose	1st Dose
USA										Mixed	Mixed

RNA vaccines
- Pfizer–BioNTech
- Moderna
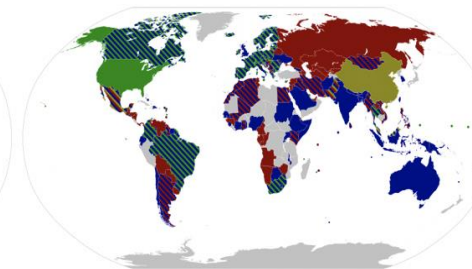
Adenovirus vector vaccines
- Oxford–AstraZeneca
- Sputnik V
- Johnson & Johnson
- Convidecia
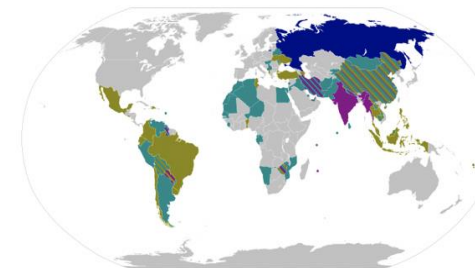
Inactivated virus vaccines
- Sinopharm (BBIBP)
- CoronaVac
- Covaxin
- Sinopharm (WIBP)
- CoviVac

Protein subunit vaccines
- EpiVacCorona
- RBD-Dimer

5. Next steps.

Moderated by Prof Karen Canfell & Dr Isabelle Soerjomataram

Thank you

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