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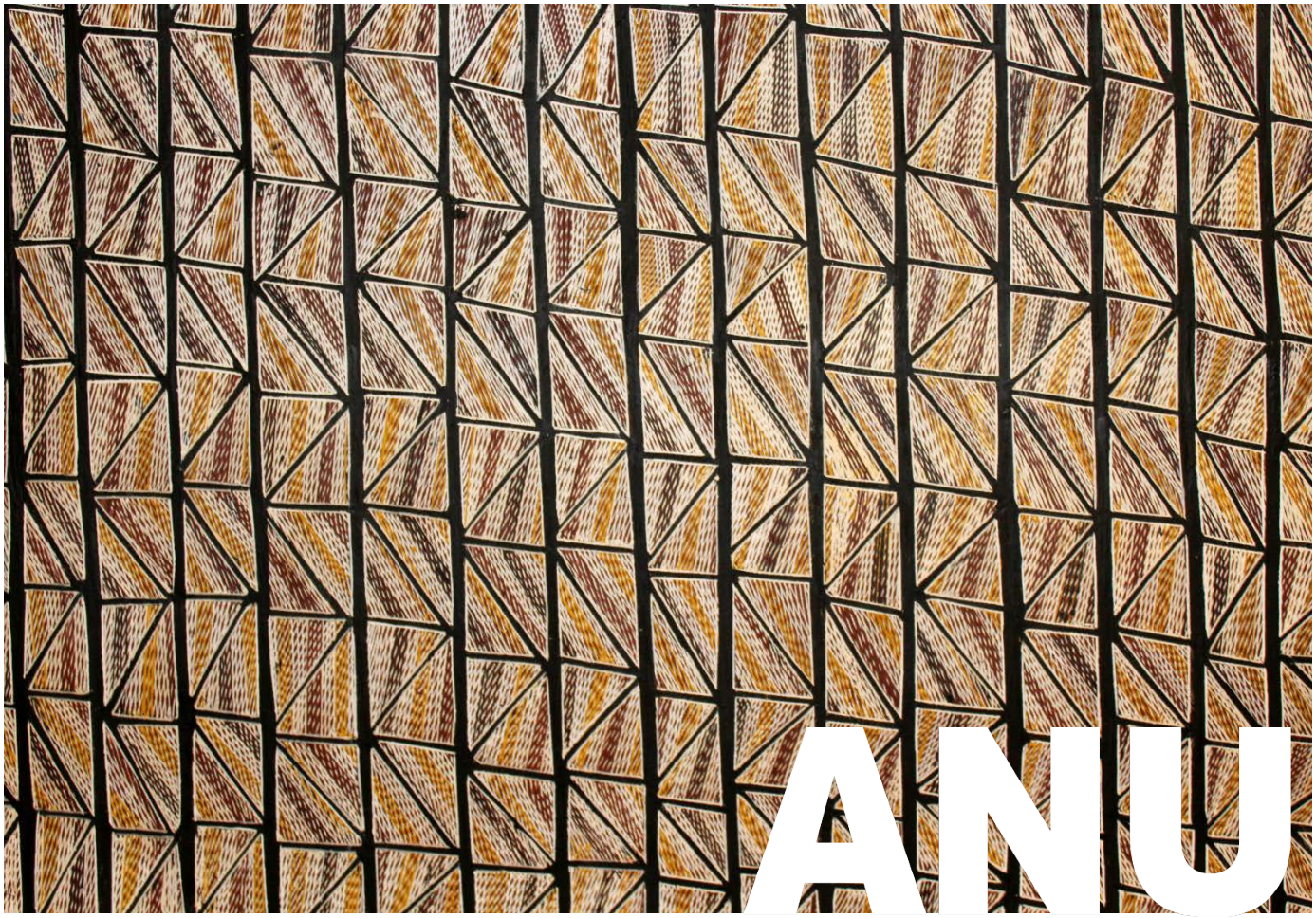

BEYOND PARITY IN ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH WORKFORCE PLANNING: ACHIEVING EQUITY THROUGH NEEDS-BASED AND STRENGTHS-BASED APPROACHES

J. LAHN, S. PUSZKA, P. LAWTON, Y. DINKU, N. NICHOLS AND F. MARKHAM

Centre for Aboriginal Economic Policy Research
ANU College of Arts & Social Sciences

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Beyond Parity in Aboriginal and Torres Strait Islander Health Workforce Planning: Achieving Equity through Needs-Based and Strengths-Based Approaches

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Abstract

Meeting the healthcare needs of Aboriginal and Torres Strait Islander people requires needs-based and strengths-based planning of the Aboriginal and Torres Strait health workforce. Substantial gains have been made over recent decades in growing the Aboriginal and Torres Strait Islander health workforce. However, the overall size of this workforce remains low, retention is poor and workforce growth in some areas is not commensurate with population growth. Through the National Agreement on Closing the Gap, Australian governments have recognised that achieving better Aboriginal and Torres Strait Islander health outcomes requires equity in health system investment, system-wide workplace reforms and strength-based approaches that emphasise partnerships with Indigenous organisations and communities. However, at present there is no national commitment to achieving an equitable number of Aboriginal and Torres Strait Islander people within a culturally safe and responsive health workforce.

We were commissioned by the National Health Leadership Forum to investigate approaches to workforce planning based on the

healthcare needs of Aboriginal and Torres Strait Islander people. Through reviews of published literature and existing datasets and a renal case study, we show that needs-based workforce planning requires establishing and modelling targets that take into consideration the burden of disease; geographic location of health needs; access to culturally safe care; and addressing deficiencies in the workforce data currently available. Appropriate workforce planning also requires addressing very low retention rates of Aboriginal and Torres Strait Islander health professionals through structural, system-wide reforms to foster culturally safe workplaces that are free of racism. Realising the need for and contributions of the Aboriginal and Torres Strait Islander health workforce to improving health outcomes necessitates working in partnership with Aboriginal and Torres Strait Islander health peak organisations.

Keywords: Aboriginal and Torres Strait Islander health, workforce planning, employment policy, cultural safety, Closing the Gap, renal services.

Acknowledgments

This report was commissioned by the National Health Leadership Forum. We greatly appreciate the opportunity to provide input into this critical area of policy.

The renal case study analysis in this report received ethical approval from the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research (HREC reference 2011-1634). The data reported have been supplied by the Australia and New Zealand Dialysis and Transplant Registry (ANZDATA). The interpretation and reporting of these data are the responsibility of the authors and in no way should be seen as an official policy or interpretation of the Australia and New Zealand Dialysis and Transplant Registry.

Acronyms

ABS	Australian Bureau of Statistics
AHMAC	Australian Health Ministers' Advisory Council
AHP	Allied Health Professional
AHW	Aboriginal Health Worker
AIHW	Australian Institute of Health and Welfare
AMHW	Aboriginal Mental Health Worker
ANU	Australian National University
ANZDATA	Australia and New Zealand Dialysis and Transplant Registry
CAEPR	Centre for Aboriginal Economic Policy Research
COAG	Council of Australian Governments
FTE	Full time equivalent
HP	health professional
KPIs	National Key Performance Indictors for Aboriginal and Torres Strait Islander health
MMM7	Modified Monash Model 7
NATSISHS	National Aboriginal and Torres Strait Islander Health Survey
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NCVER	National Centre for Vocational Education Research
NHLF	National Health Leadership Forum
NHMRC	National Health and Medical Research Council

NHWDS	National Health Workforce Dataset
OECD	Organization for Economic Cooperation and Development

Contents

Tables

Figures

Executive Summary

Meeting the healthcare needs of Aboriginal and Torres Strait Islander people requires approaches to Aboriginal and Torres Strait health workforce planning that recognise the strengths of this workforce and the needs of Aboriginal and Torres Strait Islander patients. Substantial gains have been made over recent decades in growing the Aboriginal and Torres Strait Islander health workforce with greater numbers of Aboriginal and Torres Strait Islander doctors, nurses, dentists and allied health professionals emerging (Australian Bureau of Statistics (ABS) 2018a). However, the overall size of this workforce remains low, retention is poor and workforce growth in some areas is not commensurable with population growth (Bond et al., 2019; Wright et al., 2019). Through the Closing the Gap framework, Australian Commonwealth and state governments have recognised that achieving Aboriginal and Torres Strait Islander health outcomes requires equity in health system investment and partnership approaches. However, at present there is no national commitment to achieving equity in the representation of Aboriginal and Torres Strait Islander people within the health workforce or to realising the contributions of this workforce to improving health outcomes.

This report was commissioned by the National Health Leadership Forum (NHLF) – a partnership of national Aboriginal and Torres Strait Islander health and wellbeing organisations[1] to investigate approaches to needs-based workforce planning. Key foci involved the following:

- What actual and potential health benefits of the Aboriginal and Torres Strait Islander health workforce appear in current research evidence?
- What would comprise a best practice needs-based workforce planning approach for the Aboriginal and Torres Strait Islander health workforce?
- What Aboriginal and Torres Strait Islander health workforce targets would be required to realise a needs-based approach?
- What can we learn about workforce planning from a case study of dialysis needs and services in very remote areas?

Aboriginal and Torres Strait Islander health professionals can contribute substantially to culturally appropriate care and to improving Indigenous patient health outcomes. However, currently available datasets do not adequately support the task of Aboriginal and Torres Strait Islander health workforce planning necessary to underpin improved health outcomes. Appropriate workforce planning requires:

- establishing and modelling targets that take into consideration the burden of disease, geographic location of health needs and equitable access to culturally safe care
- addressing deficiencies in the workforce data currently available
- addressing very low retention rates through structural, system-wide reforms to foster culturally safe workplaces that are free of racism
- working in partnership with Aboriginal and Torres Strait Islander health peak organisations.

[1] NHLF membership organisations: Aboriginal and Torres Strait Islander Healing Foundation, Australian Indigenous Doctors Association, Australian Indigenous Psychologists' Association, Congress of Aboriginal and Torres Strait Islander Nurses and Midwives, Gayaa Dhuwi (Proud Spirit) Australia, Indigenous Allied Health Australia, Indigenous Dentists' Association of Australia, The Lowitja Institute, National Association of Aboriginal and Torres Strait Islander Physiotherapists, National Aboriginal Community Controlled Health Organisation, National Aboriginal and Torres Strait Islander Health Workers' Association, National Aboriginal and Torres Strait Islander Leadership in Mental Health, Torres Strait Regional Authority.

Recommendations

Based on our review of the literature and available data, conceptual model and renal case study we strongly recommend action in three areas.

Reconceptualise Approaches to Health Workforce Planning:

1. Strategies to increase the Aboriginal and Torres Strait Islander health workforce must be reframed as a *health* priority not an *employment* priority.
2. Health workforce planning must apply a strengths-based approach taking into account the actual and potential contribution of the Aboriginal and Torres Strait Islander workforce in improving Aboriginal and Torres Strait Islander patient outcomes.
3. A strengths-based approach must be combined with a needs-based orientation to workforce planning considering the burden of disease among Aboriginal and Torres Strait Islander populations.
4. Needs-based workforce planning must also consider the geographic location of healthcare needs and the health workforce, the changing policy environment and potential for more equitable access to remote services in future.

Focus on Future Data and Research Requirements:

No current dataset is adequate for modelling needs- and strengths-based approaches to national health workforce planning. Methods for developing needs- and strengths-based approaches across for the workforce require further development.

5. Adequate data is needed to underpin health workforce planning based on needs and strengths principles. This will require the creation of new datasets and/or a significant body of research to assemble available data from existing instruments in concert with Aboriginal and Torres Strait Islander professional bodies and disease specialists.
6. Future research must focus on the task of developing models for use in workforce planning, that estimate the relationships between the prevalence of diseases and the need for health professionals.

Expand the Workforce:

Several critical challenges to increasing the workforce remain.

7. Increasing the number of Aboriginal and Torres Strait Islander health professionals will require a strong focus on addressing very low retention rates of Aboriginal and Torres Strait Islander employees in the sector, in part through improving the cultural safety of workplaces.
8. Attracting and retaining health professionals in remote areas is challenging – workforce planning should include an emphasis on developing Aboriginal and Torres Strait Islander health professionals from within local communities.
9. Addressing cultural safety, particularly regarding culturally sensitive areas of healthcare (such as dialysis) necessitates local, culturally specific responses. Learning from existing successful models of care and developing new professions that enable Aboriginal and Torres Strait Islander staff to deploy knowledge and skills in providing care in intercultural workplaces.

The Aboriginal and Torres Strait Islander Health Workforce: Policy context

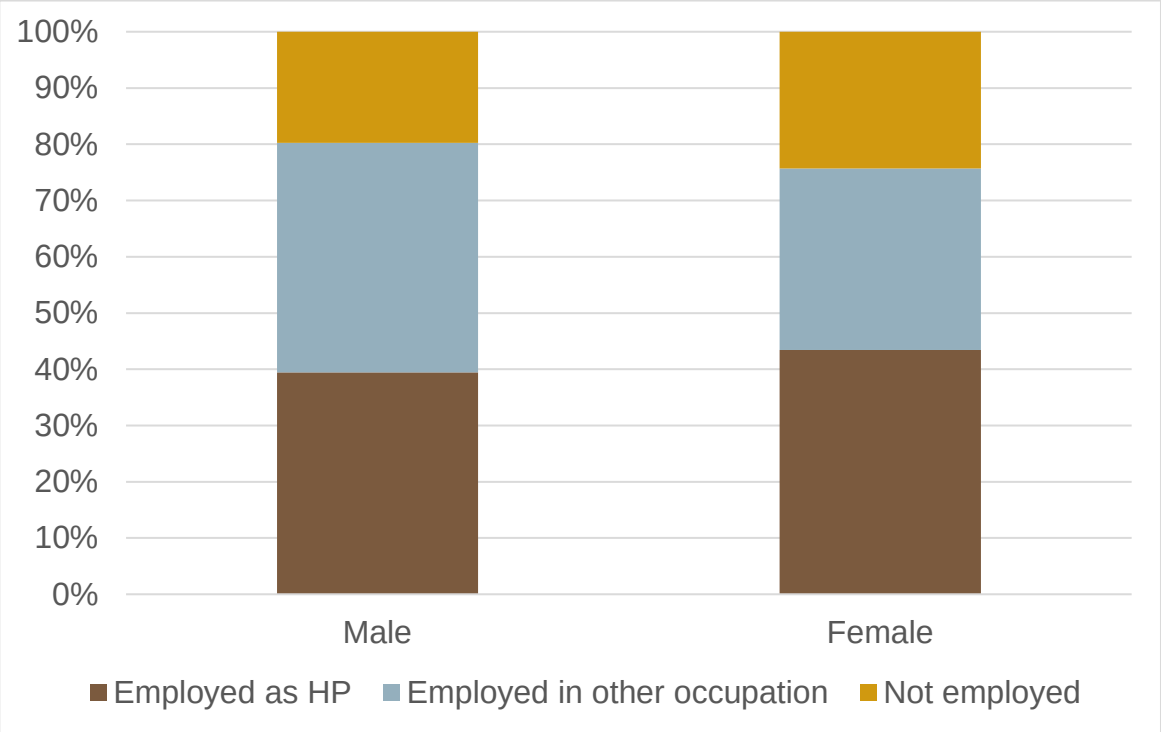
Meeting the healthcare needs of Aboriginal and Torres Strait Islander people requires needs-based and strengths-based planning of the Aboriginal and Torres Strait health workforce. Substantial gains have been made over recent decades in growing this Aboriginal and Torres Strait Islander health workforce; and greater numbers of Aboriginal and Torres Strait Islander doctors, nurses, dentists and allied health professionals (HPs) have emerged (ABS 2018a). In the 2016 Census, 3401 Aboriginal and Torres Strait Islander males and 12 374 Aboriginal and Torres Strait Islander females aged 15–64 years reported to have completed a qualification in the field of health at the Certificate IV level or higher.[2] However, the overall size of the workforce remains low when considered as a proportion of the total workforce; retention is also poor and workforce growth in some areas is not commensurable with population growth (Baily et al., 2020; Bond et al., 2019; Wright et al., 2019).

A large proportion of Aboriginal and Torres Strait Islander people with qualifications in health-related fields are employed in other fields or are unemployed. Utilising ABS census statistics only about 39% of males and 43% of females with a health-related qualification work as HPs.[3] The remainder of those with a qualification in a health-related field are either working in other occupations (41% of males and 32% of females) or not in employment (20% of males and 24% of females) (Fig. 1).[4] Professionals and community and personal service workers account for the largest number of graduates in health-related fields who work in non-health occupations (28% and 27%) (Fig. 2).

There is a pressing need for a more granular account of these employment statistics where Aboriginal and Torres Strait Islander people have qualifications in health-related fields but are not employed in health fields or are not in employment. A deeper statistical account may also present an opportunity to develop policy strategies to re-engage with people if they desire through skills-updating, registration and employment in the health sector. The current COVID-19 context has highlighted an example of the utility of re-engaging with those who have health qualifications but are not currently working in health as a route to creating ‘surge’ workforces who are standing by to address any workforce shortfalls during major health crises. The ability to generally increase the Aboriginal and Torres Strait Islander health workforce and improve retention is an ongoing concern but requires a deeper understanding of workplace stresses and strains.

[2] Appendix 1 lists fields of study used to calculate the number of people who have completed a health qualification at the Certificate IV level or higher.
[3] Appendix 2 sets out the occupations included in our custom built ‘Health Professional’ classification.
[4] These figures should be considered an underestimate as 17.5% of the population was missed in the Census and of those who completed the census some did not nominate a non-school qualification.

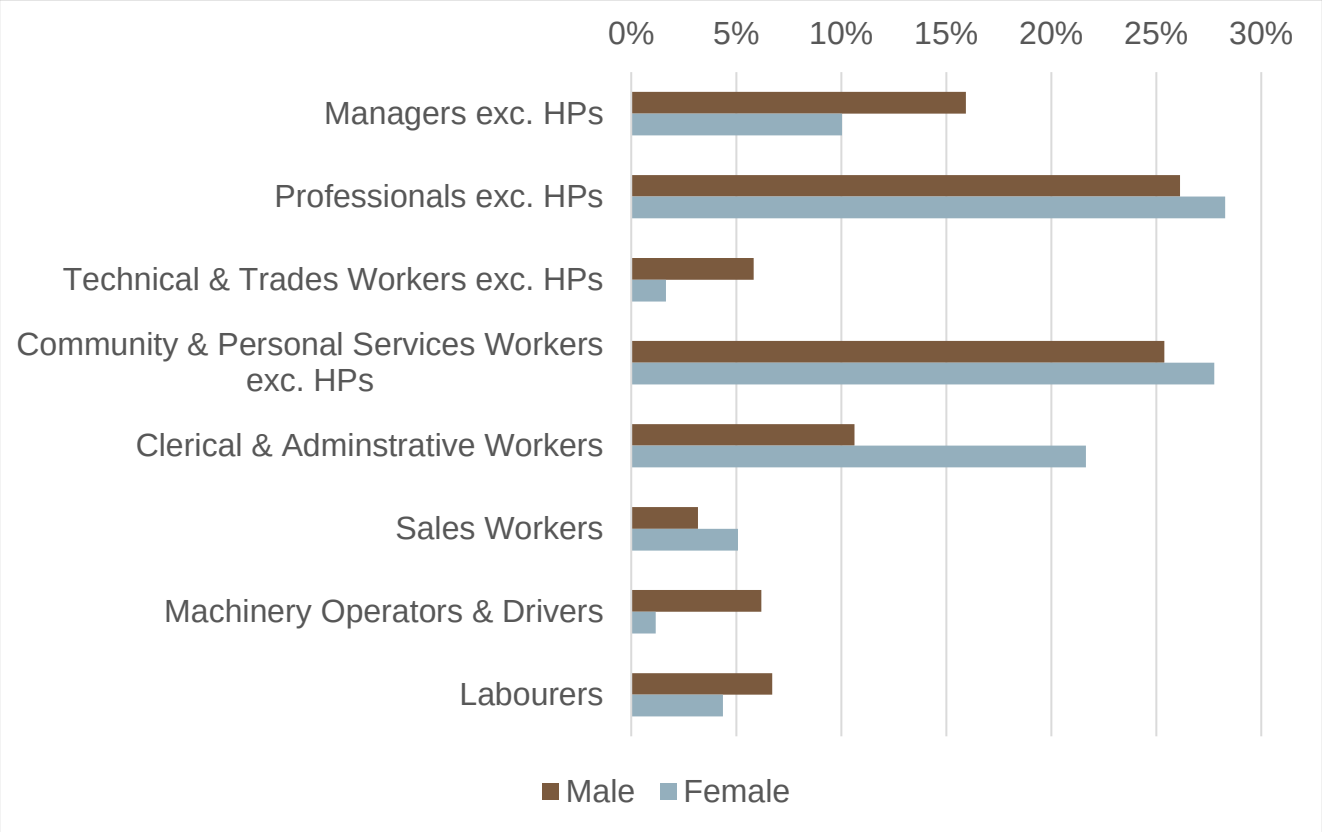
Fig. 1 Employment outcomes for Aboriginal and Torres Strait Islander working-age adults with a qualification in a health-related field at Certificate IV or higher



Source: Authors' calculation from the 2016 Census, Table Builder (ABS, 2018a).

Expanding the workforce requires moving beyond simplistic attention to parity-driven employment statistics. Health workforce *equity* must be clearly differentiated from health workforce *parity*. A parity-based workforce target for 2019 would aim for Aboriginal and Torres Strait Islander people to comprise 2.7% of the health workforce, given that around 2.7% of the population aged 25–64 in 2019 identify as Aboriginal and/or Torres Strait Islander. An equity-based workforce target would aim to ensure that the health needs of Aboriginal and Torres Strait Islander people can be met by Aboriginal and Torres Strait Islander HPs. The need for healthcare is proportionately greater among Indigenous Australians because of the greater burden of disease among the Aboriginal and Torres Strait Islander population. An equity approach to the health workforce would ensure that Aboriginal and Torres Strait Islander people can receive healthcare from other Aboriginal and Torres Strait Islander people in a setting nearby to the location where they live. Research is needed to develop methods of estimating equity-based workforce targets.

Fig. 2 Current occupation of working-age employed Aboriginal and Torres Strait Islander adults with a Certificate IV or higher qualification in a health-related field not working in a non-health occupation



Source: Authors' calculation from the 2016 Census, Table Builder (ABS, 2018a).

The policy context

The critical contribution of the Aboriginal and Torres Strait Islander health workforce to improving Aboriginal and Torres Strait Islander health outcomes is recognised by the Council of Australian Governments (COAG) through the Closing the Gap policy framework. Six National Partnership Agreements established the indicators, policy directions and initiatives of Closing the Gap (Australian Indigenous HealthInfoNet, 2018). The National Partnership Agreement on Improving Indigenous Health Outcomes established initiatives to increase the number of Aboriginal and Torres Strait Islander people in the Australian health workforce and to improve the cultural competency of the health workforce and health system (COAG, 2008).

More recently, the Closing the Gap Refresh process has led to renewed emphasis on strengths-based approaches and partnerships with Aboriginal and Torres Strait Islander people, communities and organisations to achieve better health outcomes, following sustained advocacy from Aboriginal and Torres Strait Islander health peak organisations. A new National Agreement on Closing the Gap between Australian Governments and Aboriginal and Torres Strait Islander peak organisations recognises the need for structural, system-wide reform of government agencies in order to achieve Aboriginal and Torres Strait Islander health equity, and notes that expanding the Aboriginal and Torres Strait Islander health workforce is an integral element of this task (COAG & Coalition of Aboriginal and Torres Strait Islander Peak Organisations, 2020).

Through the Closing the Gap framework, Australian Governments have recognised that improving Aboriginal and Torres Strait Islander health outcomes requires equity in health system investment and strengths-based and partnership approaches. However, at present there is no national commitment to achieving *equity* in the representation of Aboriginal and Torres Strait Islander people within the health workforce or to realising the contributions of this workforce to improving health outcomes. While the Commonwealth has established a National Aboriginal and Torres Strait Islander Health Workforce Framework (Australian Health Ministers' Advisory Council (AHMAC), 2016), the Framework currently lacks an implementation plan establishing accountability for targets, strategies and timeframes. Australian states and territories, with the exception of Tasmania, have developed their own Aboriginal and Torres Strait Islander health workforce strategic plans. However, state and territory strategic plans contain inconsistencies, do not reflect contemporary evidence-based diversity management principles and in some cases inappropriately frame strategic plans as employment strategies rather than health strategies (Bourke et al., 2020). State and territory strategic plans, moreover, are unable to establish workforce strategies in areas of the health system in which the Commonwealth has substantial jurisdiction, such as primary care.

National leadership and a commitment to Aboriginal and Torres Strait Islander health workforce targets that reflect the health needs of the Aboriginal and Torres Strait Islander population are required. The recent renewed emphasis on strengths-based and partnership approaches and structural, system-wide reform, furthermore, provides a prime opportunity to develop an Aboriginal and Torres Strait Islander health workforce implementation plan in partnership with Aboriginal and Torres Strait Islander health peak organisations. In light of the present COVID-19 pandemic, the need for a culturally safe, responsive and supported Aboriginal and Torres Strait Islander health workforce has been highlighted as more salient than ever.

Our research investigated approaches to Aboriginal and Torres Strait Islander workforce planning that recognises the strengths of that workforce and the needs of Aboriginal and Torres Strait Islander patients. With this task, the current limitations of applying such approaches were taken into account, in addition to outlining future data and research required to realise a level of accurate workforce planning that can form the foundation of culturally safe care and improving health outcomes into the future.

Research questions and methodology

We were commissioned by the National Health Leadership Forum (NHLF) to investigate approaches to needs-based workforce planning.

We undertook this research in two stages. The first stage involved responding to the questions:

- What actual and potential health benefits of the Aboriginal and Torres Strait Islander health workforce are shown in current research evidence?
- What would a best practice needs-based workforce planning approach for the Aboriginal and Torres Strait Islander health workforce comprise?
- What Aboriginal and Torres Strait Islander health workforce targets would be required to realise a needs-based approach?

In order to respond to these questions, we undertook reviews of:

- research literature examining how the Aboriginal and Torres Strait Islander health workforce contributes to Aboriginal and Torres Strait Islander health outcomes
- approaches to workforce planning
- available national data to support Aboriginal and Torres Strait Islander health workforce planning.

Our research quickly found that the literature suggests Aboriginal and Torres Strait Islander health professionals can contribute substantially to improving Aboriginal and Torres Strait Islander patient health outcomes. However, currently available datasets are neither designed nor adequate to support the task of Aboriginal and Torres Strait Islander health workforce planning necessary to underpin improved health outcomes.

Responding to this latter finding, in stage two of the research we explored workforce planning through an in-depth case study of dialysis services in remote areas. In the second stage of research, we undertook:

- a review of the actual and potential health benefits of the Aboriginal and Torres Strait Islander health workforce in dialysis services and potential new identified roles in dialysis services
- analysis of the Aboriginal and Torres Strait Islander health workforce requirements in dialysis services in remote areas, based on burden of disease and geographical location.
- analysis of the data required to support better planning in this area.

A review of the role of the Aboriginal and Torres Strait Islander health workforce in improving health outcomes

There is clear and growing research evidence supporting a general conclusion that Aboriginal and Torres Strait Islander health staff play an instrumental role in delivering better health outcomes for Aboriginal and Torres Strait Islander people. The benefits to healthcare provision and patient outcomes identified in the research literature speak to the unique skill-sets and insights that Aboriginal and Torres Strait Islander people bring to their healthcare roles. The results of our literature survey are presented in Appendix 3.[5] Our survey found the benefits of this workforce extend across different health conditions, healthcare settings and geographic locations. Research evidence points to a range of benefits stemming from multiple areas of knowledge and skill including:

- increased screening and identification of disease
- increased delivery of evidence-based guidelines and scheduled services
- reduced rates of self-discharge from hospital prior to completion of treatment
- improved patient health literacy
- improved communication with patients
- improved capacity to understand and meet patients' expectations of healthcare providers
- rapid and culturally-responsive outbreak management in communities
- improved continuity of care between hospital and primary healthcare providers
- improved patient support
- improved disease management amongst patients
- improved patient history-taking and greater capacity to involve appropriate family members in patient care

[5] See the recently released Lowitja Institute funded study (Meyer et al., 2020) for a similar review undertaken in the context of a broader study into career pathways.

- capacity to develop beneficial partnerships between Aboriginal and Torres Strait Islander and non-Indigenous staff that may lead to improved workplace culture and reduced structural and interpersonal racism.

A number of studies demonstrate the capacity of Aboriginal and Torres Strait Islander health professionals to improve patient adherence to treatment regimes and to improve patient health outcomes. The research literature also highlights the ability of Aboriginal and Torres Strait Islander health professionals to partner with non-Indigenous counterparts in order to foster culturally safe health services through improved communication, coordination and patient support. This literature seems likely to continue to expand, identifying further areas of benefit for patients with specific health conditions across the healthcare system, as is already apparent in the context of the COVID-19 pandemic (see e.g. Kerrigan et al., 2020). Realising the full range of actual and potential benefits delivered by this workforce will be integral to fulfilling current policy commitments to providing culturally safe care, eliminating systemic and structural biases in government agencies and ultimately to success in Closing the Gap.

What will be required is not just a greater understanding of the actual and potential benefits and contributions of the Aboriginal and Torres Strait Islander health workforce but also a better understanding of the sorts of workplace settings and adjustments that will enable the course of these benefits and contributions. An urgent challenge is to improve retention of staff.

One recent study identified the need for 'supportive and culturally safe workplaces' to support future workforce growth (Lai et al., 2018). In other professional settings, feeling undervalued and underutilised plays a big role in the early exit of Aboriginal and Torres Strait Islander staff from professions (Faulkner and Lahn, 2019). Similar frustrations can be expected to be present among the health workforce.

Future research should seek to identify the benefits of workplace environments that recognise and facilitate the contributions of the Aboriginal and Torres Strait Islander health workforce. Research that investigates the reforms required to transform workplaces into supportive and culturally responsive environments free of structural and interpersonal racism should be a priority. While the community-controlled sector presents a longstanding model of culturally responsive healthcare, future research should consider the reforms required to improve the cultural safety of workplaces in other healthcare sectors.

A conceptual model for Aboriginal and Torres Strait Islander workforce planning and a summary of available data and assessment of adequacy for planning purposes

Workforce planning is essential if an Aboriginal and Torres Strait Islander health workforce is to provide the culturally safe healthcare for Aboriginal and Torres Strait Islander people. However, estimating the necessary number of Aboriginal and Torres Strait Islander health professionals required to meet healthcare needs is not simple (Birch et al., 2007; Malyon et., 2010; Ono et al., 2013).

For each profession, it requires understanding the current numbers of health professionals, their likelihood of staying in their current profession and their likely retirement dates, as well as understanding the training pipeline of new health professionals entering the workforce. There is no data currently available for Aboriginal and Torres Strait Islander people that matches this description for many health professions. Such gaps in our understanding need to be addressed before detailed health workforce planning can take place.

Making matters more complex is the more difficult question of quantifying Aboriginal and Torres Strait Islander health needs. It is impossible to know how many new health professionals are required without an estimate of how many are needed in the first place. Estimating the current healthcare needs is a complex task, and one which current data collections are ill-suited for. Considerable research and development will be needed to develop models of Indigenous healthcare need. These will then need to be combined with demographic projections of the future Aboriginal and Torres Strait Islander population and assumptions about its health status in order to arrive at estimates of future health care needs.

Cross-cutting these difficulties is the issue of geography. The future Aboriginal and Torres Strait Islander health workforce will need to live in the same regions as their patients. Matching the regional supply of and demand for Aboriginal and Torres Strait Islander health professionals adds an additional layer of complexity to these calculations.

In the section that follows, we outline a greatly simplified potential model for workforce planning based on the current and future supply and demand of full-time health professionals.

A Conceptual Model for Health Workforce Planning

We propose that workforce planning involves estimating the supply of and demand for total full-time equivalent (FTE) health professionals (HPs). This section outlines a model for estimating current and future health workforce needs.

Current health workforce

a) Total FTE HPs available

For each health profession, count the number of HPs, compute the FTE per HP based on average weekly hours worked, and multiply the number of HPs by FTE per HP.

b) Total FTE HPs required: two alternative estimation methods

i. Current contact with the health system

One measure of need is current contact with the health system. Current utilisation rates could form the basis of a needs estimate. Using Medicare and hospital data, the number of healthcare episodes could be calculated for the Aboriginal and Torres Strait population, appropriately categorised by age and gender. This data could form the basis of an estimation of the current rate of contacts with health professionals and thereby calculate the demand for FTE HPs.

Underlying this method is an assumption that Aboriginal and Torres Strait Islander people are currently receiving an appropriate quantity of care, and that it is only the quality that is lacking. This assumption lacks realism. Consequently, it is likely that this method of estimating health workforce needs will underestimate the true demand for Aboriginal and Torres Strait Islander health professionals.

ii. Utilise disease burden as a proxy for healthcare needs

An alternative approach takes the health status of the Aboriginal and Torres Strait Islander population as its starting point for estimating healthcare needs. Ideally all sources of ill health among Aboriginal and Torres Strait Islander people would be incorporated, including both the incidence of chronic diseases and acute conditions. The complexity of this modelling exercise will grow as the number of conditions considered increases, so a simpler, less complicated model might focus on the most common and care intensive chronic diseases (which include but are not limited to diabetes mellitus, depression, asthma, cardiovascular diseases, kidney disease

and musculoskeletal diseases). Data describing the prevalence of many health conditions is recorded in the National Aboriginal and Tress Strait Islander Health Survey (NATSIHS) (ABS, 2019) and the 2012–13 National Aboriginal and Torres Strait Islander Health Measures Survey (NATSIHMS). These surveys provide the basis for calculating the total number of cases for each disease type.

A method of converting the incidence of health conditions to a quantity of required health care is then needed to reliably estimate expected primary healthcare demands. One method of doing this is on the basis of clinical guidelines. Clinical guidelines in the Australian primary healthcare system could provide indicative data on a recommended minimum number of visits and physician time to keep a given disease in stable condition (National Health and Medical Research Council (NHMRC), nd). Another method is to model the optimal frequency of clinical review using existing, linked datasets such as hospitalisation or cause-of-death datasets with primary care datasets (which will contain patient-level data about health conditions) (Zhao, et al., 2013). Once data are obtained on the recommended number of disease-specific patient care episodes, the length of those episodes and the type of health professionals providing care, the quantity of healthcare time required per year could be calculated. Resulting estimates of the total required time from health professionals will in turn support the production of projections of the equivalent number of required Aboriginal and Torres Strait Islander health professionals.

Estimating the future supply of and demand for FTE HPs

a) Estimating inflows and outflows prior to target year

The total number of FTE HPs in the target year will be determined by inflow and outflow of HPs during the years leading to the target year.

i. Outflows

Estimating the number of people retiring or leaving the health workforce between the base year and the target year requires information on the gender, age, probable career duration with a health profession, and current workforce status (active or not) of existing HPs. A projection of the total outflow would entail multiplying numbers of HPs leaving the workforce by predicted FTE per HPs.

ii. Inflows

Often a combination of training pipelines and skilled immigration entry are seen as the main sources of new entrants into the health workforce. In the case of the Aboriginal and Torres Strait Islander health workforce, we would anticipate training as the crucial source of new workforce supply. Estimating the number of FTE HPs joining the workforce between the base year and the target year would require data on the number of trainees in health-related courses in the base year, expected enrolments in coming years, expected years to completion, rates of completion and rates of employment upon course completion (as not everyone with a healthcare qualification may be available to work). To obtain a complete picture of the total inflow, multiply the number of new HPs by the predicted FTE per HP.

iii. *Expected demand: population*

To calculate expected demand for FTE HPs, two pieces of information are required: population projections and epidemiological projections.

Standard methods for constructing population projections are well studied and generally uncontroversial. The components approach involves projecting ‘ageing’ the current population, accounting for birth rates, deaths and migration. However, their application to the Aboriginal and Torres Strait Islander population has typically

underestimated population increase by substantial and policy relevant margins (e.g. ABS, 2018b; O'Donnell & Raymer, 2015). Consequently, additional care may be needed to incorporate unexpected population increase into population projections.

iv. Expected demand: Epidemiological changes

Demand for HPs may change in the future as a result of epidemiological changes, such as changes in the prevalence and incidence of certain diseases, within the Aboriginal and Torres Strait Islander population. This may result from changes in lifestyle and related health-risk behaviours in the population, or changes to structural factors that influence health (including the cultural safety of healthcare). For example, levels of smoking and alcohol consumption along with aspects of diet clearly linked to prevalence of chronic disease such as lung cancer, emphysema and diabetes (Condon et al., 2004; Harris et al., 2013; Wright, 2018).

Change in demand for HPs associated with epidemiological changes will involve tracking changes in the disease burden between the base and target years by taking into consideration in combination with data on disease-specific visit frequency per year and physician time per visit as indicated in 1b(iii) (assuming that the minimum required number of visits and amount physical time are time-invariant).

A summary of data availability and adequacy for health workforce planning

There has been significant developments in the data infrastructure of the Aboriginal and Torres Strait Islander population since the 1971 Census of Population and Housing when Aboriginal and Torres Strait Islander people were included for the first time (Taylor, 2013). A brief review of the suitability of existing datasets for the task of health workforce planning is presented in Table 1. Our summary considered the range and extent of available data pertaining to key areas of the health workforce, demographic and health variables, other potentially useful information concerning work or field of study. We note areas where data is missing from the dataset that would be required for health workforce planning. The particular strengths and shortcomings of the datasets in these respects are summarised below.

The **Census of Population and Housing**, while providing a valuable basis for modelling population trajectories and demographic dynamics, has only collected limited information on population health outcomes to date. However, the 2021 Census will include a brief question on health conditions for the first time. The data provided regarding healthcare practitioners is also limited in terms of the professions identified. Finally, the census is characterised by a significant undercount of Aboriginal and Torres Strait Islander people, missing an estimated 17% of the Indigenous population in 2011 and 2016 (Markham & Biddle, 2018).

Non-census derived data relating to Aboriginal and Torres Strait Islander people, obtained mainly via surveys and administrative collections, do not provide sufficient information for health workforce planning. Administrative data (including hospital data and health-centre data) are largely filtered from mainstream collections via an Indigenous identity question. This data is relatively inaccessible and forms part of restricted-access database held by government.

Similarly, unit record data held by the **Australian Institute of Health and Welfare** (AIHW) are often difficult to access for privacy reasons. Access to data (such as episodes of hospital care) requires custom data requests that are time consuming and consequently expensive. As such, we were unable to assess these data in our survey. It is noteworthy that AIHW have not published research focusing specifically on Aboriginal and Torres Strait Islander health workforce and planning.

Dedicated surveys which collect data about Indigenous health and social characteristics such as the **National Aboriginal and Torres Strait Islander Social Survey** (NATSISS) and **National Aboriginal and Torres Strait**

Islander Health Survey (NATSIHS), are best deployed to inform national – or state (territory) – level policy-making about Indigenous wellbeing improvements (Taylor, 2013). The datasets are less suited to undertaking needs-based assessment of regional and local communities in health terms, especially across remote areas of Australia, because of small sample sizes (ABS, 2016, 2019).

Other data sources such as the **National Health Workforce Dataset** (NHWDS) and **National Centre for Vocational Education Research** (NCVER) provide de-identified registration and survey data for health professionals, the latter only including those with vocational qualifications such as registered nurses and enrolled nurses (Health Workforce Dataset, 2018; NCVER, 2020). However, they do not provide information detailing full-time/part-time working arrangements for health professionals, a critical issue in estimating total numbers of available HPs.

Data from **National Key Performance Indicators for Aboriginal and Torres Strait Islander Health** (KPIs) appear less relevant to health workforce planning as they are collected only from regular clients of a primary healthcare service (i.e. people attending at least three times in two years) funded by the Australian Government Department of Health and required to report against Indigenous primary healthcare KPIs. These are primarily Aboriginal Community Controlled Health Services. The data methodology excludes people from the population of patients who have not attended relevant primary healthcare services at least three times in two years and those who have attended a primary healthcare service that is not funded by the Department of Health and not required to report against the Indigenous primary healthcare KPIs (AIHW, 2018).

This summation of available datasets finds that despite enhanced collection and publication of statistical data about Aboriginal and Torres Strait Islander people, further basic information is needed to develop a comprehensive model for Indigenous health workforce planning. These data shortcomings are unsurprising given that these data collections were not designed for Indigenous health workforce planning. Table 1 sets out the sorts of information missing from the data that would be required to carry out workforce planning.

Table 1 Review of datasets of Indigenous socioeconomic circumstances and outcomes with relevant and missing information that is vital for health workforce planning

Data source	Demographic and health characteristics	Health professionals/trainees	Specific Information	Missing (relevant) data
Census (2016)	Age Gender Indigenous status Socioeconomic status	Nutrition professionals; surgeons; psychiatrists; specialist physicians; general practitioners and resident medical officers; anaesthetists; other medical practitioners; pharmacists; optometrists and orthoptists; occupational and environmental health professionals; medical imaging professionals; audiologists and speech pathologists\therapists; podiatrists; physiotherapists; occupational therapists; dental practitioners; complementary health therapists; chiropractors and osteopaths; other health diagnostic and promotion professionals; nurse managers; nurse educators and researchers; midwives; registered nurses	Whether working as a Health Professional (HP) or Allied Health Professional (AHP) Main field of current study	Course enrolment and completion periods Nursing specialisation Nurse to patient ratio
NATSISS (2014/15)	Age Gender Indigenous status Sociocultural engagement Socioeconomic status Stressors and emotional wellbeing Self-reported health status Long-term and chronic health conditions Health risk factors	Dietitians; medical imaging; occupational and environmental health; optometrists and orthoptists; pharmacists Chiropractors and osteopaths; complimentary health therapists; dental practitioners; occupational therapists; physiotherapists; podiatrists; speech professionals and audiologists Generalist medical practitioners; anaesthetists; specialist physicians; psychiatrists; surgeons Midwives; nurse educators and researchers; nurse managers; registered nurses	Whether currently studying a health qualification and level of current study Main filed of current study Job role as AHP/HP Job areas as AHP/ HP	Course enrolment and completion periods AHP (HP) to patient ratio

Table continues on p. 14

NATSIHS (2018/19)	Age Gender Indigenous status Socioeconomic status Sociocultural engagement Stressors and emotional wellbeing Self-reported health status Long-term and chronic health conditions Anthropometric measurements Health risk factors Health actions	Dietitians; medical imaging; occupational and environmental health; optometrists and orthoptists; pharmacists Chiropractors and osteopaths; complementary health therapists; dental practitioners; occupational therapists; physiotherapists; podiatrists; speech professionals and audiologists Generalist medical practitioners; anaesthetists; specialist physicians; psychiatrists; surgeons Midwives; nurse educators and researchers; nurse managers; registered nurses	Whether a registered AHP/HP Job role as AHP/HP Job areas as AHP/ HP Job setting	Current training status Course enrolment and completion periods AHP (HP) to patient ratio
NCVER (2020)	Age Gender Indigenous status Education	Medicine Nursing Pharmacy Dentistry Public health Radiography Rehabilitation therapy Complementary therapies Other health	Whether currently studying a health course Field of study Level of qualification Year of enrolment and year of completion Intended occupation of training Whether post-training employment is the same profession as training	Field of specialisation Full-time/part-time Employment Geographic information
NHWDS (2018)	Age Gender Indigenous status Education	health practitioners Chiropractors Dental practitioners Medical practitioners Medical radiation practitioners Nurses and midwives Occupational therapists Optometrists Osteopaths Pharmacists Physiotherapists	Course year Course length Training medical speciality Student study status Whether an enrolled or a registered nurse Whether a practicing or non-practicing AHP/HP Years worked as AHP/HP Number of hours worked	Full-time/part-time employment AHP(HP) to patient ratio

Table continues on p. 15

		Podiatrists Psychologists	Years intended to work as AHP/HP Job role as AHP/HP Job areas as AHP/HP Job setting	
KPIs (2019/20)	Age Gender Indigenous status of patients Long-term and chronic health conditions Health risk factors Immunisation status Anthropometric measurements	Service provider's address service Provider's FTE staff Number of service operation hours, days and weeks by service provider	No information about HPs	Health status and other characteristics of 'non-regular clients' FTE of health practitioners Socioeconomic status of patients Job role of health practitioners Indigenous status of health practitioners Geographic information

Note: NATSISS – National Aboriginal and Torres Strait Islander Social Survey; NATSISHS – National Aboriginal and Torres Strait Islander Health Survey; NCVER – National Centre for Vocational Education Research; KPIs – National Key Performance Indicators for Aboriginal and Torres Strait Islander Health; and NHWDS–National Health Workforce Dataset.

A case study illustrating Aboriginal and Torres Strait Islander health workforce planning: renal care in remote areas

Aboriginal and Torres Strait Islander people experience a very high and increasing incidence of end-stage kidney disease, particularly in remote areas (Australia and New Zealand Dialysis and Transplant Registry, 2018; AIHW, 2013). Dialysis treatment for end-stage kidney disease is a speciality area of healthcare requiring skilled health professionals and characterised by large amounts of contact between patients and staff. As nurses and Aboriginal HPs are not required to report on their areas of specialisation in the census and NCVER (Table 1), it is not presently known how many Aboriginal and Torres Strait Islander HPs are working in Australian dialysis services.

On 1 November 2018, the Australian Government introduced changes to the Medical Benefits Schedule (Medicare) to support the provision of dialysis by 'registered nurses, Aboriginal Health Workers and Aboriginal and Torres Strait Islander Health Practitioners in very remote areas of Australia defined as Modified Monash Model 7'.[6] As part of this case study we sought to understand how Aboriginal and Torres Strait Islander HPs may improve the care of Aboriginal and Torres Strait Islander renal patients. We also sought to estimate how many extra staff, including Aboriginal and Torres Strait Islander HPs, would be required to provide care in Modified Monash Model 7 (MMM7)[7] areas if uptake of staff-supported haemodialysis was increased as a result of this policy change.

Health benefits of an Aboriginal and Torres Strait Islander renal workforce

Research evidence suggests that expanding the Aboriginal and Torres Strait Islander renal workforce will improve cultural safety, patient communication and holistic care in renal services. It also suggests that an Aboriginal and Torres Strait Islander renal workforce would contribute to improved adherence to treatment and improved Aboriginal and Torres Strait Islander patient health outcomes.

Renal services provided to Aboriginal and Torres Strait Islander patients require particular attention to cultural safety. Among Aboriginal and Torres Strait Islander people from several regions of Australia, blood and the kidneys are associated with certain taboos, and dialysis may be experienced as a highly intimate form of treatment (Devitt and McMasters, 1998; Reid, 1983; Strathern and Stewart, 1999). Dialysis services may be subject to particular expectations among some patients of the separation of genders, applying to both patients and staff (Puszka, unpub ms). At the same time patients may be unwilling to discuss concerns about these matters with the HPs they rely on (Devitt et al., 2017; Heil and Macdonald, 2008). Anecdotally, we know that such sensitivities and expectations are not always well understood or accommodated by non-Indigenous renal HPs or within healthcare systems. Some non-Indigenous HPs employed in renal services report difficulty in navigating patient relationships (Devitt et al., 2017). Fostering culturally safe renal services requires a system-wide approach, however improving the representation of Aboriginal and Torres Strait Islander HPs among staff will improve the capacity of renal services to respond to these issues and is a critical element of culturally safe care. The employment of Aboriginal and Torres Strait Islander HPs from the same communities and groups as patients will improve the capacity of renal services to develop local responses.

Dialysis is a highly technical, specialised form of treatment. Meticulous adherence to treatment regimes is ideal; missing only a small number of dialysis sessions can have a substantial impact on overall health, potentially resulting in hospitalisation and increasing the risk of mortality (Obialo et al., 2012; Tentori et al., 2007). Missing

[6] http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Factsheet-RenalMedicine
[7] https://www.health.gov.au/health-workforce/health-workforce-classifications/modified-monash-model

treatment can also impact on patients' eligibility for remote dialysis services when they are available, as well as patients' eligibility to be wait-listed for a kidney transplant (Anderson et al., 2007). Renal patients are commonly prescribed highly complex diets that carefully manage caloric and dietary intake (Kidney Health Australia, 2017). Effective communication between patients and their treating HPs is critical in ensuring patients receive relevant and necessary information concerning their condition and treatment, as well as having opportunities to raise questions and concerns.

Nonetheless, a substantial volume of research from across Australia suggests that current communication between HPs and Aboriginal and Torres Strait Islander renal patients is often poor (Anderson et al., 2008; Bennett et al., 1995; Burnette and Kickett, 2009; Cass et al., 2002; Devitt and McMasters, 1998; Hughes et al., 2018; Rix et al., 2014). Inadequate communication with patients within renal services does not reflect Australian healthcare safety and quality standards (The Wardliparingga Aboriginal Research Unit of the South Australian Health and Medical Research Institute, 2017) and may lead to patient harm. Increasing the Aboriginal and Torres Strait Islander health workforce within renal services, as well as the employment and uptake of interpreters of Aboriginal and Torres Strait Islander languages, supports improved effectiveness of communication between patients and staff (Burnette and Kickett, 2009; Cass et al., 2002; Rix et al., 2013).

Employment of renal-trained Aboriginal Health Practitioners to deliver remote renal services: examples from the Tiwi Islands and the Kimberley

Evaluations of remote dialysis services on the Tiwi Islands and in the Kimberley show that patients receiving treatment on country had better health outcomes, better adherence to treatment, reduced hospitalisation rates and reported improved quality of life (Gorham, 2000; Marley et al., 2010). In both cases, the employment of renal-trained Aboriginal Health Practitioners contributed to overwhelmingly positive patient outcomes.

In the Tiwi Dialysis Centre model, renal-trained Aboriginal Health Practitioners initially worked together with patients' carers to perform dialysis. Carers were trained to assist patients and staff performed treatment as non-remunerated dialysis 'buddies'. The Tiwi model was found to work well when buddies assisted Aboriginal Health Practitioners but was less effective when subsequent patients required a higher level of care beyond the training of buddies. Local Aboriginal people employed as renal Aboriginal Health Practitioners also expressed concerns about providing care to patients of a different gender and in specific kin relationships to them. None remained in the role for an extended period, and Aboriginal Health Practitioners from outside the community were subsequently employed. Staffing at the Kimberley Satellite Dialysis Centre does not appear to have been impacted by similar issues.

The employment of Aboriginal and Torres Strait Islander staff drawn from the same communities and groups as patients provides opportunities to improve patient outcomes and foster local approaches to culturally-safe care. However, renal services will also need to work closely with Aboriginal and Torres Strait Islander communities and patients to navigate gender norms and kinship relations between staff and patients.

Aboriginal and Torres Strait Islander renal patients may experience a range of psychosocial issues and physical impairments relating to their condition and treatment. They require comprehensive, holistic approaches to care that encompass far more elements than the process of dialysis itself (Rivalland, 2006). Aboriginal and Torres Strait Islander people with end-stage kidney disease who are displaced to urban centres experience the intersection of disadvantage, displacement and serious illness (Devitt and McMasters, 1998). They contend with housing insecurity and are at high risk of homelessness (Cass et al., 2011; Habibis et al., 2011; Puszka, 2019). In the absence of familial networks of support, these people may also be at risk of intimate partner violence

(Puszka, unpub ms). While patients undertaking treatment in their communities may not experience the negative impacts of displacement, they are still likely to require a level of support. End-stage kidney disease is regularly associated with frailty and physical impairment, however the connection between chronic disease and disability is not well recognised within the National Disability Insurance Scheme (Puszka 2019). Issues of this kind are likely to be distressing to patients and impact their capacity to adhere to treatment (Devitt and McMasters, 1998). Gorham et al. (2017) suggest that in some models of remote community-based dialysis currently in operation, eligibility criteria for treatment in remote areas is less strict due to the presence of social support for patients. A comprehensive model of care for Aboriginal and Torres Strait Islander renal patients will require expanding current social support and advocacy roles within renal services (Gorham et al., 2016; Rivalland, 2006). This may include the development of new roles and identified positions.

Estimating the Aboriginal and Torres Strait Islander dialysis workforce required in very remote areas

Matching the supply of Aboriginal and Torres Strait Islander HPs to the need for health services has an important geographical element. Meeting healthcare needs involves the provision of healthcare services in a location nearby to where patients live. For some health conditions that require regular treatment, patients must permanently relocate closer to the location of health services to receive treatment.

We hypothesise that treatment services are inequitably distributed, with health services likely to be located further from the homes of Aboriginal and Torres Strait Islander people and closer to the homes of non-Indigenous Australians (see, e.g., Markham & Doran, 2015). If this is the case, then Aboriginal and Torres Strait Islander people are more likely to have to relocate to access health services, further compounding health inequities.

It is not clear how many Aboriginal and Torres Strait Islander people relocate in order to access health services. It is reasonable to expect that many people who have moved would like to return to their previous residential location if adequate services were available there. In this section, we demonstrate a method for estimating the number of Aboriginal and Torres Strait Islander renal patients who have relocated to access treatment. We use this case study to test the hypothesis that Aboriginal and Torres Strait Islander people are more likely to have to move to access healthcare than non-Indigenous Australians. We then estimate the number of Aboriginal and Torres Strait Islander HPs required in very remote areas if geographical access to treatment services were equalised for Aboriginal and Torres Strait Islander people.

Methods

To estimate the Aboriginal and Torres Strait Islander dialysis workforce required we utilised the Australian and New Zealand Dialysis and Transplant (ANZDATA) Registry to estimate the Aboriginal and Torres Strait Islander dialysis and care needs. The ANZDATA Registry is a unique dataset that receives demographic, basic comorbidity and treatment information about every person in Australia that receives maintenance renal replacement therapy for end-stage kidney diseases – that is, dialysis treatment or a kidney transplant. Such a dataset allows for estimates of need across geographic location. Since 2005, this dataset has included both the postcode of residence of patients at the start of treatment, as well as the postcode of residence at 31 December every year. Data for all patients starting treatment from 2013 to 2017 inclusive was used in this analysis, with follow-up complete to the end of 2017.

Using ABS[8] and Australian Government Department of Health[9] correspondence files, we used these data to determine the number of people originally resident in very remote (MMM7) areas of Australia, and to determine the number of people who had the same postcode reported two years after starting treatment as that recorded at the start of treatment.

We also assessed the cumulative chances of either death or treatment recorded with the same-as-original postcode to two years after starting treatment, to be presented graphically. Using multivariable multinomial logistic regression, we estimated the risk of death and treatment recorded with the same-as-original postcode at two years after starting treatment for non-Indigenous patients, taking demographic factors, recorded comorbidities and primary renal disease at treatment commencement and remoteness of origin into account. Adjusting for comorbidities is an important step, as those with comorbidities are more likely to have complex care needs and thus are more likely to need to relocate close to a major hospital. We applied the resulting estimated probabilities of treatment recorded with the same-as-original postcode to the Aboriginal and Torres Strait Islander patient group, to estimate the number of Aboriginal and Torres Strait Islander patients originating from MMM7 areas who *would have* received treatment at the same-as-original postcode at two years after starting treatment, *if they had the same chances to return to the same postcode as non-Indigenous Australians from the same MMM7 remoteness category*.

To estimate the workforce deficit in the treatment of Aboriginal and Torres Strait Islander patients from very remote (MMM7) areas back in or close to their own communities or origin, we applied a simple formula of two staff for every four patients (as advised in personal communication with Sarah Brown, CEO of Purple House).

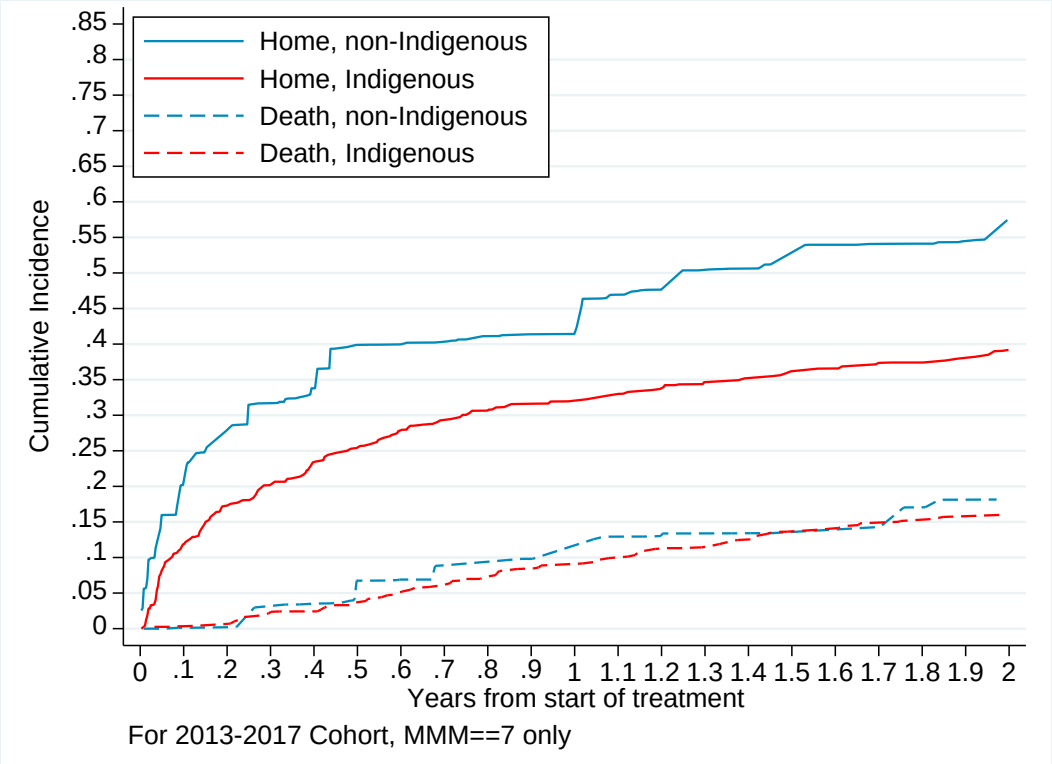
Results

A total of 12 900 patients started maintenance renal replacement treatment in Australia between 2013 and 2017 inclusive, of whom 1387 were Aboriginal and Torres Strait Islander. A total of 435 Aboriginal and Torres Strait Islander patients were from MMM7 areas; in contrast, only 48 non-Indigenous patients were from MMM7 regions.

Two years after the start of treatment, 184 Aboriginal and Torres Strait Islander patients originally from MMM7 areas had returned to the same-as-original postcode on treatment, 195 had a different postcode on treatment and 56 had died; 31 non-Indigenous patients originally from MMM7 areas had returned to the same-as-original postcode on treatment, 10 had a different postcode on treatment and seven had died. The cumulative incidence of returning to the same-as-original postcode, and the risk of death, is demonstrated in Fig. 3. At two years after the start of treatment, 67 of the Aboriginal and Torres Strait Islander MMM7-origin patients were being treated through a self-care dialysis modality (such as peritoneal dialysis or self-care home haemodialysis), and three had a kidney transplant; 15 non-Indigenous MMM7-origin patients were being treated with a self-care dialysis modality and seven non-Indigenous patients had a kidney transplant.

[8] https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/1270.0.55.006July%202011?OpenDocument
[9] https://www.health.gov.au/health-workforce/health-workforce-classifications/modified-monash-model
https://data.gov.au/data/dataset/modified-monash-model-mmm-2019

Fig. 3 Cumulative chances of treatment at home and death by Indigenous status



Source: Author calculations based on Australia and New Zealand Dialysis and Transplant Registry (ANZDATA 2018)

The multivariable multinomial logistic regression model predicted that 31 non-Indigenous patients originally from MMM7 regions should have returned to the same-as-original postcode on treatment two years after start of treatment if they had the same chances as all non-Indigenous patients (taking age, sex, remoteness, comorbidities and primary renal diagnosis into account). In contrast, the model predicted that 249 Aboriginal and Torres Strait Islander patients (or 65.7% of surviving patients) should have returned to the same-as-original postcode on treatment if they had the same chances to return to the same postcode as non-Indigenous patients (taking age, sex, remoteness, comorbidities and primary renal diagnosis into account).

Discussion

In summary, our calculations suggest that two years after starting treatment between 2013 and 2017, 114 Aboriginal and Torres Strait Islander patients and nine non-Indigenous patients were receiving staff-supported haemodialysis in MMM7 areas of Australia. This means that approximately 62 FTE nursing or HP staff were already working to provide this dialysis care in MMM7 areas. Although small in number, a far higher proportion of surviving non-Indigenous patients from MMM7 areas (53.7%) were receiving treatment with a self-care dialysis modality or a kidney transplant than Aboriginal and Torres Strait Islander patients (18.5%).

If they had the same opportunity as non-Indigenous patients from very remote areas to return home, an additional 65 Aboriginal and Torres Strait Islander patients would have received care in MMM7 home communities *even taking their documented illness burden into account.* Using the above-mentioned Purple House formula of two staff for every four patients, an additional 32.5 FTE staff would be required to provide dialysis care in MMM7 areas of Australia (assuming no increase in the chances of transplantation for Aboriginal and Torres Strait Islander patients from remote or very remote areas). There would be no increase in the number of non-Indigenous patients from MMM7 areas requiring staff-supported care.

Access to dialysis treatment in very remote (MMM7) areas among Aboriginal and Torres Strait Islander people may improve as take-up of the new Medicare support proceeds. If equitable access to dialysis treatment in MMM7 areas is achieved, a needs-based allocation of dialysis staff in MMM7 areas would require 89% of staff to be Aboriginal and Torres Strait Islander HPs. As we know that attracting and retaining HPs in remote areas is challenging, workforce planning should include an emphasis on attracting Aboriginal and Torres Strait Islander HPs drawn from within local communities. Additionally, addressing cultural safety, necessitates local and culturally specific responses. Developing new identified roles may provide an avenue for overcoming human resource and cross-cultural challenges.

Options for developing new identified roles in renal services

In the Central Australian Renal Study update, commissioned by the Commonwealth Department of Health, Gorham and her co-authors recommended the development of new identified roles in Northern Territory renal services (Gorham et al., 2016; Hooper et al., 2007). New roles would have little or no involvement in administering dialysis in order to respect cultural protocols associated with blood and the kidneys. These roles would not require extensive training, avoiding the need for trainees to be absent from their communities for extensive periods. A proposed Indigenous dialysis professional role would assist with machine set up and strip down and would monitor treatment, requiring six months of training. Alternatively, an Indigenous dialysis assistant role would support renal nurses and would have no clinical role, only requiring on-site training.

Purple House is an Aboriginal Community Controlled Health Organisation that provides dialysis across the Northern Territory. As part of its holistic model of care, Purple House has developed a non-clinical patient preceptor role (Purple House, 2019). Patient preceptors are Indigenous people with lived experience of end-stage kidney disease, who are recognised as leaders within their communities. Their roles involve advocacy within healthcare systems, patient education and social support to patients and their families. Preceptors are casual employees of Purple House covered by the Social, Community, Home Care and Disability Services Industry Award. Their positions are currently funded by communities, e.g. through mining royalties.

Conclusions

Aboriginal and Torres Strait Islander HPs make a vital and undeniable contribution to providing culturally safe care and improving Aboriginal and Torres Strait Islander health outcomes. Further increasing the employment of Aboriginal and Torres Strait Islander people in the health workforce will continue to yield positive health outcomes for patients. Sustaining the growth of this workforce and realising the potential benefits for Aboriginal and Torres Strait Islander health requires national leadership and appropriate planning. Appropriate workforce planning requires establishing and modelling targets that take into consideration the burden of disease, geographic location of health needs and equitable access to culturally safe care; and addressing deficiencies in the workforce data currently available. Appropriate workforce planning also requires addressing very low retention rates through structural, system-wide reforms to foster culturally safe workplaces. Realising the benefits and contributions of the Aboriginal and Torres Strait Islander health workforce to improving health outcomes necessitates working in partnership with Aboriginal and Torres Strait Islander health peak organisations.

Appendix 1. Health-related qualifications, fields of study

Field Code	Field of Education	Field Code	Field of Education
019901	Medical Science	060705	Dental Technology
019907	Pharmacology	060799	Dental Studies, n.e.c.
060101	General Medicine	060901	Optometry
060103	Surgery	060903	Optical Technology
060105	Psychiatry	060999	Optical Science, n.e.c.
060107	Obstetrics and Gynaecology	061301	Occupational Health and Safety
060109	Paediatrics	061303	Environmental Health
060111	Anaesthesiology	061305	Indigenous Health
060113	Pathology	061307	Health Promotion
060115	Radiology	061309	Community Health
060117	Internal Medicine	061311	Epidemiology
060119	General Practice	061399	Public Health, n.e.c.
060199	Medical Studies, n.e.c.	061501	Radiography
019901	Medical Science	061701	Physiotherapy
019907	Pharmacology	061703	Occupational Therapy
060101	General Medicine	061705	Chiropractic and Osteopathy
060103	Surgery	061707	Speech Pathology
060105	Psychiatry	061709	Audiology
060107	Obstetrics and Gynaecology	061711	Massage Therapy
060109	Paediatrics	061713	Podiatry
060111	Anaesthesiology	061799	Rehabilitation Therapies, n.e.c.
060113	Pathology	069901	Nutrition and Dietetics
060115	Radiology	069903	Human Movement
060117	Internal Medicine	069905	Paramedical Studies
060119	General Practice	069907	First Aid
060199	Medical Studies, n.e.c.	069999	Health, n.e.c.
060301	General Nursing	090501	Social Work
060303	Midwifery	090507	Care for the Aged
060305	Mental Health Nursing	090509	Care for the Disabled
060307	Community Nursing	090511	Residential Client Care
060309	Critical Care Nursing	090513	Counselling
060311	Aged Care Nursing	090515	Welfare Studies
060313	Palliative Care Nursing	090599	Human Welfare Studies & Services, n.e.c.
060315	Mothercraft Nursing and Family and Child Health Nursing	090701	Psychology
060399	Nursing, n.e.c.		
060501	Pharmacy		
060701	Dentistry		
060703	Dental Assisting		

Source: ABS Australian Standard Classification of Education ASCED 2001, released 2015 (ABS 2015).

Appendix 2. 'Health Professionals', fields of occupation

Code	Occupation
1342	Health and Welfare Services Managers
2511	Dietitians
2512	Medical Imaging Professionals
2513	Occupational and Environmental Health Professionals
2514	Optometrists and Orthoptists
2515	Pharmacists
2519	Other Health Diagnostic and Promotion Professionals
2521	Chiropractors and Osteopaths
2522	Complementary Health Therapists
2523	Dental Practitioners
2524	Occupational Therapists
2525	Physiotherapists
2526	Podiatrists
2527	Speech Professionals and Audiologists
2531	Generalist Medical Practitioners
2532	Anaesthetists
2533	Specialist Physicians
2534	Psychiatrists
2535	Surgeons
2539	Other Medical Practitioners
2541	Midwives
2542	Nurse Educators and Researchers
2543	Nurse Managers
2544	Registered Nurses
2721	Counsellors
2723	Psychologists
2725	Social Workers
272613	Welfare Workers
3112	Medical Technicians
4111	Ambulance Officers and Paramedics
4112	Dental Hygienists, Technicians and Therapists
4113	Diversional Therapists
4114	Enrolled and Mothercraft Nurses
4115	Indigenous Health Workers
4116	Massage Therapists
423	Personal Carers and Assistants
4231	Aged and Disabled Carers
4232	Dental Assistants
4233	Nursing Support and Personal Care Workers
4234	Special Care Workers

Source: Australian Bureau of Statistics – Statistics New Zealand, Australian and New Zealand Standard Classification of Occupations, ANZSCO, First Edition Revision 1, Released 2009.

Appendix 3. Literature survey of benefits to Aboriginal and Torres Strait Islander patients arising from the involvement of Aboriginal and Torres Strait Islander health professionals

Publication	Study objectives	Method	Sample size	Relevant major findings
Taylor et al., 2018	Describe the Aboriginal and Torres Strait Islander specific programs and initiatives implemented in a subset of cancer treatment services	Qualitative, semi-structured interviews	14 cancer service providers	Aboriginal and Torres Strait Islander staff members can be especially effective in engaging and following up Aboriginal and Torres Strait Islander patients
Mbuzi et al., 2017	Explore Aboriginal and Torres Strait Islander peoples' experiences of hospitalisation for acute cardiac care	Qualitative, narrative inquiry	24 Aboriginal and Torres Strait Islander patients	Aboriginal and Torres Strait Islander patients view Indigenous Hospital Liaison Officers as vital because they provided companionship and a link to their culture
Custodio et al., 2016	Report on an Indigenous led health initiative during a disease outbreak in a remote community	Case report	176 Indigenous children	Disease levels were significantly reduced
Tavella et al., 2016	Compare coronary care for Indigenous and non-Indigenous patients who present to hospital with acute coronary syndrome	Quantitative study	12 797 non-Indigenous & 274 Indigenous patients	Care for Indigenous patients improved when facilitated by Indigenous staff.
Worrall-Carter et al., 2016	Explore Aboriginal patient experience of cardiac care	Qualitative patient experience	10 Indigenous patients	Aboriginal Health Liaison Officers were regarded as an important part of the team involved in the care of Aboriginal patients
Daws et al., 2014	Report on the outcomes of a working together model of care coordination by an Aboriginal Hospital Liaison Officer and a specialist cardiac nurse	Quality improvement	15 Aboriginal patients	Cardiac rehabilitation attendance for Aboriginal patients is improved when Aboriginal Hospital Liaison Officer and specialist cardiac nurse coordinate care
Einsiedel et al., 2013	Examine rates and risk factors for self-discharge by Indigenous patients	Quantitative prospective cohort study	202 Indigenous patients	The involvement of Indigenous staff reduces self-discharge rates for Indigenous patients.
Taylor et al., 2009	Examine the impacts of an Indigenous health worker in a hospital setting	Mixed methods	12 Indigenous patients	Indigenous health workers can have a substantial positive impact in hospitals

Hooper et al., 2007	Describe the extent and nature of professional partnerships between occupational therapists and Aboriginal health workers	Qualitative	7 health professionals	partnerships significantly benefit the client and health outcomes for Aboriginal communities; and professional partnerships significantly benefit the client and health outcomes for Aboriginal communities; and professional partnerships significantly benefit the client and health outcomes for Aboriginal communities; and Professional partnerships with Aboriginal Health Workers significantly benefit the health outcomes of Aboriginal clients
McDermott et al., 2015	Evaluation of the effectiveness of a community-based Aboriginal Health Worker (AHW)-led case management approach to diabetes the care in primary care services in remote northern Australia	Quantitative (randomised controlled trial)	213 Indigenous patients	A culturally safe, AHW-led model of diabetes care for high risk patients can be effective in improving diabetes control
Templeton et al., 2010	Evaluation of an AHW-led screening program for sexually transmissable infections and blood-borne viruses a delivered to male detainees of a rural juvenile detention centre	Quantitative (file audit)	101 screens	The education and screening program, employing skilled Aboriginal staff not affiliated with the correctional system, identified a large number of asymptomatic and previously undiagnosed infections among detainees.
Anderson et al., 2009	Discussion of current status and future directions of Indigenous health workforce	Qualitative (editorial)	Editorial; no data collected	Potential for the presence of an Indigenous health workforce to alter the culture of healthcare systems
King, 2001	Explore beliefs and attitudes about healthcare among Indigenous people in South Australia	Qualitative	43 interviews with Indigenous health professionals	AHWs considered integral to the successful delivery of diabetes care
Abbott et al., 2007	Descriptive analysis of roles of AHWs in the health workforce	Qualitative (case report)	6 case histories	AHWs play critical roles in emergency care, client support, peer education, holistic care, Indigenous leadership, cultural mentorship and health promotion

Gilroy et al., 2017	Review of Australian Indigenous disability workforce literature	Qualitative (systematic review)	18 studies reviewed; various sample sizes	An Indigenous disability workforce in regional and remote areas may improve the accessibility of the NDIS among Indigenous people
Deshmukh et al., 2014	Assess perspectives of Indigenous health professionals on cardiovascular risk assessment	Qualitative	8 AHWs and Indigenous nurses	AHWs and Indigenous nurses contribute to cardiovascular risk assessment and education through their credibility with Indigenous clients
Stamp et al., 2008	Assess a model of perinatal care involving Aboriginal Maternal and Infant Care (AMIC) workers and midwives	Qualitative	9 interviews	AMIC workers and midwives contribute to an inter-cultural model of care
Harris & Robinson, 2007	Evaluation of the Aboriginal Mental Health Worker (AMHW) Program in the Northern Territory	Mixed methods	52 interviews, 30 file audits	AMHWs provide important contributions in responding to mental health crises and addressing domestic violence and drug and alcohol abuse. AMHWs can provide culturally appropriate counselling
Si et al., 2006	Assess the effect of employing AHWs to deliver of diabetes care in remote community health centres	Quantitative (file audit)	137 medical records	Employing AHWs is associated with improved delivery of diabetes care in remote communities

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