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Establishing the value of Indigenous eye health programs: health needs, economic priority and performance assessment approaches

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Abstract

Objectives. The aim of this paper was to compare three different approaches that are used in support of additional funding of health programs, using Indigenous eye health programs (IEHPs) as an example. These approaches are Heath and Health Care Needs, Economic Priority (Value for Money) and Conformity with Health Services Performance Standards.

Methods. A review of relevant literature was conducted to identify relevant benchmarks and assess IEHPs.

Results. In terms of health needs, vision loss is the fourth highest contributor to the Indigenous health gap. Additional funding for Indigenous eye treatment services to remove the gap is estimated at A\$28.1 million per annum. As an economic priority, IEHPs (specifically for refractive error, cataract, diabetic retinopathy and trachoma) demonstrate excellent value for money and compare favourably with other better-researched health programs. Evaluation of health performance measures indicated that IEHPs also perform well, as judged by Australian performance standards for health services generally and Indigenous health services more specifically, the later involving local delivery, including care coordination through Aboriginal-controlled community health services.

Conclusion. The value of IEHPs was demonstrated using all three approaches. Different approaches are likely to be more or less persuasive with different audiences. The application of these approaches is relevant to other health programs.

What is known about this topic? Supporters of additional funding for health programs frequently use the impact of this additional funding on the health and health care needs of the affected populations and individuals. Indigenous Eye Health programs are considered for illustrative purposes. This argument is not necessarily persuasive to funders of health programs.

What does this paper add? This paper demonstrates that two further approaches, namely Economic Priority and Conformity with Health Performance Measure Standards, both demonstrate good arguments in support of additional funding and that these outcomes may be more persuasive to funders of health programs.

What are the implications for practitioners? Practitioners are able to harness additional approaches with a higher likelihood of success of submissions for additional funding for the program they are promoting.

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Introduction

It has been estimated recently that vision loss is the fourth highest contributor to the substantial health gap between Indigenous and non-Indigenous Australians.¹ The Roadmap to Close the Gap for Vision project (hereafter The Roadmap) explores the reasons for this situation and presents a review of health service

provision with the aim of developing a model of eye care based on health needs for Indigenous Australians, the majority of whom (approximately two-thirds) live outside of major cities.^{2,3}

Forty-two recommendations across nine domains of activity are presented in The Roadmap with the goal to 'Close the Gap for Vision'. These recommendations were formulated following consultation with Indigenous community members, the Aboriginal community-controlled sector, eye health professions and industry, the health sector, non-governmental organisations, research groups and Commonwealth and jurisdictional governments.

However, as is well known, government funding of health programs, although influenced by community need, is also influenced by other factors such as patient demand, peak body advocacy and cost. In addition, there are many competing needs in the healthcare sector, so it is difficult to know whose needs should have priority for funding.

Health economists have also questioned whether health needs assessment (HNA) is the most appropriate way to establish funding priorities.⁴ Instead, they argue that the key concept is that the programs resulting from this funding should reflect not the demonstrable needs or gaps in services, but rather their ability to produce demonstrable improvements in health and do so efficiently. While acknowledging the importance of effectiveness and cost-effectiveness (efficiency), it is worth noting that these are only two of the criteria by which health services performance is judged. Other criteria include, for example, accessibility, continuity of care, safety, equity and quality. Health may also have a different meaning among Indigenous people embracing concepts of community gain and cultural safety.⁵

The aim of this article is to establish the value of Indigenous eye health programs (IEHPs) using not only the health and heath care needs approach, but also the economic priority and performance standards approach using all relevant benchmarks. The purpose for doing so is to strengthen the argument for their value and eventually their 'translation into funding' by government. The overall approach, it is argued, is relevant for programs other than IEHPs.

Methods

A search of the relevant literature so as to best define and describe the conceptual basis for understanding and determining the needs and care needs approach, as well as the economic priority approaches when applied to health programs, was conducted. This included how this would be suitable for Indigenous Australians. The economic priority for expanded funding of IEHPs was then assessed focusing particularly on their Value for Money and how this compares with the Value for Money of other important health programs. These performance measures (effectiveness and cost-effectiveness) were used alongside several others to assess whether these (proposed) expanded IEHPs performed well against both the Australian National Health Performance Framework and the Aboriginal and Torres Strait Islander Health Performance Framework. This study is entirely a desktop exercise and ethical consent was not necessary. The Roadmap on which this study is based received ethical approval from the Human Research Ethics Committee at The University of Melbourne, as well as from many Indigenous health agencies and organisations and several government departments.

Results

Health needs assessment

HNA is an essential tool to inform the commissioning and planning of services. It can be defined as a systematic method of identifying the public health, health and social care needs of a population, and making recommendations for changes to meet these needs.⁶ The term 'need' is used in different and varying contexts. Bradshaw⁷ identifies four important descriptions of these usages, as follows:

- Normative need, based on professional judgement (such as the need for medical treatment)
- Felt need (or demand), which comprises individual's perceptions of variations from normal health
- Expressed need, which can be the vocalisation of need or the extent to which people use services
- Comparative need, based on judgements by professionals as to the relative needs of different groups.

It is important to distinguish between the need for health and the need for health care. The former term includes health problems where there is no realistic or available treatment, and which therefore should not inform the planning of healthcare services. For the purposes of HNA, need is assumed to exist when there is an effective and acceptable intervention, or the potential for health gain (or benefit more generally).⁶ This may be described as 'interventionist need'.

Stevens *et al.*⁸ describe three approaches to the conduct of HNA: epidemiological, comparative and corporate. The last approach is based on eliciting the views of stakeholders such as professionals, patients and service users, the public and politicians on what services are needed.

As an illustration of the epidemiological approach, the number of individuals in the population with a condition may be estimated. There is then the option of expressing the population-wide burden of disease in terms of disability-adjusted life-years (DALYs) lost. In turn, DALYs may be monetarised based on the accepted financial value of one DALY lost within that particular society. This can be added to other healthcare costs (avoiding double counting) to estimate the overall cost of the illness to that society. Sometimes the cost of new or expanded programs to remove the gap between needs and current provision is estimated. Such an analysis showed that, in 2004, the total cost of vision loss in Australia was A\$9.85 billion and this had increased to A\$19.6 billion in 2009.^{9,10}

Little work has been done in conceptualising the meaning of health needs among Indigenous Australians.^{5,11} However, the dimensions of health benefit from an Indigenous perspective have been identified as follows:

- individual health gain covering empowerment, emotional wellbeing and spiritual wellbeing
- community health gain covering internal relationships (e.g. development of bonding as well as social policies and institutions affecting health, wellbeing and sustainability)

enous populations, and access

 cultural security, judging whether interventions were informed by Indigenous knowledge, were an appropriate response to cultural differences and values and facilitated strong partnerships between providers and the Indigenous community, as well as providing employment for Indigenous workers.⁵

Health needs in Indigenous eye health

Vos and Mitchell have estimated the burden of disease of Indigenous vision loss using modelling from data derived from the National Indigenous Eye Health Survey.¹ They estimated that 2278 prevalent years of disability (YLD) were lost by Indigenous Australians in 2003. Of the 2278 YLD, 1966 YLD represented the health gap between the Indigenous and non-Indigenous population due to vision loss. This constituted 10.8% of the non-fatal health gap for all causes (3.5% for fatal and non-fatal health gaps combined). Calculated in this way, vision loss was the fourth highest contributor to the health gap after ischaemic heart disease (8169 YLD), diabetes (6833 YLD) and road traffic accidents (1996 YLD).

The Roadmap undertook a detailed exercise to estimate the gap between needs and existing service provision for three very common eye diseases or conditions in Australian Indigenous people, namely refractive error, cataract and diabetic retinopathy.² This relied on two sources of data. The first was national and regional data from the National Indigenous Eye Health Survey for the prevalence of each eye disease or condition. From these data it was possible to estimate that large numbers of eye care services are needed for a population of 10 000 Indigenous Australians aged over 40 years overall for a 1-year period (see Table 1).² The second source of data was current service provision for national and regional Indigenous eye health care (Medicare and hospital inpatient and outpatient data).^{12,13}

A detailed costing exercise was then conducted to estimate the extra local treatment funding required to meet this gap. This was estimated to be A\$28.1 million funding per annum (diabetic retinopathy A\$13.7 million; cataract A\$10.8 million; refractive error A\$3.5 million). These included capped and uncapped costs for both Commonwealth and state and territory governments, as well as A\$13.3 million for local eye care coordination of services. This was on top of A\$17.4 million per annum currently being provided by all governmental jurisdictions.¹⁴

Economic priority for additional funding of health programs

The aim of economic priority setting (evaluation) is to ensure that the health benefits resulting from health care are maximised and that the opportunity costs of health care are minimized.^{3,15} This is done by comparing health care interventions in terms of health gains produced for resources spent.

Some health economists are critical of the HNA approach because some conditions with great need may not be very amenable to treatment or prevention, or may have high costs. Consequently, they argue that prioritising healthcare services on the basis of need may lead to the inefficient use of resources, subsequently resulting in high opportunity costs.^{4,15}

The priorities established by HNA are likely to be different from those established through economic evaluation. The former favours the treatment of illnesses such as ischaemic heart disease, which have major burden of disease impacts. This may conflict with the results of economic evaluations. For example, Donaldson and Mooney make the point that foot problems are unlikely to rank high in society's list of health care needs, yet chiropody represents good value for money in terms of health gains relative to extra resources spent.⁴

However, estimating value for money (cost per DALY) for the very large numbers of programs and services that constitute the health sector and that are aimed at both whole populations and subpopulations is self-evidently no small undertaking. Several workers have begun this work.^{16,17} The Assessing Cost-effectiveness in Prevention (ACE-Prevention) project makes a major contribution by calculating costs per DALY for each of 150 prevention interventions, including ones relating to Indigenous health.⁴ Conclusions were drawn not only on the basis of cost per DALY rankings, but also other policy-relevant considerations, such as acceptability, feasibility and equity (second-stage filters).

Economic priority for additional funding of IEHPs

It is worth first considering whether the methodology for the estimation of cost-effectiveness should be modified in any way in recognition of the special circumstances of Indigenous people and the magnitude of their health problems in Australia. The ACE-Prevention project has argued that the best practice model for primary health care for Indigenous populations is based on self-determination and community control, exemplified by the Aboriginal community-controlled health service (ACCHS) model of

Table 1.	Eye care se	ervices requi	red for a p	opulation of	10 000	Indigenous	people
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Total Indigenous population for area No. of people requiring glasses each year (assumes replacement every second year)		
No. of people with diabetes requiring annual eye examination		
% Indigenous people over 40 years of age with diabetes	37.0%	
No. of people requiring diabetic retinopathy surgery		
% Indigenous people with diabetes requiring laser surgery	11.6%	
No. of cataract operations	95	
% population to reach national cataract surgery rate	0.95%	
No. of ophthalmology referrals diabetes laser surgery + cataract surgery + trichiasis surgery	243	
No. of optometry eye examinations required each year		
% Australian population receiving eye examinations each year (includes diabetes and glasses examinations; Medicare data)	17%	

comprehensive primary health care.^{4,18} This model provides a cost-based equity weight the ACE-Prevention project argue is necessary in the highly disadvantaged circumstances of Australian Indigenous health. An Indigenous health service delivery template was developed by $Ong \, et \, al.$ ¹⁹ to estimate the additional activities undertaken by ACCHS and the magnitude of these added costs.

Using money values estimated using the Indigenous health service delivery template, several Indigenous preventive programs that were cost-effective in non-Indigenous populations (blood pressure and cholesterol (in various circumstances), hepatitis B, kidney disease and prediabetes) were studied the ACE-Prevention project. Results for cost-effectiveness were similar to those for non-Indigenous populations. Screening and treatment programs for diabetes and prediabetes were the most relevant to IEHPs, and five of these were deemed to be cost-effective. This finding is supported by a study in a non-Australian Indigenous group of the cost-effectiveness of screening for diabetic retinopathy using a portable fundus camera in isolated First Nations communities in Canada.²⁰

There are no other direct estimations of the cost-effectiveness of IEHPs. However several studies exist that are highly relevant to this topic and from which it is possible to draw cautious conclusions. The most important of these studies are the companion studies by Baltussen and Smith²¹ and Chisholm et al.²² These studies report cost-effectiveness analyses of strategies for controlling vision (and hearing) loss in sub-Saharan Africa and south-east Asia, where vision and hearing loss are major burdens. Although there are many differences between Indigenous people living in Australia and those living in sub-Saharan Africa and south-east Asia, all share significant levels of social and health disadvantage, including high burdens of disease due to vision loss.¹ Intervention effects and resource inputs were based on published reports, expert opinion and the standardised World Health Organisation-CHOICE database. Cost per DALY averted, expressed in international dollars (\$Int) for 2005 was estimated.

Treatment of extracapsular cataract surgery (with 95% coverage), trichiasis surgery (80% coverage) and annual screening of schoolchildren for refractive error (50% coverage) were among the most cost-effective interventions for vision impairment, with the cost per DALY averted less than \$Int285 in both regions.²¹ These interventions can be considered highly cost-effective. Mass treatment with azithromycin to control trachoma was considered cost-effective in sub-Saharan Africa, but not South East Asia.²¹ This latter conclusion is controversial because it assumes a cost for azithromycin rather than its free provision through a worldwide and long-standing drug donation scheme.²³

In the companion paper to Baltussen and Smith²¹, the costeffectiveness of these vision (and hearing) programs is compared with programs for cancer, cardiovascular disease, diabetes and tobacco use, respiratory and mental disorders and road traffic injuries in sub-Saharan Africa²² (see Fig. 1, or a comparison for the incremental cost-effectiveness ratios for these conditions). Results for south-east Asia (not shown) are similar. Figure 1 shows incremental cost-effectiveness ratios for vision loss programs with profiles superior for most other groups of diseases. These findings also include screening for diabetic retinopathy and photocoagulation (80% coverage). On the basis of these findings, eye heath interventions in non-Indigenous populations can generally be regarded as cost-effective. 20

Performance criteria of general and Indigenous health services

The Australian National Health Performance Committee (NHPC) developed the National Health Performance Framework (NHPF) in 2001. The NHPC later reviewed the NHPF with a revised framework agreed in September 2009.²⁴

The NHPF consists of six health system dimensions: Effectiveness; Safety; Responsiveness; Continuity of Care; Accessibility; and Efficiency and Sustainability. It is useful to consider again how well the model of care proposed in The Roadmap performs in relation to these dimensions. This can be assessed by considering how closely the report's²⁴ 42 recommendations (grouped into nine domains) map onto these six performance dimensions. We have already seen in the previous section that the IEHPs are effective and efficient (cost-effective), the second and part of the sixth NHPF dimension. Four of The Roadmap's nine domains conform to several the NHPF dimensions:

- To improve identification and referral for eye care needs from primary health care (Accessibility and Continuity of care NHPF dimensions)
- (2) To enhance access to Aboriginal and mainstream eye services (Accessibility and Responsiveness NHPF dimensions)The Roadmap proposes that IEHPs should be located within Aboriginal health services and should also promote cultural safety (including in mainstream services where Indigenous services do not exist). These programs include Medical Specialists Outreach Assistance Program (MSOAP) and Visiting Optometry Service (VOS), both of which provide care as close to the Indigenous person's locality as possible, including in association with their Aboriginal health service.
- (3) To improve coordination of eye care services and the successful navigation of referral pathways (includes local eye care coordination, clear pathways to care, eye care support workforce, case coordination, workforce identification and roles and partnerships and agreements) (Accessibility and Continuity of care NHPF dimensions)
- (4) To improve awareness and knowledge of eye health in communities to support self-empowerment (Accessibility NHPF dimension)

The performance measures included within the Aboriginal and Torres Strait Islander Health Performance Framework (HPF) closely relate to the original NHPF of 2001 and are slightly different to the revised version of 2009.²⁵ Twenty nominated components are specified within the six health system performance dimensions (tiers). Several of these are not directly relevant to IEHPs. An inspection of the components that are directly relevant to these IEHPs reveals that these Roadmap domains also map onto the performance dimensions (tiers) of the HPF.

Discussion

Measuring the merit of health programs

On the basis of the information assembled above, IEHPs perform well using all three approaches for establishing the merit of a



Fig. 1. Incremental cost effectiveness (international dollars (\$Int) per disability-adjusted life-years (DALYs) saved) of dominant interventions in sub-Saharan African countries with high child and adult mortality. HPV, human papillomavirus; VIA, visual inspection with acetic acid; IHD, ischaemic heart disease; CHF, chronic heart failure; FOB, faecal occult blood. Derived from Chisolm *et al.*²²

prospective program. Therefore, it is possible to argue for their merit using any or all of the three approaches. It may be that different approaches will be more or less persuasive with different audiences. Thus, the health needs approach may be more persuasive with health practitioners and the general community, whereas economic priority and program performance may be more persuasive with government departments.

There are limitations to all three approaches. These mainly concern the absence of comprehensive studies on the cost-effectiveness of health programs generally and, most importantly here, IEHPs. This highlights the continuing need for data and research studies in economic priority work.²⁶ This applies particularly to Indigenous health interventions, not just IEHPs.

Segal and Chen critically analyse the economic priority approach and express some reservation about the quality adjusted life years (QALY) league table approach.²⁶ These concern the data and research burden noted above. They also have concerns about a possible lack of community and political support for these technical procedures as a basis for prioritising health services funding, as became apparent during the Oregon Health Insurance Experiment. This expressed itself, for example, in community concern in prioritising, say, chiropody for foot problems over programs aimed at more serious disease.²⁷

This data and research gap concerning health needs is becoming less pressing due to the publication of the burden of disease.²⁸ However, health care needs remain less studied. There have also been few comparisons of the performance of health programs using the NHPF criteria, both in general and involving IEHPs.^{29,30} These reviews would also need to be made within a particular society and its health system and cannot be generalised across societies. Data and research activity in support of these reviews within those other particular societies will be necessary.

More general issues

Given the lack of full technical information and perhaps some community resistance (Indigenous or otherwise) to its use, meritbased proponents of programs will still need to enter the community debate to convince others of their merit. This will mean addressing questions and doubts as to the merits of these programs. For example, it could be argued that not all components of the proposed IEHP outlined in The Roadmap report are delivered by primary care staff in Aboriginal health services and so could be deemed not to conform fully to an Indigenous health care model. The counterargument to this would be that these components are of a sufficiently specialised nature that they can only be delivered by visiting ophthalmological and optometric practitioners or in a hospital setting (e.g. cataract surgery). Very importantly, they are delivered as close to the Indigenous person as possible, either in their Aboriginal health service or in their local hospital.

It could also be argued that a disease-based approach (here an organ-related disease-based approach) is not an appropriate or straightforward way to fund Indigenous health programs. For example, Governments are faced with public campaigns to fund very large numbers of disease-based programs and this may lead them, as a consequence, to fund services that cover as wide a range of diseases as possible. Indeed, the Australian government

funds Indigenous health programs under health services headings (e.g. the Primary Health Care Access Program and the Commonwealth Indigenous Chronic Disease Package) rather than particular diseases. The Chronic Disease Package is necessarily disease specific and it is interesting to note that the Australian government funds an Indigenous Eye and Ear Health Program including VOS and MSOAP.

The community, including the Indigenous community, may also be more attracted to a general health and wellness focus, such as women's health or Indigenous health, rather than a disease focus. Nevertheless, this problem is not insurmountable, as is apparent by the fact that the National Aboriginal Community Controlled Health Organisation (NACCHO) endorses the organand disease-based project set out in The Roadmap.

Competing interests

The authors declare there are no competing interests.

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