Article begins on page three of this document.

Title	Renewed cervical screening: what the early results tell us
-------	--

Authors:

	Title	First name	Mid initials	Last name	Postnom (eg, PhD)	Position1	Address1	Position2	Address2	Tel	Email
1	Prof.	David	C	Currow	BMed, MPH, PhD	Chief Executive Officer	1				David.currow@health.nsw.gov.au
2	Prof.	Sanchia		Aranda	PhD, MN, B App Sci	Chief Executive Officer	2				Sanchia.Aranda@cancer.org.au

Number of corresponding author:	1
Number of alternative corresponding author:	

Addresses:

	Institution	Postal address	City	State	Post Code	Nation
1	Cancer Institute New South Wales	P O Box 41	Sydney	NSW	1435	
2	Cancer Council Australia	Level 14, 477 Pitt Street	Sydney	NSW	2001	

Postal address of first corresponding author (if different from the institutional address given above)	
--	--

Primary Keywords [Office use only]	Environment and public health; Neoplasms
Secondary keywords [Office use only]	Mass screening; Uterine cervical neoplasms
Notes:	

Article details (press ctrl – 9 to enter details):

Office use

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1002/MJA2.50267](#)

This article is protected by copyright. All rights reserved

Article type	Editorial
Blurb	The renewed program delivers a more personalised program for women by applying risk stratification
Pullquote	

<i>Ms. Number</i>	mja19.00363.R1
<i>Medical editor</i>	Christine Gee
<i>Medical editor email</i>	cgee@mja.com.au
<i>Structural editor</i>	Paul Foley
<i>Structural editor email</i>	pfoley@mja.com.au
<i>Section/Category</i>	Editorial
<i>Strapheading</i>	Editorial
<i>Substrap</i>	

Elsevier – file data:

Filename for copyediting	cur_mja19.00363_ms.docx
Accompanying graphics	None
Stock images	cur_mja19.00363_im.eps cur_mja19.00363_im.jpg cur_mja19.00363_hs(1).eps cur_mja19.00363_hs(1).jpg cur_mja19.00363_hs(2).eps cur_mja19.00363_hs(2).jpg
Appendices	None

Office use – history:

Event	Date
Original submission received	18/04/2019

Event	Date
Accept	09/05/2019

Proof sent to author	
Proof returned by author	
Published (date format xx/xx/xx)	05/08/19
Issue	3
Vol	211
DOI	10.5694/mja19.00363
Journal	The Medical Journal of Australia
Original article DOI (for response)	

Renewed cervical screening: what the early results tell us

The renewed program delivers a more personalised program for women by applying risk stratification

An estimated 570 000 women were diagnosed with cervical cancer in 2018, and its incidence and mortality are particularly high in low and middle income countries.¹ In Australia, the incidence of cervical cancer has plummeted since the national screening program was introduced in the early 1990s.² More recently, the national human papilloma virus (HPV) vaccination program for teenage girls and boys was followed by a reduction in the proportion of women with high grade dysplasia and an increase in the age at which such pathology is detected,³ reflecting the positive health impacts of the program. The elimination of cervical cancer as a public health problem and the associated premature mortality is an exciting but realistic prospect.⁴

It is 51 years since the World Health Organization (WHO) adopted criteria for population screening programs.⁵ That these criteria remain valid after more than half a century is in itself remarkable, and they can still be applied even as our understanding of the pathophysiology of cervical cancer evolves and the technology for screening improves. Generating an acceptable test for detecting pre-invasive lesions, thereby improving survival for women with screen-detected cancers, is the crux of population screening.

The new national cervical screening program reflects an important shift in population-based screening in Australia, identifying women at risk of developing pre-invasive lesions with HPV DNA screening. This risk-based approach offers the opportunity to tailor the timing of subsequent screening. The study reported by Machalek and colleagues in this issue of the *MJA*⁶ helps re-affirm that the shift to the more sensitive HPV DNA test and a risk-based management algorithm is supported by the different rates of cervical abnormality associated with specific oncogenic strains of HPV. This personalisation of risk assessment builds on the more limited risk stratification (based solely on age) in the current national breast and bowel screening programs and the earlier cervical screening program.

In Australia, there are still marked disparities in the incidence and mortality of cervical cancer in different communities: 5-year survival among Aboriginal and Torres Strait Islander Australians is lower than for other women (54% v 70%), and for the most socio-economically disadvantaged women the incidence of cervical cancer is higher (9.1 v 6.0 cases per 100 000 women) and 5-year survival lower (61% v 79%) than for the least

disadvantaged.² Assessing outcomes for these communities is difficult on the basis of the demographic data collected by the cervical cancer program, but we know even less about those for women from diverse cultural backgrounds, women who have experienced sexual assault or domestic violence, and women in the LGBTIQI community.

The acceptability of Pap tests was a challenge for the previous national screening program. According to the 1968 WHO screening criteria, optimising the acceptability of screening has a positive impact across the community, especially among women with more restricted access to current models of service provision and, consequently, some of the poorest outcomes. In the new national cervical screening program, offering self-collection under supervision for never or lapsed screeners is a major step forward in improving the health of our community. Connecting with marginalised populations who have not engaged with Pap testing in the past through home testing is an immediate opportunity for maximising the benefits of the renewed national program.

The three national population screening programs (cervical, bowel, and breast cancers) have traditionally relied on engaging people who are at average risk. The new cervical screening program should be seen as an example for other areas in which improved understanding of pathophysiology and new technologies allow identification of cancerous and pre-cancerous conditions early enough to alter the subsequent course of the illness. A paradigm shift is needed in clinical domains in which there is evidence that innovative new technologies can fulfil the WHO criteria for population screening, especially in sub-populations at higher risk of cancer and cancer-related death: hepatocellular cancer in hepatitis B virus carriers with cirrhosis and people with long term high alcohol intake; lung cancer in current and former heavy smokers; women at the greatest risk of breast cancer, whose needs are not systematically met by the national breast screening program; and, in the foreseeable future, people with ovarian, prostate, and gastric cancers.

We ultimately need to move to personalised screening schedules for each person at risk of these cancers according to algorithms that incorporate personal history (including lifestyle factors), the initial screening findings, and genetic factors. Micro-simulation modelling offers a new approach to planning the risk-stratified, population-level screening by incorporating all risk elements.⁷ The ability to balance risks and benefits at this level of detail is the ultimate goal for population screening, but is not in sight yet for most cancers. We must ensure that future research efforts in epidemiology, pathology, clinical and genetics are coordinated so that screening can reach its next level of maturity.

Competing interests: No relevant disclosures.

Provenance: Commissioned; externally peer reviewed.

Author details

David C Currow FAHMS¹

Sanchia Aranda AM²

¹ Cancer Institute New South Wales, Sydney, NSW.

² Cancer Council Australia, Sydney, NSW.

David.currow@health.nsw.gov.au

doi: 10.5694/mja19.00363

See Research (Machalek)

References

- 1 World Health Organization. Cancer. Cervical cancer. Undated. <https://www.who.int/cancer/prevention/diagnosis-screening/cervical-cancer/en> (viewed Apr 2019).
- 2 Australian Institute for Health and Welfare. Cancer in Australia 2019 (Cat No. CAN 119; Cancer series no. 123). Canberra: AIHW, 2019.
- 3 Garland SM, Kjaer SK, Muñoz N, et al. Impact and effectiveness of the quadrivalent human papillomavirus vaccine: a systematic review of 10 years of real-world experience. *Clin Infect Dis* 2016; 63: 519-527.
- 4 Hall MT, Simms KT, Lew JB, et al. The projected timeframe until cervical cancer elimination in Australia: a modelling study. *Lancet Public Health* 2019; 4: e19-e27.
- 5 Wilson JMG, Jungner G. Principles and practice of screening for disease (Public Health Papers No. 34). Geneva: World Health Organization, 1968. http://whqlibdoc.who.int/php/WHO_PHP_34.pdf (viewed Mar 2019).
- 6 Machalek DA, Roberts JM, Garland SM, et al. Routine cervical screening by primary HPV testing: early findings in the renewed National Cervical Screening Program. *Med J Aust* 2019; 211: 000-000.
Velentzis LS, Smith MA, Simms KT, et al. Pathways to a cancer-free future: a protocol for modelled evaluations to maximize the future impact of interventions on cervical cancer in Australia. *Gynecol Oncol* 2019; 152: 465-471.

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:

Currow, DC;Aranda, S

Title:

Renewed cervical screening: what the early results tell us

Date:

2019-08-01

Citation:

Currow, D. C. & Aranda, S. (2019). Renewed cervical screening: what the early results tell us. MEDICAL JOURNAL OF AUSTRALIA, 211 (3), pp.110-+. <https://doi.org/10.5694/mja2.50267>.

Persistent Link:

<http://hdl.handle.net/11343/286125>