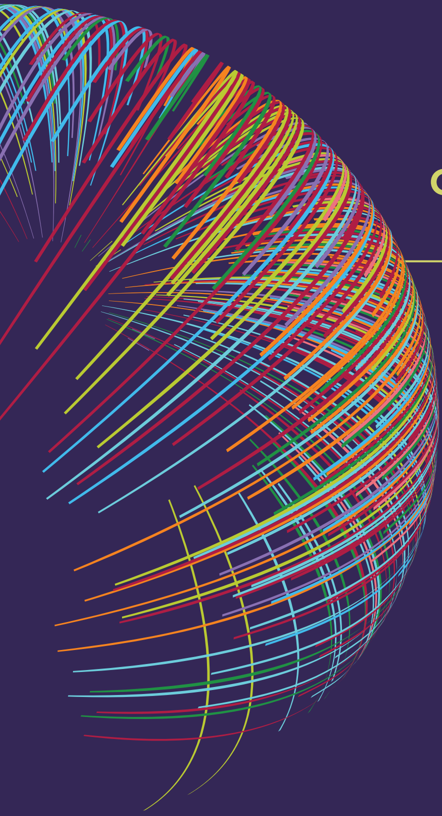
Toronto Global Cancer Control Conference



Creating the Future

March 1 to 3, 2018

Toronto, Canada

UHN Princess Margaret Cancer Centre

UNIVERSITY OF TORONTO
DALLA LANA SCHOOL OF
PUBLIC HEALTH

LETTER FROM CO-CHAIRS

Dear Friends

We are very pleased to offer a very exciting program devoted to global cancer control. Cancer is the most complex group of diseases that use most of health systems. Cancer control spans many subjects from policy and planning, prevention and screening activities, availability of diagnostic services with laboratory medicine, pathology and medical imaging, early detection programs, treatment with surgery, radiotherapy, chemotherapy, and support of pharmacy and infection control services, palliative care with psychosocial support and rehabilitation. Cancer is a heterogenous group of diseases that varies around the world and across the life course. Although around 30-50% of cancers are preventable, many are curable and most are treatable, cancer receives less attention on the global health agenda than other diseases. Great discrepancies are seen across the world, especially in low and middle-income countries (LMIC). Although the long term survival has doubled in the last 40 years in high income countries this progress has not been witnessed in low or middle-income countries. Hence, in high-income countries, two-thirds of those diagnosed with cancer can expect to survive, but in LMICs only one-third do.

Our conference cannot possibly address all aspects of cancer control. However, we will discuss many pressing issues around the globe and hope to highlight what needs to be dome, what can be done and how we can get involved to accelerate the progress in global cancer control. The conference brings together experts in public health, global health, cancer policy, cancer treatment and supportive care. The presence of the World Bank, experts from the global health community as well as major cancer organization, universities and NGOs shows the breadth and depth of expertise that need to be engaged.

We were able to attract visionary keynote speakers who will stimulate us to think big. The many world experts in the special topic sessions will address cancer control challenges and initiatives and set the stage for the discussion about the future. The Davos-Style Plenary Panel discussions will focus on the future and what can be done to accelerate the progress, how can we act differently, show us the opportunities for innovation, and create synergies by working together. The final special keynote by Julio Frenk will take us into the future of cancer in global health.

The abstracts submitted to the meeting describe many Toronto based global cancer initiatives and also efforts by investigators from LMICs in supporting development of cancer services. With over 100 posters accepted to the conference, the interest in global cancer is surely reaching new heights.

We are very pleased to welcome many young people to the meeting including the six winners of the travel grants from low and middle income countries. We are fortunate to have the Lancet Oncology as our scientific partner and Lancet Global Health publishing the session abstracts.

We are grateful to our sponsors for their generous support.

Working with you, we hope that these few days will herald many more years of knowledge and action that can substantially improve cancer control worldwide.

Mary Gospodarowicz, OC MD, and Prabhat Jha OC, DPhil
Co-chairs

OVERALL CONFERENCE OBJECTIVES

- To explore next generation approaches to cancer control, disruptive innovation, and foster transdisciplinary engagement to address global cancer challenges.
- To build together partners, stimulate networks, foster and develop young leaders.
- To examine critical and potentially synergistic link between women's and child health initiatives and global cancer control.

INTERNATIONAL SCIENTIFIC ADVISORY COMMITTEE

Mary Gospodarowicz, Co-chair
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Felicia Knaul, Co-chair
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Otis Brawley
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CONFERENCE DIRECTOR

Mary Hooey

FACULTY LIST

KEYNOTES

Sir George Alleyne, MD FRCPC FACP(Hon) DSc(Hon)
Director Emeritus, Pan American Health Organization
Washington, DC

Professor Julio Frenk, MD MPH PhD
President, University of Miami
Miami, FL

Sir Michael Marmot, MBBS MPH PhD FRCP FFPHM FMedSci
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OAM, Professor, Faculty of Medicine
Sydney, Australia

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ACCREDITATION

This continuing education event was held under the auspices of Continuing Professional Development, Faculty of Medicine, University of Toronto and Princess Margaret Cancer Centre.

Royal College of Physicians and Surgeons of Canada – Section 1
This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, approved by Continuing Professional Development, Faculty of Medicine, University of Toronto. You may claim a maximum of 20 hours (credits are automatically calculated).

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Through an agreement between the Royal College of Physicians and Surgeons of Canada and the American Medical Association, physicians may convert Royal College MOC credits to AMA PRA Category 1 Credits™. More information on the process to convert Royal College MOC credit to AMA credit: www.ama-assn.org/go/internationalcme

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Live educational activities occurring in Canada and recognized by the Royal College of Physicians and Surgeons of Canada as Accredited Group Learning Activities (Section 1) are deemed by the European Union of Medical Specialists (UEMS) eligible for ECMEC®."

CERTIFICATE OF ATTENDANCE

To receive your certificate of attendance, you must complete the online evaluations (see Evaluation section below). Upon completion, you will be directed to your certificate where you will be able to type in your name, the number of credits you are eligible for, and print the certificate.

EVALUATION

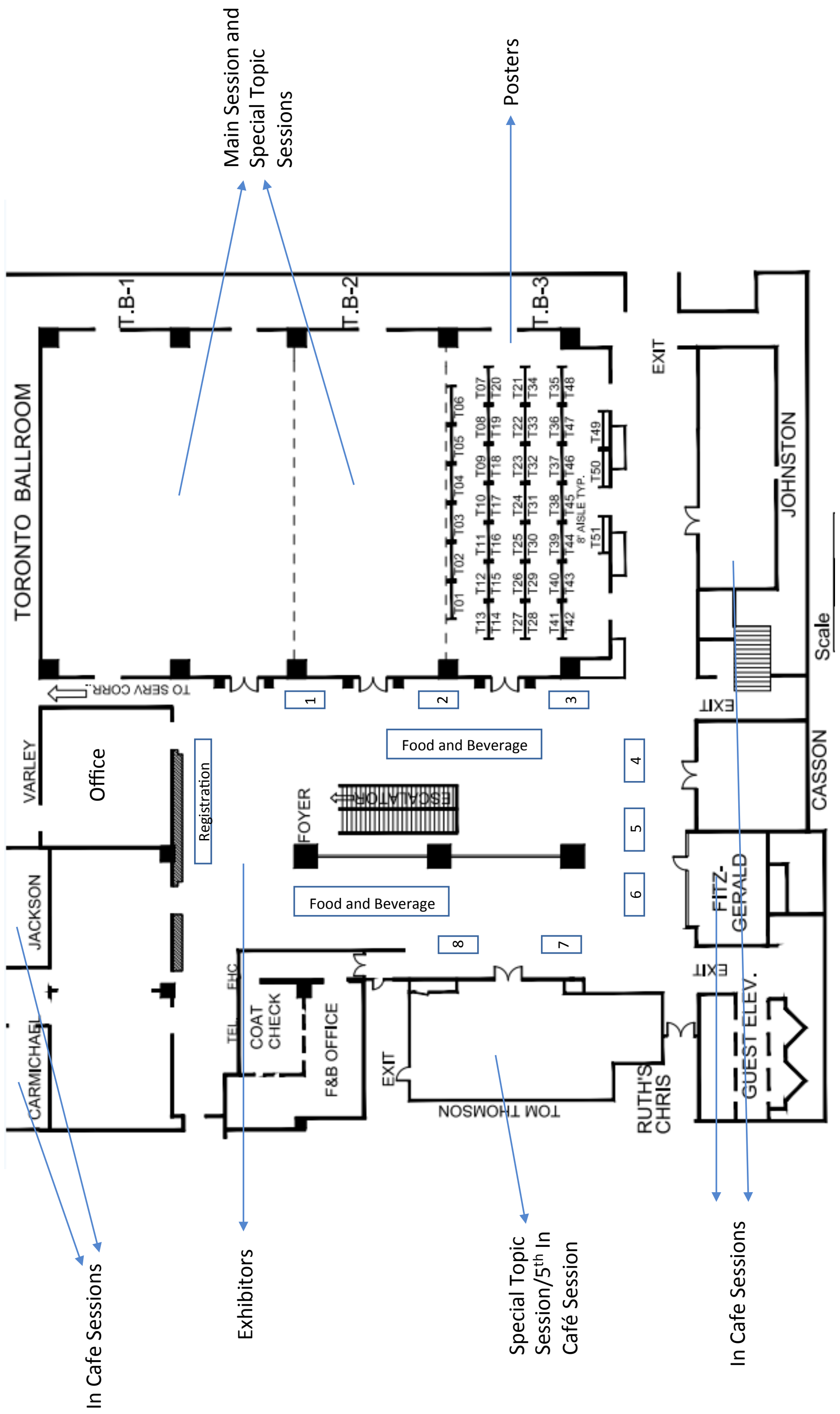
The evaluation will be done through an online survey that will be sent to you by the end of the day. The email will include a link to the survey. The survey will be easily accessible on your smart phone or you can choose to complete the survey online at your desktop computer/laptop. Please note that if you open the survey, you must complete the survey in its entirety. If you close out of the survey, it will not save. Once you complete the survey and click "Done", you will be directed to your certificate of attendance.

WIFI ACCESS

To access your complimentary WiFi, open your device's network settings, select "Hilton Meeting", and enter the password "global" when prompted.

INFORMATION

Should you require assistance at any time during this conference, please visit the registration desk, located in the foyer.



ABSTRACTS

Thank you to Lancet Global Health, our scientific partner, in publishing our abstracts from the keynotes, plenary panel discussion and special topic sessions.

Topics covered were related to access to cancer care; education and health human resources advances/innovations; equity in access to cancer; health economics, Innovations in cancer care delivery, healthcare systems, and quality of care; palliative and supportive care, pain control; prevention and screening; survivorship; tobacco control and transdisciplinary models of cancer care.

You are invited to view the posters (Abstracts #19-92) on Thursday and Friday during the breaks and lunches with the official poster viewing session on Thursday at 5:30 during the Welcome Reception.

Abstracts #1-18 are featured in the Rapid Fire Sessions on Saturday morning.

Prizes will be awarded for the best rapid fire and poster presentation.

TRAVEL AWARDS

Toronto Global Cancer Control Conference offered travel funds for participants from LMICs which included masters and doctoral students, post-doctoral fellows, residents, fellows, medical students, and young leaders under the age of 40. We hope to encourage networking and exchange of ideas among emerging scholars working within all aspects of cancer control, particularly encourage interdisciplinary dialogue and cross-disciplinary exposure of research in cancer care.

CONGRATULATIONS TO OUR AWARDEES!

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Past President, WITS Student Surgical Society
Johannesburg, South Africa

PROGRAM AT-A-GLANCE

THURSDAY, MARCH 1, 2018

7:00-8:00	BREAKFAST AND REGISTRATION
8:00-8:30 Convention Level Foyer	Welcome and Opening Ceremony M. Gospodarowicz, P. Jha A. Brown, T. Young, C. Chan
8:30-9:15 Toronto I/II	Introduction: F. Knaul Keynote 1 **Research and Innovation in Global Cancer Control** Sir G. Alleyne, Director Emeritus, Pan American Health Organization
9:15-10:30 Toronto I/II	**PPD 1 Digitally-enabling Research and Innovation in Global Cancer Control** Co-Chairs: D. Jaffray, Sir G. Alleyne R. Sankaranarayanan, A. Goldenberg, C. Nalin, N. Hacohen
10:30-11:00	REFRESHMENT BREAK

11:00-12:15

STS 1.1 Improving Access to Cancer Care Together with Indigenous Peoples	**STS 1.2 The Lancet Commission on Palliative Care and Pain Relief – Findings, Recommendations and Future Directions**	**STS 1.3 Global Health and Equity in Access to Genomics and Clinical Trials with Novel Therapies**
Chair: C. Earle	Chair: F. Knaul	Chair: A. Oza
G. Turner P. Tobin U. Aslam D. Withrow	C. Zimmermann R. Atun Sir G. Alleyne M. Gospodarowicz	O. Ginsburg C. Hudis S. Lheureux R. Sullivan
Tom Thomson	Toronto II	Toronto I

12:15-13:00	LUNCH
13:00-14:15 Toronto I/II	**PPD 2 Integrated Prevention for Global Cancer Control** Chair: L. Rabeneck E. Franco, P. Jha, R. Sankaranarayanan
14:15-15:30 Toronto I/II	**PPD 3 Progress in Women's Health – Lessons and Opportunities for Global Cancer Control** Chair: F. Knaul R. Atun, M. Schneidman, R. Spitzer, M. Abdel-Wahab, D. Watkins
15:30-16:15	REFRESHMENT BREAK / CAFÉ SESSIONS
15:35-16:05	**CAFÉ SESSIONS**

C1 Women's Cancers - a Major Global Challenge	**C2 The Lancet Oncology/The Royal Society of Medicine: Challenges of Cancer Control in Small Island Nations**	**C3 UICC – Leading Global Cancer Organization**	**C4 Global Cancer Surgery**
Chair: O. Ginsburg	Co-chairs: D. Collingridge	Chair: S. Aranda	Chair: R. Sullivan
M. Abdel-Wahab R. Spitzer	S. Stanway D. Sarfati C. Fosker C. Campbell	A. D'Cruz C. Adams	A. Dare B. Anderson CS Pramesh
Tom Thomson	Fitzgerald	Carmichael	Jackson

16:15-17:30 Toronto I/II	**PPD 4 Supportive Care in Cancer: New Directions to Achieve Universal Access for Psychosocial and Palliative and End-of-Life Care** Chair: G. Rodin S. Kaasa, F. Knaul, F. Mwangi-Powell, C. Zimmermann
17:30-19:00	WELCOME RECEPTION / POSTER VIEWING Convention Level Foyer/Toronto III

FRIDAY, MARCH 2, 2018

7:15-8:00 BREAKFAST AND REGISTRATION

7:15-8:00 Young Leaders Breakfast (by invitation)
Tom Thomson

8:00-8:45 Introduction: P. Jha
Keynote 2
Health Equity, Cancer, and Social Determinants of Health
Sir M. Marmot, University College London
Toronto I/II

8:45-10:00 **PPD 5 Networks in Global Cancer – Potential Synergies and Opportunities**
Chair: R. Atun
F. Cavalli, C. Adams, L. Stevens, Y. Lievens, M. Abdel-Wahab, F. Knaul
Toronto I/II

10:00-10:45 REFRESHMENT BREAK / CAFÉ SESSIONS

10:05-10:35 **CAFÉ SESSIONS**

C5 Childhood Cancers – Urgent Equity Imperative	**C6 Palliative Care**	**C7 ASCO Global Engagement**	**C8 Scale Up Prevention**	**C9 Health Systems**
Chair: S. Gupta	Chair: C. Zimmermann	Chair: E. Cazap	Chair: E. Franco	Chair: F. Knaul
T. Kutluk A. Denburg	S. Kaasa F. Mwangi-Powell	J. Gralow O. Brawley	P. Jha L. Rabeneck A. Lofters	R. Atun Sir G. Alleyne
Fitzgerald	Carmichael	Jackson	Casson	Tom Thomson

10:45-12:00

STS 2.1 Disease Control Priorities 3rd Edition: Package Principles and Overview	**STS 2.2 Global Radiotherapy Challenge – Turning Data into Action**	**STS 2.3 Delivering Cancer Control in LMICs**
Chair: T. Sullivan	Chair: Y. Lievens	Chair: D. Collingridge
P. Jha H. Gelband R. Sankar S. Horton D. Watkins Moderator: H. Gelband	M. Abdel-Wahab D. Rodin M. Barton	A. Dare CS Pramesh R. Sullivan
Toronto I	Toronto II	Tom Thomson

12:00-13:00 LUNCH

13:00-14:15

STS 3.1 Capacity Building in sub-Saharan Africa: Models of Care	**STS 3.2 Cancer Survivorship: a Local and Global Issue in Cancer Control**	**STS 3.3 World Oncology Forum - European Leadership to Conquer Cancer**
Chair: P. Loehrer	Chair: G. Rodin	Chair: F. Cavalli
B. Rosen O. Orang'o J. Gralow M. Milosevic	J. Jones D. Howell E. Grunfeld A. D'Cruz	R. Sullivan R. Atun F. Knaul R. Sankar
Tom Thomson	Toronto II	Toronto I

14:15-15:00 REFRESHMENT BREAK / CAFÉ SESSIONS

14:20-14:50 **CAFÉ SESSIONS**

C10 Cancer Drugs	**C11 GTFRCC**	**C12 Work on the Ground - Capacity Building Initiatives**	**C13 Global Cancer Efforts**	**C14 Tobacco Control**
Chair: A. Oza	Chair: Y. Lievens	Chair: P. Loehrer	Chair: F. Cavalli	Chair: P. Jha
O. Ginsburg O. Brawley	D. Jaffray D. Rodin J. Khader	B. Rosen J. Gralow	L. Stevens R. Sankar	B. King
Fitzgerald	Carmichael	Jackson	Casson	Tom Thomson

15:00-16:15 **PPD 6 The Economic Case for Investing in Cancer Control**
Chair: T. Evans
D. Watkins, R. Atun, S. Horton, H. Gelband, A. D'Cruz, X. Wei, B. Anderson
Toronto I/II

16:15-17:30 **PPD 7 The Role of Universities and Academia in Promoting Global Cancer Control**
Chair: E. Franco
A. Brown, P. Loehrer, L. Stevens, J. Chan
Toronto I/II

SATURDAY, MARCH 3, 2018

7:15-7:45 BREAKFAST AND REGISTRATION

7:45-8:45 **RAPID FIRE PRESENTATIONS**

Moderator: Amit Oza	**Moderator: Anna Dare**
F. Rubagumya, A. Lofters, G.T. Kalepos, C. Mach, S. Young, M. Yap, J. Brierley, N. Richard, S. Ali	M. Attila, A. Manirakiza, S. Van Straten, S. Liu, H. Vulpe, A. Zhong, L. Chalklin, W.K. Evans, A. Dare
Toronto I	Toronto II

8:45-10:00			
	STS 4.1 Global and Regional Partnerships to Build Evidence and Capacity in Supportive Care Chair: G. Rodin	**STS 4.2 City Cancer Challenge 2025 and Future Directions of Union for International Cancer Control** Chair: C. Adams	**STS 4.3 Cancer Control Planning by International Care Control Partnership: An Exploration of Planning Practices and Resources in Diverse Settings** Chair: L. Stevens
	F. Mwangi-Powell S. Kaasa W. Lam J. Frenk	S. Henshall A. D'Cruz S. Aranda	E. Cazap M. Sherar T. Kutluk B. Kostelecky
	Toronto I	Toronto II	Tom Thomson

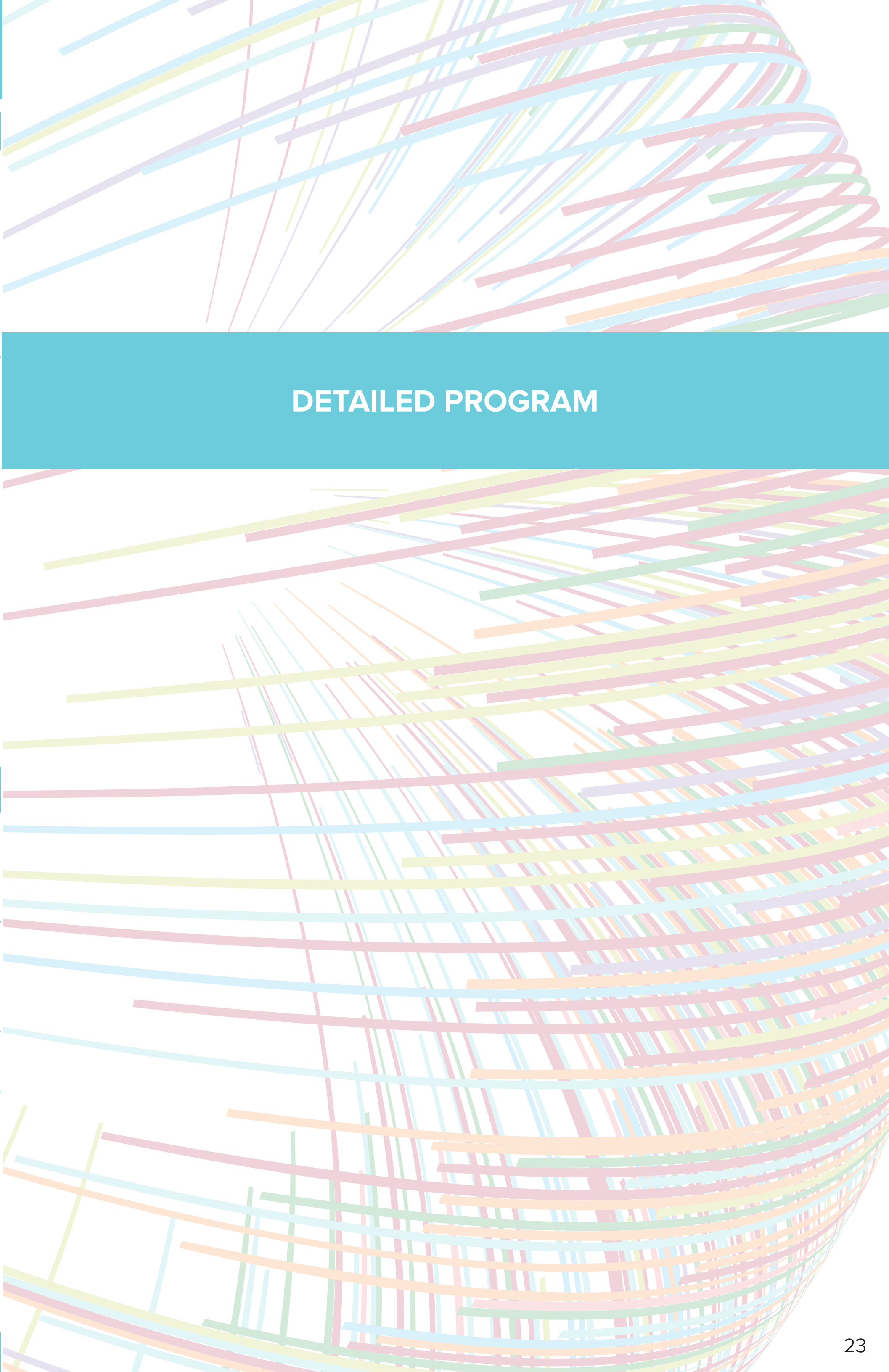
10:00-10:30 BREAK

10:30-11:15 Introduction: M. Gospodarowicz
Special Keynote
Cancer in Global Health: Beyond False Dichotomies
Toronto I/II J. Frenk, President, University of Miami

11:15-12:30 **PPD 8. Future of Education in Closing the Equity Gap in Global Cancer Control**
Co-Chairs: J. Frenk, M. Giuliani
Toronto I/II N. Hammad, A. Brown

12:30-13:00 **Summary**
Toronto I/II H. Gelband, F. Knaul

13:00-13:15 **Closing Remarks**
Toronto I/II M. Gospodarowicz, P. Jha



DETAILED PROGRAM

THURSDAY, MARCH 1, 2018

7:00-8:00	Breakfast and Registration	Convention Level Foyer
8:00-8:30	**Welcome and Opening Ceremony** Mary Gospodarowicz, Prabhat Jha, Felicia Knaul, Adalsteinn Brown, Trevor Young, Charlie Chan	Toronto I/II
8:30-9:15	**Keynote 1** Introduction: Felicia Knaul **Research and Innovation in Global Cancer Control** Sir George Alleyne Examine the multisectorial approach to cancer prevention and control and engage in public and private partnerships.	Toronto I/II
9:15-10:30	**PPD1 Digitally-enabling Research and Innovation in Global Cancer Control** Co-chairs: David Jaffray, Sir George Alleyne Rengaswamy Sankaranarayanan, Anna Goldenberg, Carlo Nalin, Nir Hacohen Review major technology enabled trends that will impact how we formulate and execute on cancer research and innovation strategies in the coming decades.	Toronto I/II
10:30-11:00	Refreshment Break	
11:00-12:15	**STS 1.1 Improving Access to Cancer Care Together with Indigenous Populations** Chair: Craig Earle Discuss opportunities to incorporate reconciliation practices across the continuum of care that supports the diversity of Indigenous communities, geography, and stakeholders throughout Canada and discuss Indigenous populations and challenges globally. *Where the journey begins…geography as a social determinant of Inuit Health* Gail Turner *A national approach to regional priorities: lessons learned and promising practices in Indigenous cancer control* Pam Tobin *Improving access to cancer care together with Indigenous Peoples through Cancer Care Ontario's Aboriginal cancer strategies* Usman Aslam *Measuring cancer burden in Indigenous communities: Overcoming challenges and finding opportunities in Canada and internationally* Diana Withrow Moderator: Craig Earle Panel: Gail Turner, Pam Tobin, Usman Aslam, Diana Withrow	Tom Thomson
11:00-12:15	**STS 1.2 The Lancet Commission on Palliative Care and Pain Relief – Findings, Recommendations and Future Directions** Chair: Felicia Knaul Develop monitoring frameworks to assess progress in palliative care; promote training and capacity-building to reduce the gap in access to pain control and palliative care and engage global and national cancer control advocates and advocacy groups to catalyze access to palliative care and pain relief. *Alleviating the access abyss in palliative care and pain relief: Key findings and recommendations of The Lancet Commission report* Felicia Knaul *UHC and access to palliative care and pain relief: health systems responses looking to 2030* Rifat Atun *Integrating Palliative Care: Beyond the Essential Package* Camilla Zimmermann Moderator: Felicia Knaul Panel: Rifat Atun, Camilla Zimmermann, Sir George Alleyne, Mary Gospodarowicz	Toronto II
11:00-12:15	**STS 1.3 Global Health and Equity in Access to Genomics and Clinical Trials with Novel Therapies** Chair: Amit Oza Panel: Ophira Ginsburg, Cliff Hudis, Stephanie Lheureux, Richard Sullivan Discuss challenges and potential solutions across different jurisdictions in access to novel therapies and clinical trials.	Toronto I
12:15-13:00	Lunch	
13:00-14:15	**PPD 2 Integrated Prevention for Global Cancer Control** Chair: Linda Rabeneck Panel: Eduardo Franco, Prabhat Jha, Rengaswamy Sankaranarayanan Explore integrated prevention using human papillomavirus (HPV) associated cervical cancer and tobacco control as two priorities and discuss the role of these focused priorities within the universal health coverage agenda.	Toronto I/II
14:15-15:30	**PPD 3 Progress in Women's Health – Lessons and Opportunities for Global Cancer Control** Chair: Felicia Knaul Panel: Miriam Schneidman, Rifat Atun, May Abdel-Wahab, Rachel Spitzer, David Watkins Review global successes and future challenges to the health of women and discuss how efforts to reduce the burden of women´s cancers can be embedded into and take advantage of women´s health and empowerment platforms.	Toronto I/II

15:30-16:15	Refreshment Break / Café Sessions	
15:35-16:05	**Café Sessions** Café sessions will provide a unique opportunity to engage directly in a dialogue between the faculty experts and the audience in various topics.	
	C1 Women's Cancers - a Major Global Challenge Chair: Ophira Ginsburg May Abdel-Wahab, Rachel Spitzer	Tom Thomson
	C2 The Lancet Oncology/The Royal Society of Medicine: Challenges of Cancer Control in Small Island Nations Co-chairs: David Collingridge, Suzie Stanway Diana Sarfati, Christopher Fosker, Christine Campbell	Fitzgerald
	C3 UICC – Leading Global Cancer Organization Chair: Sanchia Aranda Anil D'Cruz, Cary Adams	Carmichael
	C4 Global Cancer Surgery Chair: Richard Sullivan Anna Dare, Ben Anderson, CS Pramesh	Jackson
16:15-17:30	**PPD 4 Supportive Care in Cancer: New Directions to Achieve Universal Access for Psychosocial and Palliative and End-of-Life Care** Chair: Gary Rodin Panel: Stein Kaasa, Felicia Knaul, Faith Mwangi-Powell, Camilla Zimmermann Identify and address future global and regional strategies and solutions to address the gap in psychosocial, palliative and end of life care in cancer and means to accelerate the progress and establish and supporting global and regional and partnerships to advance supportive care in cancer.	Toronto I/II
17:30-19:00	Welcome Reception / Poster Viewing	Convention Level Foyer/ Toronto III

FRIDAY, MARCH 2, 2018

7:15-8:00	Breakfast and Registration	Convention Level Foyer
7:15-8:00	Young Leaders Breakfast (by invitation)	Tom Thomson
8:00-8:30	**Keynote 2** Introduction: Prabhat Jha **Health Equity, Cancer, and Social Determinants of Health** Sir Michael Marmot Discuss the inequalities, control and impact of social determinants of health.	Toronto I/II
8:45-10:00	**PPD 5 Networks in Global Cancer – Potential Synergies and Opportunities** Chair: Rifat Atun Panel: Felicia Knaul, Franco Cavalli, Cary Adams, Lisa Stevens, Yolande Lievens, May Abdel-Wahab, David Jaffray Examine the future potential of synergies that could be created by aligning the current network working on global cancer care control and discuss how the outcomes of current work could be scaled up through new partnerships. *Brief introduction of the panel and the importance of networks in the global fight against cancer* Rifat Atun *Novel networks in the global fight against cancer: Global Task Force on Cancer Care and Control – achievements and future directions* Felicia Knaul *Role of Research and funding institutions – NCI experience of establishing successful networks* Lisa Stevens *Professional Associations: potential for national, regional and global networks for learning and practice: ESTRO experience and future directions* Yolande Lievens *IAEA: establishing global and local networks in expansion of radiotherapy – achievements and future direction* May Abdel-Wahab *Bringing together leaders – World Oncology Forum* Franco Cavalli *Innovation networks – how to establish and harness potential in development and application of new and affordable technologies and delivery models* David Jaffray *UICC: bringing together global and country-level institutions to create an inclusive network for greater synergy; achievements and vision* Cary Adams	Toronto I/II
10:00-10:45	Refreshment Break / Café Sessions	

10:05-10:35 **Café Sessions**

Café sessions will provide a unique opportunity to engage directly in a dialogue between the faculty experts and the audience in various topics.

C5 Childhood Cancers – Urgent Equity Imperative Fitzgerald
Chair: Sumit Gupta
Tezer Kutluk, Avi Denburg

C6 Palliative Care Carmichael
Chair: Camilla Zimmermann
Stein Kaasa, Faith Mwangi-Powell

C7 ASCO Global Engagement Jackson
Chair: Eduardo Cazap
Julie Gralow, Otis Brawley

C8 Scale Up Prevention Casson
Chair: Eduardo Franco
Prabhat Jha, Linda Rabeneck, Aisha Lofters

C9 Health Systems Tom Thomson
Chair: Felicia Knaul
Rifat Atun, Sir George Alleyne

10:45-12:00 **STS 2.1 Disease Control Priorities 3 Cancer Volume – Significance of Cancer in Global Health Initiatives** Toronto I

Chair: Terry Sullivan

Provide policy makers and funders an adaptable model package of services for expanding locally appropriate cancer control, which can be implemented over time in concert with expanding universal health coverage.

Core messages from DCP3 to improve global health
Prabhat Jha

DCP3 cancer package
Hellen Gelband

DCP3 priority interventions for screening and treating common cancers
Rengaswamy Sankaranarayanan

DCP3 costing of cancer services
Susan Horton

Integrating DCP3 cancer interventions within Universal Health Coverage
David Watkins

Moderator: Hellen Gelband
Panel: Prabhat Jha, Rengaswamy Sankaranarayanan, Susan Horton, David Watkins

10:45-12:00 **STS 2.2 Global Radiotherapy Challenge: Turning Data into Action** Toronto II

Chair: Yolande Lievens

Enhance access to radiotherapy worldwide by applying a data-driven approach, where knowledge is translated into action and methodological expertise is extended into the development of practical applications.

The Global Task Force on Radiotherapy for Cancer Control (GTFRCC): challenges and opportunities
Danielle Rodin

How the International Atomic Energy Agency (IAEA) responds to the calls to action
May Abdel-Wahab

Global Impact of Radiotherapy in Oncology (GIRO) from data to action through international collaboration
Yolande Lievens

Moderator: Yolande Lievens
Panel: Danielle Rodin, May Abdel-Wahab, David Jaffray, Mei Ling Yap, Michael Barton

10:45-12:00 **STS 2.3 Delivering Cancer Control in LMICs** Tom Thomson

Chair: David Collingridge

Provide a unique opportunity to engage directly in a dialogue between the faculty experts and the audience.

Delivering safe and affordable global cancer surgery
Anna Dare

Equitable cancer control in India
CS Pramesh

Strengthening cancer systems
Richard Sullivan

Moderator: David Collingridge
Panel: Anna Dare, CS Pramesh, Richard Sullivan, Ben Anderson

12:00-13:00 Lunch

12:00-13:00 Special Young People Networking Session (by invitation)

Global Cancer Advocacy 101: Building an effective strategy for policy influence Carmichael

Young Professionals Advocacy session with Jordan Jarvis and Fidel Rubagumya from the Young Professionals Chronic Disease Network.

13:00-14:15 **STS 3.1 Capacity Building in sub-Saharan Africa: Models of Care** Tom Thomson

Chair: Patrick Loehrer

Discuss the experiences and future opportunities in capacity building for clinical care, research and education in Kenya and discuss the priorities and obstacles to care and potential solutions for a sustainable cancer treatment and control program in LMICs.

Moderator: Patrick Loehrer
Panel: Omenge Orang'o, Julie Gralow, Michael Milosevic, Barry Rosen

13:00-14:15 **STS 3.2 Cancer Survivorship: A Local and Global Issue in Cancer Control** Toronto II

Chair: Gary Rodin

Discuss the management of persistent late effects of cancer treatments and the delivery of survivorship care from cancer centre to the community.

The role of tertiary care in cancer survivorship: rehabilitation and risk-based models of care
Jennifer Jones

Activation of survivors in managing cancer as a chronic disease: role of supported self management
Doris Howell

Models of care to meet the global challenge of cancer survivorship
Eva Grunfeld

Moderator: Gary Rodin
Panel: Jennifer Jones, Doris Howell, Eva Grunfeld, Anil D’Cruz

13:00-14:15 **STS 3.3 World Oncology Forum – European Leadership to Conquer Cancer** Toronto I

Chair: Franco Cavalli

Review contribution of the WOF to global cancer control and promote the development and implementation of new evidence-based strategies aimed at cancer prevention, risk assessment/ early detection, early intervention tailored to specific cancers and populations.

Original idea, past and present
Franco Cavalli

The role of diagonal approach
Felicia Knaul

Summary of the last WOF (19-21 October 2017)
Rifat Atun

Moderator: Franco Cavalli
Panel: Felicia Knaul, Rifat Atun

14:15-15:00 Refreshment Break / Café Sessions

14:20-14:50 **Café Sessions**

Café sessions will provide a unique opportunity to engage directly in a dialogue between the faculty experts and the audience in various topics.

C10 Cancer Drugs Fitzgerald
Chair: Amit Oza
Ophira Ginsburg, Otis Brawley

C11 GTFRCC Carmichael
Chair: Yolande Lievens
David Jaffray, Danielle Rodin, Jamal Khader

C12 Work on the Ground - Capacity Building Initiative Jackson
Chair: Pat Loehrer
Barry Rosen, Julie Gralow

C13 Global Cancer Efforts Casson
Chair: Franco Cavalli
Rifat Atun, Lisa Stevens,
Rengaswamy Sankaranarayanan

C14 Tobacco Control Tom Thomson
Chair: Prabhat Jha
Bronwyn King

15:00-16:15 **PPD 6 The Economic Case for Investing in Cancer Control** Toronto I

Chair: Tim Evans
Panel: Hellen Gelband, Anil D’Cruz, David Watkins, Xiaolin Wei, Susan Horton, Rifat Atun, Prabhat Jha, Ben Anderson

Explore the economic arguments for advancing cancer control in LMICs, taking stock of existing analyses and enumerating the formidable remaining challenges and discuss how can prevention, treatment and palliation be integrated within funding plans for cancer control?

What’s needed to make the case for investment?
Hellen Gelband

The future of cancer control in India
Anil D’Cruz

TBA
David Watkins

The future of cancer control in China
Xiaolin Wei

Financing cancer control
Susan Horton

Networks and innovations for cancer services
Rifat Atun

Bending the cancer technology curve—what is needed?
Prabhat Jha

16:15-17:30 **PPD 7 The Role of Universities in Academia in Promoting Global Cancer Control**

Chair: Eduardo Franco
Panel: Adalsteinn Brown, Pat Loehrer, Lisa Stevens, Jennifer Chan

Explore the opportunities offered by universities and academic cancer centres in scaling up global cancer control efforts and discuss academic career opportunities offered in global cancer.

SATURDAY, MARCH 3, 2018

7:15-7:45 Breakfast and Registration

7:45-8:45 **Rapid Fire Presentation 1** Toronto I

Moderator: Amit Oza

Review various research projects on cancer control globally.

Abstracts #1-9

1	Fidel Rubagumya	Needs assessment for population-based pediatric cancer intervention in Rwanda
2	Aisha Lofters	BETTER WISE: An innovative, evidence-based program for cancer and chronic disease prevention and screening
3	George Thomas Kapelo	Architectural responses for UVR protection – creating prototypes for interactive architecture for shade design
4	Calvin Mach	Clinical public health: educating dietitians to integrate public health principles into clinical care
5	Stephanie Young	Preventing alcohol-related cancer: what if everyone drank within the guidelines?
6	Mei Ling Yap	Factors affecting actual radiotherapy utilisation in the 45 and Up Study cohort, New South Wales
7	James Brierley	Reducing gaps in cancer registry information on tumours stage: Essential TNM
8	Nadine Richard	Patient and caregiver perspectives on the cognitive impact of brain metastases in relation to supportive care needs and quality of life
9	Suad Ali	Mapping Global Retinoblastoma Prevalence, Treatment Capacity and Expertise

7:45-8:45 **Rapid Fire Presentation 2** Toronto II

Moderator: Anna Dare

Review various research projects on cancer control globally.

Abstracts #10-18

10	Attila Adnan Merdin	Building new leadership in cancer control: the youth as a channel for change
11	Stephanie Van Straten	Identifying women at risk of uncertainty and poor quality of life when undergoing breast cancer surgery: a survey-based descriptive study
12	Achille Manirakiza	Cancer Education in Rwanda: Challenges and opportunities
13	Sophia Liu	Impact of immigration status on lifestyle behaviours and perceptions in cancer survivors
14	Horia Vulpe	Developing young leaders in Global Radiation Oncology: results of a pilot program for a Global Oncology Scholarship for Canadian Radiation Oncology trainees
15	Adrina Zhong	Ethical, social and cultural issues related to clinical genetic testing and counseling in low- and middle-income countries: a systematic review
16	Lesley Chalklin	The Quality of Dying and Death in Hospice Care in Kenya
17	William K Evans	Costs and cost-effectiveness of smoking cessation within an organized CT lung cancer screening program
18	Anna Dare	Monitoring cancer outcomes using nationally-representative mortality surveys: India's Million Death Study

8:45-10:00 **STS 4.1 Global and Regional Partnerships to Build Evidence and Capacity in Supportive Care** Toronto I

Chair: Gary Rodin

Create and sustain global partnerships to advance psychosocial, palliative and end-of life care for cancer patients and their families and create new opportunities to build research capacity and to ensure the quality and universality of access of this essential dimension of cancer care.

Coming of age: the global revolution in palliative and supportive care
Gary Rodin

Global and regional partnerships to build capacity in supportive care
Faith Mwangi-Powell

The development of integrated psychosocial care in Hong Kong
Wendy Lam

A need for International collaboration in palliative and supportive care research
Stein Kaasa

Moderator: Gary Rodin
Panel: Faith Mwangi-Powell, Wendy Lam, Stein Kaasa, Julio Frenk

8:45-10:00 **STS 4.2 City Cancer Challenge 2025 and Future Directions of Union for International Cancer Control** Toronto II

Chair: Cary Adams

Discuss challenges associated with both Treatment for All and C/Can 2025 and explore opportunities to engage in key global initiatives.

C/Can 2025: increasing access to quality cancer treatment in cities
Sue Henshall

Achieving Treatment for All
Sanchia Aranda

Moving from global commitments to local action
Anil D'Cruz

Moderator: Cary Adams
Panel: Sue Henshall, Anil D'Cruz, Sanchia Aranda

8:45-10:00 **STS 4.3 Cancer Control Planning by International Cancer Control Partnerships: An Exploration of Planning Practices and Resources in Diverse Settings** Tom Thomson

Chair: Lisa Stevens

Explore how cancer control planning has been approached in different settings and examine four specific aspects of cancer control planning.

Cancer control planning in Latin America
Eduardo Cazap

Cancer control planning in Ontario and Canada
Michael Sherar

Cancer control planning in Turkey
Tezer Kutluk

Moderator: Lisa Stevens
Panel: Eduardo Cazap, Michael Sherar, Tezer Kutluk

10:00-10:30 Refreshment Break

10:30-11:15 Special Keynote Toronto I
Cancer in Global Health: Beyond False Dichotomies
Julio Frenk

11:15-12:30 **PPD 8 Future of Education in Closing the Equity Gap in Global Cancer Control** Toronto I

Co-chairs: Julio Frenk, Meredith Giuliani
Panel: Nazik Hammad, Adalsteinn Brown

Demonstrate the critical role innovation in education plays in addressing the growing health human resource crisis in cancer care globally and explore real world examples of health professions education innovations building on the recommendations from the Lancet Commission Health Professionals for a New Century.

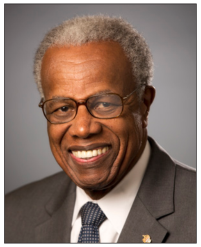
12:30-13:00 **Summary** Toronto I
Hellen Gelband, Felicia Knaul

13:00-13:15 **Closing Remarks** Toronto I
Mary Gospodarowicz, Prabhat Jha

BIOGRAPHIES

May Abdel-Wahab is the Director of the Division of Human Health at the International Atomic Energy Agency, Vienna Austria. She has over 30 years of patient care, teaching and research experience in radiation oncology. Before joining IAEA she was section head of GI Radiation Oncology at the Cleveland Clinic, USA and Professor at the Cleveland Clinic Lerner School of Medicine, Case Western University. Her research focused on evaluating radiation therapy for prostate and GI cancers as well as quality assurance and access in radiotherapy. She served on various National and International committees, such as the UN inter-agency Task Force (UNIATF) on Non-Communicable Diseases (NCDs), as Chair of the ASTRO Committee for Healthcare Access & Training, as Co-Chair IHE-RO planning committee and on the UN Joint Programme on Cervical Cancer Control Steering committee, among others. She has published over 150 scientific publications, including scientific papers , abstracts and book chapters and has served on several advisory boards and professional journal editorial boards.

Cary Adams is CEO of the Union for International Cancer Control (UICC), where he leads global efforts in cancer advocacy, convening the cancer community (through World Cancer Day, the World Cancer Congress and the World Cancer Leaders' Summit) and running significant global capacity building projects that address global cancer issues. He has served two terms as Chair of the NCD Alliance, a coalition of 2000 organisations working on non-communicable diseases.



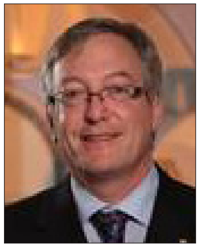
Sir George Alleyne, a native of Barbados, became Director of the Pan American Health Organization (PAHO), Regional Office of the World Health Organization (WHO) on 1 February 1995 and completed a second four-year term on 31 January 2003. In 2003 he was elected Director Emeritus of the PASB. From February 2003 until December 2010 he was the UN Secretary General's Special Envoy for HIV/AIDS in the Caribbean. In October 2003 he was appointed Chancellor of the University of the West Indies. He currently holds an Adjunct professorship on the Bloomberg School of Public Health, Johns Hopkins University. Sir Alleyne has received numerous awards in recognition of his work, including prestigious decorations and national honors from many countries of the Americas. In 1990, he was made Knight Bachelor by Her Majesty Queen Elizabeth II for his services to Medicine. In 2001, he was awarded the Order of the Caribbean Community, the highest honor that can be conferred on a Caribbean national.

Ben Anderson is the director of the Breast Health Clinic at the Seattle Cancer Care Alliance (SCCA). He is the Professor of Surgery and Global Health Medicine at the University of Washington (UW). Dr. Anderson is vice chair of the National Comprehensive Cancer Network (NCCN) Breast Panel and chair of the NCCN International Program Committee. With joint appointments at the Fred Hutchinson Cancer Research Center Division of Public Health Sciences and the UW Department of Global Health, Dr. Anderson created and chairs the Breast Health Global Initiative (BHGI), a unique program to develop "resource-stratified" guidelines for breast cancer early detection, diagnosis, treatment and palliative care in lowand middle-income countries (LMICs). Dr. Anderson has served on the Board of Directors of the Union for International Cancer Control (UICC). Dr. Anderson now co-chairs the Breast Cancer Initiative 2.5 (BCI2.5), a global campaign to reduce disparities in breast cancer outcomes for 2.5 million women in the next decade.

Sanchia Aranda was appointed as CEO of Cancer Council Australia in August 2015. In this role Sanchia leads cancer policy and advocacy development, ensuring a strong evidence base is used to inform cancer control in Australia. She also holds academic appointments with the School of Health Sciences, University of Melbourne and the Faculty of Nursing, University of Sydney and is a research fellow at the Peter MacCallum Cancer Centre. She has 38 years' experience in cancer control and has held roles in healthcare, research, tertiary education and government prior to joining the not-for-profit sector. She has held significant leadership roles in Australian Cancer Control, including 8 years on the Advisory Council for Cancer Australia (2006-2015). She is the President for the Union for International Cancer Control and has been on the Board of UICC for 6 years.

Usman Aslam is Group Manager, Aboriginal Cancer Control Unit, Prevention and Cancer Control Department, Cancer Care Ontario. Usman supported the development and implementation of Cancer Care Ontario's Aboriginal Cancer Strategies since 2012. Prior to joining the Aboriginal Cancer Control Unit, Usman led several projects in Cancer Screening at Cancer Care Ontario and held posts at the Cardiac Care Network of Ontario and the World Health Organization.

Rifat Atun is Professor of Global Health Systems at Harvard University and Director of the Health Systems Cluster. He is the Faculty Chair for the Harvard Ministerial Leadership Initiative. In 2006-2014 he was Professor of International Health Management at Imperial College London. Professor Atun's research focuses on global health systems, global health financing, and innovation in health systems. He has worked extensively with governments, the UK DFID, the World Bank, World Health Organization, and other international agencies to design, implement and evaluate health system reforms. Professor Atun studied medicine at University of London as a Commonwealth Scholar and undertook his postgraduate medical studies and MBA at University of London and Imperial College London. He is a Fellow of the Faculty of Public Health of the Royal College of Physicians (UK), a Fellow of the Royal College of General Practitioners (UK), and a Fellow of the Royal College of Physicians (UK).

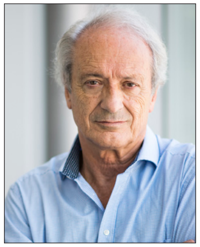


Michael Barton is Professor of Radiation Oncology at UNSW, and Research Director of the Collaboration for Cancer Outcomes Research and Evaluation (CCORE) and the Ingham Institute for Applied Medical Research at Liverpool Hospital. He is the Principal of the Cancer Research Theme of the Faculty of Medicine UNSW. He has chaired reviews of cancer services throughout Australia and overseas including; the Victorian Cancer Services Framework Report, the Papua New Guinea Cancer Services Report, the Review of Cancer Services in New South Wales in 2004, the feasibility study of radiotherapy in the Northern Territory and a review of cancer services in Western Australia. He chaired the expert advisory committee examining the feasibility of establishing a radiotherapy service in North West Tasmania.

Otis Webb Brawley is an acknowledged global leader in the field of cancer prevention and control. As the chief medical and scientific officer and executive vice president of the American Cancer Society, he is responsible for promoting the goals of cancer prevention, early detection, and quality treatment through cancer research and education. Dr. Brawley currently serves as professor of hematology, oncology, medicine and epidemiology at Emory University. Dr. Brawley has served on a number of advisory committees including: the NIH Committee on Women's Health; the Centers for Disease Control and Prevention Advisory Committee on Breast Cancer in Young Women; the Centers for Disease Control and Prevention Breast and Cervical Cancer Early Detection and Control Advisory Committee; and the FDA Oncologic Drug Advisory Committee. Dr. Brawley graduated from the University of Chicago, Pritzker School of Medicine; trained in internal medicine at Case-Western Reserve University, and in medical oncology at the National Cancer Institute.

Adalsteinn (Steini) Brown is the Interim Dean of the Dalla Lana School of Public Health at the University of Toronto and the Dalla Lana Chair of Public Health Policy at the University. Past roles include senior leadership roles in policy and strategy within the Ontario Government, founding roles in start-up companies, and extensive work on performance measurement. He received his undergraduate degree in government from Harvard University and his doctorate from the University of Oxford, where he was a Rhodes Scholar.

Christine Campbell is a Reader at the Usher Institute at the University of Edinburgh. She leads a programme of research in the interface of cancer and primary care. She has held positions as cancer co-lead for the Scottish School of Primary Care Cancer Programme, and until recently was chair of the Screening sub-group of the UK's NCRI Primary Care Group. She sits on the Executive Group of Ca-PRI, the international cancer and primary research network. Recent and ongoing projects span the cancer journey from prevention through symptomatic diagnosis and survivorship, but with an emphasis on cancer screening and diagnosis (both within the UK and in sub-Saharan Africa), health disparities, and the role of policy in health system interventions in cancer.



Franco Cavalli, was the Scientific Director of the Oncology Institute of Southern Switzerland (IOSI) in Bellinzona (Switzerland) until 2017. He is currently still President of the Foundation, which manages the Institute of Oncology Research in Bellinzona. He has an international reputation for the treatment of and research into malignant lymphoma and new drugs. Every second year he organizes in Lugano the International Conference on Malignant Lymphoma, which is the most important congress on this topic worldwide. Franco Cavalli has been President of the Swiss Cancer League and is Chairman of the Scientific Committee of the European School of Oncology (ESO) and of the World Oncology Forum (WOF). He was President of the UICC between 2006 and 2008. He has been member of WHO committee of selection of essential medicines for cancers since 2015. He was member of the Swiss Parliament between 1995 and 2007.

Eduardo Cazap is an Argentinean medical oncologist with a longstanding clinical and scientific career in Argentina and Internationally. Founder and first President of the Latin American & Caribbean Society of Medical Oncology (SLACOM), Past- President of the UICC and Member of the Executive Committee of the National Cancer Institute of Argentina since 2010. Dr. Cazap also serves as Chairman of the Executive Committee of the Breast Health Global Initiative (BHGI). Dr Cazap received in 2013 the Distinguished Achievement Award of the Conquer Cancer Foundation (USA) and bestowed as Fellow of the American Society of Clinical Oncology (FASCO). Most recently he has been appointed as member of the Global Oncology Leadership Task Force, American Society of Clinical Oncology (ASCO) 2014-2016 and President of the Senologic International Society (SIS) 2017-2019.

Charlie Chan is the Interim President & CEO at University Health Network (UHN). Other leadership roles at UHN include Chief Medical Officer and Executive Vice President for Clinical Programs, Quality & Safety. He was appointed Professor of Medicine at the University of Toronto (U of T) in 2005. After receiving his M.D. and completing his Internal Medicine & Pulmonary Medicine training at U of T, Dr. Chan continued his clinical training at Yale University. He was also a Visiting Scholar at Yale University's Robert Wood Johnson Clinical Scholars Program. Dr. Chan has served and chaired numerous national and international expert panels for respiratory condition treatment guidelines. Dr. Chan has also served as board members for several non-profit foundations.

Jennifer Chan is Vice President, Policy and External Affairs, at Merck Canada Inc. and is responsible for the company's team of government relations and public affairs specialists. Prior to this role, she held the position of Vice President, Policy and Communications at Merck Canada since December 2011. A native of Montreal, Jennifer began her career in academic research before joining Schering-Plough in 1993 as a Clinical Research Associate. Jennifer is a member of the Board of Directors of the Institute of Health Economics in Alberta, as well as the Quebec Consortium for Drug Discovery and the Quebec Network for Personalized Health Care. She is co-chair of the Canadian Biosimilars Forum and has served as a Merck for Mothers ambassador in Canada since the program was launched in 2011. Jennifer holds a Bachelor of Science degree in physiology and a Master of Science degree in pharmacology and therapeutics, both from McGill University in Montreal.

David Collingridge has been Editor-in-Chief of The Lancet Oncology since March 2002, and is also the Publishing Director for The Lancet's Specialty Journals. Prior to his appointments at The Lancet, he gained a PhD in Tumour Biology from the Gray Cancer Institute/University College London, UK, and held research posts in the Department of Therapeutic Radiology, Yale University, CT, USA, and in the PET Oncology Group, Imperial College School of Medicine, Hammersmith Hospital, London, UK. Dr Collingridge has published numerous peer-review articles, editorials, opinion pieces, and news reports, and has co-authored a text book on radiobiology. He currently also holds the position of Clinical Associate Professor of Radiation Medicine at Hofstra/Northwell Health, NY, USA.

Anil K D'Cruz is Director at the Tata Memorial Hospital, Mumbai, India and Professor and Surgeon in the Department of Head and Neck Surgery. He is also a Diplomate of the National Board, New Delhi. He is on the Board of Directors on the Union International on Cancer Control, Geneva as well as Governing Council, Foundation of Head and Neck Oncology, India. He is also on the Governing Board/ Scientific Advisory Board of various leading institutions such as Gulf Medical University, All India Institute of Medical Sciences, Rishikesh, National Institute of Biomedical Genomics, Kalyani amongst others. He has been past-president of the Asian Society of Head and Neck Oncology, Foundation of Head and Neck Oncology, India; Task force, Department of Biotechnology, Government of India, and Cancer guidelines, Indian Council of Medical Research.

Anna Dare MBChB PhD is a general surgery resident at the University of Toronto and a post-doctoral fellow at the Centre for Global Health Research, St Michael's Hospital. Her major interest is expanding access to surgical care in low- and middle-income countries (LMICs) in order to meet emerging health challenges. Her research examines the relationships between surgical access, coverage and outcomes using largescale epidemiological studies and geostatistical methods. Originally from New Zealand, Anna received her medical degree from the University of Auckland. She then completed her PhD at the University of Cambridge, England as a Commonwealth Scholar. Anna has served as a Commissioner on the Lancet Commission on Global Surgery and the Lancet Oncology Commission on Global Cancer Surgery, and is an author for the Disease Control Priorities Project (3rd edition) Cancer Volume.

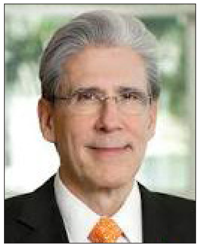
Avram Denburg received his medical degree from McMaster University in 2006. He completed both a residency in paediatrics and a fellowship in haematology/oncology at The Hospital for Sick Children (SickKids). Denburg has a Master of Science in Health Policy, Planning and Financing from the London School of Economics and the London School of Hygiene and Tropical Medicine, pursued with the support of a Commonwealth Scholarship. He trained at Harvard University as a National Institutes of Health-funded Pediatric Scientist Development Program Fellow. Denburg is currently pursuing a PhD in health policy as a 2015 Trudeau Scholar and CIHR Fellow at the Centre for Health Economics and Policy Analysis at McMaster University. Dr. Denburg's research focuses on the political, ethical and economic dimensions of child health policy, in both local and global contexts.

Craig Earle is a medical oncologist and Vice-President of Cancer Control at the Canadian Partnership Against Cancer, a Senior Scientist at the Institute for Clinical Evaluative Sciences, and a Professor of Medicine at the University of Toronto. He is past Chair of the Ontario Steering Committee for Cancer Drug Programs and is a current member of the pan-Canadian Oncology Drug Review Expert Review Committee. Dr. Earle originally trained in Ottawa, after which he spent 10 years between 1998 –2008 in Boston at Harvard Medical School and the Harvard School of Public Health. Between 2008-2017 he was Director of Health Services Research and Head of Clinical Translation at the Ontario Institute for Cancer Research.

Tim Evans is the Senior Director of Health, Nutrition and Population at the World Bank Group. Prior to this he was the Dean of the James P Grant School of Public Health at BRAC University in Dhaka, Bangladesh (2010-13), and Assistant Director General at the WHO (2003-10). Dr. Evans has been at the forefront of advancing global health equity and strengthening health systems delivery for > 20 years. While at WHO, he led the Commission on Social Determinants of Health. He co-founded the Global Alliance on Vaccines and Immunization (GAVI) and is a board member of a number of international health alliances.

Christopher Fosker is the Radiation Therapy Director and Radiation Oncologist at Bermuda Cancer and Health Centre in Bermuda, a Consultant Clinical Oncologist with Bermuda Hospitals Board, an affiliate of the Dana-Farber Cancer Institute and Consultant at the Brigham and Women's Hospital in Boston. Dr. Fosker obtained his medical degree from the University of Leeds in the UK in 2003, and shortly after that went on to become a Member of the Royal College of Physicians (2006) and Fellow of the Royal College of Radiologists in the UK (2011). In 2012, he completed a Clinical Fellowship at the University of Toronto and was subsequently awarded the R.S. Bush Award for Academic Excellence as a Radiation Oncology Fellow.

Eduardo L. Franco is James McGill Professor and Chairman, Department of Oncology, and Director, Division of Cancer Epidemiology, McGill University, Montreal. Since 1985, he has conducted epidemiologic research on the causes of cancer and on the means to prevent it or to improve patient survival. He is known for his contributions to our understanding of HPV infection and using this knowledge to prevent cervical cancer via vaccination and improved screening strategies. He received Lifetime Achievement Awards from the American Society for Colposcopy and Cervical Pathology (2010) and from the International Papillomavirus Society (2015), the Women in Government's (US) Leadership Award (2008), the Canadian Cancer Society's Warwick Prize (2004), and the McLaughlin-Gallie Award from the Royal College of Physicians and Surgeons of Canada (2011). He is the Editor-in-Chief of Preventive Medicine. He is Officer of the Order of Canada (2016) and Fellow of the Royal Society of Canada (2011) and of the Canadian Academy of Health Sciences (2012).



Julio Frenk, is a Mexican physician, scholar and renowned leader in global public health. He is the current President of the University of Miami, and former Dean of the Harvard TH Chan School of Public Health. Prof. Frenk was the founding-director of the National Institute of Public Health in Mexico, and served as the Secretary of Health in Mexico from 2000-06 where he led major health system reforms and introduced a comprehensive universal health coverage program, Seguro Popular. This expanded access to health care for over 55 million uninsured Mexicans. He is renowned for his work on health policy, global health governance, medical education, and health system reform.

Julie Gralow is the Jill Bennett Endowed Professor of Breast Medical Oncology and Professor of Global Health at the University of Washington School of Medicine, a Member of the Clinical Research Division at the Fred Hutchinson Cancer Research Center, and Director of Breast Medical Oncology at the Seattle Cancer Care Alliance. Dr. Gralow has dedicated her life to fighting breast cancer. She is actively involved in clinical care, education, and research, and has led numerous local and national clinical trials related to breast cancer treatment, prevention, and survivorship. She has also launched several women's cancer support organizations.

Hellen Gelband is Associate Director for Policy at the Center for Disease Dynamics, Economics & Policy (CDDEP). Her work spans infectious disease, particularly malaria and antibiotic resistance, and non-communicable disease policy, mainly in low- and middle-income countries. Before joining CDDEP, she conducted policy studies at the (former) Congressional Office of Technology Assessment, the Institute of Medicine of the U.S. National Academies, and a number of international organizations. She is an editor in the Cochrane Infectious Diseases Group and an editor of Disease Control Priorities, 3rd edition. At CDDEP, she has led the Global Antibiotic Resistance Partnership (GARP) since its inception in 2008.

Ophira Ginsburg is medical oncologist with expertise in cancer genetics, epidemiology, prevention, and screening. She is an Advisor to the National Cancer Hospital and National Institute for Cancer Control of Vietnam, and is a faculty member of the Institute of Cancer Policy, King's College London and the James P Grant School of Public Health at BRAC University, Bangladesh. She serves on several NGO advisory boards including Young Professionals Chronic Disease Network (U.S.), Global Focus on Cancer (U.S.), and is a founding member of WEMA, Women's Health Equity Through Mobile Approaches (Canada). In 2015-2016, Dr Ginsburg worked as the Cancer Management Lead for the World Health Organization. She is now the Director of the High Risk Program at the Laura and Isaac Perlmutter Cancer Center at NYU Langone Medical Center, and Associate Professor in the Department of Population Health, NYU School of Medicine.

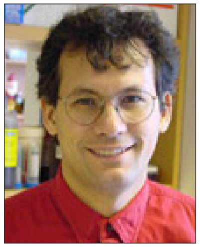
Meredith Giuliani is an assistant professor in the University of Toronto, Department of Radiation Oncology and a radiation oncologist in the Radiation Medicine Program at the Princess Margaret Cancer Centre. She received her MBBS qualification from the University of London, England and her Master's of Education from the University of Toronto. She completed her residency training at the University of Toronto. She is the Chair of the Canadian Association of Radiation Oncology's Education Committee and the Director of Undergraduate Education for the Department of Radiation Oncology at the University of Toronto, the Medical Director of Education for Princess Margaret Cancer Centre and the Cancer Care Ontario Smoking Cessation Champion for Toronto Central South. Her research interests include education technology development, outcomes research in lung cancer and curriculum development.

Anna Goldenberg is a Scientist in the Genetics and Genome Biology Lab at SickKids Research Institute and Assistant Professor in the Department of Computer Science at the University of Toronto (Computational Biology Group). The Goldenberg lab develops new machine learning methods that can help decipher human disease heterogeneity. Our contributions to machine learning include novel data integration methods,graph-based unsupervised feature selection and graphical models for subtyping in GWAS. We collaborate with clinicians to ensure that our work is relevant in the clinic.

Mary Gospodarowicz is Professor of Radiation Oncology at the University of Toronto, the Medical Director of the Princess Margaret Cancer Centre at the University Health Network, and the Regional Vice President of Cancer Care Ontario. Professor Gospodarowicz is Past-President of the Union for International Cancer Control (UICC).

Eva Grunfeld is a leader in cancer health services and outcomes research. Her research focuses on evaluation and knowledge translation of cancer health services, covering the entire spectrum of cancer control activities. She is internationally recognized for research on cancer survivorship. Dr. Grunfeld uses a mixed-methods approach including randomized controlled trials, qualitative research and outcomes research. Knowledge translation is an integral part of all her research activities. She has conducted several multi-centre RCTs on cancer survivorship which has influenced clinical practice guidelines and policies internationally. Dr. Grunfeld holds many peer-review grants as Principal Investigator and has served on many committees to further the goals of cancer control in Canada and internationally. She obtained her medical degree from McMaster University and doctoral degree in cancer epidemiology from Oxford University.

Sumit Gupta is a Staff Oncologist and Clinician Investigator at the Hospital for Sick Children, an Assistant Professor at both the Faculty of Medicine and the Institute for Health Policy, Management and Evaluation at the University of Toronto, and an Adjunct Scientist with the Cancer Research Program at the Institute for Clinical Evaluative Sciences. He completed a PhD in Clinical Epidemiology from the University of Toronto, during which time he was supported by a CIHR Fellowship Award. He is currently one of the chairs of an ongoing Lancet Oncology Commission on Sustainable Pediatric Cancer Care in low and middle income countries. Sumit has worked extensively with pediatric oncologists and policymakers throughout Latin America, the Caribbean, and India. He currently holds grant funding from The Garron Family Cancer Centre, Alex's Lemonade Stand, CIHR and the Canadian Cancer Society Research Institute.



Nir Hacohen is an immunologist and geneticist focused on developing and applying unbiased methods to understand the mammalian immune response. His group is focused on several inter-related areas, including: (i) viral and bacterial sensing in dendritic cells, the sentinel cells of the immune system; (ii) detection of self vs. non-self by the innate immune system; (iii) genetic basis for the observed variation in immunity across the human population, with an emphasis on tumor immunity and autoimmunity; and (iv) novel and personalized immunotherapeutics. He is co-director of the Broad Cell Circuits Program, co-director of the Broad Center for Cell Circuits, and a founding PI of the Broad Genetic Perturbation Platform and Functional Genomics Consortium. Hacohen received an AB in physics from Harvard University and a PhD in biochemistry from Stanford University. After starting his own group as a Whitehead Institute Fellow, he moved to the Broad Institute and joined the faculties of Harvard Medical School and Massachusetts General Hospital.

Nazik Hammad is Assistant Professor in the department of Oncology, cross-appointment in the department of Medicine and Program Director, Medical Oncology Residency Training Program at Kingston General Hospital and Queen's University. Her areas of Education Interest are Education and training of medical oncology residents and fellows; Undergraduate Education in Oncology and Oncology training of physicians and other health care providers in Low Income Countries.

Sue Henshall completed her PhD at the University of London before returning to Australia where she led a translational cancer research laboratory at the Garvan Institute of Medical Research. Over the course of her career, she has completed a MPH and held appointments at the University of NSW and Georgetown University. In 2013, she founded the global health consultancy, Three Stories Consulting that works with organisations to make the best use of evidence for successful advocacy by creating resources and building capacity around global health issues with a focus on NCDs.

Sue Horton became interested in working on health and economics while spending a summer during grad school working for the World Bank, which was newly interested in lending for health. She then spent six months at the International Centre for Diarrheal Disease Research in Bangladesh while writing my thesis. That led to a lot of varied projects. She worked or taught in about 25 low and middle income countries, on topics ranging from labour markets, women's participation, benefits and costs of micronutrient interventions, and currently costs and benefits of breastfeeding, cost and cost-effectiveness of cancer interventions, and disease control priorities in low and middle income countries. Sue Horton has also worked on research projects with the World Bank, FAO, WHO, UNICEF, Copenhagen Consensus, among others, and currently the Disease Control Priorities project.

Doris Howell is the RBC Chair in Oncology Nursing Research and Education at the University Health Network and a Professor in the Lawrence S. Bloomberg Faculty of Nursing with a cross-appointment in the Institute of Health Policy, Management and Evaluation (IHPME). As a Senior Scientist in the Department of Psychosocial and Supportive Care, Ontario Cancer Institute and as an Affiliate Scientist with the ELLICSR Health, Wellness & Cancer Survivorship Centre, University Health Network. She is the Co-Director of the Ontario Patient Reported Outcomes-Symptoms and Toxicity Research Unit (On-PROST) testing the implementation of Patient Reported Outcomes (PRO) in routine clinical practice on health outcomes.

Clifford Hudis is the Chief Executive Officer of the American Society of Clinical Oncology (ASCO). He also serves as the CEO of its Conquer Cancer Foundation and as Chairman of the Board of Governors of ASCO's CancerLinQ. He previously served in a variety of roles at ASCO including as President. Before moving fulltime to ASCO he was the Chief of the Breast Medicine Service at Memorial Sloan Kettering Cancer Center (MSKCC) in New York City, where he was also Professor of Medicine at the Weill Medical College of Cornell University. At ASCO his key initiatives include the acceleration of CancerLinQ, the society's focused effort to increase insights and learning from the rapidly accumulating electronic records of routine care provided by clinicians.

David Jaffray obtained Ph.D. in the Department of Medical Biophysics at the University of Western Ontario and was at William Beaumont Hospital in Michigan where he instigated a direction of research in image guided radiotherapy. He joined the Princess Margaret Hospital in Toronto as Head of Radiation Physics and a Senior Scientist within the Ontario Cancer Institute. David holds the Fidani Chair in Radiation Physics, is the Director of the TECHNA Institute for Health Technology Development at the University Health Network and recently became the Executive Vice President of Technology and Innovation at the University Health Network. He is a Professor in the Departments of Radiation Oncology, Medical Biophysics, and Institute for Biomaterials and Biomedical Engineering at the University of Toronto.

Jordan Jarvis is a Doctor of Public Health candidate at the London School of Hygiene and Tropical Medicine, focused on policy research to improve equitable access to care for cancer and other non-communicable diseases (NCDs) across low-income and marginalized populations. For over 3 years, Jordan served as the Executive Director of the Young Professionals Chronic Disease Network (YP-CDN), a global advocacy network and nonprofit organization with over 7,000 members in over 150 countries. As a YP-CDN Board member, Jordan continues to support global advocacy initiatives and advocacy capacity building for NCDs, with a particular focus in East Africa. Previously, Jordan completed a postgraduate research fellowship at the Harvard Global Equity Initiative (HGEI) at Harvard Medical School, and worked for Amref Health Africa conducting research and advocacy for cervical cancer and human resources for health in Kenya, the International Agency for Research on Cancer/WHO in France, and on cancer policy at the World Health Organization. She is currently a World Heart Federation Emerging Leader and completed the CEO Training Program through the Union for International Cancer Control in 2016.

Prabhat Jha is an Endowed Professor in Global Health and Epidemiology at the University of Toronto and Canada Research Chair at the Dalla Lana School of Public Health, and the founding Director of the Centre for Global Health Research. Professor Jha is a lead investigator of the Million Death Study in India, which quantifies the causes of premature mortality in over 2 million homes. He founded the Statistical Alliance for Vital Events, which focuses on reliable measurement of premature mortality worldwide. Earlier, he served in senior roles at the World Health Organization and the World Bank. He was made an Officer of the Order of Canada in 2012. Professor Jha holds an M.D. from the University of Manitoba and a D.Phil. from Oxford University, where he studied as a Rhodes Scholar.

Jennifer Jones is a Senior Scientist and the Director of Cancer Rehabilitation and Survivorship Program and Associate Director of the Centre for Health Wellness and Cancer Survivorship (ELLICSR) at Princess Margaret Cancer Centre. She is also an Associate Professor at the University of Toronto. She has produced scholarly and professional work based on the topic of translational research to inform clinical survivorship care. Her work focuses on examining new approaches to predict, prevent, and manage long-term adverse effects of cancer and its treatment. In addition to her work in cancer effects and treatment, Dr. Jones has experience evaluating innovative models of follow-up care and support for the increasing number of cancer survivors. Dr. Jones has also worked in implementation research, which focuses on translating evidence to clinical practices by developing integrated knowledge of translation models and education.

Stein Kaasa is Professor of Palliative Medicine at the Institute of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology (NTNU), National Cancer Director at the Norwegian Directorate for Health, Chair of the European Palliative Care Research Centre and Network. He has worked extensively to get palliative care research on the national and global agenda, and is a prolific researcher who has published more than 450 peer-reviewed articles and book chapters.

Jamal Khader is currently a Consultant Radiation Oncologist who specializes in Head and Neck, Genitourinary, Gastrointestinal and Lung Cancers at the King Hussein Cancer Center in Amman Jordan. He is the immediate Past President of the Jordan Oncology Society, and is an Ex Member of the UICC Board of Directors.

Bronwyn King is an Australian oncologist and founder and CEO of Tobacco Free Portfolios, a not-for-profit organisation that collaborates with the world's largest financial organisations to drive global change towards tobacco-free finance. Bronwyn started her medical career working on the lung cancer unit at the Peter MacCallum Cancer Centre in Melbourne. The devastating impact of tobacco on her patients left a deep impression. Years later, Bronwyn discovered her unwitting investment in tobacco companies through her super fund and felt obliged to try to bridge the gap between the health and finance sectors. Tobacco-free finance policies have since been implemented by more than 40 Australian superannuation funds as well as Sovereign Wealth funds, banks, insurers and fund managers in ten countries, including BNP Paribas, AXA and Australian Super. More than AU$12 Billion away from investment in tobacco.

Felicia Marie Knaul is the Director of the University of Miami Institute for Advanced Study of the Americas, Professor at UM's Miller School of Medicine, and Sylvester Comprehensive Cancer Center. She maintains a strong program of research and advocacy in Latin America, especially in Mexico, where she is the Senior Economist at the Mexican Health Foundation and Founding President of Tómatelo a Pecho. Dr. Knaul is also the President of the Latin American Union against Women's Cancers. In 2017, she was inducted into the National Academy of Medicine of Mexico. In 2008 Dr. Knaul founded Tómatelo a Pecho, a Mexico-based NGO that promotes research, advocacy, awareness, and early detection in Latin America. Dr. Knaul served as Chair of the Lancet Commission on Global Access to Palliative Care and Pain Relief. As Director of thenHarvard Global Equity Initiative, she founded the Global Task Force on Expanded Access to Cancer Care and Control. She has also served on numerous boards, including the UICC. Dr. Knaul received MA and PhD in economics from Harvard University and a BA in international development from the University of Toronto

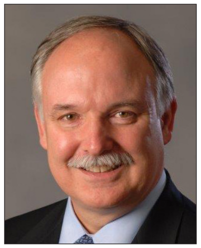
Brenda Kostelecky is the lead for the NCI Center for Global Health's Cancer Control Planning and Policy team and manages NCI's international cancer control planning and implementation initiatives. She has several years' experience in science policy and strategic planning at NCI and has led development of the Cancer Control Leadership Forum Program with regional Forums developed that include the Middle East, Southeast Asia, the Caribbean, Latin America, and Central Asia. Dr. Kostelecky also played an instrumental role in creation and expansion of the International Cancer Control Partnership, a coalition of international organizations supporting national cancer control planning and implementation efforts that includes the Union for International Cancer Control, the World Health Organization, the International Agency for Research on Cancer, the American Cancer Society, the Centers for Disease Control and Prevention, the American Society of Clinical Oncology, and many other partners.

Tezer Kutluk graduated from Hacettepe University Medical School Ankara-Turkey. Postdoctoral fellow and Fulbright scholar at MD Anderson Cancer Center USA (1992-94). Member of SIOP, ASCO, AACR, honorary member AAP, International Children's Center, UNICEF National Committee. He had served as a leading healthcare executive at Hacettepe University; Vice-Director of Children's Hospital, the Director of Oncology Hospital, Director of Children's Hospital and President of Institute of Child Health, President of Institute of Oncology, Board Member of Institute for Health Sciences, Member of Senate & CEO of Hacettepe University Hospitals. He is past President of Turkish Association for Cancer Research and Control, past President of European Cancer Leagues. He is named as honorary fellow of by American Academy of Pediatrics in May 2014. He is Associate Editor of the Journal of Global Oncology published by ASCO. He was the President of UICC. He recently elected to the NCD Alliance Board Member.

Wendy WT Lam is currently Associate Professor at the School of Public Health, as well as an adjunct Associate Professor at the School of Nursing, The University of Hong Kong. She is the head of the Division of Behavioural Sciences. She obtained her B.Sc (Nursing) from Queen's University, Canada, then attended the University of Toronto obtaining her M.Sc in Nursing. She completed her Ph.D. specialized in Psycho-oncology from the University of Hong Kong. She was awarded the 2007 Hiroomi Kawano Young Investigator Award by the International Psycho-Oncology Society for her work on Chinese women with breast cancer. She is an active contributor in International Psycho-oncology Society, being a board of director and a chairman of the Liaison Committee. Her research interests focus on psychosocial adaptation patterns and service optimization in cancer patients.

Stephanie Lheureux is a Clinician Investigator in the Bras Drug Development Program, Staff Medical Oncologist and Gynecology Site Leader at Princess Margaret Cancer Centre. She is also an Assistant Professor at the University of Toronto. Following her Medical Degree and specialization in Medical Oncology (University of Caen, France) she was recruited as an Assistant Professor at the Academic Cancer Center of Caen (Normandy, France), where her practice combined research and clinical care in gynecologic cancers. Shortly thereafter, Dr. Lheureux received her PhD with merit for preclinical evaluation of new targeted therapies and drug resistance mechanisms in ovarian cancer. She worked on new treatment to overcome chemoresistance in ovarian cancer models including an imaging component.

Yolande Lievens is the chair of the radiation oncology department of the Ghent University Hospital, Belgium. Her clinical focus lies on radiation therapy for thoracic malignancies, with a special attention for the role of radiotherapy in hematology and in breast cancer. She has always been closely involved in the organizational aspects of radiotherapy, in the position of radiotherapy within multidisciplinary oncology and in the financial and health economic aspects of cancer care. This interest in health services research is substantiated in her collaboration in the ESTRO-HERO (Health Economics in Radiation Oncology) project and in the Global Task Force on Radiotherapy for Cancer Control that is now continued in the ESTRO GIRO (Global Impact of Radiotherapy in Oncology) project. She has a vested interest for quality issues in radiation oncology, not only in terms of quality assurance but also regarding the impact of radiation treatments on quality of life.



Patrick J. Loehrer, Sr. is a prolific clinical researcher and specialist in the treatment of a variety of cancers including testis, bladder, colon, pancreas and, most notably, thymus. His research related to thymic cancer has been recognized with the Exceptional Service Award of the Foundation for Thymic Research. Dr. Loehrer was the founding chair of the Hoosier Oncology Group. Dr. Loehrer has served on the boards of the ECOG Foundation, the American Society of Clinical Oncology, and the American Board of Internal Medicine. Dr. Loehrer is the Director of the IU Simon Cancer Center. He has numerous other awards including the Flick Family Fund Award, American Cancer Society Fellowship and the American Cancer Society Junior Faculty Award, the Glenn Irwin Experience Excellence Award, the ECOG Young Investigator Award, the Danielson Award, the Collaborator of the Year Award from the Walther Cancer Institute and the W. George Pinell Award. Dr. Loehrer received the Special Recognition Award, and in 2017, was awarded the Allen S. Lichter Visionary Leadership Award from ASCO.

Aisha Lofters is a family physician with the St. Michael's Hospital Academic Family Health Team and scientist with the Li Ka Shing Knowledge Institute of St. Michael's Hospital. She is an assistant professor at the University of Toronto in the Department of Family and Community Medicine and adjunct scientist at the Institute for Clinical Evaluative Sciences. She currently holds a Career Development Award in Prevention from the Canadian Cancer Society Research Institute. Her research interests include cancer screening, immigrant health and health equity, using a broad range of methods including secondary database analysis and community-based participatory research.

Sir Michael Marmot, has pioneered research into health inequalities and their causes for over 35 years. He was Chair of the Commission on Social Determinants of Health, set up by the WHO in 2005, led the longitudinal Whitehall Studies of health outcomes in British civil servants and authored the Marmot Review: Fair Society, Healthy Lives which estimated the staggering impact and cost of health inequities in Britain. He is currently the Director of the UCL Institute of Health Equity, and immediate past President of the World Medical Association. He was knighted by Queen Elizabeth II for services to Epidemiology and understanding health inequalities in 2000.

Michael Milosevic is a radiation oncologist in the Radiation Medicine Program, Princess Margaret Cancer Centre and University Health Network, Toronto, Canada. He is a Professor and the Vice-Chair of Research in the Department of Radiation Oncology at the University of Toronto, a past-President of the Canadian Association of Radiation Oncology (CARO) and the Chair of the Canadian Partnership for Quality in Radiotherapy (CPQR). Dr. Milosevic's clinical practice is in the management of gynecological cancers. His research is focused in two main areas: high precision, MR-guided external beam radiotherapy and brachytherapy; and biological targeting of tumor hypoxia and immune-mediated radiation treatment resistance. He is committed to building radiation treatment capacity in developing parts of the world where gynecological cancers are among the most common and debilitating diseases.

Faith Mwangi-Powell is a public health expert with extensive experience in managing complex public health programmes across Africa. Faith's experience includes serves as the Global Director for The Girl Generation a DFID funded, ten country social change communication initiative to end Female Genital Mutilation (FGM), where she provides thought leadership, strategic direction, and global partnership development, resource leveraging and technical oversight for all activities globally. Previously, Faith worked as the founding Executive Director of the African Palliative Care Association and supporting palliative care global advocacy, partnership development and services development in over 20 African countries. Faith holds a Master's degree in Population Policies from Cardiff University, Wales, and a PhD in 'Women's economic development and fertility behavior' from the University of Exeter, England.

Carlo Nalin is Global Head of Drug Assessment and Advocacy in Therapeutics Integrity & Established Medicines for Novartis Oncology. Dr Nalin began his pharmaceutical career as a protein biochemist at Hoffmann-La Roche involved in drug discovery. He joined the Sandoz Research Institute in 1993, and led several laboratory teams focused on targeted Oncology drugs. Carlo received his bachelor degree in Biophysics from the University of Pennsylvania and holds a PhD in Biochemistry from the State University of New York Medical University at Syracuse. His postdoctoral trainings were performed at Cornell University and at the Roche Institute for Molecular Biology.

Elkanah Omenge Orang'o is a Consultant Obstetrician/Gynaecologist and Gynaecologic Oncologist, Head-Division of Gynaecologic Oncology at Moi Teaching and Referral Hospital and is the Chair Department of Reproductive Health, Moi University School of Medicine, Kenya. His research interests include gynaecological malignancies, early detection and treatment, advocacy for cancer prevention/control.

Amit Oza is Head of the Department of Medical Oncology & Hematology, and Medical Director of the Cancer Clinical Research Unit at Princess Margaret Cancer Centre. He is co-Director of Bras Drug Development Program at the Princess Margaret and Professor of Medicine at University of Toronto. Dr. Oza has been PI and co-investigator in >100 phase I, II and III trials for gynecological cancer and advanced colorectal malignancies. Under his direction, the gynecology group is one of the largest ovarian cancer clinical trials groups consistently accruing >30% of all patients seen onto clinical trials (>120/yr) at PM.

CS Pramesh is the Professor and Head of Thoracic Surgery at the Tata Memorial Centre, Mumbai. He is the convener for the National Cancer Grid, a large network of over 120 cancer centres in India. Pramesh has strong interests in clinical trial designs, surgical trials, comparative effectiveness research, promoting collaborative research and cancer policy. He completed the Post Graduate Diploma in Clinical Trials offered by the London School of Hygiene and Tropical Medicine, University of London in 2010. He is keen on promoting training in clinical research methods and conducts several courses on clinical research methodology, biostatistics and scientific writing.

Linda Rabeneck is the Vice-President, Prevention and Cancer Control, and oversees Cancer Care Ontario's prevention, screening, research and surveillance programs. Dr. Rabeneck is a gastroenterologist and clinician scientist. She is Professor of Medicine, Professor of Health Policy, Management and Evaluation, and Professor, Dalla Lana School of Public Health at the University of Toronto and Senior Scientist at the Institute for Clinical Evaluative Sciences (ICES) in Toronto. She is a Master of the American College of Gastroenterology and President-Elect of the Canadian Academy of Health Sciences. Dr. Rabeneck previously served as Director of the Division of Gastroenterology at the University of Toronto, and Regional Vice President, Cancer Care Ontario and Chief of the Odette Cancer Centre at Sunnybrook Health Sciences Centre. Dr. Rabeneck played a leadership role in launching ColonCancerCheck in Ontario, Canada's first organized, province wide colorectal cancer screening program.

Danielle Rodin is a radiation oncologist at Dana Farber/Brigham and Women's Cancer Center, the 2017-2018 fellow of the Canadian Association of Radiation Oncology, and The Commonwealth Fund's Harkness Fellow in Health Care Policy and Practice. She completed her M.D. and postgraduate specialty training at the University of Toronto, and M.P.H. from Harvard University. She is now undertaking her fellowship in the Department of Health Policy and Management at the Harvard T. H. Chan School of Public Health, where she is identifying approaches to enhance the utilization of value-based cancer care. With that aim, she is analyzing variation in the treatment patterns and costs of specific clinical care pathways for prostate cancer, and the impact of clinical practice guidelines on the use of low-value cancer services for prostate, breast, and hematologic malignancies. Dr. Rodin's work has been published in Lancet Oncology, Lancet Global Health, and numerous other peer-reviewed journals.

Gary Rodin is the Harold and Shirley Lederman Chair in Psychosocial Oncology and Palliative Care and is Head of the Department of Supportive Care at the Princess Margaret Cancer Centre in Toronto. Dr. Rodin is the Director of the Global Institute of Psychosocial, Palliative and End-of-Life Care (GIPPEC) and a Professor of Psychiatry at the University of Toronto. He is a clinician-investigator who has published widely on the psychiatric and psychosocial aspects of cancer and other medical illnesses. Under his leadership, the Department of Supportive Care at the Princess Margaret has now achieved an international reputation for its academic and clinical excellence.

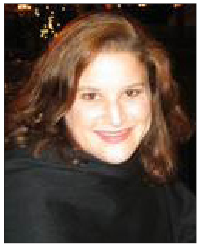
Barry Rosen completed his fellowship at both Princess Margaret Hospital and Toronto General Hospitals in Toronto. In 2002 he was appointed the Head of Gynecologic Oncology at the University of Toronto and Head of Gynecologic Oncology at University Health Network. Dr Rosen was on staff at Princess Margaret Hospital from 1985 to 2015. Dr Rosen developed an interest in global health 10 years ago during a visit to Eldoret Kenya where he spent 5 weeks working with the local gynecologists. During a second visit he taught two gynecologists how to do surgery for cervix cancer and subsequently in collaboration with Moi University he helped develop and initiate a gynecologic oncology fellowship training program in Kenya, the first of its kind in Sub-Saharan Africa outside of South Africa. This program has graduated 5 fellows to date and three more are in training. He recently moved to Michigan in June 2015 and is Section Head of Gynecologic Oncology for Beaumont Health and Professor at Oakland University William Beaumont School of Medicine.

Rengaswamy Sankaranarayanan was trained as radiation and clinical oncologist in the University of Kerala, India and had post-doctoral training at the Pittsburgh Cancer Institute, USA and the MRC Biostatistics Unit, Cambridge, UK. He was the Head of the Early Detection and Prevention Section the International Agency for Research on Cancer (IARC) of the World Health Organization until 2014 and is currently the Special Advisor on Cancer Control and Head of the Screening Group (WHO). He is committed to research, training, program development and technical assistance in early detection and cancer control, particularly in low- and middle income countries. He has provided technical support to national cancer control programs and national screening programs in several LMICs.

Diana Sarfati is a public health physician and epidemiologist with a particular interest in the interface between public health and clinical medicine. She is co-Head of the Department of Public Health and the Director of the Cancer and Chronic Conditions (C3) research group. Professor Sarfati has a range of research interests relating to cancer, long term conditions and health services. She has led a large body of work relating to ethnic disparities in cancer outcomes. This work has resulted in the identification of key patient and health system factors that influence cancer survival. This work has been used extensively by health policy makers, clinicians and other researchers to develop policies and practices that aim to reduce inequities in cancer outcomes.

Miriam Schneidman is a Lead Health Specialist in the Africa Region of the World Bank. She has worked on health and human development issues in the Africa and Latin America and Caribbean Regions of the World Bank. She has led the design and development of investment operations in Africa (e.g. Burundi, Burkina Faso, Cameroon, Democratic Republic of Congo, Kenya, Rwanda, Nigeria, Tanzania, and Uganda) and Latin America and the Caribbean (e.g. Bolivia, Colombia, Haiti). Most recently, she organized a South-South Knowledge Exchange to support countries in East and Southern Africa to share lessons and experiences in cancer care and control. Schneidman currently represents the World Bank on the Stop TB Partnership Coordinating Board. In the past she served as a member of the Center for Global Development Performance-Based Incentives Working Group and the Harvard Global Task Force on Expanded Access to Cancer Care and Control. She holds degrees in Economics from the University of Maryland and in Public Health from The Johns Hopkins University.

Michael Sherar is President and CEO of Cancer Care Ontario, a role he was appointed to in 2011. From 2006 to 2011, he was the provincial agency's Vice-President, Planning and Regional Programs, leading the development of Regional Cancer Programs, including capital planning for cancer services across the province. Dr. Sherar is an Affiliate Scientist at the Techna Institute University Health Network where he carries out research and development of minimally invasive thermal therapy technologies for cancer including radiofrequency ablation. Dr. Sherar received a BA in Physics from Oxford University in 1985 and his PhD in Medical Biophysics from University of Toronto in 1989.



Rachel Spitzer is currently the Director AMPATH at the University of Toronto. She is also Associate Professor and Vice Chair, Global Women's Health at the University of Toronto, Department of Obstetrics and Gynecology; and staff physician at Mount Sinai Hospital.

Susannah Stanway is a Consultant in Medical Oncology at The Royal Marsden NHS Foundation Trust. Her research interest is predominantly focused on Cancer Survivorship. This includes the area of cardio-oncology, in collaboration with amongst others, the Cardio-Oncology Group at the Royal Brompton Hospital and the London School of Hygiene and Tropical Medicine; She co-chairs the Royal Marsden NHS Foundation Trust's Living With and Beyond Cancer Committee; sits on the Royal Marsden Partners Survivorship pathway; Susie has an interest in cancer control in low-middle income countries and she sits on the editorial board of ASCO's Journal of Global Oncology, leads a sub-module on Cancer in Low-Middle Income Countries on the ICR MSc course, actively contributes to oncology education of junior doctors in East Africa with the East African Development Bank-British Council-Royal College of Physicians group. She is immediate past president of the Oncology Section at the Royal Society of Medicine.

Lisa Stevens joined the Center for Global Health (CGH) as the Deputy Director for Planning and Operations in 2012. In support of NCI, she has fostered collaborations, created decision-making tools, and overseen the development of strategic plans. Since joining CGH, Lisa has focused on the development of the strategic priorities for the Center. As the Senior Lead of the International Global Cancer Control Program Lisa has worked with Ministries of Health and other multi-sectorial groups in all WHO Regions to include evidence-based policies in a cancer control and/or NCD control plans. In addition, Lisa co- founded the International Cancer Control Partnerships to organize multiple global partners working with stakeholders in the area of cancer control. This partnership has focused on collating published cancer control and NCD plans as well as other tools that individuals charged with developing, implementing, or evaluating national plans can utilize.

Richard Sullivan is the founding Director of the King's Health Partner's Institute of Cancer Policy & Global Health and leading expert on global cancer policy and global health security. He is the former Clinical Director of Cancer Research UK. He has chaired several high profile Lancet Commissions on delivering affordable cancer care in high-income countries, global cancer surgery, and cancer care in LMICs. He has a far-reaching international network through which he collaborates to design, implement and evaluate local, regional and global cancer policy.

Terrence Sullivan is a behavioral scientist, Professor and Senior Fellow at the Institute for Health Policy, Management & Evaluation, Dala Lana School of Public Health, University of Toronto and adjunct professor in the Department of Oncology at McGill University. His research interests span Cancer Control, Quality and Performance Strategies, Disability Policy and Public/Private Issues in Health Policy. In governance roles he chairs the board of the Canadian Agency for Drugs and Technologies in Health, the quality committee of the Hospital for Sick Children, the governance and nominations committee of Exactis Innovation (a federal NCE) and is a member of the board of Vector AI. From 2001 to March 2011 he occupied leadership positions at Cancer Care Ontario (CCO). Founding president of the Institute for Work & Health (1993-2001), he previously played senior roles in the Ontario Ministries of Health, Cabinet Office and as Assistant Deputy Minister, Constitutional Affairs and Federal-Provincial Relations during the Charlottetown negotiations. He served two successive First Ministers of Ontario as Executive Director of the Premier's Council on Health Strategy.

Pam Tobin is Director of First Nations, Inuit and Métis Strategy Implementation at the Canadian Partnership Against Cancer. Pam is an adopted member of the Takla Lake First Nation and sits with the Beaver Clan at Potlatch. She was given this honour in recognition for environmental health work she has done in and around the traditional territory of Tse Keh Nay in northern British Columbia. She has worked extensively with First Nations, Inuit and Métis throughout Canada and has also worked with Indigenous populations in Guatemala and Russia. In her role at the Partnership, is responsible for working with Indigenous partners and stakeholders to improve the cancer journey and to close the gaps in cancer and control in all provinces and territories. Pam previously served as Director, Screening and Early Detection at the Partnership. She was responsible for collaborating with the national breast, colorectal, cervical and lung networks to improve the quality of and participation in organized screening programs. Prior to joining the Partnership, Pam was the Director, Regional Operations for the BC Cancer Agency Centre for the North. As part of the senior leadership team she led the integration of all clinical programs between the regional health authority and the BC Cancer Agency to improve access to care to rural, remote and isolated communities.

Gail Turner is Inuit, a beneficiary of the Labrador Inuit Land Claim, who retired in 2012 from the position of Director of Health Services for the Nunatsiavut Government, Northern Labrador. She holds a Bachelor of Nursing degree from Memorial University of Newfoundland, a Master's of Adult Education from St. Francis Xavier University, She has presented on Inuit health at provincial, regional, national and international meetings and symposiums, including the World Cancer Congress in 2011. Her work has been focused in public health but she has also managed remote community clinics and continuing care. Gail is the Indigenous Director on the Board of the Canadian Partnership Against Cancer. She is a recent recipient of the Labradorians of Distinction Award for services to health and community.

David Watkins is Senior researcher in health economics with the Disease Control Priorities Network and physician-scientist in the Departments of Medicine at the University of Washington and University of Cape Town. His scientific interests are in priority setting for health in LMICs, with a particular interest on prevention and control of NCDs.

Xiaolin Wei is the Faculty's first Associate Professor of Health Systems and Clinical Public xiaolin-weiHealth in Asia — a shared core faculty position with the Dalla Lana School of Public Health's Division of Clinical Public Health and the Institute of Health Policy, Management and Evaluation — as of April 8, 2016. Wei is an internationally-recognized leader in healthcare and health policy with a focus on primary care reform and tuberculosis control. He is also an IHPME alumnus, holder of the 2004 Dr. Ted Goldberg Scholarship and he participated in the School's Global Health Summit in November 2014 by addressing the question, what is the gold standard for health systems? Wei has held visiting professorships at the Nuffield Centre of International Health and Development at the University of Leeds, UK, where he is also a Fellow of the Faculty of Public Health. Wei is also a technical advisor to the World Health Organization on tuberculosis and influenza and the secretary-general and executive board member of the International Union Against Tuberculosis and Lung Disease.

Diana Withrow is a postdoctoral fellow in the Radiation Epidemiology Branch of the Division of Cancer Epidemiology and Genetics at the National Cancer Institute. Dr. Withrow earned her Ph.D. in epidemiology from the University of Toronto Dalla Lana School of Public Health in 2016. Her doctoral research comprised the first national-level analysis of cancer survival among First Nations and Métis adults in Canada. Dr. Withrow's research interests include socio-demographic and economic disparities in survival and survivorship, the role of therapy on second cancer risk, and the optimal application of survival analysis techniques to these research areas.

Mei Ling Yap is a staff specialist radiation oncologist and director of training at Liverpool and Macarthur Cancer Therapy Centres, Sydney, Australia. Mei Ling undertook her radiation oncology speciality training in Australia and Singapore from 2007-2011. She then undertook a clinical research fellowship at Princess Margaret Cancer Centre, Toronto from 2011-2013. Mei Ling was a member of the Global Task Force in Radiotherapy on Cancer Control (GTFRCC) and co-author of the Lancet Oncology Commission. She now sits on the steering committee of the Global Impact of Radiotherapy on Oncology (GIRO) project. Mei Ling is co-chair of the Asia Pacific Radiation Oncology Special Interest Group (APROSIG-RANZCR), which supports LMIC radiotherapy departments in the Asia-Pacific through a bilateral exchange, training and education. She also co-runs GlobalRT, an online platform advocating for equitable access to radiotherapy globally. Mei Ling was selected as a UICC 'Young Cancer Leader' in 2015. Mei Ling holds a conjoint senior lecturer appointment with the University of Western Sydney and University of New South Wales and an adjunct senior lecturer appointment with the University of Sydney.

Trevor Young is Dean of the University of Toronto's Faculty of Medicine and Vice Provost, Relations with Health Care Institutions. Prof. Young is a clinician-scientist who studies the molecular basis of bipolar disorder and its treatment. He has published more than 200 peerreviewed journal articles and has held more than 35 peer-reviewed grants. Prof. Young and his lab focused on the processes that lead to long-term changes in brain structure and function in patients with bipolar disorder, and how mood-stabilizing drugs can alter those changes. Prof. Young has supervised more than 30 research and clinical trainees. Since January 1, 2015, Prof. Young has been Dean of Canada's largest Faculty of Medicine, with more than 8,000 faculty members and 6,900 students enrolled in undergraduate medicine, postgraduate medicine, radiation sciences, and professional and doctoral graduate programs. As Vice Provost, he is responsible for the University's partnership with nine fully affiliated hospitals and 18 community-affiliated hospitals and health facilities. The Faculty of Medicine and the fully affiliated hospitals are also a thriving research enterprise — one of the largest in North America — that includes one-fifth of all health and biomedical Canada ResearchChairs and has attracted $804 million in research funding (2013-14).

Camilla Zimmermann is Head of the Division of Palliative Care at the Princess Margaret Cancer Centre and the University Health Network, and a Senior Scientist at the Princess Margaret Cancer Centre Research Institute. She is also Professor of Medicine and Rose Family Chair in Supportive Care at the University of Toronto. Dr. Zimmermann is internationally known for her research on palliative and supportive cancer care, particularly in the area of early palliative care. Dr. Zimmermann was awarded the William E. Rawls Prize by the Canadian Cancer Society for her research, which is focused on determining the best way to provide timely, integrated symptom management and supportive care for patients with cancer and their families.

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1

Needs Assessment for Population-based Pediatric Cancer Intervention in Rwanda

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Background: Over 250,000 new pediatric cancer cases are diagnosed yearly worldwide. In the developing countries, the childhood cancer burden is estimated to increase even more information about pediatric cancers in developing countries is limited by the lack of cancer registries and cancer treatment centers that assist in early diagnosis, treatment and reporting of treatment outcomes.
Objective: Rwanda Children's Cancer Relief (RCCR) with International Health Initiatives (IHI), two-health organization, has initiated collaboration through a project called Rwanda Health Initiatives and Needs Outreaches (RHINO) and conducted a situational assessment of childhood cancers in Rwanda with a plan to develop a comprehensive childhood cancer care program.
Method: An anonymous survey was administered to local healthcare providers in Rwanda to assess knowledge about pediatric cancers and determine the use of local resources in the care of pediatric cancer patients. The analysis of the survey informs the current status of pediatric cancer in Rwanda and serves as a basis for a plan to implement a children's cancer initiative.
Results: The survey was completed by 515 healthcare workers throughout Rwanda. Approximately 90% of the respondents reported that they have not received any specific education on pediatric cancer. About 40% of the respondents believe that families in Rwanda first seek traditional healers and then seek hospital care when traditional options fail. More than 90% of respondents reported that less than 25% of families can afford treatment without a severe financial burden. Bloodwork and x-rays were the diagnostic studies most commonly available.
Conclusion: Results show that health care workers in Rwanda are not adequately trained to manage pediatric cancer patients. The data further shows that Rwanda is limited in terms of health infrastructure and technological development to deal with the complexity of treating childhood cancers. Factors such as late presentation and cultural beliefs have impact on prognosis of cancer patients. This information will assist in implementing programs to educate health workers, establish children's cancer services, develop infrastructure and apply technology (such as telemedicine) to enhance the quality of and access to care for childhood cancer in Rwanda.

2

BETTER WISE: An Innovative, Evidence-based Program for Cancer and Chronic Disease Prevention and Screening

Aisha Lofters
St. Michael's Hospital, Toronto, ON

Background: Family physicians often lack time, resources, and tools to address cancer and chronic disease prevention and screening (CCDPS). The BETTER WISE (Building on Existing Tools to Improve Cancer and Chronic Disease Prevention and Screening in Primary Care for Wellness of Cancer Survivors and Patients) approach integrates evidence-based preventive care for cancer with other chronic diseases, specifically focusing on lifestyle factors. A health professional within the primary care setting is trained to take on the role of a Prevention Practitioner (PP), who develops a tailored "Prevention Prescription" with each patient, helping them set actionable goals for their health.
Objectives: To determine if patients who receive an individualized visit with a PP have improved cancer surveillance and CCDPS outcomes compared to standard care.
Methods: In this pragmatic cluster randomized control trial, patients are randomized at the physician level to receive an early BETTER WISE intervention or wait-list control. Eligible patients are aged 40-65 years (both general health and cancer survivors). A health professional within the practice will take on the role of PP and use the BETTER WISE tool kit, which includes blended care pathways for cancer survivors (breast, colorectal, prostate) and CCDPS. The outcome measure is a composite index, defined as the proportion of appropriate CCDPS actions achieved by the patient (according to pre-defined targets and eligibility at baseline) at 12-month follow-up.
Results: The BETTER trial demonstrated that the addition of a PP improved uptake of CCDPS in primary care settings compared to usual care (54% vs 21%, $p<0.001$). It is expected that BETTER WISE patients in the intervention group will have improved 12-month CCDPS outcomes compared to wait-list control. Trial recruitment will begin in fall 2017. To date, a clinical working group from three provinces (Alberta, Ontario, and Newfoundland & Labrador) has worked together to review the available clinical evidence and assist in the identification of appropriate tools for the BETTER WISE project.
Conclusion: The BETTER WISE approach will address the CCDPS needs of patients including cancer survivors. This approach provides a framework to integrate a new role and develop practices' skills and resources for cancer surveillance and CCDPS.

3

Architectural Responses for UVR Protection – Creating Prototypes for Interactive Architecture for Shade Design

George Thomas Kapelos
Ryerson University, Toronto, ON

Background/Objectives: Toronto has Canada's first policy on shade to support prevention of skin cancer, caused by environmental UVR. Shade is a key component of skin cancer prevention. An architectural design studio produced prototypes of interactive structures for shade for evaluation by parks planners and testing in a park setting in Toronto Ontario.
Methods/Overview: The architecture studio applied Australian methods and techniques for designing and evaluating shade. Consultations with park users and managers identified site constraints and needs. Recreation facilities and activities on the site were mapped. Locations for placing shade devices to maximize their effectiveness were located. A typology of interactive approaches was developed and applied to shade structure design. Designs were produced, digital and scale models built, and schemes were evaluated as to their effectiveness in producing shade in desired locations.
Results: Twelve designs demonstrating six methods of interactivity were presented for a five specific recreational sites within the park. Computer renderings simulated shade creation during diurnal cycles of peak UVR in these locations. Feedback was elicited from park users and managers and was applied to policies developed for capital projects in Toronto parks.
Conclusions: Successful collaboration between health promoters, parks planners and architects can create UVR protection through shade. Architectural interactivity is an innovative tool for shade creation.

4

Clinical Public Health: Educating Dietitians to Integrate Public Health Principles into Clinical Care

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Background: As cancer care advances, there is an increasing need for seamless continuity of care from hospital to community, creating a demand for clinicians with skill-sets that transcend traditional training. Clinical Public Health (CPH) is one such approach that educates health care professionals to integrate primary, preventative care, and public health principles to encourage a systems approach in the delivery of health care. The recently revised Master of Public Health – Nutrition and Dietetics (MPH-ND) program at the University of Toronto's Dalla Lana School of Public Health, division of CPH, challenges future registered dietitians to view health care from a broad perspective that integrates clinical, individual, and population health. Through a tri-partnership between the University of Toronto, University Health Network, and Toronto Public Health, students participate in clinical placements that enable them to develop clinical expertise while integrating their knowledge gained from public health theory courses. This expanded scope of practice for the registered dietitian results in improved quality of care of the patient.
Objectives: To apply CPH principles of patient self-management, by leading in the co-creation of nutrition education group for patients new to cancer treatment at the Princess Margaret Cancer Centre.
Methods/Overview: A needs assessment was conducted, including surveying patients receiving cancer treatment, for education needs related to nutrition and cancer. Responses were transcribed and sorted into common themes. An education class was developed based on these themes as well as clinical best practice guidelines. Plain and actionable language was used to increase patient knowledge and understanding of nutrition and cancer so that patients are able to take personal action to manage treatment side effects during treatment.
Results and Conclusions: The creation of a nutrition education class to be implemented as a standard of care benefits new patients through the application of CPH principles to promote

patient self-management and participation in the health care continuum of cancer treatment. Dietitians trained in CPH will be able to respond readily to the changing needs of cancer patients and engage patients as partners throughout their cancer journey.

5

Preventing Alcohol-related Cancer: What if Everyone Drank within the Guidelines?

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Background/Objectives: Alcohol consumption is a major cause of morbidity and mortality. Guidelines have been developed in many countries to help individuals reduce their alcohol-related harm. In Canada, two sets of guidelines are commonly promoted: the Low-Risk Alcohol Drinking Guidelines (LRADG) and stricter, cancer-specific guidelines developed by the World Canada Research Fund (WCRF) and the American Institute for Cancer Research (AICR). The objectives of this study are to estimate the proportion and number of cancer cases diagnosed in Ontario in 2012 attributable to alcohol consumption and to compare the impact of drinking within two sets of guidelines on alcohol-attributable cancer incidence.
Methods/Overview: We estimated the proportion of cancers in Ontario attributable to alcohol consumption by calculating population attributable fractions (PAFs) for six cancer types using drinking prevalence from the 2000/01 Canadian Community Health Survey and relative risks from meta-analyses. Each PAF was multiplied by the number of incident cancers in 2012, allowing for a 12-year latency period, to calculate the number of alcohol-attributable cases. We also estimated the number of alcohol-attributable cases assuming consumption had not exceeded the levels recommended by the LRADG or the WCRF/AICR guidelines.
Results: 1,207 new cases of cancer diagnosed in Ontario during 2012 are estimated to be attributed to alcohol consumption, representing approximately 1.6% of all new cancer cases. If no Ontario adults had exceeded the LRADG, an estimated 286 fewer cancer cases could have been diagnosed in 2012, whereas an estimated 434 fewer cancer cases could have been diagnosed if no Ontario adults had exceeded the stricter WCRF/AICR guidelines.
Conclusions: Strategies to limit alcohol consumption to the levels recommended by drinking guidelines could potentially reduce the cancer burden in Ontario.

6

Factors Affecting Actual Radiotherapy Utilisation in the 45 and Up Study Cohort, New South Wales

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Purpose: We report the actual radiotherapy utilisation rates (RUR)s for people with newly-diagnosed with cancer in the 45 and Up Study cohort and investigate the factors which affect RUR.
Methods and Materials: There were 267,153 individuals aged ≥45 enrolled in the Sax Institute's 45 and Up Study, a population-based cohort study of healthy ageing in New South Wales (NSW). Individuals completed a baseline questionnaire during 2006-2009 and consented for linkage to administrative health databases through the Centre for Health Record Linkage. Databases included: the 45 and Up Study baseline questionnaire, NSW Cancer Registry, NSW Admitted Patient Data Collection (APDC) and Medicare Benefits Schedule (MBS); the latter supplied by the Department of Human Services.
Participants with an incident primary cancer were identified through a cancer diagnosis recorded in the NSWCR following completion of the baseline questionnaire. Receipt of external-beam radiotherapy was identified through relevant codes recorded in the MBS and/or APDC. Individualised data on socio-demographic factors were obtained from the 45 and Up Study baseline questionnaire.
Results: There were 9817 people with an incident cancer diagnosed by December 2010, who were included for analysis. Median age was 69 (range:45-98) years; median follow up was 5.4 (range:4.0-8.9) years. The lifetime actual RUR (RUR-lifetime) for all patients was 30%; lower than the optimal of 48%. The cancer sub-site specific RUR-lifetime was lower compared to optimal for 21/27 (77.7%) sub-sites including: 33% vs. 58% for prostate, 66% vs. 87% for breast, 13% vs. 22% for colorectal, and 45% vs 77% for lung cancer. In the multivariable analysis, female gender (HR 0.78 (0.68-0.87) p<0.001), age≥80 (HR 0.54 (0.48-0.62) p<0.001), needing help for a disability (HR 0.74 (0.61-0.88) p=0.001) and Charlson Co-morbidity Index≥2 (HR 0.73 (0.61-0.87) p=0.001) were associated with lower RUR. Distant stage (HR 1.53 (1.33-1.76) p<0.001) and lack of private health insurance (HR 1.13 (1.04-1.23) p=0.005) were associated with higher RUR.
Conclusions: Between 2006 and 2014, actual RURs were below optimal for the NSW 45 and Up Study cohort overall and for a majority of cancer sub-sites. RUR varied according to sex, stage, age at diagnosis, co-morbidities, health insurance status and performance status.

7

Reducing Gaps in Cancer Registry Information on Tumors Stage: Essential TNM

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Background: Cancer Control depends on knowledge of cancer incidence but such knowledge is limited without knowing the extent at diagnosis of any identified cancer. The most frequently used classification for recording extent of and cancer by both physicians and population based cancer registries (PBCR) is the Tumour, Node, Metastases or TNM classification. Unfortunately in low and middle income countries (LMIC) cancer registries often have access to limited information and are unable to determine complete TNM. It was therefore decided to develop a simplified system that was comparable to TNM that could be used by LMIC PBCRs
Methods: A working group with representatives from the UICC (Union for International Cancer Control), IARC (International Agency for Cancer Research, IACR (International Association of Cancer Registries) and NCI (National Cancer Institute) was formed. Essential TNM was developed. It was determined that once a cancer registrar had identified the most extensive disease - the presence of metastatic disease (M1) - this could be recorded and the registrar was not then required to look for evidence for the extent of nodal disease or the primary itself. If there is no evidence of metastatic disease the evidence for nodal disease is looked for, and if not present then the extent of the primary is investigated. The extent of disease can be summarized in the following order: M, N and T. Diagrams and rules for combining Essential TNM elements into stage groups (I-IV) were developed for breast, cervix, prostate and colon cancers. Essential TNM has been subjected to field testing in Ecuador, Malawi, Cote d'Ivoire and Zimbabwe.
Results: Full analyses of the field tests have identified issues regarding under identification of distant metastases and the collection of lymph node data, which has resulted in refinements of the schemas and the development of a training program. Essential TNM is being developed for lung, liver, lymphoma, esophagus, stomach and bladder cancer.
Conclusions: Essential TNM provides comparability with UICC TNM Stage Groups and is an alternative to provide staging information by PBCR that complies with the objectives of the Global Initiative for Cancer Registry Development (GICR).

8

Patient and Caregiver Perspectives on the Cognitive Impact of Brain Metastases in Relation to Supportive Care Needs and Quality of Life

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Background: An estimated 30% of cancer patients develop brain metastases (BrM), causing significant morbidity. Most BrM patients have cognitive deficits on objective testing, but patients' (and their caregivers') subjective experience of cognitive dysfunction remains understudied.
Objectives: To explore patients' and caregivers' perspectives on cognitive sequelae of BrM in relation to their quality of life (QOL) and supportive care needs.
Methods: A cross-sectional sample of BrM patients completed validated patient-reported outcome measures of cognitive functioning, distress, and participation in valued activities. Caregivers provided parallel ratings of patients' cognitive functioning and impact on their own activities. Responses within patient-caregiver dyads were compared.

Results: BrM patients (n=109) ranged in age from 28-87; 64% were female. 37% reported clinically significant (≥1.5 SDs from normative means) dysfunction in one or more cognitive domains (e.g., memory, attention, executive functioning, language). Their concerns did not relate to age or sex, but associated with aspects of QOL including anxiety (r's = 0.28-0.57, p's <.01), depression (r's = 0.33-0.68, p's <.001), restrictions in instrumental activities (r's = 0.24-0.31, p's <.02) and in personally meaningful activities and relationships (r's = 0.41-0.58, p's <.001). Caregivers in the 31 patient-caregiver dyads ranged in age from 25-73; 55% were female and 70% were spouses. Caregiver and patient ratings of patients' cognitive functioning showed good agreement (r's = 0.41-0.75, p's <.05). Patient and caregiver mean scores on QOL measures were comparable (p's >.1), except for caregivers reporting a marginally greater impact on intimacy (t(27)=1.62, p <.059). Patients and caregivers requested information (importance rated M = 8.2 and 8.3/10; print and online formats) and strategy-training (importance rated M = 8.1 and 8.3/10; individual, group, and web-based options) to help manage cognitive dysfunction.
Conclusions: Cancer patients who develop BrM may experience significant cognitive problems with associated distress and limitations in meaningful activities and relationships. These cognitive problems are often apparent to caregivers, who may also experience reduced QOL. Both patients and caregivers endorsed a need for cognitive supports that are not currently available in standard cancer care, highlighting a need for future resource development.

9

Mapping Global Retinoblastoma Prevalence, Treatment Capacity and Expertise

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Background: Retinoblastoma (childhood eye cancer) is curable, but outcomes remain poor in low-and-middle-income countries. Optimal resources and expertise for retinoblastoma management have been outlined in published clinical guidelines to inform health policy at various levels. We conducted a situational analysis at key treatment centers worldwide to inform systems of patient referral, educational capacity initiatives, and enhance patient care.
Methods: We conducted an online survey of global retinoblastoma centers to document patient care availability. An online platform was developed using ESRI ArcGIS software to disseminate in an interactive and data-rich format (www.1rbw.org).
Results: We documented information from 178 retinoblastoma centers in 76 countries and six genetic testing labs: 14 from low-income (LI), 97 from middle-income (MI) and 67 from high-income countries (HICs). An estimated 1421, 6545, and 784 new patients each year in LICs, MICs, and HICs. Capacity for enucleation was available in all centres of HICs and 97% of LMICs. Imaging by 2D Ultrasound was widely available, but RetCam and Ultrasound biomicroscopy was mainly in HICs. Focal therapy was available in 98% of HICs, and 83% in LMICs. Systemic chemotherapy was available in 98% of HICs and 80% in LMICs.
Intra-arterial chemotherapy was available in 73% of HICs and 31% in LMICs, and intra-vitreal chemotherapy in 84% of HICs and 42% of LMICs. Radiotherapy was available in 93% of HICs, and 62% of LMICs.
Ophthalmologists were part of the team in all of HIC centers and 97% of LMIC. Oncologists were part of all HIC centers and 79% of LMIC. Genetic counselors were available in 95% of HIC centers and 39% of LMIC.
Conclusions: The One Retinoblastoma World map connects stakeholders and strengthens capacity to care for the global retinoblastoma population. Knowledge of where and how patients are managed worldwide provides an efficient and rapid path for parents to access urgent care. Estimated incidence versus location and capabilities of centers reveals opportunities to increase capacity, collaboration and coverage in various regions. This first-of its-kind collaboration promotes global standards of care, setting the stage for multicenter clinical trials and other research, thereby accelerating the translation of results from lab to clinic.

10

Building New Leadership in Cancer Control: The Youth as a Channel for Change

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Background: The youth are the largest population in most of the world hence they are labeled the 'future'. They are the trend makers, and the influencers among themselves. The rise of tobacco use among the youth, especially in the low and middle income countries, is alarming. Research and reports show that youth are starting to smoke as early as 12 years old due to the influence of the marketing of the tobacco industries. Toddlers were found to be more likely to want a soda rather than a glass of water or fresh juice.
Methods: Youth Against Cancer Kenya (YACK) focus is on engaging youth in the fight against cancer by creating awareness through social media platforms & face to face talks, using a different approach like no other organization by using guerrilla marketing strategies. YACK has labeled the big multinational cooperates as the competitors of its target market, the youth. Cooperates and industries such as coca cola, fast food restaurants and tobacco firms have the same market target as YACK, very aggressive in their marketing which gives them the ultimate advantage globally with a sales increase of almost 70% due to marketing. YACK realizes if we don't use strategies with as much aggression as they have, then we are bound to lose our youth to their seductive advertisements.
Results: With the appropriate marketing strategies we influence our peers by educating them about the dangers of cancer in an approach that is appealing to them. With the appropriate use of their likings and tastes, brand ambassadors and familiarity YACK empowers them with the knowledge of better choices such as healthier lifestyles at a younger age will reduce their risks of getting cancer at an older age.
Conclusions: There is a desperate need to reach out to the youth using the perfect collaboration, partnership and resources, package and market a healthy lifestyle. Thus empower them to make better choices by living a healthy lifestyle following healthy diets, regular exercises and keeping away from harmful substances such as tobacco. At the same, the empowered youth become advocates and ambassadors.

11

Identifying Women at Risk of Uncertainty and Poor Quality of Life When Undergoing Breast Cancer Surgery: a Survey-based Descriptive Study

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Introduction: Breast cancer is a leading cause of morbidity and mortality in South African women. In resource-limited settings, emphasis for disease management is often concentrated on biological control and survival; however, understanding the full biopsychosocial experience of breast cancer is essential in improving overall access and patient uptake of care.
Objectives: This study of women undergoing surgery for breast cancer, aims to determine the presence of uncertainty, poor quality of life (QoL) and their relationships to demographics and social support in an urban uninsured South African population.
Methods: A quantitative cross-sectional study was carried out in patients prior to breast surgery. Each participant completed the survey including validated questionnaires of uncertainty, QoL index, social support scale and demographics.
Results: Of the 67 women approached, 61 (91%) participated. Uncertainty was found in 68.8% (31.1% severe uncertainty). Higher levels of uncertainty are associated with an education higher than primary school (OR: 0.55 CI: 0.55-3.1), and with being older than 45 years (OR:0.45 CI:0.14-1.6) or knowing of others with breast cancer (OR: 0.47 CI: 0.12-1.9), irrespective of outcome. Good social support did not affect levels of uncertainty. Conversely QoL was improved in women with at least primary education, and in women above 45 years (p=0.002).
Pre-surgical chemotherapy was unassociated with either uncertainty or QoL. Greatest uncertainty was reported about the roles of the treating staff and the presence of unanswered questions.
Conclusions: Older women and those with education more commonly experienced uncertainty, but reported better QoL. The areas of uncertainty can help direct clinicians in limited resources settings to better direct services to help support patients, instituting simple measures of education and orientation.

12

Cancer Education in Rwanda: Challenges and Opportunities

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Background: The burden of cancer in Sub-Saharan Africa keeps increasing coupled with limited infrastructures and human resources especially oncology trained health care providers.

Many countries have no systems in place to counteract this epidemic and academic institutions are also not preparing future doctors to confidently take care of cancer patients. The oncology education model used in Rwanda medical training is not fully understood and no known tools available to assess whether medical graduates are adequately trained in basic principles of oncology.

Methods: To identify the current status of cancer education in Rwandan medical school, from March to April 2017, an online based questionnaire was sent out to students in the two (2) final years of medical school at the University of Rwanda. The questionnaire consisted of two sections; basic demographics and assessing the general Oncology education status

Results: We are presenting a preliminary analysis of 46 students, with 36.2% (n=17) females, and the largest proportion being between 25-29 years of age (63.6%; n=26).

Close to a half of the students felt better exposed to cancer patients and to bedside cancer related teaching in the Internal Medicine rotation (47.9% and 45.8% respectively). Ninety four percent (n=45) of the students reported that there is no formal oncology rotation.

More students (39.6%; n=19) expressed neutrality in how comfortable they would be while attending cancer patients, while about the same percentage expressed less level of comfort in managing oncology cases (31.3%; n=15). About 81.3% (n=39) agreed that a suitable oncology curriculum would be beneficial, and interestingly 85.3% (n=41) feel an extra-curricular educative platform would be useful.

Conclusions: The preliminary results of this study show that there is inadequate oncology education in undergraduate medical education in Rwanda. A suitable Oncology curriculum and objective based oncology clinical rotations are needed to address this deficiency expressed by majority of undergraduate medical students in Rwanda.

13

Impact of Immigration Status on Lifestyle Behaviours and Perceptions in Cancer Survivors

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Background: Lifestyle behaviours including physical activity (PA), smoking cessation, and alcohol moderation are key aspects of cancer survivorship. Disparities in health literacy and cancer screening behaviours have been documented between immigrant and native-born cancer patients. However, little has been explored in disparities with respect to lifestyle behaviors in cancer survivorship.

Objective: To compare lifestyle behaviours and perceptions towards these behaviours between immigrants and native-born cancer patients.

Methods: Adult cancer patients recruited from Princess Margaret Cancer Centre (Toronto, Canada) were cross-sectionally surveyed on their PA, smoking, and alcohol history before and after diagnosis, and their perceptions of the effect of these behaviours on survival, quality of life (QoL), and fatigue. Logistic regression models evaluated the associations between immigrant status and either behaviours or perceptions.

Results: Among 1275 patients recruited, 27% (n=338) were identified as foreign-born immigrants. At baseline (1 year before diagnosis), 17% smoked, 69% were physically inactive, and 58% consumed alcohol. Immigrants were less likely to meet PA guidelines at baseline compared to native-born patients (OR=0.72, P=0.046). In addition, immigrants were less likely to perceive that PA improves QoL, survival, or fatigue (ORs=0.51-0.58, P≤0.03).

Although immigrants were less likely to smoke at baseline (OR=0.74, P=0.03), they were less likely to perceive that continued smoking worsens QoL and survival (ORs=0.60-0.62, P≤0.009). Immigrants were less likely to drink alcohol at baseline (OR=0.50, P<0.001), though perceptions did not differ between immigrants and non-immigrants.

Among immigrants, remote immigrants (>40 years in Canada) were at baseline 1.7 and 4 times more likely to be smoking (P=0.03) and drinking (P<0.001) respectively, compared to recent immigrants. Remote immigrants were also less likely to perceive that alcohol worsens QoL, survival, and fatigue (ORs=0.36-0.46, P≤0.003) compared to recent immigrants.

Conclusion: Immigrants were less likely to engage in PA at baseline and were less likely to be aware of the benefits of PA. Although immigrants were less likely to smoke at baseline, they were less likely to perceive continued smoking as harmful. Culturally tailored counselling should be considered for immigrants who do smoke and those who are not physically active at diagnosis.

14

Developing Young Leaders in Global Radiation Oncology: Results of a Pilot Program for a Global Oncology Scholarship for Canadian Radiation Oncology Trainees

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Background: Surveys conducted by the International Communications Workgroup of the Canadian Association of Radiation Oncology (CIC) revealed that half of radiation oncology residents were interested in Global Health electives, yet only 1 resident had completed such an elective since 2007. Studies on Global Health electives frequently identify a lack of financial resources and difficult-to-find information on placements as two important barriers to address.

Objectives: In order to promote personal and professional development, provide trainees with a unique perspective on global cancer control, and foster international collaboration, our objective was to increase the number of Canadian radiation oncology trainees completing electives in Global Health.

Methods: The CIC created a Radiation Oncology Global Health Scholarship, available to residents (PGY 2-5) and fellows. It provides $2500 in travel and lodging expenses for oncology-related Global Health electives, requires applicants to reflect on CanMEDS competencies to be acquired on elective, supports pre-departure training, and encourages familiarity with the ethics of Global Health. Recipients are encouraged to present their experience at CARO's annual meeting and must complete an exit evaluation. The scholarship is supported by an industry-supported unrestricted educational grant. Potential applicants are provided with resources to find opportunities, including a network of previous participants, and access to a worldwide elective database through GlobalRT.org, an initiative of the Young Leaders Program of the Global Task Force on Radiotherapy for Cancer Control.

Results: Three scholarships were awarded from 2014-2017. A PGY-3 resident traveled on elective to Accra, Ghana, collaborating on cervical cancer research and helping establish a distance learning program with The Princess Margaret Cancer Centre. A PGY-3 traveled to Zambia for a clinical elective focused on gynecological malignancies, and a PGY-2 is conducting research on access to radiotherapy in Nunavut. Preliminary data from exit evaluations suggest electives have contributed to personal and professional development provided unique perspectives on global cancer control, developed CanMEDS competencies, and fostered international collaboration.

Conclusions: Between 2014-2017, the CIC Radiation Oncology Global Health Scholarship has increased the number of Canadian radiation oncology trainees completing Global Health electives in Canada and abroad. In exit evaluations, electives have met defined goals for the Scholarship.

15

Ethical, Social and Cultural Issues Related to Clinical Genetic Testing and Counseling in Low- and Middle-income Countries: a Systematic Review

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Background: Advancements in genomic technology promise to revolutionize diagnosis and care for genetic disorders worldwide, including cancer. Increasing efforts aim to leave no-one behind, building capacity in genomic science even in low-and-middle-income countries (LMICs). There is an equivalent need to build genetic counselling services to meet the needs of

LMIC populations in a responsible, ethical and culturally appropriate manner.
Objectives: We aimed to systematically review the noted ethical, social and cultural issues associated with implementation and delivery of genetic services in LMICs.
Methods: Eleven electronic databases were searched for studies published between Jan 1, 1990 and July 12, 2013. Studies addressing clinical genetic testing and/or counseling, ethical, social and/or cultural issues of these genetic services, and performed in LMICs were included. Studies performed in high-income countries, focusing on the technological aspect of genetic testing and/or basic genomic research, were excluded. Narrative synthesis was employed to arrive at findings, and themes were mapped onto the Social Ecological Model. (PROSPERO registration: #CRD42016042894).
Results: Articles meeting inclusion criteria were 192. Nine key themes emerged: 1) Genetic counseling has a tendency of being directive and paternalistic; 2) Genetic services has psychosocial consequences that require improved support; 3) Medical genetics training is inadequate; 4) Genetic services are difficult to access; 5) Social determinants affect uptake and understanding of genetic services; 6) Social stigma is often associated with genetic disease; 7) Family values are at risk of disruption by genetic services; 8) Religious principles pose barriers to acceptability and utilization of genetic services; and 9) Cultural beliefs and practices influence uptake of information and understanding of genetic disease.
Conclusions: We identified a number of complex and interrelated ethical, cultural and social issues with implications for genetic diagnosis in LMICs. The Social Ecological Model highlights where these issues fit within an individual's experience of clinical genetic testing and counselling, providing multiple routes to remove barriers that preclude access and understanding. Our results are informative for practice and policy regarding implementation of genetic services in LMICs.

16

The Quality of Dying and Death in Hospice Care in Kenya

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Background: The quality of dying and death has been studied in high-income countries, but there has been little research on this outcome in low- and middle-income countries (LMICs). Palliative care providers across Africa have emphasized assessing cancer patients' and caregivers' perceptions of hospice care as a priority, to help inform changes in policy and practice to improve outcomes for patients and families facing the end of life.
Aim: The aim of this mixed-methods study was to assess in an African setting: 1. The quality of dying and death in cancer patients who receive hospice care, and 2. The cultural relevance and equivalence of the Quality of Dying and Death (QODD) questionnaire, the most widely used and best validated measure of this outcome.
Methods: A translated and back-translated version of the QODD questionnaire was administered to bereaved caregivers of cancer patients at three Kenyan hospices. The QODD questionnaire yields scores from 0-100 for overall QODD and on Symptom Control, Death Preparation, Connectedness and Transcendence. Qualitative content analysis of transcribed interviews clarified the cultural relevance and equivalence of questionnaire items.
Results: Of 213 bereaved caregivers approached, 127 (60%) provided informed consent and participated in the study. The mean overall QODD was 57.8 (SD, 15.39), with 20% scoring in the good to perfect range and less than 5% in the poor to terrible range. The Connectedness subscale showed the highest mean subscale score (82.9 + 21.71), and Symptom Control, the lowest (38.3 + 31.78), with 38.4% of scores indicating poor to terrible symptom control. The qualitative content analysis of 22 interviews identified scale modifications to improve its cultural relevance and equivalence.
Conclusion: Patients in hospice care in Kenya tend to feel connected to others, but a substantial minority experience poor quality of dying and death, particularly with regard to symptom control. Research is ongoing to ensure the cultural relevance and validity of the QODD measure and to help identify gaps in palliative care towards informing changes in policy and practice to improve the quality of dying and death in Africa.

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Costs and Cost-effectiveness of Smoking Cessation within an Organized CT Lung Cancer Screening Program

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Background: Low-dose CT (LDCT) screening of smokers at high risk of developing lung cancer (LC) has been shown to reduce lung cancer specific and overall mortality. An analysis of National Lung Screening Trial (NLST) data suggested that smoking cessation had contributed to the mortality reduction.
Objectives: The Canadian Partnership Against Cancer with Statistics Canada developed a microsimulation model (OncoSim-LC, version 2.5) to project the impact of cancer control measures on LC incidence, mortality and cost. Assuming that each annual visit for LDCT is a teachable moment to promote smoking cessation, we assessed the potential cost and cost-effectiveness of integrating cessation into an organized screening program.
Methods: OncoSim-LC incorporates Canadian demographics, risk factors, cancer management and outcomes and resource utilization. We compare organized screening with no cessation to scenarios of screening with cessation. Modelling assumptions included: annual screening of people age 55-74 with 30+ pack-year history, reaching a target participation rate (60% recruitment, 70% rescreening) over 10 years; an intensive cessation intervention (nicotine replacement therapy + varenicline + 12 weeks of counselling) costs $490; up to 10 cessation attempts integrated with screening; a permanent quit rate of 5% per cessation attempt. Overall cost was calculated over 20 years. Cost-effectiveness was estimated with a lifetime horizon, health system perspective and 1.5% discount rate. Costs are in 2016 CAD.
Results: Cessation within a screening program would cost approximately $76 million (undiscounted) per year for 2017-2036 or 8% of the total cost of screening, treatment and cessation. Compared to screening with no cessation, approximately 110 fewer incident cases and 50 fewer lung cancer deaths would occur annually at a cost of $14,000/QALY. Increased participation (90% recruitment and 80% rescreening) would result in 260 fewer deaths and cost $24,000/QALY. A permanent quit rate of 10% improves cost-effectiveness to $6,000/QALY. A 50% increase in the cost of the cessation intervention would decrease cost-effectiveness to $22,000/QALY.
Conclusions: Based on the OncoSim-LC model, a cessation program within an organized LDCT screening program is projected to cost well under $50,000/QALY in Canada. Integrating robust smoking cessation initiatives within a LDCT screening program could save lives and be relatively cost-effective.

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Monitoring Cancer Outcomes Using Nationally-representative Mortality Surveys: India's Million Death Study

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Background: Cancer mortality is a key measure of cancer burden. However, many low- and middle-income countries, including India, lack complete vital registration systems and are unable to directly measure cancer deaths. This hampers the ability to develop and implement appropriate cancer control policies.
Objectives: To determine the feasibility of using a verbal autopsy based household survey to estimate age-, site- and sex-specific cancer deaths in India.
Methods: A nationally-representative, population based household survey was conducted in India between 2001-13 in collaboration with the Registrar General of India. Sample households

were continuously monitored for vital events. Where a death occurred, verbal autopsy was undertaken using a validated tool including a half page local language narrative. 2 of 400 physicians independently assign ICD10 codes to classify causes of death, including those from cancers (C00-C97,D00-D48,N60-N64,N87,R59). Total deaths from cancers are calculated by applying the sample-weighted, age- and sex-specific proportion of survey cancer deaths to the UN estimates of total deaths in India. Age-standardised cancer death rates were then estimated for all cancers, by sex and by cancer site.
Results: Between 2001-2013, the Million Death Study captured 283,154 adult (15-69y) deaths in over 1.3 million households, of which 8.8% (sample-weighted) were from cancer. This equates to an estimated 415,000 cancer deaths in India in 2015. The three most common fatal cancers at ages 30-69 years in men were oral (32.8%), stomach (11.4%) and lung (9.1%), and in women were oral (17.0%), cervical (15.0%), and stomach (11.5%). Infection- and tobacco-attributable cancers comprised the majority of cancer deaths. National cancer death rates declined overall during the study period though there was significant subnational and sex-specific variation. The total cost of the study was approximately $2 per household.
Conclusions: Low-cost, nationally representative mortality studies such as India's Million Death Study enable quantification of cancer deaths at the national and sub-national level in the absence of reliable vital registration systems. Used in conjunction with population-based cancer registries and/or incidence estimates, age-, site- and sex-specific cancer fatality rates can also be estimated. These data provide an important foundation on which to implement cancer prevention and control measures.

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Avoidable Mortality from Infection- And Tobacco-Attributable Cancers in India, 2001-2013: Estimates from The Million Death Study

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Background: National and sub-national estimates of avoidable cancer deaths, by sex, age and cause, are needed in India to inform cancer control priorities and investment.
Objectives: We aimed to quantify total deaths, death rates and avoidable mortality from cancers in India between 2001-2013
Methods: Since 2001, the Registrar General in India has implemented a nationally-representative household survey – the Million Death Study - to determine the causes of death in 1.3 million homes. Fieldworkers obtain information about causes of death and risk factors from living household members using a validated verbal autopsy method. Two trained physicians assign ICD10 cause of death codes based on field reports. Cancers are further categorised into tobacco-attributable (C00-15,C30-34,C39,D02,D14,D10-11) and infection-related (C16,C22,C53-55,D06,N87). Total deaths from cancers are calculated by applying the age- and sex-specific proportion of survey cancer deaths to the UN estimates of total deaths in India. Annual age-standardised death rates (SDR) are calculated at the national and state level. Avoidable mortality is defined as deaths occurring in excess of the rates seen in best performing Indian states, under two scenarios (fastest decline / lowest cancer-specific death rates).
Results: 27,382 of 291,876 study deaths at ages 5-69 years were from cancer corresponding to a total of 6.96 million cancer deaths in India between 2001-13. Tobacco-attributable deaths comprised 40% of all cancer deaths in males and 20% in females. Infection-related cancers comprised 19% of all cancer-related deaths in males, and 31% in females. Cancer death rates declined across the study period for both sexes, though there was significant state-level variation. In 2013, males aged 50-69 years had the highest SDR for tobacco-attributable cancers (76 per 100,000), and females aged 50-69 years had the highest SDR for infection-related cancers (58 per 100,000). Among males, 33/49% of infection-related cancer deaths were avoidable under the two scenarios respectively, and 29%/62% of tobacco-attributable deaths were avoidable. Among females, 23%/33% of infection-related cancer deaths were avoidable, and 43%/53% of tobacco-attributable deaths were avoidable.
Conclusions: Cancer deaths are a major cause of premature, avoidable mortality in India. Use of comparative mortality statistics provides estimates on avoidable cancer mortality.

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The Enduring need for Cervical Cancer Treatment

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Background: Nearly 90% of cervical cancer deaths occur in low- and middle-income countries (LMICs), where women present with locally advanced disease. Radiotherapy is the standard of care for these patients, yet the promise of human papilloma virus (HPV) vaccination and unsubstantiated assumptions about radiotherapy's need and feasibility have resulted in major gaps in access. We determined the validity of these assumptions by assessing the direct effect of HPV vaccination on demand for radiotherapy.
Methods: We modelled the annual incidence of cervical cancer and the demand for radiotherapy from 2015 to 2072, with simultaneous roll-out of a universal HPV vaccination program. The assumptions defined in the "best case" Papillomavirus Rapid Interface for Modelling and Economics vaccination coverage scenario were applied, which included universal vaccination for HPV 16/18 of all 12-year old girls before sexual debut, beginning in 2014, with the assumption of immediate and lifelong protection. Radiotherapy demand was calculated using published models, with additional sensitivity analyses for changes in stage distribution.
Results: Over a 20-year period from 2015 to 2035, the implementation of universal bivalent HPV vaccination results in only a 3.9% reduction in cervical cancer cases over the study period across LMICs. By 2072, the incidence in LMICs is reduced by 22.9%, which amounts to 7.6, 22.5, and 11.6 million women in low, lower-middle, and upper-middle income countries, respectively. From this population, 29.6 million women will have an indication for external beam radiation and 22.1 million will have an indication for brachytherapy.
Conclusions: The failure to ensure global availability of radiotherapy treat cervical cancer would result in enormous human consequences over the next two decades. This loss would occur before the benefits of HPV vaccination are realized, and would continue over the lifespan of future vaccinated cohorts. A successful approach to cervical cancer control and to addressing the needs of women across their life course requires the inclusion of radiotherapy in national cancer control planning.

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BOXcare: A Blue Ocean Approach to Radiotherapy Delivery

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Background/Objectives: The delivery of cancer services in low- and middle-income countries (LMICs) has been hindered by poor infrastructure, weak management and regulatory systems, and a concentration of services in urban areas. BOXcare is a novel system of mobile, ruggedized radiotherapy units, which represents a blue ocean approach to cancer delivery systems.
Methods/Overview: We calculated the shielding requirements and optimal shipping weight needed for the safe delivery of external beam radiation therapy (EBRT) and brachytherapy within commercially available shipping containers. We further solicited multi-stakeholder feedback on radiotherapy design and functional limitations in LMICs to address current barriers to delivery in the construction of the BOXcare units.
Results: Using NCRP 49 standard requirements, we developed a two-tiered radiation shielding design of a radiotherapy vault that remains sufficiently lightweight to facilitate affordable and easy transport. It is modular and scalable to national needs without physical adjacency and is

not dependent on external power supply. A design for brachytherapy units is operational, and testing of external beam technologies is currently underway using nonisotopic and ruggedized linear accelerators to replace high-risk cobalt-60 sources. A financing system based on documented care delivery and no upfront capital expenditure is being developed. Options for highly automated platforms with remote expertise available for clinical decision support and an integrated quality-assurance platform with competency-based skill validation tools and real-time remote monitoring are being piloted.
Conclusions: BOXcare is a novel solution for radiotherapy delivery that has the potential to transform healthcare delivery by enabling the provision of affordable nuclear technology in LMICs and in rural and remote environments. This technology will motivate industry and healthcare markets to adapt more of their technologies, creating a tidal wave of reverse innovation as high-income countries see the low-cost and high-reward potential of modular cancer delivery.

22

Cost Effectiveness of Treating Endemic Burkitt Lymphoma in Uganda

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Background: Despite high cure rates achieved in high-income countries, outcomes for children with Burkitt lymphoma (BL) in most low- and middle-income countries (LMICs) remain suboptimal. Perceptions of high cost and resource intensity remain political barriers to the prioritization of BL and other childhood cancer treatment programs in many LMIC health systems. Little to no knowledge exists of the actual cost and cost-effectiveness of treating pediatric cancers in LMICs. To improve outcomes for children with BL, the Uganda Cancer Institute implemented a comprehensive BL treatment program in 2012. Drawing on centralized patient-level data, we undertook an economic evaluation of the program to ascertain the cost-effectiveness of BL therapy in a specific LIC setting.Methods: We compared the treatment of BL (local standard) to usual care (no care), in a cohort of 215 patients treated between 2012 and 2014. Costs included direct, indirect healthcare and indirect patient costs. Our primary measure of effectiveness was overall survival (OS). Patient outcomes were determined through electronic chart abstraction. The cost per DALY averted was calculated using WHO-CHOICE methodology and compared to standard definitions of cost-effectiveness.
Results: The 2-year OS with treatment was 47%. Nine percent of patients abandoned therapy. The cost per DALY averted in the treatment group was US$42.66. Cumulative estimate of national DALYs averted through treatment was 20,571 years, and total national costs of treatment were US$877,670. The ratio of cost per DALY averted to per capita gross domestic product (GDP) was 0.2, reflecting a very cost-effective intervention.
Conclusion: This study demonstrates that treating BL with locally tailored protocols is very cost-effective relative to per capita GDP. Studies of this kind will furnish crucial evidence to assist policymakers prioritize the allocation of health system resources among NCDs, including childhood cancer.

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Validation of the OncoSim Colorectal Cancer Model: Simulation of Sigmoidoscopy Trials for Colorectal Cancer Screening

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Background and Objective: Evaluating long term outcomes and costs of colorectal cancer (CRC) screening requires the use of simulation models. It is critical that such models be validated against available randomized control trials (RCTs). OncoSim-CRC is a microsimulation model developed to replicate Canadian demography, CRC outcomes and costs for use in cancer control decision-making. We describe its use to reproduce results from landmark RCTs of sigmoidoscopy screening which were not part in the model development.
Methods: The trial cohorts of four CRC screening RCTs (UK Flexible Sigmoidoscopy Trial, Screening for Colon Rectum Trial, Prostate, Lung, Colorectal and Ovarian Trial (PLCO) and the Norwegian Colorectal Cancer Prevention Trial) were simulated in OncoSim-CRC (version 2.3). Simulated cohorts were constructed to replicate the screening algorithms, participation, compliance and contamination rates reported by the trials. Model outputs were scaled to match the trial specific control and intervention groups and compared to observed results. We assumed that RCT observed proportional reductions in CRC incidence and mortality would be transferable to Canada so that the simulations should reproduce these quantities. To compare the relative effectiveness (per-protocol) of the unique trial-specific screening algorithms OncoSim-CRC simulations were repeated assuming 100% participation and compliance and 0% contamination.
Results: OncoSim-CRC projected mortality reductions ranged 18-27% compared to 22-31% observed across the RCTs. OncoSim-CRC predicted incidence reductions ranged 17-26% compared to the 18-23% reported by the RCTs. All OncoSim-CRC projected RCT specific incidence and mortality reductions were within the 95% confidence interval limits of the observed reductions reported by the respective RCTs. Estimated per-protocol reductions ranged from 38-45% for incidence and 40-46% for mortality.
Conclusions: Despite diverse study designs and settings, especially in the control arms, OncoSim-CRC successfully matched key cohort characteristics and the intervention outcomes of four RCTs. Estimated per-protocol reductions were substantially higher than overall results reported by the trials indicating the potential of sigmoidoscopy screening. OncoSim-CRC was able to project CRC outcomes for evidence-based cancer control decision-making.

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Incorporating an Integrated Care Pathway to Prompt a Combined Alcohol and Tobacco Intervention in Primary Care

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Background: Tobacco and alcohol use present multiplicative risk for aerodigestive cancers. Reducing alcohol consumption improves smoking cessation outcomes and reduces cancer risk. Risky alcohol consumption and smoking are often treated separately despite concurrent treatment potentially leading to better outcomes for each. However, no rapidly scalable program exists for combined interventions in primary care clinics spread across wide geographic areas.
Objective: This cluster randomized trial aims to report on the differences in intervention rates by primary care practitioners addressing risky alcohol use in a smoking cessation program.
Methods: We used the Interactive Systems Framework (ISF) for Dissemination and Implementation to develop a scalable program in primary care clinics across Ontario, Canada. Practitioners at participating sites were trained via webinar to address risky alcohol use among individuals in a smoking cessation program attempting to quit using nicotine replacement therapy (NRT). Sites were blindly allocated to one of two clinical decision support systems (CDSS) guiding practitioners to provide an intervention for risky alcohol use. Primary analysis will measure the proportion of risky drinkers offered an alcohol intervention in each CDSS arm at baseline. Patients will be contacted by phone or email to track smoking cessation and alcohol consumption rates at 6- and 12-month follow up.
Results: Since the study launch in April 2016, 221 primary care clinics have implemented a clinical decision support system. Over 230 practitioners received training to effectively address risky alcohol use in a smoking cessation program. In 16 months, 14,400 smokers have been screened for risky alcohol use, of which 5,428 (38%) were identified as drinking above recommended guidelines. Of those who drank above guidelines, 2,495 (46%) were offered an educational resource as a means for intervention.
Conclusions: It is feasible to integrate alcohol interventions in a primary care setting with smokers making quit attempts. This study offers an innovative, cost-effective approach to reducing cancer risk among dual tobacco and risky alcohol users. Upon completion of the trial in October 2017, the effect of different clinical decision support systems on practitioner behavior, and on client tobacco and alcohol use, will be discussed.

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2018 Prevention System Quality Index: Health Equity

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Background: Cancer Care Ontario's Prevention System Quality Index reports monitor system-level policies and programs that can reduce cancer risk factors and exposures in the Ontario population.
Objectives: 2018 Prevention System Quality Index: Health Equity reports on four risk factors for cancer and other chronic diseases – tobacco use, alcohol consumption, unhealthy eating and physical inactivity – using a health equity perspective. A major focus of the report is First Nations, Inuit and Métis peoples in Ontario.
Methods: Using indicator data and evidence from the literature, the report describes the distribution of cancer risk factors in the population and the effects of system-level policies and programs that can reduce these risk factors on populations experiencing health inequities. Univariate analyses were conducted to examine indicators according to socio-demographic factors: sex, income, education, residence, geography, immigration, racial or cultural group, sexual orientation, and occupation. Income and education findings are highlighted here.
Results: Groups with lower income and education have higher smoking rates, second-hand smoke exposure and lower rates of quitting smoking. Among adults who binge drink, those with lower income and education binge drink more frequently. Adults with lower income or education are less likely to have adequate vegetable and fruit consumption and the lowest income households are more likely to experience food insecurity than those with the highest income. Adults and adolescents with lower income or education are less likely to be physically active during leisure time. Females, as well as males living in low-income neighborhoods are less likely to enroll in elective health and physical education courses. First Nations, Inuit and Métis peoples have a disproportionately higher prevalence of several cancer risk factors than the non-Aboriginal population in Ontario.
Conclusions: Many groups examined in this report have higher risk factor prevalence than the rest of the population. To reduce the prevalence of cancer risk factors in the population and reduce health inequities, universal and targeted policies and programs must be implemented as part of multi-level, cross-sectoral, comprehensive strategies.

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Alpha Testing of the BEFORE (Begin Exploring Fertility Options, Risks and Expectations) Decision Aid for Young Breast Cancer Patients in Canada

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Background: Treatment-related infertility is a major concern among many young cancer patients. While fertility preservation options are available, few patients are referred to reproductive specialists and receive limited support and varied access to resources. To help inform and facilitate fertility discussions and decision-making across Canada, we created the Begin Exploring Fertility Options, Risks and Expectations (BEFORE) decision aid for young breast cancer patients.
Objective: Conduct alpha (acceptability, usability, and comprehensibility) testing on the BEFORE decision aid with young breast cancer survivors and multi-disciplinary health care providers.
Methods: A descriptive qualitative approach was used to complete alpha testing with stakeholders of the BEFORE decision aid. Convenience sampling identified eligible participants between April 2017 and May 2017. Three approaches were used to elicit feedback: (1) a focus group; (2) telephone interviews; (3) email exchange. Open-ended questions surrounding the ease of use and presentation of information were asked using questions from the Ottawa Hospital Research Institute and from existing literature as a guide. Data was collected until repetitive information was heard. Interviews were audio-recorded and detailed notes were taken during the focus group. Transcription occurred to gather representative quotes which were organized in Microsoft Excel by the recommended areas for modification.
Results: Seven health care providers participated and ranged in location and profession; 10 breast cancer survivors participated with most treated in the Greater Toronto Area and representing various self-identified ethnicities. Four themes were identified: (1) comprehensibility and acceptability of information; (2) layout and graphics; (3) usability; (4) use and delivery in clinical practice. Specifically, recommendations included modifications to photos to represent different family types, visual formatting of the fertility options success rates to alleviate biases, and improved online navigation through the decision aid.
Conclusion: The BEFORE decision aid was developed as an adjunct to clinical consultations to assist young breast cancer patients in Canada with fertility decision-making. Through the alpha testing, usability and content issues were identified and modified. The revised BEFORE decision aid is now ready for further field testing to assess feasibility in clinical practice with young women newly diagnosed with breast cancer facing a fertility decision.

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An Adaptive Framework Towards Education Solutions for Radiation Medicine in the Developing Country Settings

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The rising burden of cancer has magnified the gap in access to radiotherapy in LMIC. The investment into essential modern radiotherapy equipment means that active solutions for personnel training is urgently needed. While comprehensive cancer centers typically have established training programs, this is often suboptimal in the LMIC setting given resource constraints. A single education solution is unlikely to be adequate given the widely different settings. In response to the needs of our collaborative partners in Ghana, Zimbabwe, Kenya, we described an 8-step development framework to guide our approach to build our collaborations. We hypothesized that iteratively application of our framework allow the partnership to arrive at education solutions that is clinically acceptable, fulfil defined learning objectives and ultimately can contribute to reducing the access gap to radiotherapy.
Methods: Our 8-step framework consist of details around identification of 1. Partners 2. Knowledge gap 3. Needs assessment (to define the content) 4. Curriculum design 5. Teaching and evaluation design 6. Definition of deliverables (short and long term) 7. Budget and resource 8. iterative reassessment plan. We applied this framework to three partnerships.
Results: Our first project involves radiation oncology residents (Ghana) where the specific learning needs is in critical appraisal and research methods. A yearlong longitudinal clinical research mentorship program was implemented between 2015-16. Evaluation of the program was conducted using teaching session specific questionnaires, pre and post session feedback, Berlin questionnaire (to assess knowledge) and academic output (abstract sand manuscripts). This experience led to the adaptation of the program for radiation oncology residents in Zimbabwe (2017-18). The third project involved the training needs for radiation therapists in Kenya where in the transition from 2D to 3D radiotherapy practice. Fundamental 3D radiotherapy concepts delivered through a radiation seminar series delivered by a multidisciplinary team, using a disease site based approach is ongoing. All projects were enabled through distant learning.
Conclusion: Our experience suggests a structured approach to designing individualized education solution for LMIC is possible, feasible, and potentially effective. The use of similar evaluation methods has the potential for programmatic assessment of impact in clinical practice and patient outcomes.

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Hypofractionation: A Possible Solution for Brazil's Shortage of Radiotherapy?

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Purpose: To estimate the incremental benefit of hypofractionated RT (Hypo-RT) in prostate and breast cancer patients treated with this treatment strategy in the Brazilian public health system.
Methods: Breast and prostate cancer national incidences in 2016 were used in this analysis. These numbers were initially adjusted for the public health coverage (75.3%) assuming a homogeneous distribution of cancer in the population. Subsequently, epidemiological studies

were used for quantification of the absolute number of patients per clinical stage. Then, decision tree-arm diagrams previously defined in the literature were applied for definition of number patients treatment per clinical setting. Patients with metastatic disease and requiring palliative radiotherapy were excluded from this analysis. In the prostate cancer setting, further adjustment was performed by excluding patients with low-risk prostate cancer and by subtracting from the total number of intermediate and high-risk patients the total number of prostatectomies performed in 2016. In breast cancer, the number of patients suitable for Hypo-RT was adjusted by excluding the amount of patients requiring mastectomy followed by breast reconstruction. Finally, the net benefit in number of extra patients treated was quantified by taking into consideration the universal use of Hypo-RT.
Results: Approximately 46,096 prostate and 43,686 breast cancer patients were estimated to require medical care under the Brazilian public health system in 2016. 14,912 prostate cancer patients require upfront RT after adjusting for staging, clinical settings and number of prostatectomies. All of these patients would be suitable for Hypo-RT resulting in a 46% reduction in the number of fractions administered. In breast cancer patients, 23,947 patients were estimated to be suitable for Hypo-RT resulting in a reduction of 27.9% in the total number of fractions required in breast cancer treatment.
Conclusion: The full implementation of Hypo-RT for prostate and breast cancers in the Brazilian public health system would result in higher rates of RT access with same linear accelerator time expenditure. This would be of great importance in the Brazilian context as previous reports have estimated that approximately 47% of the cancer patients requiring RT in Brazil's public health system do not receive this treatment in the curative setting.

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How to Develop a Successful Radiation Oncology Residency Program in a Developing Country with Constrained Economy

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Introduction: For any comprehensive cancer care, a well-trained cancer professional staff is needed to assure best oncology practice. Radiation Oncology service is an essential component of cancer care delivery and therefore a well-trained & high caliber specialists are needed. There has been a lack in radiation oncologists in Jordan and the region for decades, with only handful western trained radiation oncologists available in Jordan. Aim In 2004 a well-structured &recognized radiation oncology residency program has been established at King Hussein Cancer Center (KHCC), Jordan in order to overcome the severe lack of well-trained radiation oncologists not only in Jordan but in the region, as well. This program is recognized by the Jordan Medical Council, which governs the medical specialties in Jordan.
Methods: A four-year Radiation Oncology Residency Program was established at KHCC. The program provides structured training and progress assessment in all aspects of radiation oncology. During the residency training, residents will responsible for patient care, including initial evaluations, management decisions, treatment delivery and follow up. This is to assure the goal of competency in medical knowledge, patient care, system based practice, interpersonal and communication skills, professionalism, and practice-based learning and improvement. The didactic training includes journal clubs, lectures & courses in physics, radiobiology, statistics& basic research. A core curriculum clinical course covering all aspects of oncology care & radiotherapy planning is taught weekly by the attending staff. Residents also attend institutional scientific activities like grand rounds, clinicopathological conference, morbidity & mortality meetings, symposia & conferences. During residency training residents are expected to rotate at different departments like medical oncology, nuclear medicine, pathology and radiology. For more advanced training &external exposure, an external rotation for 3 months is performed at a well reputed cancer centers (H. Lee Moffitt Cancer Center& Research Institute, USA & Leeds Cancer Center, UK). Annual evaluation examination is being held for the residents to evaluate their performance.
After successful completion of second year, the residents are allowed to sit for part one (basic) examination run by Jordan Medical Council & after completing four years of residency training, residents are allowed to sit for part two (clinical) examination. Beside, our residents are permitted to sit for the annual American College of Radiologists (ACR) examination. Each resident is expected to be involved with at least one research project during the program (retrospective chart review, case report, and literature review).
Results: By establishing a well-structured radiation oncology residency program, we were able successfully graduate many high caliber radiation oncologists not only from Jordan but also from the region. Conclusion By building a well-structured Radiation Oncology Residency Program in a developing country with a constrained economy and in collaboration with well-known programs in developed countries, lack of radiation oncologist's obstacle can be overcome.

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The Impact of Departmental Quality Assurance Rounds in Radiation Oncology Practice on Patient Management Plan: Developing Country Single Institution Experience

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Abstract Background and purpose: Quality assurance (QA) rounds represent an important check point for the patient radiotherapy plan. This study focused on the variables which modified the radiotherapy treatment plan and outcome.
Methods: We reviewed all patients who were discussed at our departmental QA rounds which held 2 to 3 times per week from January 2007 till the end of December 2014.The quality assurance process was divided into three categories: approved, minor modifications and major modifications for radiotherapy treatment plans. Major modifications were considered as any substantial change for the treatment dose, target volume or intent of treatment which requires patient re-simulation or treatment re-planning. Minor modifications included trivial treatment plan change which doesn't require re-planning for the whole treatment.
Results: A total of 7043 radiotherapy treatment plans for different anatomical sites were reviewed at our departmental QA rounds. From these treatment plans 6129 (91%) were approved, 611 (9%) needed modification, which we divided into major modifications 496 patients and minor modifications 142 patients.303 plans were reviewed as representation and further discussion.
Conclusion: Quality assurance rounds provide a significant impact for radiotherapy treatment plans, through identification of potential mistakes; it also helps in improving the radiotherapy plan & delivery process and directs future strategy for assuring high quality measures especially for developing countries.

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Youth Advocacy for NCDs: A Twitter Campaign to Raise Awareness on the Lack of Radiotherapy Treatment in Uganda

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Background: Uganda, a low-income country, is experiencing an increase in the incidence of cancer, particularly breast cancer (3.7%), cervical cancer (1.8%) and prostate cancer (5.2%). The annual number of cancer deaths are about half the number of newly diagnosed patients. Radiotherapy is required during the management of approximately half of all cancers.
Uganda has had a single radiotherapy unit since the 1990s, which broke down beyond repair in April 2016. Six months later there was still no radiotherapy machine and a new bunker to house the new machine, estimated at Ugx 2 billion (USD 555,000), was still at the ground level of construction.
Methodology: The Young Professionals Chronic Disease Network (YP-CDN) Uganda chapter planned a 4-week social media advocacy campaign in October 2016, to raise awareness among the Ugandan public about the radiotherapy situation and hold the government accountable to progress in the construction of the Radiotherapy bunker. Aiming for at least 1000 tweets weekly, it was advertised via e-posters on emails, newsletters, website, facebook and twitter accounts using the hashtag #Bunker4Mulago. 5 active twitter users and 1 journalist were recruited to be part of the campaign. The messages targeted the Minister of Health who was in position to politically influence the progress of the construction and renovation process.
Results and outcome: The first two weeks had over 100,000 impressions (reactions from users including replies and retweets) on twitter. The following two weeks had about 70,000 impressions. Members of the public and local media highlighted the plight of the patients and the progress of bunker construction. The Daily Monitor Newspaper quoted the Minister of Health committing to have the Bunker completed in the following two months.
Discussion and Conclusion: With the global YP-CDN community, YP-CDN Uganda shared the situation worldwide and renewed media interest in the lack of radiotherapy. #Bunker4Mulago showed the potential that social media can have in cancer advocacy, if reliable information is shared. The Old radiotherapy bunker has been completely renovated. The machine has been shipped into the country, expected to be fully installed by the end of September.

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Building Capacity in Cancer Related Genomic Research in LMICs: The Case Study of the University of Nairobi

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Background: Approximately 70% of the global cancer burden is felt in LMICs, with 28,000 individuals being diagnosed with cancer each year in Kenya and an estimated 22,000 succumbing to their disease. Most individuals are referred to the Kenyatta National Hospital Cancer Treatment Center, the primary health facility for the poor. Genetic testing has been adopted in HICs for cancer diagnosis, prognosis, and to direct treatment strategies but remains only available for those with international insurance providers, or those wealthy enough to pay out-of-pocket in Kenya.

Objectives: We aim to identify barriers and opportunities to capacity building for cancer related genomic research in LMIC, using Nairobi as a case example. Within this, an overarching goal is to identify and overcome the obstacles associated with introducing next generation sequencing (NGS) capabilities at a public research university and affiliated teaching hospital.

Methods: We performed a situational analysis involving unstructured interviews with key stakeholders in genomic research in Nairobi including faculty members and clinicians in both the private and public sector, students at the University of Nairobi, and individuals responsible for private laboratories situated in Nairobi.

Results: Several barriers to enhancing genomic based research capacity within this setting were identified and can be grouped under: infrastructure, education, and sustainability. Infrastructure based barriers refer to the initial financial cost to purchase infrastructure in addition to maintenance of machinery over time. Participants noted a lack of knowledge among both clinicians and patients with few undergraduate degree courses surrounding genetics and therefore qualified personnel to operate machinery. Many participants noted sample acquisition and the current lack of sample throughput to justify the costs associated with sequencing, affecting the long-term sustainability of the facility.

Conclusion: Despite these barriers, all individuals interviewed desired more genomic-based capacity at their institution. Several strategies to overcome these challenges were identified, including opening up the facility to external researchers, offering sequencing as a clinical service in partnership with the Kenyatta National Hospital Cancer Treatment Center, training individuals abroad, and developing educational materials on genetics. Further examination of the barriers and opportunities is needed before NGS can be placed within this setting.

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Self Versus Provider Sampling to Detect High Risk HPV. Which Method is Better and can it be used for Future Cervical Cancer Screening?

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Background: Cervix cancer is both the most common and most lethal cancer in Kenya. The best way to prevent cervix cancer would be with the HPV vaccine yet until it is implemented screening is necessary. One of the most important barriers to screening is access. We did a study to evaluate the reliability of self testing for HPV in both HIV affected and unaffected women.

Objective: To determine the ability of women to collect vaginal-cervical samples for HPV testing and compare self-collected to provider collected samples.

Methods: The study was conducted at 4different clinics in Kenya. Women were instructed to take their own vaginal specimen and at the same visit a cervical specimen was collected by a health care provider. Gene Xpert HPV assay was used to analyze the specimens.

Results: 359 women participated. 179 were HIV affected and 176 unaffected. 164 were HOV positive with self-collected compared to 124 with provider sampling. 30% of women with a positive HPV test were missed by provider sampling whereas only 10% were missed by self-sampling. Agreement between self and provider sampling had a kappa value of 0.57.

Conclusion: More women with HPV were detected through self-sampling compared to provider sampling. More importantly, fewer women with HPV were missed with self-sampling. HIV status did not influence HPV detection rates. Greater access with better screening reliability will be with home self HPV sampling. An economic model for justification of this approach will also be presented.

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Withdrawn

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Can Distant Learning Support the Transition from 2D to 3D-conformal Radiation Practice for Radiation Therapists?

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Technological advances in radiotherapy (RT) has translated into improvements in patient outcomes. Formal training programs to support modern RT practice involve dedicated fulltime study at teaching sites equipped with appropriate teaching equipment and faculty. This is typically of limited access for developing countries. For radiation therapists (RTT) who have clinical experience in treatment deliver, a program designed specifically to provide knowledge and skill to address 2D to 3D-conformal radiotherapy is needed. We hypothesized that distant learning has a role to play to address this educational need.

Methods: As part of a larger collaboration between Chandaria Cancer Center (Kenya) and Radiation Medicine Program at Princess Margaret Cancer Centre (Canada), we set out to design a strategy to teach radiation therapists the foundation knowledge necessary for transitioning from 2D to 3D-conformal radiotherapy practice. "Needs assessment" was conducted through personal communications with stakeholders. An interactive distant learning strategy was used to deliver a seminar series. A "disease site based approach" designed to maximize clinical relevance while explaining key technical concepts was adopted. Site specific multi-disciplinary teams (oncologist (O), physicist, therapist) of faculty from PMH and Kenya O led the teaching sessions with specific emphasis on the inter-disciplinary nature of complex radiotherapy delivery. Post session assignments and end of seminar series assessments are planned to enhance learning. Anonymous evaluations are sought to facilitate enhancement of the curriculum.

Results: The curriculum design involve sessions around common malignancies in Kenya (esophagus, cervix, prostate, breast, head and neck and palliative radiotherapy). Key concepts including CT simulation, characteristics of 3D treatment plans, image guidance and value of team derived workflows are incorporated. Preliminary session evaluations suggest the sessions were "at the right level", will recommend to colleagues" and "is useful to my practice".

Conclusion: Preliminary experience suggest that distant learning is feasible to teach foundational knowledge necessary for the transition from 2D to 3D-conformal radiotherapy practice. It is our vision that such a curriculum can be supplemented by short (e.g 2-3 week focused practicum at a training facility) that will bring the learner's knowledge and skill to a level consistent with basic 3D clinical practice.

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Creating a Low-cost Virtual Reality Surgical Simulation to Increase Surgical Oncology Capacity

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Background/Objectives: Worldwide, more than 80% of people with cancer will require surgery during their disease course, but less than 25% have access to safe, affordable and timely surgery. Among the barriers to increasing surgical capacity are the time and costs required to train novices. Virtual reality surgical simulations can reduce the time required for novices to reach surgical proficiency, though their costs may exceed USD $100,000. The goal of this study was to determine if a low-cost system, using commercially available technology designed for in-home computer gaming, could be used to create a realistic virtual reality surgical oncology simulation.

Methods: We used standard commercially available virtual reality software and Oculus Rift hardware to provide high-quality visuals and believable surgeon hand interactions. We created near identical VR reproduction of an operating room using 1:1 scale matching of real-world elements including equipment, instruments, supplies, and sounds, maintaining frame rate greater than 60fps to maintain visual fidelity. Internal anatomy was designed as virtual reality replica of the human female pelvic anatomy including organs, veins and other vessels, peritoneum and connective tissue. Internal anatomy was designed to run at 120fps and to allow for a realistic abdominal radical hysterectomy simulation. Surgical hands were modeled to scale for those with large and small hands. Multiple hand positions were simulated using Oculus touch hardware. Reconstructing the virtual environment to simulate reality as accurately as possible was done immerse users in the simulator so that they focus on learning and practice without distractions. Training modules were designed by experts in education, human behavior, virtual reality and gynecologic oncology.
Results: We successfully created a low-cost virtual reality simulation that prepares novice surgeons to conduct an abdominal radical hysterectomy surgery procedure. The simulation can be used with commercially available computer gaming hardware that currently costs less than USD $2,000.
Conclusion: Low-cost virtual reality simulation has the potential to reduce the time and cost to train surgeons to perform surgical oncology procedures. If effective, such simulations have relevance to multiple surgical procedures and applicability in resources limited and abundant settings.

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It's not over when it's over: Which Factors are Associated with Ease of Getting Help After Cancer Treatment in Canada?

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Background/Objectives: Survivorship can be more challenging to patients and families than the actual cancer treatment. An understanding of the elements that enable patients getting help for their needs after treatment is essential for the design of effective patient-centred services. The objective of this study was to analyze national survey data to identify personal, operational, and patient-provider relationship factors associated with adult patients having a good experience getting help for their post-treatment needs.
Methods: This analysis used data from The Experiences of Cancer Patients in Transition study, a Canadian national survey launched in 2016 in which over 13,000 cancer survivors (who completed treatment one to three years prior to survey response) answered questions related to their post-treatment experiences. The outcome of interest was ease of getting help for their most difficult concern, categorized as very easy, easy, hard, very hard, did not get help. Cross-tabulations were used to evaluate the association of the outcome of interest with the following: personal factors (age, gender, education, place of residence, disease site, treatment received); operational factors (access to patient navigation, having a follow-up written plan) and patient-provider relationship factors (having a care provider in charge of follow-up, involvement of care providers in post-treatment care). Significance was evaluated using linear regression.
Results: The final sample consisted of 8,072 adult cancer survivors (age 30 or older) who sought help for their concerns. All factors related to the patient-provider relationship in this study were significantly associated with ease of getting help ($p<0.01$), including having a care provider in charge of follow-up, being able to ask doctors questions, and being able to visit or talk to specialists, general practitioners or other care providers. In contrast, there was no significant association between place of residence (urban or otherwise; $p=0.93$) and having patient navigation ($p=0.10$) with ease of getting help for their most difficult concern.
Conclusions: These results highlight the importance of active care provider involvement and patient-provider communication during patients' transition into cancer survivorship. It is a foundational step in identifying system factors that can advance the shift of the cancer system towards person-centred care after treatment.

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Patient Navigation: Mitigating the Surge of Advanced Breast Cancer in Sub-Saharan Africa

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Objective: The sub-Saharan region is noted to have a characteristic cancer profile. The adverse mix of late detection rates and poverty results in a high rate of advanced breast cancers and high cancer mortality rates. In Nigeria, cancer leads to 72,000 deaths per annum; this number is set to increase given that there are 102,000 new cases of cancer every year. The mortality incidence for breast cancer is 51% with over 70-80% of breast cancer patients present advanced breast stages III or IV. In an attempt to mitigate the pains of women battling with advanced breast cancer, a metastatic breast cancer (MBC) programme was launched; known as Breast Cancer Navigation and Palliative Programme (BCNPP) with the goal of navigating advanced breast cancer patients, provision of access to palliative care and reducing late presentation of stage III or IV breast cancer in central Nigeria; we trained breast cancer survivors, and oncology nurses on palliative care, home-based palliative and patient navigation.
Method: Forty-two breast cancer survivors and oncology nurses, from 6 municipal areas of Abuja, central Nigeria were scheduled for training sessions on patient navigation and palliative care. An additional cancer help line was launched in the region to connect urban and rural women to palliative care closest to them and metastatic breast cancer support group was set-up.
Results: A mixed methods approach involving qualitative and quantitative analysis revealed that the trained personnel improved in their knowledge of palliative care and an increased commitment on patient navigation. Health centres in the region recorded an increased awareness on palliative care, advanced breast cancer and number of patients returned back to care.
Conclusion: Advanced breast cancer awareness, patient navigation trainings and palliative care programmes are potential useful tools in the sub-Saharan region in mitigating the pains of advanced breast cancer in the region.

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Exploring Support Networks and Quality of Life of Metastatic Breast Cancer Patients in Nigeria and Turkey

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Background: Metastatic breast cancer (MBC) is now a critical issue in breast health, as over 70% of the breast cancer patients present late stages (III & IV) with few patients having access to palliative care needs, treatment facilities and information. Studies have consistently explored the effects of different psychosocial interventions in improving the quality of life of cancer patients at different stages of breast cancer, very few studies looked at metastatic breast cancer. This study explored support networks, such as, NGO support programmes, metastatic breast cancer support group, family, government and faith-based support in improving the quality of life of women living with metastatic breast cancer in Nigeria and Turkey.
Method: A multi-sites study, conducted in Nigeria and Turkey. MBC patients completed the FACT B and the Support Network questionnaire both online and paper-base; Focus Group Discussion (FGD) were also conducted with some MBC patients.
Results: We explored the support networks, such as, NGO support programmes, metastatic breast cancer support group, family, government and faith-based support in improving the quality of life of women living with metastatic breast cancer in Nigeria and Turkey in a multiple linear regression model while adjusting for possible confounding variable of country. The regression results suggest that cancer support group, health care givers and spouse support are significantly associated with an average increase in QoL.
Results show that controlling for the different stages and age of participants, emotional support mattered more for general wellbeing ($B = 1.96$, $p = .003$). Informational support and practical support were not significant in predicting wellbeing.
Considering the source of support, cancer support groups ($B = 1.08$, $p = .04$), health care providers ($B = 3.49$, $p = .003$), spousal support ($B = 1.40$, $p <.001$) and family support ($B = 1.01$, $p = .02$) mattered more in the wellbeing of MBC patients than support from religious bodies ($B = .18$, $p = .66$) and friends ($B = .84$, $p = .11$).
The regression result highlight the importance of social support network for MBC patients.
Runcie

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Driving Improvements in Cancer Care Ontario's Smoking Cessation Initiative for Cancer Patients

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Background: Substantial evidence exists that quitting smoking after a cancer diagnosis can result in improved treatment efficacy and safety, decreased risk of recurrence and second primary cancers, and lower mortality. Based on this evidence, Cancer Care Ontario (CCO) implemented a smoking cessation program for new ambulatory cancer patients in Ontario's 14 Regional Cancer Centres (RCCs) in 2014. Implementation is monitored centrally by CCO using performance indicators and monthly discussions with regional champions.
Objectives: Significant variation in implementation processes and performance metrics among RCCs highlighted a need for quality improvements.
Methods: CCO undertook a series of initiatives to enhance provider and patient education and to standardize processes. Based on program learnings and emerging evidence, the program model was revised from 5As (Ask, Advise, Assess, Assist, Arrange) to 3As (Ask, Advise, Act), and site-specific recommendations were provided to support consistency in implementation. Communications materials and an online learning module were developed to educate healthcare providers and patients on the health benefits of smoking cessation in order to improve rates of screening and referrals to cessation services. Importantly, two performance indicators have been included on CCO's Regional Scorecard, which measures performance against targets and determines an RCC's overall performance ranking within the province.
Results: Performance on the Tobacco Use Screening indicator (proportion of new cancer patients screened for tobacco use) was 42.0% across Ontario in April 2015 when first included on the Scorecard. By July 2017, performance had improved to 64.7%, with significant improvements seen among the lowest-performing RCCs. The Accepted a Cessation Referral indicator (proportion of tobacco users who accepted referral to cessation services) improved only modestly in 2016/17, from 19.7% in Q1 to 23.4% in Q4. This indicator has been added to the Regional Scorecard as of 2017/18. Both indicators are discussed at quarterly performance reviews with the Regional Vice-Presidents responsible for cancer services.
Conclusion: The CCO performance Scorecard is a strong driver of quality improvement. CCO is encouraged by regional enthusiasm to adopt the refined 3As model, and anticipates further improvements in the performance metrics, especially in the proportion of tobacco users who accept referral to cessation services.

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Policy Development for the Screening & Early Detection of Cervix Cancer in State of Uttar Pradesh

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We started with Review & Analysis of the current scenario, clear policy in Uttar Pradesh were lacking. We met Director Cancer & NCD Control Govt. of U.P., Health Secretary Medical Education Govt. of Uttar Pradesh, Mission Director National Health Mission Uttar Pradesh, Principal Health Secretary Govt. of Uttar Pradesh, Specialized Female Govt. Hospitals & Governor of Uttar Pradesh. It was concluded that there was no specific policy for Screening & Early Detection of Cervical Cancer. Even there is no education or awareness on this issue for the females especially in rural area (Cervical cancer incidences are higher in rural area).
Advocacy Training was organized at Lucknow on the occasion of "World Cancer Day" (4th February) with material for capacity building of Organizations working on Cervical Cancer and female health. Presence of Hon'ble Governor & Principal Health Secretary enabled us in making a dent on the issue from the very beginning. His Excellency The Governor of Uttar Pradesh being a Cancer Survivor was the Best Advocate, stressing during the lecture on the need to address the issue. Principal Health Secretary, the ultimate deciding authority for developing the policies assured for full cooperation and early action.
Networking of youth groups was integrated with the workshop. The Female NCC & NSS Youth Volunteers were called from different female colleges (as different rural campaigns are regularly organized by these volunteers), and Nursing students. Campaign designing competition was organized for them so as to plan the same at community level.
The event was popularized through Social Media like Facebook, Twitter, whatsapp. The invitation was sent to Press Media so as to reach the maximum population.
After conducting the first workshop at Lucknow. Principal Health Secretary of Govt. of Uttar Pradesh announced to establish the Screening clinics for Screening of Cervical Cancer in 23 districts of Uttar Pradesh. Treatment facilities would be provided in all the Government Medical Colleges of Uttar Pradesh.
The clinic set up shall be monitored by National Health Mission Unit of Uttar Pradesh.
Now females of UP are utilizing the government facilities for their health specially Cervix & Breast Cancer.

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Development and Evaluation of a Novel Psychoeducational Intervention for Patients with Pancreatic Cancer

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Background: Pancreatic cancer has one of the poorest prognoses amongst all cancers globally. The disease places substantial physical and psychosocial burden on patients and their loved ones. The associated distress and uncertainty can be amplified by unmet informational and support needs, but standardized and proactive approaches to provide information and support for patients with pancreatic cancer and their families are not routinely implemented. Therefore, we developed and implemented a brief psychoeducational intervention to improve knowledge about the disease and its psychosocial impact, satisfaction with care, and to reduce uncertainty.
Objective: To develop an acceptable intervention and evaluate the feasibility of its implementation in an ambulatory pancreatic cancer clinic at a large tertiary cancer centre.
Methods: (i) Development: We used the Schofield & Chamber's framework for supportive care interventions to inform the development process. The Consolidated Framework for Implementation Research (CFIR) guided the intervention development and evaluation phases, to assess its feasibility and sustainability in our context using a multi-methods design.
(ii) Evaluation: Feasibility outcome data were documented across the evaluation phase. Measures assessing illness uncertainty, satisfaction with care, and knowledge were administered at baseline and at 1 month. Semi-structured interviews were conducted with participants and clinical staff to inform feasibility and acceptability.
Results: A representative group of stakeholders was identified and collaboratively established the intervention, CALMING, with key considerations to ensure clinical relevance and sustainability including the content, target audience, and mode of delivery. CALMING was developed as a 1.5-hour group session led by an interdisciplinary team (i.e., nurse, social worker, dietitian) to address disease management, communication with loved ones and HCPs, personal and family impact of cancer, preparing for the future, and palliative and supportive care services. Preliminary findings will be discussed regarding the feasibility of implementing psychoeducation into routine care of those with progressive medical disease.
Significance: A group psychoeducational intervention for people affected by pancreatic cancer may reduce uncertainty and facilitate adaptation to this life-threatening disease, consistent with goals for early integration of palliative and supportive care. An implementation science approach to intervention delivery can improve uptake and sustainability in the clinical setting.

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Barriers and Opportunities for Genetic Service Delivery in Kenya from a Healthcare Professional Perspective

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Background: Clinical genetic testing and counselling are essential health services for the management of cancer; however, access and quality of these genetic services vary worldwide. In Kenya, there are no genetic counselors and genetic testing technology has been recently introduced in the private sector.
Objectives: To uncover barriers and opportunities for genetic service delivery in the Kenyan healthcare system from a healthcare professional perspective.
Methods: This was a mixed methods study, in which qualitative data was gathered through

semi-structured interviews and quantitative data was gathered through surveys. Study participants were eligible for this study if they performed genetic counselling and/or genetic testing. Thematic analysis was used to analyze the interview data. Descriptive statistics were computed for all survey responses.

Results: Service provider and health system barriers were identified for genetic testing and counselling. For genetic testing, service provider factors include lack of long-term communication with clinician or patient, and difficulty in explaining genetic test results to patients. Health system barriers for genetic testing include high cost, lack of regulatory frameworks and policies, lack of local infrastructure, and inadequate collaboration between private and public sectors. For genetic counselling, service provider factors such as inadequate medical training in genetics and unwillingness to discuss genetic testing with patients create barriers for patients to access or understand genetic testing. Health system factors include minimal medical curriculum focused on genetics, lack of official genetic counselling training and practice guidelines.

Conclusions: A number of opportunities to improve genetic service delivery were identified. As the demand for genetic testing increases, clinicians recognize there is a need to increase genetic education, in medical school and for practicing clinicians, to provide adequate genetic counselling. Currently, genetic testing is almost completely outsourced abroad. Increasing clinician and public awareness of genetic testing can increase volumes needed to bring testing locally in a cost effective manner. Due to current high costs, only affluent patients can afford this service. Collaboration between private and public health sectors is needed to narrow this gap in service provision and ensure all cancer patients can benefit from advances in genomic medicine.

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What do Women Want? Panel Based Genetic Testing Preferences in Women at Increased Risk of Ovarian Cancer

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Background: Panel-based genetic testing (PBGT) is becoming increasingly prevalent in clinical practice, but little is understood about information preferences and impact of results. PBGT groups similar genes and involves results of varying significance, including only a small proportion of medically actionable results. A greater understanding is essential to the development of genetic testing guidelines specific to PBGT, along with educational materials and decision support tools for patients and providers. This mixed-methods study explored PBGT preferences of participants with a first-degree relative who has died from ovarian cancer.

Methods: We conducted a cross-sectional survey of self-referred unaffected women in Ontario, Canada who have at least one first-degree relative with ovarian cancer and who are undergoing PBGT through a clinical research study. Participants had the option to receive genes (A) BRCA1/2, (B) associated with ovarian and other cancers (C) that are thought to increase the risk of ovarian and other cancers (D) that are known to increase the risks of other cancers (but not ovarian). Quantitative data were collected using a web-based survey platform. Using bivariate analysis and logistic regression, we determined the relationship of sociodemographic and psychological factors (anxiety, depression, decisional conflict) with the genetic information preferences. We also conducted semi-structured telephone interviews with 20 participants who were purposively sampled based on their diverse panel choice selection. Transcripts were analyzed using conventional content analysis.

Results: 350 women participated in pre-genetic counseling and consented to which results they would like to receive and most chose to receive information from all panels (84%). Those with more decisional conflict did not want to receive genetic information from all panels. Interviews revealed that participants appreciated all forms of "knowledge" regarding their genetic risk and that many contemplated participation in the program but once committed did not truly consider what information they preferred to receive.

Conclusion: In our sample, most women opted to select all panels for PBGT, including panels without actionable results. This preference was associated with a higher level of decisional conflict. Our findings have important implications for the advancement of PBGT in screening for ovarian cancer.

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The Digital Divide is Still an Issue: Factors Related to the Use of the Internet as a Source of Health Information among Canadian Men with Prostate Cancer

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Background: In today's digital age, prostate cancer patients are required to rely heavily on web-based sources of health information to inform their decision making.

Objectives: To determine the factors associated with the use of the Internet as a source of health information among Canadian men with prostate cancer.

Methods: Population surveys were conducted in four Canadian provinces in 2014-15. Each provincial cancer registry surveyed a random sample of ~55% of prostate cancer patients diagnosed in late 2012. Data analyses included descriptive, bivariate and multivariate analyses. Pearson's chi square and Fisher's exact tests were used to examine associations between independent variables and health-related Internet use. Correlates of health-related Internet use were analyzed using multivariate logistic regression.

Results: 1366 patients responded across provinces. Mean age of respondents was 69 years (SD=8.2), and most were receiving follow-up after treatment (63%), and were in good or very good health (93.6%). Eighty-two percent of respondents were Internet users, 65% reporting using the Internet to get information about prostate cancer, and 40% reported feeling confident in using information from the Internet to help make decisions related to their prostate cancer. Factors that correlated significantly ($p<0.05$) with health-related Internet use were: age, education, income, urban residence, broadband Internet access, frequency of Internet use, accessing the Internet from multiple devices, active information seeking and active decision making. According to multivariate regression analysis, respondents who used the Internet as a health resource were more likely to be younger (OR=0.51; 95% CI 0.3-0.8; $p=0.003$), have broadband access to the Internet (OR=0.63; 95% CI 0.42-0.94; $p=0.025$), use the Internet daily (OR=0.51, CI 95% 0.3-0.86; $p=0.01$), access the Internet from multiple devices (OR=0.56; CI 95% 0.37-0.84; $p=0.006$), and report an active information seeking role (OR=0.21; CI 95% 0.12-0.36; $p<0.001$).

Conclusion: A majority of Canadian prostate cancer patients use the Internet as a source of health information about prostate cancer, but most do not feel confident in using information from the Internet to make health decisions. A digital divide based on age and quality of Internet access still exists. Recommendations are made to overcome modifiable factors that influence health related Internet use.

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Compensator-based IMRT for Cost-effective Radiotherapy in Low- and Middle-income Countries

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Background: Access to radiation therapy, a critical component to cancer care, is severely limited in low- and middle-income countries (LMICs) due to economic challenges and difficulty translating technologies to resource-limited settings. We are developing a novel compensator-based intensity modulated radiation therapy (IMRT) system that is efficient and low-maintenance, and which could be used with either a linear accelerator or a Cobalt-60 machine to deliver cost-effective treatment in LMICs. The purpose of this study is to examine the feasibility of this system through a comparison of treatment plan quality by using the gold standard, linear accelerator-based IMRT, as the benchmark.

Methods: We commissioned Cobalt-60 compensator-based machine models in the Pinnacle treatment planning system and benchmarked the models against Monte Carlo simulations. We generated five head & neck (H&N) and five gynecological plans, disease sites which frequently indicate IMRT. We compared tumor coverage and organ-at-risk sparing to the 6 MV IMRT-MLC plans used clinically at our institution. Physical characteristics of the compensators (thickness,

resolution, location) were modified to determine the impact on plan quality.
Results: Compensator-based Cobalt-60 machines yielded comparable plan quality to 6MV MLC-IMRT plans in our dosimetric analysis. In the H&N plans, the tumor coverage and max spinal cord dose were similar, though the mean parotid dose was 10% higher in the Cobalt-60 compensator plans (not significant). In gynecological plans the tumor coverage and bladder dose were similar, while the rectum dose was slightly greater for the compensator plans (not significant). Treatment times are shorter than for linear accelerator-based IMRT, suggesting higher patient throughput could be achieved with this system.
Conclusions: Compensator-based Cobalt-60 IMRT showed similar plan quality to clinical 6MV MLC-IMRT with shorter treatment times, suggesting that compensator-based IMRT could be feasible in LMICs. A range of optimal compensator physical characteristics has been obtained, and now a prototype system will be developed with commercial and clinical partners at an LMIC site.

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Radiotherapy in Small Countries

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Background: Radiotherapy is an essential part of the treatment of cancer and is indicated at least once in about half of all cancer patients. However, access to radiotherapy is often limited or not available at all in many countries. Countries with smaller populations and lower economic status face additional challenges to justify the investment in the treatment. This study aims to examine the availability of radiotherapy in small countries and the factors influencing the establishment of radiotherapy there.
Methods: A small country was defined as a country with a population less than one million persons. The economic status of each country was defined using the World Bank Classification. The cancer incidence in each country was obtained from GLOBOCAN 2012. The number of cancer cases with an indication for radiotherapy was calculated using the CCORE model. The available radiotherapy equipment in the country was obtained through the DIRAC database and complemented with information obtained directly from certain countries.
Results: There were 41 countries with a population of under 1 million; 15 were High Income countries (HIC), 15 Upper Middle Income, 10 Lower Middle Income (LMIC) and one Low Income. 28 countries were islands. Populations ranged from 799 (Holy See) to 886,450 (Fiji) and the total number of cancer cases occurring in small countries was 21,043 (range by country from 4 to 2,476). Overall the total number of radiotherapy cases in small countries was 10,982 (range by country from 2 to 1,239). Radiotherapy was available in all HIC islands with 80 or more new cases of cancer in 2012 but was not available in any LMIC island. Fiji was the only LMIC island with a large radiotherapy caseload. Similar caseloads in non-island LMICs all had radiotherapy services. Most non-island HICs did not have radiotherapy services presumably because of the easy access to radiotherapy in neighbouring countries.

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Surgical Training. Is there Value in Subspecialty Training in Sub-Saharan Africa

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Background: Gynecologic cancers are the most common cancers affecting women in Kenya. During obstetrics and gynecology residency in Kenya, little attention has been given to developing expertise in oncology. Since most women present with advanced stage cervix cancer there is little or no opportunity to treat these women surgically or with chemotherapy. With cervical cancer screening women with early stage disease are identified and they can be cured with surgery. Treatment of gynecologic cancers requires expertise in surgery, chemotherapy and use of radiation. This is a knowledge set that is acquired in North America through 3-4 year subspecialty training. It is reasonable and practical therefore to develop subspecialty expertise in these countries.
Objective: To establish subspecialty training in Kenya, for Kenyan obstetricians and gynecologists.
Methods: A training curriculum was developed at Moi University to initiate gynecologic oncology training. The post graduate education committee, Dean of medicine and Moi University senate, approved this program. During the first two years North American gynecologic oncologists travelled to Kenya to spend two weeks training the fellows, in surgery, clinics and providing didactic teaching. In addition the fellows spent 6 weeks in a cancer centre in Canada, training in pathology, palliative care and radiation oncology.
Results: 5 obstetricians and gynecologists have graduated. Three remain in Eldoret, 1 in Kisumu and one in Kampala, Uganda. Those in Kenya are 4 of 6 gynecologic oncologists in all of Kenya. They are providing care that was simple not available in the past. There are 3 fellows currently in the training program. The Kenyan Medical and Dental Board as well as the Kenyan Ministry of Health recognize this program.
Conclusions: It is possible to develop subspecialty surgical training in Kenya, which in turn will benefit women affected with gynecologic cancers. These trained physicians have stayed in their country of origin, which is not always the case when trainees come to North America. Their expertise now affects residency training programs in that residents now have an oncology rotation and receive appropriate oncology training from experts.

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Improving Treatment Capacity for Tobacco Cessation Counselling within Cancer Care Settings among Health Care Practitioners

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Background: Tobacco is the leading cause of cancer risk, accounting for nearly 85% of all lung cancer-related deaths. Research suggests that smoking cessation following a cancer diagnosis has many benefits, including improved treatment outcomes and higher survival rates. Despite this evidence, smoking cessation programming in cancer care settings remains limited. In an effort to address this gap, The Training Enhancement in Applied Counselling and Health (TEACH) Project, in partnership with Cancer Care Ontario (CCO), and in collaboration with the Canadian Partnership Against Cancer and stakeholders across Ontario, developed an educational program focused on tobacco interventions for patients in cancer care settings.
Objectives: The TEACH Specialty Course, Tobacco Interventions in Cancer Care Settings, was designed to increase capacity among health care practitioners (HCPs) in delivering tobacco cessation interventions specifically tailored to individuals diagnosed with cancer.
Methods: In association with our advisory circle, we established course competencies and learning objectives in order to guide curriculum development. This two day in-person training was offered in October 2016 in Toronto, Ontario. To assess the impact of this education program on practice, learners were required to complete pre and post-course learning assessments, as well as follow-up surveys at 3 and 6 months post-course.
Results: 98 practitioners successfully completed our TEACH course, reporting an overall mean satisfaction of 4.56/5 (n = 88); 5 being the highest rating. Perceptions among HCPs that this training would "enhance professional practice" was also rated 4.79/5. Results from pre/post learning assessment data revealed a statistically significant increase in self-reported knowledge, skills, feasibility, importance and confidence ($p<0.05$) to change practice following training. In addition, at 3 and 6 months post-course 96.23% and 90.91% of HCPs, respectively, reported sharing new knowledge they had learned within their organizations/communities.
Conclusion: Our results show that this course had a positive impact on HCPs self-perceived ability to provide cessation counselling in cancer care settings. By enhancing treatment capacity of HCPs, we can contribute to an increase in access to cessation programming, and help reduce tobacco use among cancer patients. In the future, TEACH intends on migrating to an online platform, to increase accessibility to HCPs.

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Diagnosed Common Cancers and Common Cancerous Cause of Death in Northern City of Rajshahi, Bangladesh

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Background: Cancer is one of the main reasons of mortality in the world. Cancer is of huge concern for the world and is the cause of millions of deaths each year and most of the world's cancer cases are now in developing countries including Bangladesh.
Objectives: Considering cancer importance among diseases and its role on diseases burden and quality of life, it seems essential to update data about local pattern of the most common cancers and cancer related deaths, to provide evidence needed for public health priorities and effective prevention policies in Bangladesh.
Methods: It is a descriptive cross-sectional study. Our study population included all the diagnosed cancer cases in public and private pathology centers of northern city of Rajshahi in 2016. Sampling method was census. Descriptive statistics were used to state the results.
Results: All under study patients were 512 whom their cancers were diagnosed in pathology centers of northern city of Rajshahi during 2016. Stomach cancer is the most common cancer among patients; breast cancer and colon cancer are in the next ranks after it respectively. The first five cancerous causes of death among Rajshahi City population were as; neoplasm of stomach, gallbladder, liver, colon and lung respectively.
Conclusion: Generally, having ignored the observed differences in distribution of the frequency of cancers in Rajshahi City from global and country patterns, the most common diagnosed types of cancers in this city are related to stomach and breast which is congruent with country pattern. Local epidemiological information about most common cancerous diseases and most common cancerous cause of death in Rajshahi city can be used to evidence based decision making by health manager, and help them to more effective interventions toward primary, secondary and tertiary preventions.

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Advancing Competencies in Radiation Oncology through Personalized Learning Programs

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Introduction: There is a global need for new professionals trained in advanced techniques for Radiation Oncology. To meet these training needs novel educational programs are needed. The purpose of this program was to develop a blended learning, focused, in-depth program in advanced radiotherapy techniques to facilitate upskilling of early to mid-career radiation oncologists.
Methods: In collaboration with UHN International Centre for Education a Personalized Learning Program (PLP)TM was developed to facilitate training in radiotherapy competencies for CT/MRI simulation, stereotactic radiotherapy techniques, cone beam CT (CBCT) and intensity-modulated radiotherapy. Program design was based in Knowles' adult learning theory. Participants underwent rigorous interview and selection processes related to their learning objectives, language skills and potential to impact clinical care locally following the PLP TM. PLP TM objectives were jointly created between faculty and learner and placements were 3-6 months in duration. PLPs TM consisted of a blended experience with eLearning modules, clinical observation, operating room observation, and experience in planning, CT simulation and CBCT. Learners participated in multi-disciplinary tumour boards and quality assurance activities. Additionally, there were one-on-one mentorship sessions with senior faculty, didactic longitudinal courses in physics, radiobiology, imaging literacy and clinical fundamentals.
Results: 5 radiation oncologists participated in the program between 2014-2016. Learners from China (4) and Spain (1) spent between 3-6 months in the program. Their clinical focus included genitourinary, breast, gastrointestinal, liver, lung, head and neck, lymphoma, gynaecological, and spine radiothearpy. To support the program 15 eLearning modules were developed in a number of different site groups including: spine, sarcoma modules (Ewing and Soft Tissue), retinoblastoma, rectum, prostate, medulloblastoma, lung modules (locally advanced and SBRT), liver, Hodgkin's lymphoma, head and neck modules (nasopharynx and oropharynx), gynaecology, and breast. When surveyed, 100% (n=5) said that they achieved their clinical PLP TM objectives, 100% (n=5) would recommend the program to their colleagues, and 100% (n=5) would describe both their personal and professional experiences in the PLP TM program as "excellent".
Conclusions: PLPs TM using a blended learning approach are feasible within the radiation medicine context. Further work is needed to establish the long-term effectiveness of such programs on local practice.

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Feasibility and Patient Satisfaction of a Pilot Patient Centered Education Intervention for newly diagnosed Prostate Cancer Patients in Santiago, Chile

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Background: Patient Centered Models (PCM) have been widely implemented in cancer settings, according to patient and institutional needs. Effective Patient Education (PE) enhances patients' knowledge/understanding of their disease and treatments, with positive outcomes in treatment compliance and symptom management, coping, and satisfaction with care. Coordinated delivery of PE and early assessment of supportive care needs also have shown positive impact in other areas such as health resource utilization. Prostate cancer patients have shown to benefit from these kind of interventions.
Objective: 1) To develop and implement a PE intervention within a PCM framework for newly diagnosed prostate cancer patients at Fundación Arturo López Pérez, a Chilean non-profit private cancer center. 2) To implement a psychosocial long term follow up (2 years) for these patients.
Method: Program was designed as a Quality Improvement Pilot Project. A thorough institutional diagnosis was conducted prior to the Project. Patients were recruited after diagnosis was confirmed, and were invited to participate via invitation letter and phone call. Intervention (visit 1) consisted of a personalized interview/assessment with a nurse and a social worker specialized in cancer to educate/discuss treatment options and system navigation. Social, financial and practical concerns were assessed and ongoing counselling was given according to individual circumstances. Follow-up (visit 2, 30 days after treatment) was phone delivered. Specific educational material was created suitable for low health literacy level and measures were administered to assess QOL and Satisfaction with care (MDASI, EPIC-CP, PSCC Scale).
Results: Pilot intervention was conducted through October 2016-March 2017. 56 patients were enrolled and 39(70%) participated at visit 1 (median age 63), and 21(38%) at visit 2. Overall acceptability and satisfaction with the in-person intervention was very high (PSCC mean 4.6/5). An interesting finding is that phone follow-up has had difficulties, with lower compliance and will to participate than in-person interviews.
Conclusion: Implementation of PE in-person intervention has proven to be feasible and highly acceptable. Psychosocial along with medical follow up remains an important challenge, as cultural factors such as preference of in-person interactions over phone-based intervention has showed to be an important factor for feasibility assessment.

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Assessment of the Information Content of Risk Factors for Colorectal Cancer: Bayesian Approach

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Background: Colorectal cancer (CRC) in the structure of morbidity and mortality of the population steadily holds leading positions. Risk factors for the development of CRC in the world are well studied, while their significance and informativeness in specific socio-economic, climatic, geographical and medico-social conditions can vary significantly. The primary role in reducing cancer morbidity is played by primary prevention of cancer. Bayesian approach can be used to predict individual risk of pathology development.
Objectives: Identification with the help of the Bayesian model of individual risk of developing CRC in the population for the organization of primary prevention of the disease.
Methods: An epidemiological study ("case-control") of the prevalence of known risk factors for CRC development in the population of the Omsk region (n=609) was conducted.
Results: At the time of questioning, risk factors for the development of CRC were 83.7% of men and 75% of women. The analysis showed that among men the consumption of red meat is significantly more frequent, as well as the regular use of alcohol. There were no significant differences between the consumption of fresh fruits and vegetables during the study. The prevalence of regular consumption of alcoholic beverages among respondents is significantly higher than the number of those who did not drink alcohol in the last 12 months ,and amounted to 40.8% and 20.5%,respectively.Of regular men who consumed alcohol in the last 12 months, men were 91 (59.4%), and women 115 (32.6%)(p <0.01).The prevalence of smoking among respondents in our study was 22.3%;in men 39.2%,in women 14.2%;p<0.01.The body mass index among the respondents was: for men 26.5±5.82;in women,26.6±5.75.More than half of the respondents had a body weight exceeding the normative indices (85(55.5%)of men and

181(51.4%) women ,p=0.4115).According to the results of the study there were established values of informativeness and chances. Operational characteristics are calculated: the sensitivity of the test, the prognosticity of the positive result, the prognosticity of the negative, prevalence.
Conclusions: Due to the availability of information on the prevalence and significance of risk factors, it is possible to predict the risk in a particular person. This technique was implemented by us in the form of a computer program-"Personalized prevention of an individual risk of developing colorectal cancer"

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The Evaluation of a Return to Work Planning Template to Facilitate Work Re-integration after Cancer Treatment

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Background: With improvements in screening and treatment, the number of individuals who return to work (RTW) after cancer is increasing. Cancer survivors report a desire and need to re-engage in paid employment due to financial stress, desire for productivity, proof of recovery, and sense of normalcy. To address a gap in RTW resources for survivors, our team developed a RTW template to help survivors plan for and communicate RTW needs with their workplace and insurance representatives.
Objectives: This study evaluates the use and perceptions of the effectiveness of the RTW template in facilitating RTW of cancer survivors.
Methods: Twenty-two survivors with various types of cancer were interviewed after receiving a RTW consultation with an occupational therapist (OT) and using the RTW template. Interviews were transcribed and coded according to themes developed by investigators. A modified grounded theory approach was used to understand how participants used the template, and how it affected their RTW.
Results: Use of the template provided participants with feelings of increased confidence when discussing accommodations with insurance companies and/or employers. The expertise of the OT combined with the formal nature of the template added credibility and legitimacy to the accommodations and other requests relating to RTW. Participants found that working with the template provided them with clarity on typical RTW processes and aided in the preparation process of returning to work. Information learned in consults normalized participant's concerns, which reduced their anxieties and increased confidence when returning to work. Limitations of the template include that it is not as useful for those who do not have insurance or Human Resources support for a graduated RTW and other accommodations. It is not designed for starting a new career or job but rather for returning to a pre-cancer role in the workforce.
Conclusion: The RTW template is a tool that enables survivors to discuss RTW needs with insurance and/or employers. The template provides education for patients, and increases perceptions of legitimacy and confidence in discussing RTW needs. Future research should be conducted to further improve the template and consultations, and assess longitudinal outcomes of the use of the template.

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Interventions to improve Health Literacy in Cancer Patients: A Narrative Review

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Background: Health Literacy (HL) are the cognitive and social skills which determine the motivation and ability of individuals to understand/use information in ways which promote/maintain good health. It is considered to be critical to empowerment and health equity, as it has been shown to be a strong predictor of health status. HL is important in cancer care, where system navigation and self-management of symptoms is essential for QoL and treatment adherence. The objective of this review is to identify/describe interventions designed to improve HL in cancer patients.
Method: A literature search was conducted on May, 2017, on the following databases: Medline, CINAHL, PsycInfo, Scielo, Scopus, ScienceDirect and Epistemonikos, with the algorithm: (Health Literacy OR Cancer Literacy) AND Cancer AND Intervention, developed with a health bibliothecologist. Search included all fields, all documents, no year limit, and English and Spanish results.
Results: Search showed 1236 results. Title/abstract were reviewed with 10% of independent screening by both authors. 32 articles were selected for full-text reading. Final election included 9 articles belonging to 8 studies. All studies (100%) were conducted in the USA, were disease specific (50% breast, 50% prostate), with a mean sample size of 71 participants. Study design included RCT (50%), intervention group only (38%) and participatory research (12%). Interventions consisted on multimedia devices (38%) or personalized face-to-face interactions with health professionals. HL was always measured along with other outcomes like treatment adherence and decision-making. Measures for HL showed high variability, with the REALM being the most used (50%). Notably, only one study (12%) reported a definition of HL. Although acceptability of interventions tended to be high, effectiveness of interventions were mixed, with improvements tending to decrease over time, or showing improvements on low literacy participants that are still considered as low literacy.
Conclusions: Interventions in HL for cancer patients is a promising but challenging clinical research field. HL is not considered a primary outcome, but as an outcome associated with other behavioral/cognitive constructs. Variability on study designs and measurement makes it difficult to compare interventions. Definition and operationalization of HL is critical to design and measure effective interventions.

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A Comprehensive Assessment of the Informational needs of Brain Metastases Patients and their Caregiver

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Background: Patients with brain metastases (BrM) experience direct effects on brain function resulting in significant impairment in quality of life [1]. Although BrM survival rates are low, with advances in treatment, targeted adjuvant interventions achieve longer overall survival [2]. Unfortunately, this patient and caregiver population reports many unmet informational and supportive care needs with discordance between what they want to know and what healthcare providers perceive their needs to be [3-4]. The purpose of this study was to report BrM patient and caregiver information needs and preferred modalities for education delivery.
Methods: A cross-sectional study comprising of a self-administered questionnaire was conducted using a convenience sample at a Brain Metastases Clinic in Toronto, Canada. To assess informational needs, the questionnaire consisted of 3-point Likert scales for the importance patients or caregivers attributed across six domains of need.
Results: 109 patient and 77 caregiver surveys were analyzed. Both study populations were predominantly in their fifties (59.5% of patients and 53% of caregivers), had completed some college or university (45.5% and 45.5%) and working part-time/ full-time (40.2% and 57.9%). The majority of BrM patients had primary lung cancer (51.4%) and were in long term follow-up (43.5%). Patients and caregivers regarded the greatest majority of questions from the medical (67.1% and 74.4%) and physical (66.5% and 74.0%) domains as most important. The top preferred education modalities were: one-on-one instruction with the healthcare provider (30.4% and 33.3%), pamphlets (28.1% and 21.9%), then websites (12.5% and 16.2%).
Conclusions: This study sets a foundation for future resource development by illustrating the type of information that brain metastases patients and caregivers want and the modality in which they want to receive it. It also highlights the most important informational needs of these populations, which parallels the reported unmet supportive care needs in the literature [3-4].

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Effective Interventions for Occupational Skin Cancer Prevention

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Background: The most important risk factor for skin cancer is exposure to ultraviolet radiation and the key determinant of someone's level of exposure is whether or not they are an outdoor worker. There are up to 5.4 million outdoor workers in Canada, with the majority receiving 'high' levels of exposure to solar UV radiation. However, outdoor workers are often inadequately protected and workplaces find it difficult to implement effective sun safety measures. Despite this, few intervention studies have been conducted in Canada.
Objectives: The objective of the Sun Safety at Work Canada project was to develop and evaluate effective skin cancer prevention measures for occupational settings.
Methods: An intervention study was conducted between April 2014 and September 2016 with 17 workplaces throughout Canada to assist these workplaces in implementing more effective sun safety measures. The intervention was guided by a comprehensive conceptual model and rigorously evaluated at three time-points using qualitative (e.g. OHS lead and key informant interviews) and quantitative approaches (e.g. worker surveys, OHS lead surveys, UV dosimetry).
Results: The workplaces implemented a total of 23 policy changes and 137 practice changes. Three overall themes emerged as barriers and facilitators to the implementation of new sun safety initiatives at the workplaces: the workplace context, the intervention and the external context. The average UV exposure of outdoor workers was 6.1 SED, which is 4.6 times the Occupational Exposure Limit. Even though sun safety training and the supply of PPE was substantially increased at all workplaces, the use of sun protection measures by workers remained poor, with high rates of sunburn reported.
Conclusion: The large number of policy and practice changes implemented by the workplaces resulted in substantial sun safety improvements and should provide a sound base for future initiatives. The continued limited use of sun protection measures by workers along with their high UV exposures and the high number of work-related sunburns highlight the need for continued advocacy to improve measures to reduce sun exposure of outdoor workers.

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Global Health Competencies in Oncology Training: A Competency-Based Curriculum Profile

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Purpose: To develop a competency profile for oncology professionals in global health and cancer.
Methods: A comprehensive list of potential global health competency items will be generated from public and professional resources. Redundant or out-of-scope items will be eliminated or harmonized through investigator consensus. Remaining items were subjected to an international 3-round modified Delphi process involving 50 experts in oncology and/or global health. During Round 1, each item will be scored independently on a 9-point Likert scale indicating appropriateness for inclusion in the competency profile. Participants may also suggest new competencies for inclusion in the subsequent rounds of the Delphi process. Items which have a mean score of 1-3 will be removed and a mean score of 7-9 will be included in the profile. Items with a mean score of 4-6 will be discussed and subsequently rated in round 2. In round 2 participants will join a video/teleconference. Items which received a mean score of 4-6 will be discussed and participants will rank them again on the 1-9 scale. New items which were suggested in round 1 will be discussed and ranked. In round 3, items which had a mean score in Round 1 or 2 of 7-9 will be presented for classification into a 'must' or a 'should training item.
Results: Frequency and descriptive statistics will be generated to describe the study population and their range of responses, and to compare ratings of the competency profiles. The final competency profile will be presented and will be categorized using the CanMEDS framework (medical expert, communicator, collaborator, professional, scholar, leader and health advocate).
Conclusions: This competency based curricular profile will be suitable for incorporation into national training standard for oncology trainees.

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Comparative Evaluation of Colposcopy Verses Conventional Cytology and HPV DNA Testing as a Diagnostic Triage for Single visit Screen and Treat Strategy in VIA Based Cervical Cancer Screening Programs in Low Resource Settings in India

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Background: Poor compliance for screening, diagnosis and treatment due to multiple visits involved is perceived as the single most major barrier for effective cervical cancer programs in resource constrained countries already facing challenges for implementation due to absence of reliable health infrastructure for cytology and HPV testing programs. Real time Diagnostic test that can be offered in the same sitting to establish diagnosis that allows decision making for immediate treatment would improve compliance for treatment. The present study was performed to evaluate the efficacy of diagnostic triage by colposcopy compared to conventional cytology and HPV DNA testing in Visual Inspection with 5% Acetic Acid (VIA) based primary screening programs.
Methodology: 257 VIA positive women screened under the primary cervical cancer screening program by VIA were offered diagnostic triage with Colposcopy, Conventional cytology and HPV DNA testing. Test characteristics and their 95% confidence intervals were compared with that of conventional cytology and HPV DNA test against the reference standard of histopathology.
Results: The sensitivity of diagnostic colposcopy, cytology and HPV DNA by Hybrid Capture II was 0.69 (95% CI: 0.41 - 0.89), 0.44 (95% CI: 0.20 - 0.70) and 0.69 (95% CI: 0.41 - 0.89) respectively and that of specificity was 0.76 (95% CI: 0.70 - 0.81), 0.97 (95% CI: 0.94 - 0.99) and 0.83 (95% CI: 0.78 - 0.88) respectively. Colposcopy and HPV DNA had similar false negative rate (FNR) [0.31 (95% CI: 0.11 - 0.59)].
Conclusion: Diagnostic triage for VIA positive women by colposcopy was comparable to HPV DNA testing and was more sensitive than conventional cytology. In settings with limitations in establishing diagnostic cytology and molecular facilities and also difficulty in accessing health-care facilities triage by colposcopy should be considered as a possible alternative. Diagnostic triage by Colposcopy will facilitate diagnosis and pre cancer treatment like cryotherapy to be undertaken in Single visit for Effective and Sustainable cervical cancer screening programs in India.

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BETTER HEALTH: Durham – A Cluster Randomized Trial of Prevention Practitioners in Low-income Neighborhoods

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Background: The original BETTER (Building on Existing Tools to Improve Chronic Disease Prevention and Screening) trial demonstrated a 30% improvement in adherence to evidence-based cancer and chronic disease prevention and screening activities in the primary care setting. The BETTER intervention consists of a personalized visit between a participant and a "Prevention Practitioner" who uses Brief Action Planning to empower the participant to set achievable short-term goals.
Objective: To improve participation in cancer and chronic disease prevention and screening activities in low-income areas, by adapting the BETTER intervention for delivery by the Durham Region Health Department, and testing the effectiveness of the adaptation in a cluster randomized trial.
Methods: BETTER HEALTH: Durham aims to establish that the BETTER intervention can be adapted and proven effective among 40-64 year old residents of low-income areas when provided in the community by public health nurses trained as Prevention Practitioners. Focus groups and key informant interviews among stakeholders and eligible residents of low-income areas are informing the adaptation, along with feedback from a Community Advisory Committee (CAC). After adaptation is complete, 10 clusters will be randomly allocated to immediate intervention or six-month wait-list control and results compared between the two groups.
Results: We have established a CAC of nine community members, which has identified recruitment strategies to reach eligible individuals, and have completed the adaptation focus groups and key informant interviews. A primary care advisory group has also been established. Trial recruitment is anticipated for fall 2017.
Conclusion: BETTER HEALTH: Durham provides an opportunity to build partnerships across

public health and primary care through research that focuses on cancer and chronic disease prevention in low-income neighborhoods.

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Partners in Action: Integrating Shade Design in Public Places for Cancer Prevention

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Background: Social media is a key tool in promoting cancer prevention. The provision of shade is one of the key methods of preventing skin cancer, caused by environmental ultraviolet radiation. Public policy to support the creation of shade is one component of skin cancer prevention. The Toronto Cancer Prevention Coalition Ultraviolet Radiation Working Group (TCPC – UVRWG) successfully put shade on the city's cancer prevention agenda. Consequently Toronto is the first city in Canada to implement a shade policy. To advance this policy, a film was produced to present the members of this group, describe its workings, discuss the policy and demonstrate the necessity of multi-disciplinarity for skin cancer prevention.
Methods: The Shade Policy Committee of the UVRWG secured funding to hire a documentary film maker. Together this group prepared a film script that would encapsulate the rationale for shade, the necessity of including a range of expertise in shade creation, present the views of shade promoters and present examples of shade in Toronto.
Results: The film was shot and produced in 2013, and released publicly on You-tube in 2014. Entitled "Partners in Action: A Shade Policy for the City of Toronto", it won the 2014 Canadian Dermatology Association Public Education Award.
Conclusions: Activity in Toronto for shade creation represents a successful synergy linking UVR awareness and skin cancer prevention with public health, city planning, urban forestry, civic design and health promotion policy. The use of social media extends the reach of health promoters to a larger audience and is an effective tool for skin cancer prevention.
Funding source: The City of Toronto / Toronto Public Health.

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Ultraviolet Radiation (UVR) Awareness Activities and UVR Protection Policies in Ontario Public Health Units

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Purpose: A study funded by the Canadian Cancer Society (Ontario Division) and Ryerson University determined the scope and depth of skin cancer prevention initiatives in Ontario Public Health Units (PHUs), which are at the forefront of delivery of ultraviolet radiation (UV) awareness and skin cancer prevention activities in Ontario. These PHUs have formed networks to collaborate, enhance communications, share information and promote skin cancer prevention. The study aggregated data on the range, scope and type of initiatives in skin cancer prevention by PHUs to determine the level of their activities and to provide future direction to collaborating networks.
Methods: In 2009, a survey was conducted of Ontario 36 PHUs to determine the levels of activity with regard to UV awareness activities and protection policies. This survey was repeated in 2013 by a sub-group of PHUs to determine if significant changes in activities or policies had occurred.
Results: 31 of 36 PHUs participated, thus including PHUs responsible for the health of 85% of Ontario's population. A range of involvement and activities by health care professionals to address skin cancer prevention was found. Activities are developed to target diverse groups and respond to locally determined needs and conditions. Respondents reported the presence of policies and guidelines in support of UV awareness and skin cancer prevention. They identified barriers to delivery of programs and activities, as well as impediments to policy and guideline development, notably lack of resources and public perceptions of the issue. Few programs were evaluated for their effectiveness. In 2013 no substantive changes in activity levels or perceived barriers were found.
Conclusions: PHU professionals utilize multiple strategies whose implementation is constrained by resources and perceived actual barriers. The lack of program evaluation prevents full assessment of activity outcomes and thus constrains ongoing health promotion planning.

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Patient Engagement and Approaches for Women with DCIS: a Qualitative Study with Canadian Clinicians

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Background: Up to 25% of mammographically-detected lesions are ductal carcinoma in situ (DCIS), a disease with uncertain risk of progression to invasive breast cancer. Women diagnosed with DCIS, both nationally and internationally, have consistently reported suboptimal communication about DCIS and treatment options, and poor health care experiences and outcomes. Little is known about the challenges providers face in discussing DCIS with patients, or how to improve the health care experience and associated outcomes of women diagnosed with DCIS In Canada. Person-centred care is an approach which has been shown to improve quality of care and develop beneficial patient-provider relationships. This study explored how to improve and support person-centred care for DCIS.
Methods: Qualitative interviews were conducted with clinicians who manage DCIS patients from across Canada. Sampling was purposive by specialty and province, and by referral from those interviewed. Participants were asked about communication and decision-making practices and challenges, and recommendations for improvement. Themes were identified using a constant comparative technique and duplicate independent analysis.
Results: Forty-six participants from 6 provinces (18 general/oncology surgeons, 16 radiation/medical oncologists, 5 radiologists, 7 patient navigators/nurses) were interviewed. Communication with patients was complex due to the need to tailor discussion based on individual clinical/demographic characteristics, comprehension, number and type of questions and care partners. DCIS was described using a range of terminology, and formal (i.e. prepared packages) and informal (i.e. draw pictures) material. Challenges included misperception of risk among patients and desire for over-treatment, need for successive consultations to achieve full understanding, and limited informational and supportive care resources. Recommendations included educational and communication aids for patients, and patient navigators.

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Examining 90-day Readmission Following Surgery for Esophageal Cancer in Ontario

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Background: A high proportion of patients undergoing surgery for esophageal cancer are readmitted to hospital following surgery.
Objective: To define the readmission rate following esophagectomy in Ontario, assess the influence of surgery at a thoracic centre on the readmission rate, and identify patient factors predictive of readmission within 90 days of hospital discharge.
Methods: A population-based retrospective cohort study using linked health administrative data was performed in Ontario. Patients over 18 years undergoing surgery for adenocarcinoma or squamous cell esophageal or esophago-gastric junction cancer between 2002-2015 were included. The risk-adjusted readmission rate was identified and compared between thoracic and non-thoracic centres. Multivariable logistic regression analysis was used to identify factors associated with 90-day readmission.
Results: Of 3,670 patients included in the study, average age was 63.6 ± 11.1 years, 23% were female (n=853), 58% had surgery at a designated thoracic centre (n=2,133), and 25% were readmitted within 90 days (n=1,016). Median hospital length of stay was 12 days (interquartile range 9-20). Readmitted patients had higher comorbidity and longer length of stay than patients not readmitted ($p<0.001$). There was no difference in readmission rate between thoracic and non-thoracic centres. However, across designated thoracic centres, the readmission rate varied from 14% to 32%. This variability was unrelated to hospital case volume or postoperative mortality. On multivariable analysis, hospital stay greater than 21 days (OR 1.89, 95% CI 1.51 – 2.37), high comorbidity burden (OR 1.48, 95% CI 1.17-1.87), and female sex (OR 1.23, 95% CI 1.04-1.47) were predictive of 90-day readmission. No other study factors were associated with readmission.

Conclusion: One in four patients are readmitted within 90 days following surgery for esophageal cancer. Surgery at a thoracic centre did not influence risk of readmission and variability in readmission rates was seen even across designated thoracic centres. Patients with high comorbidity burden are at increased risk of readmission; further measures to support post-operative recovery at home are needed.

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Spontaneous Regression in Children with Neuroblastoma: A Report from a Single Institution in Algeria

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Background: Neuroblastoma (NBL) is the most common neoplasm of early childhood that is able to regress spontaneously. This study aimed to describe clinical and biological profile of children with neuroblastoma exhibiting spontaneous tumoral regression.
Methods: A retrospective study including all patients initially diagnosed with NBL was performed from January 2008 to December 2016. Patients are evaluated at initial diagnosis by biochemical studies including plasmatic LDH, and urinary catecholamines (VMA, HVA) measure. Disease extension is documented by medullary and imaging exploration. It is staged according to INRGSS. Analysis for MYCN gene is performed on 30% of the population. Expectative duration varied from 6 to 108 months.
Results: 36 patients are identified with a sex-ratio of 2.3 and a median age at diagnosis of 6 months (range 4 days -11 ms). Primary adrenal tumor is the most frequent localization (70%). 66% of patients have a tumor diameter between 30 and 60 mm, 27% below 30 mm and 7% above 60 mm. 40% are staged at 4S, 43% (L2) and 17% (L1). A complete remission is observed in 50% of the patients and partial in 41% of them. 9% of patients experience a progressive disease and undergo conventional treatment. It seems that Median delay of regression was shorter in patients with localized tumor comparatively with those presenting metastatic disease (11 vs 18ms).
Conclusion: In our working conditions, spontaneous regression, even followed only by ultrasound to reduce the risks due to irradiation, makes it possible to avoid chemo-induced toxicity in a population at risk.

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Home HPV Testing in Rural Kenya: Improving Capacity for Cervical Cancer Screening and Prevention

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Background: Cervical cancer is the leading cause of cancer mortality in Kenya and other Sub-Saharan countries. Its high incidence is related to the heavy HIV/AIDS burden in the area. Barriers for women in rural Kenya to screening include length and cost of travel, time for treatment and follow-up. Another study we did found only 36% of women offered free screening came for it and of them 10% had a precancerous lesion. As a result of the low response to the screening, we proposed an HPV self-testing strategy to be undertaken by women in the privacy of their homes in their villages. Colposcopy would then be offered to only those who tested positive for high risk HPV.
Objective: Within the Chulaimbo region in Kenya, a trial of home HPV testing was initiated as part of a larger program linking HIV testing and other chronic diseases such as diabetes and hypertension. The aim was to test 5000 women and to correlate HPV results with HIV status and biopsy proven dysplasia and cancer.
Methods: Health care workers went door to door within rural Chulaimbo to counsel and invite women to participate in the program. The clients were educated on the procedure and their HPV samples were collected and tested. Those with a positive HPV test were then referred for colposcopy. All costs were covered including travel and a per diem.
Results: A total of 2120 women were offered HPV screening and 679 refused. Of those screened 420 tested positive for high risk HPV. Only 90 have come back to the clinic for colposcopy. Among women who tested positive for HPV, 30% were HIV positive.
Conclusions: This is the first program to date to go into western Kenya using home HPV screening for cervix cancer. Home HPV testing offers the possibility of reaching more women where barriers to screen exist. Only women who test positive are required to go to travel to a screening center and where as those who test negative do not need to travel. Home HPV testing may be the most effective strategy for widespread screening in low resource settings.

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A Perspective of a Primary Care Provider on Cervical Cancer Prevention in Refugees

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Background: Cervical cancer annually results in the deaths of over 266,000 women worldwide. It is caused by human papillomavirus (HPV) infection. Screening for cancerous and precancerous cells by Pap testing has significantly reduced cervical cancer morbidity and mortality in Canada and many other developed countries. Refugee women are consistently screened at rates lower than recommended by national and provincial guidelines. HPV vaccination is predicted to decrease incidence of cervical cancer, potentially transcending inequalities in screening. Little research dedicated to HPV vaccination in refugees currently exists. Memorial University of Newfoundland’s Gateway Program is an initiative orchestrated by medical students and primary care providers that provides pre-medical services to newly landed refugees in St. John’s, Newfoundland and Labrador.
Objectives: 1) To interview a primary care provider who works with the refugee population in St. John’s, NL regarding their experiences with cervical cancer prevention/HPV vaccination awareness in this population. 2) To determine the recurrent themes and concepts that arose during this interview and how they relate to current literature.
Methods: A purposeful interview of a primary care physician and advisor to the Gateway Program was conducted, recorded, and transcribed verbatim. The transcript was analyzed and themes were discussed in context of current literature.
Results: Discussion regarding cervical cancer prevention is best had 2-3 months following arrival, after rapport has been developed and the patient has settled. A refugee’s specific culture and community of origin are highly important with respect to their familiarity and comfort with preventative medicine and sexual health. As has been demonstrated in literature, refugee women often prefer female physicians and physicians of cultural backgrounds similar to their own. An enduring barrier to HPV vaccination in adult refugees is financial cost, though children benefit from school vaccination programs. This physician’s experiences with multidisciplinary refugee care and education echo successes reported in other centers.
Conclusions: This interview highlighted several barriers to cervical cancer prevention in refugee women, and ways in which they are being overcome. Research and advocacy should be directed toward financial barriers to HPV vaccination, with the aim to increase its accessibility in this population and others.

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Potential Impact of Scaling Lung Cancer Screening in Ontario, Canada

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Background: In 2017, it is expected that lung cancer will account for 14% of all newly diagnosed cancers and be responsible for 26% of cancer deaths among Canadians. Since the 5 year survival rate is low, participating in screening procedures is necessary for early diagnosis, before symptoms occur. Unfortunately, equitable access to screening procedures can be challenging. The purpose of this study is two-fold: 1) to determine what percentage of individuals enrolled in a province wide smoking cessation program would meet criteria for a provincial wide lung cancer screening program involving low-dose CT scan, and 2) to determine accessibility to any of the three facilities currently conducting low-dose CT scans for lung cancer screening among participants.
Methods: The Smoking Treatment for Ontario Patients (STOP) Program is a smoking cessation program implemented within Community Health Centres, Family Health Teams, Addictions Agencies, and Nurse Practitioner Led Clinics across the province of Ontario. STOP provides behavioural counselling support and nicotine replacement therapy at no cost to tobacco users attempting to quit smoking. STOP participants receive personalized doses of nicotine replacement therapy every 2 to 4 weeks for a maximum of 26 weeks. The sample included approximately 78,000 individuals who were enrolled in STOP between January 1, 2014 and August 21, 2017.
Results: According to Cancer Care Ontario, eligibility criteria for screening individuals at high risk of lung cancer include the following: 1) being 55 to 74 years of age, and 2) currently or

previously smoking on a daily basis for a minimum of 20 years. Based on self-reported data, approximately one third (n=26,391) of STOP participants would be eligible to participate in lung cancer screening using low-dose CT scan. Additional analysis will be performed to determine how barriers to accessibility may influence the ability of STOP participants to receive lung cancer screening.

Conclusions: Equity is essential in order for individuals to acquire access to necessary screening procedures. These findings indicate that one third of individuals within a province wide smoking cessation program could potentially benefit from access to lung cancer screening. Strategies to remove health disparities in cancer care are necessary.

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Coming of Age - Medical Communication in Acute Leukemia

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Background: Acute leukemia (AL) is a life-threatening disease characterized by a sudden onset, an unpredictable course and considerable morbidity and mortality. Relationships with health care providers (HCPs) are likely important in maintaining patient morale and participation in the rigorous treatment regimen. However, there has been little research investigating interactions of such patients with HCPs or on differences in such interactions related to age and life stage. Adolescents and young adults (AYA), who represent at least 10% of patients with AL, have distinctive communication and information needs that distinguish them from older adults.

Objectives: The purpose of this study was to examine interactions between patients with AL and their HCPs, satisfaction with care, and the effect of age on these outcomes.

Methods: Patients with acute myeloid, lymphocytic, and promyelocytic leukemia (N = 362) were recruited within one month of diagnosis or relapse at the Princess Margaret Cancer Centre in Toronto, Canada, as part of a larger, longitudinal study. Participants completed self-report measures including the CARES (Cancer Rehabilitation Evaluation System) Medical Interaction Subscale, the CASC (Comprehensive Assessment of Satisfaction with Care). Chi-square testing was used to assess the association between demographic characteristics and age (≥ 40 vs < 40 years) and multivariable regression analyses were used to assess joint impact of predictors.

Results: Of the 362 participants, 55% were male and the median age was 50 (range 18-86 years). Patients under 40 reported significantly poorer communication with HCPs (p = 0.0009) and lower satisfaction (Doctor's availability subscale p = 0.0013, General satisfaction subscale p = 0.0039) than older patients. These findings were independent of rates of depression or traumatic stress.

Conclusions: AYA with newly diagnosed or recently relapsed AL report less satisfaction with care and more difficulty interacting with their medical team than older individuals. These findings suggest that greater attention is needed to address the specific relational and support needs of this population, who may be struggling with the impact of a devastating diagnosis at a pivotal life stage.

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Cervical Cancer Treatment Delays and Associated Factors in a Cohort of Brazilian Women Treated at the National Cancer Institute in Rio de Janeiro

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Background: Cervical cancer is still a major public health problem in developing countries, where are observed high mortality rates and poor survival rates. Treatment delays may influence survival and have been associated to poor health care access and poor quality of care.

Objective: To estimate the treatment delay, and associated factors, among women diagnosed with cervical cancer treated on the main cancer center in Rio de Janeiro, Brazil.

Methods: A retrospective cohort study comprising 865 women newly diagnosed with cervical cancer between 2012 and 2014 was accomplished. Times from diagnose to treatment initiation (< 60 > days), and from diagnose to treatment ending (< 120 > days) were analyzed according to the Brazilian law for cancer patient treatment. Association between sociodemographic, economic, life style, clinical and treatment variables, and delays on treatment were estimated using X2-test and logistic regression model, with 95% confidential interval.

Result: Mean age was 48 (+ 13.7) and median was 47 years old; 67.6% had stage IIB-IIIB. Median time from diagnose to treatment initiation was 117 days, with a delay of 94.2%. Median time from diagnose to treatment ending was 262 days, with a delay of 87.5%. Age > 40 years (OR:1.25;CI95% 1.10-4.59), non-white skin color (OR:2.78;CI95% 1.39-5.55) and having surgery (OR:0.36;CI95% 0.13-0.99) were independently associated with delay on treatment initiation. High education (OR:0.56;CI95% 0.31-0.99), smoking (OR:2.31;CI95% 1.14-4.65),radiotherapy (OR:16.67;CI95% 6.02-46.10), and brachytherapy (OR:31.36;CI95% 12.72-77.35) were independently associated with delay on treatment ending.

Conclusion: Increased treatment delays were observed in this studied population. Delay on treatment initiation was positively associated with old age and non-white skin-color, and negatively associated with surgery. Delay on treatment ending was positively associated with radiotherapy, brachytherapy, and smoking, while negatively associated with education.

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Delay of Medical Treatment for 3,220 Women Diagnosed with Breast Cancer in Rio de Janeiro, Brazil

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Background: The majority of breast cancer death occurs in developing countries. Mortality reductions achieved in the last decades in developed countries have not been achieved in developing countries mainly because of a lack of access to early medical attention and delays on treatment. There are very few research studies on the reasons behind delayed medical attention for breast cancer in women in developing countries.

Objective: To estimate the treatment delay, and associated factors, among women diagnosed with Breast cancer treated on the National Cancer Institute in Rio de Janeiro, Brazil.

Methods: A retrospective cohort study comprising 3220 women newly diagnosed with breast cancer between 2011 and 2013 was accomplished. Times from diagnose to treatment initiation were analyzed according to the Brazilian law for cancer patient treatment (< 60 > days). Association between sociodemographic, life style, clinical and treatment variables, and delays on treatment were estimated using X2-test and logistic regression model, with 95% confidential interval.

Results: Over 50% of women was 50-69 years old, white (50.5%), presented early stage at diagnosis (63.8%), and refereed from public health service (76.9%). From those who had a histopathological diagnosis when arrived (N=2,554), median time from diagnose to 1st treatment was 108 days, varying from 97 days (stage T0-2N>1-X/T3-4N0/X) to 133 days (stage Tis). Among those, prevalence of treatment delay was 89.1%; age (50-69: OR=1.61;CI:1.24-2.11, >70 years: OR=1,91;CI:1,27-2,89),non-white skin color (OR=1.26;CI:0.98-1.62) were statistically associated with treatment delay; while high education (OR=0.31;CI:0.13-0.73), late stage at diagnosis (OR=0.63;CI:0.49-0.80), and chemotherapy (OR=0.66;CI: 0.51-0.85) were negatively associate with treatment delay. Among those who arrived without diagnosis (n=666), prevalence of treatment delay was 34.7%, and only late stage at diagnosis was statistically associated with delay on treatment (OR=0.56;0.38-0.82).

Conclusion: Increased Breast cancer treatment delay was observed among women who arrived with histopathological diagnosis. Old age and non-white skin color were positively associated with treatment delay; while high education level, late stage at diagnosis and chemotherapy were negatively associated with treatment delays. Delays on treatment, was lower among women who arrived without histopathological result, and late stage at diagnosis was negatively associated with such delay.

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Screening for Cervical Cancer in a Large HIV Clinic in Zomba, Malawi

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Background: Malawi has the highest rate of cervical cancer globally and cervical cancer is six to eight times more common in women with HIV. HIV programmes provide an ideal setting to integrate cervical cancer screening.

Objectives: To demonstrate feasibility and outcomes of integrating cervical cancer screening into a busy HIV clinic in a low resource setting.

Methods: Tisungane HIV clinic, Zomba, Malawi, has around 3700 adult women receiving treatment. In October 2015 a model of integrated cervical cancer screening using visual inspection with acetic acid (VIA) was adopted. Prior to this, screening was available but few women received the service.

Results: We evaluated cervical cancer screening visits by 957 women who were referred from the HIV clinic between May 2016 and March 2017. Of the 686 (71%) women who underwent first ever screening, 23/686 (3.4%) were found to have VIA positive lesions suggestive of pre-cancer, of whom 8 (35%) had a same-day cold coagulation procedure, 7 (30%) deferred cold coagulation to a later date (of whom 4 came for treatment), and 8 (35%) were referred to surgery due to size of lesion; 5/686 (0.7%) women had lesions suspicious of cancer. Of VIA positive women, 19 (83.3%) were within age group 31-45; 3 (12.5%) >45 years and only 1 (4.2%) <30 years. VIA positive women (N=23) were slightly older than VIA negative women (N=615; mean age 37.7 vs. 36.9)

Of 209 women (mean age 38.4 years) who were reviewed 1 year after a previous VIA, 9 (4.3%) were VIA positive and 2 (0.9%) had lesions suspicious for cancer. 17 patients came for 1 year follow up after treatment, of whom 1 was VIA positive, representing a success rate of 94%.

Conclusions: Twenty-six percent of all women on ART were screened in 10 months which is close to the target of screening all in three years. The referral rate for lesions too large to be treated with cold coagulation was higher than expected. Treatment success rate was encouraging but the rates of VIA positive lesions and suspected cancer after one year was worrying.

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A Study of Population-Based Genetic Testing for Breast and Ovarian Cancer

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The two most commonly mutated genes for hereditary breast and ovarian cancer are BRCA1 and BRCA2. These genes are associated with lifetime risks of 80% for breast cancer and 15% to 40% for ovarian cancer. They also contribute to prostate and pancreatic cancers.

In current model of genetic testing for BRCA genes, women are referred by their physicians to a specialized cancer genetics clinic to assess if they meet a certain criteria for genetic testing. We believe the current model is outdated and propose an alternate model based on guided direct-to- consumer, population-based testing, for the following reasons. First, given the strict criteria set out by each jurisdiction for BRCA genetic testing, access is limited to a minority of the population. A large proportion of individuals who carry a mutation do not qualify for genetic testing based on current guidelines.; second, in some areas, patients who met these restricted criteria have to wait for several months to be visited by a genetic counselor for evaluating their risk and ordering the test for them; third, current hereditary cancer testing is offered to patients too late, with most tests done after a patient has been diagnosed with cancer.; and finally, testing is often offered a year after a patient is diagnosed with cancer and after their course of treatment has begun, meaning the results of the genetic test cannot be used to choose the best treatments.

A national population-based cancer genetic test approach uses genetic testing as a screening tool to identify high-risk patients, followed by genetic counselling of preventive options for those identified as carrier. We launched a pilot study named Screen Project in March 2017 for evaluating population-based genetic testing for BRCA mutations in Canada. We use a guided direct-to-consumer (gDTC) approach for enrolling individuals through the study website (www.thescreenproject.ca). All individuals with a pathogenic mutation in either gene will be contacted by our team of genetic counsellors in person or by telephone to discuss their options for cancer prevention. Our team will also facilitate a referral to a local genetics clinic for long-term follow-up.

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Advanced Practice Radiation Therapists: New Tools for Bridging the Access Gap?

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Background/Objectives: In low and middle-income countries (LMICs), the shortage of health care providers (HCP) with appropriate professional competence is a barrier to access to safe health care. For radiation treatment, sufficiently trained radiation oncologists (RO), medical physicists and radiation therapists are scarce, if they exist at all, in these regions. While traditional strategies – including sending local candidates to overseas training programs; implementing small-scale, local training programs; etc. – go some distance to filling these gaps, other possibilities must be considered. For example, the World Health Organization has supported the concept of task-shifting as an area for exploration.

Methods/Overview: In one province in Canada, a long-term, system-wide project was implemented to identify if and how advanced practice in radiation therapy (APRT) could help alleviate persistent barriers to the delivery of cost-effective, high quality radiation therapy through task-shifting. From 2007 to 2016, 28 positions were built using a common, validated competency profile developed during the project. This "advanced practice" was defined with competencies in the clinical, technical and professional domain that describe higher order, autonomous clinical practice such as decision to treat, defining target volumes, assessing/managing treatment side effects, etc. The impact of this new HCP was evaluated using pre/post volume studies, retrospective data analyses, satisfaction surveys, interviews, documentation analysis from annual reports prepared by these HCPs.

Results: Results indicated that APRTs, with their additional education and training, could assume some RO activities. Each APRT was able to increase the capacity of their department 13 patients per month (average). Providers reported a positive experience, through work-life satisfaction surveys and interviews, highlighting streamlined workflow, time-savings and introduction of practice standards. New quality assurance practices and standardized treatments, which can lead to reduced risk of error and better outcomes for patients, were also reported. Patient experience was improved by reducing inappropriate referrals, improving continuity of care, and adding services.

Conclusions: APRTs, with expanded scope of practice and autonomy, could contribute to closing gaps in radiation medicine expertise that currently exists in the LMIC health care team through task shifting. This could accelerate the expansion of radiation treatment access for cancer patients.

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Estimating the Cancer Burden Due to Lifestyle, Environmental and Infectious Disease Risk Factors in Canada

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Background/Objectives: Despite established associations between modifiable risk factors and cancer risk, reductions in these risk factors have not been achieved in Canada. Low awareness about the modifiable causes of cancer among Canadians and population-based cancer prevention strategies based on outdated information may explain this lack of change. The Canadian Population Attributable Risk of Cancer (ComPARe) project will estimate the proportion of current and future cancer incidence attributable to modifiable risk factors in Canada.

Methods: We identified relevant lifestyle, environmental and infection–cancer associations from the literature and obtained risk estimates from collaborative panels and meta-analyses. Age-sex-specific incidence data from the Canadian Cancer Registry were combined with exposure prevalence data from national population-based surveys. We estimated the cancer burden attributable to smoking, alcohol, excess body weight, physical inactivity, sedentary behavior, oral contraceptive use, hormone therapy, unhealthy eating habits (i.e. insufficient fruit and vegetable, fiber, vitamin D, and calcium intake, as well as excess red and processed meat intake), air pollution, radon, disinfection byproducts, ultraviolet radiation, and seven infectious diseases.

Results: Population attributable risks for the associated cancers were 31.0% and 2.6% for active and passive tobacco smoking (14 and 4 cancer sites), 4.4% for excess alcohol intake (8 cancer sites), 10.8% for excess body weight (14 cancer sites), 10.3% for physical inactivity (15 cancer sites), 5.4% for sedentary behavior (4 cancer sites), and 9.9% and 5.9% for insufficient fruit

and vegetable intake (7 and 8 cancer sites), respectively. In 2012, 82.8%, 61.8%, and 30.2% of incident lung, colorectal, and breast cancers, respectively, were attributable to lifestyle factors. Air pollution, radon, disinfection byproducts, and ultraviolet radiation are estimated to be responsible for 7.5% of cancer cases (3 cancer sites). Of all incident cancers in 2012, 2.8% (4,932 cases) were attributable to infection with Helicobacter pylori, hepatitis B and C virus and human papillomavirus (14 cancer sites combined).
Conclusion: A considerable proportion of the cancer burden in Canada is attributable to modifiable risk factors. These comprehensive results will help inform and prioritize policy and interventions targeting these risk factors with the potential to substantially reduce the burden of cancer in Canada.

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Preventable burden of infection-associated cancers among Canadian adults in 2012
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Background: Infections are estimated to cause approximately 15% of the world's cancers, yet estimates for Canada are lacking. This information is valuable for cancer prevention because the cancer-associated infections, hepatitis B (HBV) and human papillomavirus (HPV) are preventable with vaccines, while Helicobacter pylori can be treated with antibiotics.
Objective: The Canadian Population Attributable Risk of Cancer (ComPARe) project estimates the proportion of cancer incidence attributable to modifiable factors; in this study, we estimated the number of preventable infection-associated cancers diagnosed among Canadian adults in 2012.
Methods: The prevalence of infections and the strength of their association with each cancer site were used to estimate population attributable risk (PAR) estimates. PAR quantifies the reduction in cancer incidence if an infection were eliminated. A systematic literature review was conducted for each infection to obtain the data required to calculate PARs. Measurement errors from early generation studies that used low sensitivity assays to detect H. pylori were corrected for a more sensitive assay.
Results: HBV, HPV, and H. pylori infections caused an estimated 4,701 cancers among Canadians aged 18 and older in 2012. The cancer sites with the highest percentage of preventable cases were: cervix (100% due to HPV), anus (92% due to HPV), vagina (76% due to HPV), non-cardia stomach (57% due to H. pylori), oropharynx (52% due to HPV), and liver (9% due to HBV). Of all cancers diagnosed among Canadian adults in 2012, 1.9% were related to HPV (3,343 cases), 0.7% to H. pylori (1,185 cases), and 0.1% to HBV (173 cases).
Conclusion: Preventable infections were responsible for 2.7% of the 174,160 incident cancer cases diagnosed among Canadian adults in 2012.

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Partnerships to Promote Inter-country Knowledge Exchange and Innovations in Global Cancer Research and Control: The World Bank-US National Cancer Institute Collaboration in sub Saharan Africa
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Background: Cancer incidence and mortality is increasing globally, with most cancer cases affecting low- and middle-income countries (LMICs). Governments and non-governmental stakeholders in LMICs find it challenging to access relevant technical resources to develop effective, evidence-based cancer control strategies and interventions. There is an opportunity for the international cancer control community to facilitate knowledge sharing to address this gap. To this end, the World Bank and US National Cancer Institute's Center for Global Health (NCI-CGH) pooled forces to strengthen knowledge sharing and networking for multi-stakeholder cancer control leaders in the sub-Saharan Africa region, leading to evidence-based priority setting and dissemination of best practices.

Objective: The World Bank and NCI-CGH partnership has aimed to encourage knowledge exchange and networking to strengthen evidence-based cancer control efforts within and across countries in the sub-Saharan Africa region through various multi-institutional, multi-country knowledge sharing platforms.
Methods: The World Bank and NCI-CGH developed the Cancer Control South-South Knowledge Exchange in 2014, a series of webinars to address cancer control challenges and share innovative solutions in eastern and southern Africa. This program was complemented by NCI-CGH's 2014 Africa Cancer Control Leadership Forum, an in-person introduction to evidence-based cancer control strategies and principles. Recognizing the benefit of a combined approach to knowledge sharing, NCI-CGH utilized a virtual-mentoring platform for the 2017 Africa Cancer Control Leadership Forum, and the World Bank hosted the culminating in-person knowledge sharing event for cancer control specialists and their partners in the region.
Results: Countries participating in these exchanges increased their understanding of cancer control principles and learned from and shared examples with regional colleagues about real-world implementation of evidence-based strategies. Participating partners benefited from learning about country-level challenges and priorities, and have been able to adapt their programs accordingly.
Conclusions: This long-term partnership has led to the identification of country-driven priorities and enhancement of project design by regional and international partners, and strengthening of inter-country and in-country collaborations. There is a need to ensure sustainability of these efforts through continued innovative use of technology and access to additional opportunities for joint, evidence-based cancer control skills-building and knowledge exchange.

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International Multicenter Cohort Study of Breast Cancer in Young Women
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Background/Objectives: Breast cancer at a young age (i.e. before age 40) is associated with a relatively poor prognosis. Breast cancer in women under 40 is rare (5% of all breast cancer cases), and most studies to date have been too small to permit a comprehensive investigation of the various factors affecting survival. The purpose of this large, international, multicenter cohort study is to examine the survival outcomes of young women with breast cancer in several populations around the world and to determine globally and in each country to what extent the survival rate is influenced by tumour characteristics, by the effectiveness of the various treatments and by the compliance with the various treatments.
Methods/Overview: We collected clinical data on a series of unselected women diagnosed with breast cancer before age 40 from Canada, Poland, the United States, Sweden, Singapore, Iceland, Hong Kong, Bangladesh, Chile, Mexico and Iran. For each patient, information was collected on year of diagnosis, age at diagnosis, tumour size, lymph node status, estrogen receptor status, progesterone receptor status, HER2 status, tumour grade, all treatments received (surgery, radiotherapy, chemotherapy, hormone therapy), vital status and follow-up time in months. Patients were followed from the date of diagnosis to the date of death from breast cancer, death from another cause, or date of last follow-up. We used the Kaplan-Meier method to estimate the 15-year breast cancer specific survival rate for patients at each site.
Results: To date, data has been collected and analyzed for patients from five of the contributing centers. The 15-year breast cancer-specific survival rate was 57.6% for the Canadian women, was 73.6% for the Polish women, was 54.1% for the Swedish women, was 72.9% for the white American women and was 60.9% for the black American women. The variation in survival rates can to a large extent be attributed to differences in the use of chemotherapy and tamoxifen.
Conclusions: Mortality from breast cancer in women diagnosed before age 40 varies significantly between countries. To a large extent this variation can be explained by differences in the use of chemotherapy and tamoxifen. The study is in progress.

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A Social Network Analysis of Global Retinoblastoma Care
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Background: Retinoblastoma is a rare infant cancer of the retina, with approximately 8000 new cases globally a year. There are disparities in diagnosis and treatment of retinoblastoma worldwide. The incidence is highest in low- and middle-income countries, precisely where chance at survival is lowest (less than 30%). Comparatively, a child diagnosed with retinoblastoma in a high-income country has chance at survival of over 95%. One Retinoblastoma World (www.1rbw.org) is a global network with an aim to ensure equal opportunity of care, regardless of what country a patient is diagnosed in.
Objectives: We aimed to explore how partnerships and connections within and beyond the One Retinoblastoma World network might contribute to or influence capacity for care and consequently, survival and mortality.
Methods: We conducted a mixed-methods egocentric social network analysis, a form of network evaluation, to identify the prevalence and type of connections present in One Retinoblastoma World. Network members were invited to complete an electronic network analysis survey to identify collaborative activities between their treatment center (nodes), and respective partners (alters). The survey asks for details of interactions (e.g. patient consultation, joint planning, sharing of resources), as well as the duration, frequency and nature of the partnership (e.g. formal or informal). Network maps were generated from survey results to visualize connectivity of centers. 20 key informants were selected, representing approximately 12% of the network (n=170), to participate in follow-up qualitative interviews expanding on perception and benefits of partnerships.
Results: 56 centers from 6 continents submitted surveys identifying 165 respective alters. The partnerships identified through the survey emphasize the use of collaboration primarily for individual patient care (e.g. patient referrals, consultations), and a lack of partnerships around research and twinning/ capacity building projects. The qualitative data collected thus far highlights the value of partnerships for the long-term growth and development of all collaborators.
Conclusion: Network analyses can increase understanding of the types of partnerships that support delivery of patient care globally. Inequities can be reduced and rates of survival increased by uncovering key actors in knowledge translation, training and capacity building opportunities, and reveal powerful ways to amplify existing collaborative efforts.

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Megavoltage Radiotherapy in Africa: Assessing Challenges to Access (1950-2017)

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Background/Objectives: To present data on availability of megavoltage (MV) units (60Co teletherapy machines [Co] and Linear Accelerators [LINAC]) in Africa from 1959 to 2017 and to determine the additional resources needed to reach full capacity, including a cost analysis.
Material and methods: Country data was taken from the World Bank, Country and Lending Groups, 2017 fiscal year. Cancer epidemiology was obtained from GLOBOCAN 2012. The number of radiotherapy courses needed was calculated using the methodology from the Collaboration for Cancer Outcomes Research and Evaluation (CCORE). Data on availability of radiotherapy equipment was obtained from the IAEA Directory of Radiotherapy Centres (DIRAC). The IAEA cost calculator was used to estimate the additional resources needed. Fifty-one countries were included in the analysis. Historical data was obtained from different published data, including peer-reviewed articles and systematic research of newspaper articles. The evolution of the radiotherapy capacity in the continent was analysed using a time-series analysis.
Results: Number of MV units increased from 3 in 1959 to 21 in 1970, 98 in 1990, 167 in 2000, 261 in 2010, and 340 in 2017 (66 Co and 274 LINACs). Time-series analysis showed a consistent increase in the number of MV units per million population, with a projection for 2030 of 0.28, up from 0.25 in 2015. 438,000 cancer cases need radiotherapy annually in Africa, requiring 813 MV units. With the current installed capacity only 34% of these patients can be treated. Additional investment (infrastructure, equipment and training) to bring full access is 2.12 billion US$ (52% corresponds to Low-Income Countries (LICs).
Conclusions: Although there is a documented and marked increase in the RT installed capacity in Africa, only 3 to 4 out of 10 cancer patients needing radiotherapy in Africa have access to this treatment. In LICs the lack of access is dramatic with only 3% of the needs covered. Forecast models based on historical data do not predict enough growth to cover the needs in the 2030 horizon. A cost estimate of the needed investment is feasible and recommended.

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Disparities in Accessibility to Radiotherapy in a High Income Country: The Case of Canada

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Background: Canada is a high-income country with universal healthcare. However, Canada's large geographic area and small population density creates challenges in accessibility to oncologic treatment, such as radiotherapy.
Objectives: To explore regional variations and geographic patterns in oncologic outcomes within Canada, and potential contributing treatment-related and sociodemographic factors.
Methods: Using GIS software, we conducted spatial autocorrelation using the global Moran's I statistic to detect non-random spatial patterns in age standardized all-cancer mortality-to-incidence ratios (MIRs) across health regions in Canada, from 2010 to 2012. Global ordinary least squares (OLS) regression and geographically-weighted regression (GWR) were then applied to examine relationships between distance to nearest radiotherapy centre, sociodemographic factors, and the observed spatial patterns.
Results: All-cancer MIRs by health region across Canada exhibited positive statistically significant global Moran's I index values, with a tendency towards clustering (Moran's I = .346, p = .001). Mapping of clusters showed areas of higher MIRs (range 0.45–0.88) in all of Canada's northern regions (Nunavut, Northwest Territories and Yukon), and in the north of certain provinces (Saskatchewan, Manitoba, Ontario and Quebec). Clusters with lower MIRs (range 0.35–0.43) were observed in southern regions of British Columbia, Alberta, Saskatchewan, Ontario and in New Brunswick. In both regression models, health regions with longer Euclidean distance to nearest radiotherapy centre, higher rates of smoking and lower rates of food security were significantly associated with higher MIR (r2 = .69 with OLS and r2 = .74 with GWR).
Conclusions: Disparities in accessibility to radiotherapy exist within Canada, which, along with other sociodemographic factors, may lead to poorer oncologic outcomes. Further work is required to better understand how best to improve access to radiotherapy in Canada for regions with poorer access.

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Access to Radiotherapy Among Indigenous Populations in Canada

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Background: Indigenous populations in Canada exhibit higher rates of cancer incidence and mortality compared to non-indigenous populations. Radiotherapy is an important component of cancer treatment, but little information exists on access to radiotherapy among this population.
Objectives: To describe patterns of oncologic outcomes among the indigenous populations across Canada, and to explore the potential impact of accessibility to radiotherapy and other sociodemographic factors.
Methods: We conducted a univariate analysis to explore the relationship between age-standardized all-cancer mortality-to-incidence ratios (MIRs) from 2010 to 2012, and proportion of self-identified Aboriginals per health region in Canada. High multicollinearity was observed between the proportion of Aboriginals variable and other sociodemographic factors; therefore, a multiple linear regression model was not possible, and we stratified this variable into health regions with lower (≤20%) versus higher (>20%) proportion of Aboriginals. One-way analyses of variance and non-parametric Wilcoxon Method comparisons were conducted to explore differences between the two groups with regards to MIR and distance to radiotherapy centre, measured using GIS software.
Results: Health regions with a higher proportion of self-identified Aboriginals were significantly associated with higher all-cancer MIR in univariate analysis (r2 = 0.32, p < .0001). When stratified, health regions inhabited by ≤20% versus >20% of Aboriginals had significantly lower MIR (0.42 vs. 0.53, respectively; p < .0001) and shorter Euclidean distance to nearest radiotherapy centre (123km vs. 808km, respectively; p < .0001). However, in a recursive partitioning analysis examining both MIR and distance, health regions inhabited by >20% of Aboriginals had significantly higher MIR compared to those with ≤20%, irrespective of distance to nearest

radiotherapy centre ($p < .0001$ for centres <123km; and $p = .0001$ for centres >123km). For health regions with ≤20% of Aboriginals, distance did not result in a significantly different MIR ($p = 0.10$).
Conclusions: Regions inhabited by a larger proportion of indigenous populations are located further away from the nearest radiotherapy centre, but distance does not explain these regions' poorer oncologic outcomes. Further exploration and identification of other contributing factors to this population's high MIR is required, including the highly correlated sociodemographic variables of the health regions they inhabit.

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What Tools are Available to Assess National Comprehensive Cancer Programs for Low- and Middle-Income Countries? A Systematic Review

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Background: Cancer has become a major global crisis with a dramatic rise in incidence affecting the developing world. As national comprehensive cancer control programs (NCCP) develop in low- and middle-income countries (LMIC) to face this challenge, guidance is required on how to evaluate performance. An evidence synthesis is needed in order to identify and characterize relevant evaluation tools for NCCP in LMIC.
Methods: A comprehensive review was conducted to systematically identify and characterize tools to evaluate NCCP in LMIC. Four electronic database searches were undertaken: Medline, Embase, Global Health, and Cochrane. These were supplemented by hand searches of references from identified resources. The search was unrestricted as to include both qualitative and quantitative studies. Observational studies exploring metrics used to assess NCCP in LMIC and qualitative studies stating perceptions and national, international, or organizational experiences with cancer control assessment strategies were included. Furthermore, the search strategy did include High-Income Country to capture metrics and tools from developed countries applied to the LMIC setting. Tools published up to October 3rd, 2017 were included.
Results: A total of 1297 unique citations were screened for abstracts. Forty-two studies met eligibility criteria and were screened for inclusion. Data was extracted by using a standardized data extraction form developed for the purposes of this study. Out of the nine final studies identified, three were applicable to all countries globally, two to specific regions that included LMIC (Pan-European and Latin America), one was for a specific LMIC country (Angola), and only three were designed specifically for LMIC. When characterized according to evaluation of NCCP structure, process, and outcome, none covered all dimensions optimally. None of the tools have been validated.
Conclusions: A very limited number of publicly available tools exist to evaluate NCCP in LMIC. Given the limitations in available tools, further efforts are needed to augment the available resources, and to validate key elements of existing tools.

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Radiotherapy in South Asia

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Background/Objective(s): The purpose of the study was to assess radiotherapy infrastructure and related human resource capacity in the region. An effort was also made to identify future requirements of teletherapy units, radiation oncologists and medical physicists for the region.
Materials/Methods: In this study various resources used were: 1.DIRAC (https://dirac.iaea.org/) 2. A questionnaire based survey.3. Project meeting reports (IAEA). 4. Personal communications. The information is updated till Jan 2014.
Results: There are 414 radiotherapy centres in South Asia, ranging from 5 (Nepal) to 357 (India). Out of 613 Megavoltage teletherapy units in the region; there are 330 Linear Accelerators (LAs) and 283 Co-60 units. In Bangladesh, India, Nepal, Pakistan and Sri Lanka there are 13, 287, 3, 25, and 2 LAs respectively. The number of Co-60 units in Bangladesh, India, Nepal, Pakistan and Sri Lanka is 12, 231, 2, 26 and 11 respectively. For each million population, Bangladesh, India, Nepal, Pakistan and Sri Lanka has 0.16, 0.41, 0.19, 0.28, and 0.6 megavoltage teletherapy units per million of population respectively. There are nine stereotactic radiosurgery units in the region: one in Pakistan and 8 in India. Two intraoperative radiotherapy (IORT) facilities, 3 helical TomoTherapy units, and 4 robotic radiotherapy units are exclusively available in India.
Brachytherapy services are vital as cervical cancer is the commonest cancer in women in the region. There are over 250 brachytherapy units, mostly, High Dose Rate (HDR) units. There are 1387 radiation oncologists and 896 medical physicists in the region (Bangladesh: 128 and 28, India: 1138 and 778, Nepal: 16 and 9, Pakistan: 113 and 92 and Sri Lanka: 20 and 15). South Asia needs 2338 megavoltage teletherapy units, 706 HDR brachytherapy units, 4676 radiation oncologists and 2923 medical physicists by the year 2030.
Conclusion: For South Asian countries ensuring 1-2 megavoltage teletherapy units per million populations is a daunting task. This requires establishing many more radiotherapy centres, commissioning many megavoltage teletherapy units and building human resource capacity.

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African Radiation Oncology Network (AFRONET): An IAEA Pilot Telemedicine Project for Anglophone Africa

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Background: In some regions worldwide including Africa, the number of existing radiotherapy centres is insufficient, and the equipment are often outdated. Radiotherapy staff from the region have limited opportunities for training and up-grading their skills. Many centres work in isolation and the professionals have limited access to up-to-date published literature, international meetings, and expert opinion. As a consequence, cancer patients in these countries are treated following local policies which are not always in line with international standards of care. Telemedicine can be used for closing some of these gaps.
Objectives: The IAEA established Africa Radiation Oncology Network (AFRONET) in June 2012 as a pilot project for Anglophone African countries. The purpose of AFRONET is to strengthen the process of clinical decision-making in radiotherapy centres in Anglophone African countries. The secondary objective is residents' teaching and training.
Methods: AFRONET meetings are held once a month, using the WebEx platform. The agenda includes case presentations and often a lecture on pre-announced topic of common interest and relevance. Open discussion is encouraged to facilitate decision-making and/or as an educational exercise. After the meeting, copies of the presentations along with outcomes are circulated to the participants for comments, suggestions and ready reference.
Result: From June 2012 to Dec 2017, 64 monthly AFRONET meetings were concluded. A total of 154 cases were presented for discussion. The mean age of discussed patients discussed was 34 (2-84) years, which shows a trend to a younger patient population. The results will be discussed during the meeting.
Conclusions: The project is intended to test the feasibility of the platform to deliver Virtual Tumour Board (VTB) in the real conditions prevailing in African countries.
Based on the success of the project and gained experience, such VTB are being planned for other regions (Francophone Africa, Asia-Pacific, Latin-America), and in other languages (French and Spanish). To facilitate open access to AFRONET meetings, development of a dedicated website is under consideration. Contouring software with plan review capabilities is being included to further strengthen residents' training. Support has been sought from professional/academic bodies to make these web-based meetings more meaningful and impactful."

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Role of the African Organization for Research and Training (AORTIC) in Harmonization of Oncology Physician Training in Africa

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Background: Cancer is now a leading cause of death and disability in LMIC. In order to build sustainable cancer control programs in Africa, high standard local education of health professionals is of utmost importance. The majority of practicing oncology physicians trained outside the continent. Only a handful of African countries have oncology training programs.
Objectives: The African Organization for Research and Training in Cancer (AORTIC) has

emphasized that training should be done on the continent and must be context-relevant, taking into account local disease burden, cultural and societal factors.

Because of the similarities between African countries in terms of burden of cancer and population needs, collaboration across the continent can be a powerful instrument. AORTIC is playing a leading role in facilitating, structuring and sustaining this collaboration.

Methods: To this effect, the first African program directors meeting took place in Kigali, Rwanda, on November 8th, 2017 during the 11th biennial AORTIC conference. African trainees and several international program directors also attended.

Results: The group agreed to launch the first African program directors' group. The group will officially commence its activities in January 2018.

Some of the group activities will include:

1- Collect data and create a map of the landscape of the postgraduate physician training programs in Africa.

2- Optimize regionalization of training programs in order to address disparities in oncology training within the continent.

3- Create institutional agreements to share educational resources within the continent such as exchange programs that would afford opportunities for hands-on training in radiotherapy and chemotherapy delivery.

4- Collaborate with international educators and program directors to share resources including on-line material and face-to-face teaching to address faculty shortages.

5- Create a learning community of African program directors and educators to encourage research and exchange of ideas in education in order to optimize best practices in program development, implementations and evaluation, innovative approaches in curriculum sharing, accreditation and learner assessment.

6-Define career pathways and the set of competencies/skills that enable health professionals in LMIC to carry out multiple complex roles.

Conclusion: AORTIC is leading the efforts to harmonize and improve oncology physician training in Africa.

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Accreditation of Oncology Education in Low-and- Middle Income Countries: Perspectives of African Oncologists

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Background: There is an expansion of postgraduate oncology training programs in LMIC. Locally trained oncologists are expected to deliver high quality care. Accreditation is one of the essential regulatory mechanisms to ensure high-quality education. Accreditation systems are rarely standardized or applied in the majority of LMIC. The purpose of this study is to understand the perspectives of African Oncologists on the role of accreditation and adoption of global standards into oncology training programs

Methods: We developed a survey that addressed African Oncologists' perspectives of the role of accreditation. It included 187 standards from the WFME PGME standards, ACGME-I standards for hematology/oncology, and the Royal College of Physician and Surgeons of Canada medical oncology standards. A 3-point scale was employed for each standard: 1 = not important, 2 = important but not essential, 3 = essential

Results: The survey was sent to 79 physicians, 38 responded. 87% agreed that accreditation ensures quality of education. 100% agreed that it should involve an external review. 74% believe that accreditation is feasible in resource-constrained settings. 45% agreed it will not increase emigration of qualified doctors. 70% of oncologists favoured a Pan-African accreditation system. Data of 22 individuals who completed the survey in its entirety were analyzed for standards. 5 standards received the highest ratings of 3 from all respondents: life-long learning, professionalism and ethical principles, competence in chemotherapy delivery and management of toxicities. One standard (prior internal medicine training) received a low rating of < 2.0. The majority of standards had ratings between 2.6 and 2.94, indicating that African Oncologists believe most standards to be useful. Ratings < 2.6 were related to resource constraints such as having PET scans or exposure to clinical trial patients, or service expectations such restricting the number of patients the trainee can see in clinic.

Conclusions: The survey yielded information on African oncologists' views on assessment, workload, required resources, educational experiences and degree of knowledge exposure. Most African oncologists believe that accreditation ensures quality of education. Most of the standards were considered important. This data will be useful for developing and adapting oncology education accreditation standards in resource-constrained settings.

Abbreviations:

LMICs: Low- and middle-income countries. WFME: World Federation for Medical Education. PGME: Post graduate medical education. ACGME-I: American Council of Graduate Medical Education-International

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Acute-care Hospital Use Patterns Near End-of-Life for Cancer Patients Who Die in Hospital

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Background: Acute-care hospitals have a role in managing the needs of people with cancer when they are at the end-of-life; however, over-utilization of hospital care at the end-of-life results in poorer quality of life and can worsen the patient's experience. Early integration of comprehensive palliative care can greatly reduce unplanned visits to the emergency department, reduce avoidable admissions to hospital, shorten hospital stays, and increase the number of home deaths as well as improve the quality of life of patients with advanced cancer.

Objectives: To describe the current landscape of acute-care hospital utilization near the end-of-life across Canada and indirectly examine access to palliative care in cancer patients who die in hospital.

Methods: Data were obtained from the Canadian Institute for Health Information. The Discharge Abstract Database was used to extract acute-care cancer death abstracts. Data on intensive care unit (ICU) admissions include only facilities that report ICU data. The analysis was restricted to adults aged 18+ who died in an acute care hospital in 2014/15 and 2015/16 for nine provinces and three territories.

Results: In Canada (excluding Québec), 43% (48,987) of deaths from cancer occurred in acute-care hospitals, with 70% admitted through the emergency department (ED). In the last six months of life, 50% of cancer patients dying in hospital had a cumulative length of stay ranging from 17 to 25 days, depending on the province. Between 18.1% and 32.8% of patients experienced two or more admissions to the hospital in the last month of life. The proportion of cancer patients admitted to the ICU in the last 14 days of life ranged from 6% to 15%. Patient demographics (age, sex, place of residence) and clinical factors (cancer type) were often predictors of hospital utilization at end-of-life.

Conclusions: More adequate community- and home-based palliative and end-of-life care services need to be available for cancer patients to reduce reliance on acute care and enable patients to die at home.

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Efficacy of a Carrageenan Gel Against Transmission of Cervical HPV (CATCH): Interim Analysis of a Randomized, Double-blind, Placebo-controlled Trial

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Background: Carrageenan has been identified as a potent human papillomavirus (HPV) infection inhibitor in preclinical studies.

Objective: To evaluate the efficacy of a carrageenan-based lubricant gel in reducing the risk of genital HPV infections among sexually active women.

Methods: Between January 2013 and June 2017, 280 women aged 18 years and older were randomly assigned (1:1) to a carrageenan or a placebo gel to be self-applied every other day for the first month and prior to and following each intercourse during follow-up. Assessments were done at baseline and at 0.5, 1, 3, 6, 9 and 12 months. Sociodemographic, behavioral and sexual history data were collected using computer-assisted self-administered questionnaires.

We used Roche's Linear Array assay to detect and genotype 36 genital HPV types in self-collected vaginal samples. HPV types were categorized based on tissue tropism and oncogenicity: alphapapillomavirus subgenus 1 (low oncogenic risk), 2 (high oncogenic risk) and 3 (commensal). The primary outcome was incidence of a newly detected infection by an HPV type that was not present at baseline. Analyses were done by intention-to-treat. We computed hazard ratios (HR) and 95% confidence intervals (CI) using Cox models.

Results: Baseline and follow-up characteristics were well balanced between arms. The median follow-up time was 9.2 months (interquartile range: 2.6-13.2). 59 participants in the carrageenan arm and 78 participants in the placebo arm got infected by at least one new HPV type. The HR for the first occurrence of a new infection was 0.64 (95% CI: 0.45-0.89). A lower incidence was consistently observed for all alphapapillomavirus subgenera (HR range: 0.47-0.69). When considering all new HPV types acquired by each participant (not only the first infection), 139 infections occurred in the carrageenan arm versus 198, in the placebo arm. The HR was 0.66 (95% CI: 0.46-0.93) taking into account the correlated data structure.

Conclusion: Our trial's interim analysis suggests that using a carrageenan-based lubricant gel can reduce the risk of genital HPV infections of both low and high oncogenic risk in women. A carrageenan-based lubricant could be a useful adjunct to prophylactic HPV vaccines and a more affordable alternative for developing countries.

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