

Public health capacity development through Indigenous involvement in the Master of Applied Epidemiology Program — celebrations and commiserations

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Introduction

The Master of Applied Epidemiology (MAE) program at the National Centre for Epidemiology and Population Health at The Australian

National University places scholars in field-based organisations with the aim of developing expertise in applying epidemiological methods to health problems and systems, strongly empha-

sising prevention, intervention, evaluation and policy development. The aim of the MAE is to improve health and wellbeing in Indigenous and non-Indigenous communities across Australia by means of five overarching objectives: strengthen national and regional public health capacity to respond to emerging and current disease threats; maintain and enhance rigour in surveillance and outbreak and investigation to invigorate disease control systems; develop sustainable and flexible communication and networking capacity in disease control practice; contribute to local and national health policy development; and develop a national capacity to investigate and report upon disease related to environmental factors (Hall et al. 2010). Since its inception in 1991 the MAE has developed scholars' skills and confidence and provided opportunities for potential future leaders in national and global disease control and public health.

In 1998 the inaugural Indigenous ('Indigenous' is used to refer to anyone who identifies as Aboriginal and/or Torres Strait Islander) MAE commenced, addressing the documented inequality at that time of Indigenous people in the public health workforce with professional qualifications — 49 percent of Indigenous people in health-related occupations had a diploma or certificate, of whom only 3 percent had a bachelors' degree, compared with 75 percent of the overall public health workforce. Clearly, an equivalent level of qualifications was necessary in order for Indigenous health professionals to access similar vertical and lateral employment mobility (Sibthorpe et al. 1998).

The MAE has been a major contributor to Australia's overall public health workforce. Its genesis, impacts and legacy — and its imminent demise — have been discussed elsewhere (Douglas et al. 2010; Kelly 2011). We argue that another major legacy of the MAE results from its involvement with Indigenous scholars and associated stakeholders. We discuss the personal and professional transformative impacts of that involvement — both for those Indigenous MAE scholars (we define 'scholars' as 'all graduates and current students') whose high-level epidemiological, methodological and advocacy skills continue to impact at multiple levels of the public health system, and for the public health system, per se, in Australia and internationally.

Methods

Data collection

In late 2009, using MAE administrative records and assisted by snowballing techniques to verify current contact details, notification was emailed to all Indigenous MAE scholars to advise of a forthcoming survey aimed at documenting their experiences, contributions and career outcomes. The survey, conducted throughout January and February 2010, explored issues regarding each respondent's pre-, during- and post-MAE experiences. The survey also explored self-reported and documented contributions to public health resulting from the training and discipline gained through those experiences while enrolled as an MAE scholar. It allowed respondents' participation electronically (using the web-based SurveyMonkey (2007) software) or by telephone interview. Where the latter occurred, to ensure consistency of questions and interpretation of answers, two Indigenous team members (JG, SF) interviewed respondents alternately, providing transcripts for verification.

Respondents were also asked to provide a list of their peer-reviewed publications and presentations since enrolment. Other data sources utilised were MAE administrative data, graduates' bound volumes, previous surveys, and specifically targeted interviews and written materials.

Data analysis

MAE administrative data and policy documentation were analysed to calculate numbers of enrolments, completions, scholars and associated policy decisions. A list of scholars' MAE projects (totaling more than 120) was analysed and organised into common themes; indicative examples of the scope and scale of the completed projects are reported. A list of all placements, project settings and study populations was analysed and organised by MAE course requirement; representative samples were selected and are reported to illustrate the breadth of coverage. Open-ended responses were analysed thematically; illustrative quotes were modified to maintain anonymity and are reported to highlight key themes. A PubMed search using the individual scholar's name was also conducted, limited to articles related to an MAE project and published during candidature or

within five years of graduation where the scholar was a first or subsequent author.

Ethical approvals

Ethical approvals were received from AIATSIS and The Australian National University Human Research Ethics Committees. All respondents provided informed consent.

Results: MAE administrative data

The inaugural 1998 Indigenous intake comprised eight scholars. It was envisaged that similar numbers would enrol in ensuing years, but for reasons related to numbers of eligible applicants this was not possible. Cohorts of six, five, four and four scholars respectively were enrolled in the Indigenous MAE annually from 1999 until 2002. A decision taken prior to the 2003 intake coalesced the Indigenous and general MAE streams, incorporating two Indigenous-designated positions annually. In total, there have been 42 Indigenous Australian enrolments, comprising 12 who did not complete and 30 (27 graduates plus three current enrolments at time of survey) scholars whose administrative data were examined (Table 1).

Indigenous community experience was a prerequisite for candidature. Although most candidates had qualifications in nursing or health sciences, scholars had diverse educational backgrounds including sociology, English literature, archaeology, management and international studies. Approximately 66 percent had a bachelor’s degree, others a diploma or graduate diploma.

Indigenous MAE scholars’ field placements have primarily been in the eastern states and south Western Australia (Figure 1).

This evident concentration of urban placements does not reflect the geographic diversity of project settings, which include national, urban, rural and regional locations. Study populations were also diverse, including Indigenous whole-of-community hospitals; health service providers; prisoner, adult, children, male, female and marginalised groups; and a variety of cultural and social groups (Table 2).

Results: Indigenous cohort survey

Contribution through employment

Thirteen eligible scholars (43 percent) responded to the survey. Not everyone answered every question, as was their prerogative; one [JG] is a co-author of this paper (therefore only her administrative data were analysed) and three were enrolled during the survey period (therefore questions relating to post-MAE endeavour were not applicable). Ten graduates responded to questions regarding their post-MAE endeavours. While some, we suggest, were simply self-deprecating rather than objective, most responses attributed a high level of relevance of the MAE to subsequent professional achievements. Two respondents lamented that epidemiology was not more prominent in terms of their current work. Exhibiting that self-deprecation, one respondent suggested that this was simply because they

Table 1: Indigenous MAE enrolments, 1998–2010

Cohort year	Enrolments	Completions	Scholars
1998	8	8	–
1999	6	4	–
2000	5	0	–
2001	4	2	–
2002	4	3	–
2003–2009 ¹	14	12	–
2010	1	–	1
Totals	42	29	1

¹ Since 2003 the MAE program has included two Indigenous-designated positions annually.



Figure 1: Indigenous MAE scholars’ field placement locations

Table 2: Illustrative selection of research topics and study populations**Rapid response public health investigations**

- Food- and water-borne outbreaks — for example, gastrointestinal illness, salmonella and campylobacter outbreaks in various settings and communities
- Person-to person transmission outbreaks — for example, conjunctivitis, post-strep glomerulonephritis, scabies and skin sores in remote communities
- Non-communicable disease cluster outbreaks — for example, vulvar cancer, diabetes risk assessment
- Zoonotic outbreaks — for example, equine influenza
- Vaccine-preventable disease outbreaks — for example, measles, varicella and hepatitis B
- Sexually transmissible infections — for example, HIV risk assessment
- Vector-borne disease — for example, malaria risk assessment in Far North Queensland

Evaluation of surveillance systems and health services

Evaluations were undertaken at the national, state and local levels in, for example, public health units, remote and urban Aboriginal community-controlled organisations, prison settings, hospital settings

- Infectious diseases — for example, otitis media, hepatitis A, B and C, invasive pneumococcal disease, acute rheumatic fever, gonorrhoea, rubella, dengue importations
- Non-communicable diseases — for example, cervical cancer, bowel cancer, hearing loss, sudden infant death syndrome, injury, diabetes, asthma
- Other — for example, Indigenous status identification, Indigenous birth and mortality registration, health information systems, social health risk factors during pregnancy, peri-natal data, blood-borne viruses and sexually transmissible infections, cancer support services, health and wellbeing, midwifery notification

Analysis of public health data to inform policy and practice

- Infectious diseases — for example, hepatitis A, skin infections, HIV/AIDS, infant diarrhoeal disease
- Non-communicable diseases — for example, pregnancy and peri-natal health outcomes, breast cancer, stroke, Indigenous paediatric respiratory programs, injury, cardiovascular disease, diabetes hospitalisations
- Behavioural risk factors — for example, tobacco and alcohol use and prevalence of sexually transmitted infections, maternal alcohol use and child physical and psychological development, oral health, HIV in the gay community
- Health programs and outcomes — for example, co-ordinated care, patient default, cervical cancer screening, needle and syringe programs, Indigenous childhood mortality, postnatal health, socio-economic status

MAE scholar-led applied research projects

Conditions and services researched included, for example, alcohol-related injury; diabetes services and clinical outcomes; peri-natal hepatitis B; scabies control; cardiovascular rehabilitation; a range of behavioural risk factors (e.g. smoking, sexual behaviour, petrol sniffing); Indigenous identification in hospital settings; food safety; asthma, antenatal care, vaccination programs, mental health services, women's health services; evaluation of the impact of forcible removal of Aboriginal children from families or homelands due to government policies and practices.

were not utilising epidemiological skills *directly*. Two others did not perceive of their work during- or post- MAE as impacting on public health in Australia or internationally, while others perceived that most impact had been domestic, primarily on Australian Indigenous peoples. Respondents indicated that collaborations on epidemiological studies with other health researchers since graduating

had resulted directly from their MAE experiences. Largely, those contributions reverberated at multiple levels, as demonstrated by one respondent:

The [Indigenous organisation] I worked for lobbied successfully for [appropriate anti-biotic therapy]...We won [an] Award for innovative research. [I also worked for a

mainstream organisation]...based on developed skills sets derived from [the] MAE, we were able to put together the first National Guidelines around the detection and management of [disease and] lobbied government to fund a...national co-ordination of Indigenous [disease]...

All current work roles of respondents were health related: research institutions were most frequent employers, where skills being utilised included epidemiology, research methods, teaching, writing, management and mentoring. Graduates were pursuing various careers, including in research management positions, epidemiology, post-graduate study and public health policy analysis. Most graduates had multiple roles, as expressed by one respondent:

[I am] studying full-time doing a PhD; I am an Adjunct Lecturer [at the] Indigenous Health Centre with [Name] University; I have formed a consultancy company...through which I am...working with the Aboriginal Health Council of [State]; I am also employed as a Senior Research Officer at [Institution].

Post-MAE employment roles included working with Aboriginal communities, in community-controlled health organisations at national, state and local levels, and in other Indigenous settings; three worked in non-Indigenous organisations; and two had contributed to overseas research. Respondents remarked positively about the MAE's impact on them personally, as expressed by one — 'people are always impressed when I say, "I did the MAE"' — as well as its reputation more broadly, as expressed by another — 'Everything done since the MAE is because of the MAE!' Most believed that the MAE was 'very relevant' to their post-MAE activities, as expressed by yet another: 'I learnt how to do work in the research area — it really paid off!'

Contribution to scholarship

Indigenous MAE scholars have authored or co-authored more than 70 peer-reviewed publications and more than 100 conference presentations since enrolment. These numbers capture *all* contributions and all Indigenous scholars, not just survey respondents, and not just those specifically related to work completed during MAE

candidature. They include one contributing book author and 27 peer-reviewed publications directly emanating from projects completed during enrolment and published within five years of candidature (see Appendix). Twelve Indigenous MAE graduates (41 percent) have pursued health-related doctoral studies, comprising five completions and seven current enrolments.

Overall, respondents believed the MAE had contributed greatly towards their professional development, referring to peer-reviewed publications, award nominations, curricula development and overseas research — including, for one, a prestigious Fulbright Scholarship. Some had also made contributions not specifically in Indigenous health: for example, although Indigenous health research was the catalyst, one respondent's contribution benefits Indigenous *and* non-Indigenous health research by enabling legislative change for data linkage (Lovett et al. 2008).

Respondents' reflections on the overall MAE experience were mixed, though largely positive, as captured by several comments:

Positive experiences were meeting some great people and making some great contacts with people who mostly understand the bigger picture on Indigenous Health issues.

An excellent program. I hope that it continues. Many of the people I know of personally and professionally who completed the course are making important contributions to public health.

One respondent felt that Indigenous health issues should have more prominence in the MAE curriculum, making the point that non-Indigenous MAE scholars would benefit from being placed in Aboriginal health settings.

My MAE experience was rewarding professionally and personally. Graduating from the program with a Masters exceeds all expectations both negative and positive! I enjoyed the highs and learned from the lows. The negatives were that there were not enough Indigenous health issues in the program. It was frustrating at times trying to give these issues an important part of the discussion of Australian population health concerns. They really need to be reviewed and re-worked into the MAE program. Non-Indigenous MAEs

should also be encouraged to be placed in Aboriginal health settings for all or part of their MAE training.

Much of the ‘negative’ feedback centred around respondents’ Indigenous identity and an associated perceived lack of credentials for undertaking such a course of study. Others reflected on self-doubts, but this was balanced with a recognition of the resilience required (and acquired) through being part of a national program aimed at building workforce capacity in the Australian health workforce, as illustrated in the following three responses:

A negative was that I always felt as though I was not really good enough to be amongst those people...that I only had the placement because I was Aboriginal. A positive was in gaining the skills provided by the program I could make better sense of things that were presented to me and I was able to pull apart the contents to better interpret what I was reading.

I had moments when I thought I might pull out...We were told when started that we would find it the hardest thing we ever did. What made you not pull out...I just worked through the processes...and I realised I had to keep going. My own maturity made me realise I had to do this, even though there were certain obstacles, mentally physically and emotionally, but I overcame those.

The course was great for me and I think others. I often think its impact has been underestimated, probably because black fellas aren’t very good at talking themselves up...I think It’s a cultural thing. Many of the graduates I’ve spoken to have encountered lateral violence/tall poppy syndrome/internalised oppression from peers. I think the ‘stepping up’ and getting a post grad qualification is still new in our communities and Indigenous graduates face a different post MAE experience to their non-Indigenous counterparts. I’m not sure how well prepared people are for this.

MAE ‘success’ elements included its flexibility in terms of scholars being able to remain in their current location for their field-based placement, while for others it was the flexibility of being able

to move to another location in order to take up that field-based placement. A supportive cohort of Indigenous and non-Indigenous fellow scholars, and being surrounded by like-minded Indigenous and non-Indigenous alumni, staff and mentors, as well as the scholarship stipend, were also cited as reasons why the MAE model was seen as successful by respondents. The MAE stipend, which is comparatively generous, was designed to attract mid-career, mature-aged candidates who could otherwise not afford to be full-time students.

Discussion

The future of the MAE is unclear due to cessation of the overarching program through which it is funded, the Public Health Education Research Program (Douglas et al. 2010). This is despite several compelling arguments for its continuation: for example, the *National Advisory Group on Aboriginal and Torres Strait Islander Health Information and Data: Strategic plan 2006–2008* recognised the need to develop a stronger Indigenous workforce skilled in collecting, assembling, analysing, interpreting, disseminating and communicating Indigenous health statistics (AIHW 2006); a Commonwealth-commissioned review recommended improved workforce and research capacity for Indigenous Australians, specifically in areas such as epidemiology and bio-security (Australian Government 2005); a 2010 review by independent experts including an Aboriginal public health academic concluded that the MAE was of a high standard, its objectives remain valid, and it was still necessary in the Australian context to support the public health workforce (Hall et al. 2010); and a 2009 National Training Award from the Australian Learning and Teaching Council (Australian Government 2005).

Our research shows that an important legacy of the MAE, because of its commitment to and support of Indigenous scholars, has been its contribution to public health through a multitude of epidemiological projects. Moreover, for many of the Indigenous graduates, the MAE has been a platform for further postgraduate study, notably in the form of doctoral studies. Importantly, an Indigenous person trained in a ‘mainstream’ discipline such as the MAE ultimately contributes not only the skills and knowledge gained through

that particular training, but he or she also brings a suite of cultural knowledge and alternative perspectives as an Indigenous Australian to that discipline — invaluable in terms of the Australian Government’s strategy to ‘close the gap’ in disparities between Indigenous and non-Indigenous health status. In terms of its impact on Australian public health generally and Australian Indigenous public health more specifically, the MAE’s legacy results from the cumulative effects within individual scholars of the confidence it has instilled and the networking and experiential learning it has enabled. As scholars have demonstrated, that individual-level legacy has reverberated at multiple levels — in the Indigenous community(ies) and the wider Australian community at national, sectoral and local levels — in the management of health systems and data collections, through improvements in chronic and infectious diseases, and through dissemination of their research.

A study limitation was our inability to reach the 17 individuals who did not participate in the survey or the 12 who did not complete the MAE. Attempts using snowballing methods to reach both these groups of people were unsuccessful. We speculate that overburden from the multiple roles and responsibilities that many are currently engaged in, as evidenced through feedback from other respondents, may have prevented some from participating. Anecdotal evidence suggests reasons for non-completion of the MAE included alternative employment prospects and that it did not align with individual expectations. Despite this, we proffer that the MAE Indigenous graduates have impacted significantly on Australian public health generally and Indigenous public health in particular.

The MAE has greatly increased and enriched Australia’s Indigenous epidemiological workforce and has been uniquely effective in developing Indigenous research careers. In that context its value derives from its being a discipline- and placement-based applied learning model, occurring within and between cohorts of Indigenous and non-Indigenous scholars who are enabled to interact with other Indigenous and non-Indigenous peers, experts and mentors with whom they may not have otherwise had contact. At multiple levels, the impact of the MAE on Australian public health, because of its involvement with

Indigenous scholars and associated stakeholders, has been remarkable. Its contribution to the development of Australian Indigenous epidemiologists and researchers is cause for celebration, and should be acknowledged not simply as a moral goal, but as an innovative strategic goal. The imminent demise of the MAE is regrettable, not least because of its achievements in terms of developing the Indigenous epidemiological workforce. For that reason, we commiserate its passing with everyone who has hitherto had involvement, as well as potential scholars and associated stakeholders who may have hoped to enjoy experiences and outcomes similar to those we have described.

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APPENDIX

Peer-reviewed articles (n=27) and book contributions (n=1) by Indigenous MAE scholars during candidature or within five years of graduation (names of Indigenous MAE scholars are bolded and italicised)

Adams, K, T Dixon and JA Guthrie 2004 ‘Are you Aboriginal and/or Torres Strait Islander? Improving data collection at BreastScreen Victoria’, *Australian and New Zealand Journal of Public Health* 28(2):124–7.

Adams, K, T Dixon and JA Guthrie 2004 ‘Evaluation of the Gippsland Regional Indigenous Hearing Health program, January to October 2002’, *Health Promotion Journal of Australia* 15(3).

Brown, A, W Walsh, **T Lea** and A Tonkin 2005 ‘What becomes of the broken hearted? Coronary heart disease as a paradigm of cardiovascular disease and poor health among Indigenous Australians’, *Heart Lung Circulation* 14(3):158–62.

Campbell, S and S Brown 2004 ‘Maternity care with the women’s business service at the Mildura Aboriginal Health Service’, *Australian and New Zealand Journal of Public Health* 28(4):376–82.

Eades, S, AW Read, FJ Stanley, **FN Eades**, D McAullay and A Williamson 2008 ‘Bibbulung Gnarnep (“solid kid”): Causal pathways to poor birth outcomes

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