



Figure: Change in number of assisted deaths in countries and US states that have legalised these practices. The Netherlands and Belgium allow both euthanasia and assisted suicide. Switzerland and Oregon, USA, allow assisted suicide only. Raw data and sources are available in the appendix.

and Belgium, compared with Oregon and Switzerland. Yet data from the past 5 years suggest that the lack of legislation in Switzerland could also explain the higher frequency of assisted suicide, particularly since an increasing number of patients without terminal illness obtain permission for assisted suicide in Switzerland. By contrast, the lower frequency in Oregon might be explained by the requirement of a maximum life expectancy of 6 months and by the requirement that patients obtain a lethal dose from the pharmacy for auto-administration. On average, 36% of these patients in Oregon end up not using the lethal drug and die of their illness.³

Euthanasia is quickly approaching 5% of all deaths in the Netherlands, which is a higher proportion than in Belgium (although underreporting is suspected in Belgium).⁴ In 2016, Canada legalised euthanasia, and California regulated assisted suicide as in Oregon. In 2017, euthanasia already represented almost 1% of all deaths in Canada,⁵ whereas only 374 Californians died by assisted suicide (0.14% of deaths).

Legalising only assisted suicide with stringent procedural rules that exclude patients who are not terminally ill, as has been the case in Oregon, therefore seems to limit the number of assisted deaths and their increase with time. This hypothesis will be validated further when assisted deaths are legalised in more countries in the future.

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*Gian Domenico Borasio, Ralf J Jox, Claudia Gamondi
borasio@chuv.ch

Palliative and Supportive Care Service, Centre Hospitalier Universitaire Vaudois, CH 1011 Lausanne, Switzerland

- Gamondi C, Borasio GD, Limoni C, Preston N, Payne S. Legalisation of assisted suicide: a safeguard to euthanasia? *Lancet* 2014; **384**: 127.
- Regional Euthanasia Review Committees. Annual report 2016. March, 2017. https://english.euthanasiecommissie.nl/binaries/euthanasiecommissie-en/documents/publications/annual-reports/2002/annual-reports/annual-reports/RTE_annual_report_2016.pdf (accessed Feb 15, 2019).
- Oregon Public Health Division, Center for Health Statistics. Oregon Death with Dignity Act: 2017 data summary. Feb 9, 2018. <https://www.oregon.gov/oha/PH/PROVIDERPARTNERRESOURCES/EVALUATIONRESEARCH/DEATHWITHDIGNITYACT/Documents/year20.pdf> (accessed Feb 15, 2019).
- Cohen J, Diericckx S, Penders YWH, Deliens L, Chambaere K. How accurately is euthanasia reported on death certificates in a country with legal euthanasia: a population-based study. *Eur J Epidemiol* 2018; **33**: 689–93.
- Government of Canada. Medical assistance in dying. <https://www.canada.ca/en/health-canada/services/medical-assistance-dying.html> (accessed Feb 15, 2019).

Global health and cancer

Richard Horton (Sept 8, 2018, p 806)¹ hits the nail painfully hard on its head regarding the inexplicable indifference to cancer in low-income and lower middle-income countries (LLMICs). Non-communicable diseases, such as diabetes and hypertension, are easy to diagnose and low cost, effective

treatments are available; primary prevention of non-communicable diseases does not require medical interventions. By contrast, cancer treatment requires adequate diagnostic, pathology, and imaging services and surgical, medical, and radiation oncology capability which are often only available in a rudimentary form (sometimes not at all) in LLMICs, particularly in rural areas where most people live. Long distances to oncology clinics, serious financial limitations, and scarcity of oncologists and oncology nurses pose further obstacles. These enormous constraints might explain why the global health community has neglected cancer care, but these problems cannot be an excuse to do little or nothing.

In high-income countries, oncology is increasingly focused on targeted therapies, molecular diagnostics, and advanced imaging methods, which are not achievable in LLMICs because of their high cost, need for sophisticated equipment, and other impediments. Therefore, LLMICs need to develop their own affordable and feasible approaches to cancer detection, diagnosis, and treatment. The challenge for the global health community is to help LLMICs to develop clinical trials that can identify the most effective, practical, and affordable drug treatments and schedules, simple imaging (ultrasound), pathology diagnostics, and palliative treatments in low-resource settings to reduce suffering of all patients with cancer.

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Maarten C Bosland
boslandm@uic.edu

Center for Global Health and Department of Pathology, University of Illinois at Chicago, Chicago, IL 60612, USA

- Horton R. Offline: Why has global health forgotten cancer? *Lancet* 2018; **392**: 806.

Richard Horton¹ vividly points out the current and growing deficiency in global cancer care, and the relative inattention this problem receives compared with infectious diseases. Repeated

arguments against treatment include those he presented, with emphasis on prevention as the only current serious investment. Although meritorious, this approach is wholly inadequate. Imagine the outcry if that strategy were pursued in the developed world. What care is there for the millions of patients for whom prevention fails? Even though the common strategy of repeating surveys contributes additional data essential for an effective response, the process often makes the problem feel even more hopeless.

The solution to the deficit of global cancer care is a systematic approach to build expertise,² capacity, and capability on the ground using a sustainable model that recognises the mutually beneficial links among cancer, the other non-communicable diseases, infectious diseases, and health-care systems, while also producing economic benefit. Building on a Comment³ from *The Lancet Oncology* Commission on global radiotherapy, the International Cancer Expert Corps (ICEC) is establishing such a global collaborative programme to address cancer care with a complex expandable systems solution that involves building sustainable expertise in low-income and lower middle-income countries through twinning programme-based mentorship and technological innovation.⁴ ICEC's goal is to collaborate with various agency, government, and non-government efforts, each by itself useful, but which in aggregate present a greater opportunity to move beyond the current inadequate approach that seems resigned to the morally unacceptable conclusion that this human disaster is too difficult to solve.

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Lawrence Roth, *Eugenia C Wendling, C Norman Coleman, David A Pistenmaa, Donna M O'Brien nina.wendling@iceccancer.org

ICEC Board of Directors, New York, NY, USA (LR, DMO'B, DAP) and ICEC, Washington, DC 20036, USA (ECW, CNC)

- 1 Horton, R. Offline: Why has global health forgotten cancer? *Lancet* 2018; **392**: 806.
- 2 Rodin D, Yap M, Grover S, et al. Global health in radiation oncology: the emergence of a new career pathway. *Semin Radiat Oncol* 2017; **27**: 118–23.
- 3 Jaffray D, Knaul F, Atun R, et al. Global Task Force on Radiotherapy for Cancer Control. *Lancet Oncol* 2015; **16**: 1144–46.
- 4 Pistenmaa D, Dosanjh M, Amaldi U, et al. Changing the global radiation therapy paradigm. *Radiother Oncol* 2018; **128**: 393–99.

We welcome attention to the issues raised by Richard Horton¹ and agree that there has been greater emphasis on non-communicable disease (NCD) prevention and much less attention to their management, particularly in the case of cancer. But the picture is not overwhelmingly gloomy.

Global cancer control is evolving and is more nuanced than that reflected in the article. A growing number of countries are including early detection, treatment, and care services for high-burden cancers in their national health-care packages and national health insurance plans. In 2017, member states of WHO adopted a resolution on cancer control² at the World Health Assembly that includes recommendations to develop evidence-based protocols for cancer management and to develop centres of excellence supported by referral networks. WHO has already begun working on providing technical guidance to countries on cancer management, including in children, supported by the Union for International Cancer Control and other organisations. In early 2018, the Union for International Cancer Control launched its advocacy campaign Treatment for All to engage cancer organisations around the world to work closely with their ministries of health and other national partners to design country-specific strategies to improve the quality and coverage of cancer treatment and care services.

It is interesting that you have called cancer the "Cinderella of the emerging NCD movement". Rather than being a sad tale, Cinderella's story is of a young girl whose fortunes ultimately change for the better. Because of the

encouraging progress we are seeing, we do believe that cancer too is moving towards a much brighter future.

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Cary Adams, *Sonal Johnson johnson@uicc.org

Union for International Cancer Control, 1202 Geneva, Switzerland

- 1 Horton, R. Offline: Why has global health forgotten cancer? *Lancet* 2018; **392**: 806.
- 2 WHO. Cancer prevention and control: World Health Assembly resolution approved. May, 2005. <http://www.who.int/cancer/eb1143/en> (accessed Sept 19, 2018).

Excess mortality and cardiovascular disease risk in type 1 diabetes

We support the notion proposed by Araz Rawshani and colleagues¹ (Aug 11, 2018, p 477) that increased focus on management of cardiovascular risk factors is needed for individuals with type 1 diabetes. It is clear that multiple influences that contribute to this risk are not accounted for by traditional risk factors such as hyperlipidaemia, hypertension, and hyperglycaemia.

We believe that insulin resistance in type 1 diabetes could account for excess cardiovascular risk. Using gold-standard, clamp-derived measures, it has been established that individuals with type 1 diabetes have a greater degree of insulin resistance than do non-diabetic individuals.² This might be due to insulin receptor down-regulation, glucotoxicity, hyperandrogenaemia in females, and increased growth hormone secretion and action. Furthermore, within type 1 diabetes, those with a greater degree of insulin resistance have more coronary artery calcification.³

Metformin is an insulin-sensitising medication used as a first-line treatment in type 2 diabetes, and some evidence shows that it also improves insulin sensitivity in patients with type 1 diabetes.⁴ The UK Prospective Diabetes Study⁵ showed that metformin reduces the risk of