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Viewpoint

A cross-jurisdictional research collaboration aiming to improve health outcomes in the tropical north of Australia

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ABSTRACT

Can equitable health outcomes across Australia be provided by increasingly urban-dominated populations? The Australian HOT North (Improving Health Outcomes in the Tropical North) program has tackled the increasing urban-rural/remote health divide by focusing on three components of the health research ecosystem – researcher retention and recruitment, researcher-practitioner collaborations, and knowledge transfer by forming cross-jurisdictional and multi-disciplinary networks and delivering on-country knowledge translation. We propose that a more widespread implementation of locally-designed research and practice, embedded alongside programs that strengthen cross-jurisdictional networks, would increase health equity in rural and remote areas.

Health outcome equity in non-urban settings is improved by on-ground research and knowledge translation.

Universal and geographically accessible health coverage is an oft-stated aim [1], but how can this be achieved outside major urban centres? Health systems vary across the Pacific Islands, with poor health undermining development [2]. In Australia, mapping of a health index clearly shows the health disadvantage of regional and remote areas compared to metropolitan centres [3]. In 2016, the population living in very remote areas of Australia had a mortality rate 40% higher than the population living in major cities [4], with the inequality increasing since 2006 due to declines in mortality in cities, while regional and remote area death rates have not decreased [4]. This health outcome equity challenge has mainly been investigated through the prism of the maldistribution of the medical workforce [5], with solutions such as the Australian Rural Generalist Pathway implemented with some success [6].

However, the rise in dominance of urban centres continues, with the population of Melbourne projected to double to 10.2 million by 2056 [7]. In Australia, there has recently been a call to end "geographic narcissism" and "metrocentric" policymaking in health [8], and a move away from winner-takes-all urbanism and reliance on core-periphery relationships to a reshaping of the research landscape to address the inequity of health coverage across the country [9]. Despite having many common challenges, Northern Australia, in which the activities covered by this viewpoint are based, experiences siloed and ad hoc health care delivery. Furthermore, workforce planning sometimes hampers opportunities to jointly and systematically identify cross-jurisdictional health systems issues and areas of development potential, as identified by a recent situational analysis of northern Australia health service delivery [10].

Successful examples do exist of initiatives that have addressed the challenges of remote health delivery and research such as: Aboriginal Community Controlled Health Services (ACCHS) [11], the Greater Northern Australian Regional Training Network [12], and the Tropical Australian Academic Health Centre. Other examples are provided in the Northern Australia Health Service Delivery Situational Analysis [10], commissioned by the Cooperative Research Centre for Northern Australia. The link between research and health outcomes and provision in northern Australia is evidenced in numerous examples, from Indigenous Primary Health Care Continuous Quality Improvement Processes [13], to providing the evidence base for the Remote Primary Health Care Manuals [14], to directly informing changes to Commonwealth policy to improve access to dialysis in very remote areas for Aboriginal and Torres Strait Islander Australians [15]. Further Australia-wide recent examples are summarised in 10 of the Best, showcasing significant research projects that support the improvement of human health [16].

Our exemplar in this article, the HOT North (Improving Health Outcomes in the Tropical North) program was funded through an

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Fig. 1. The HOT NORTH Example: Building capacity locally and regionally through cross-cultural, cross-disciplinary, cross-sectoral, and cross-jurisdictional engagement.

Australian National Health and Medical Research Council four-year grant (2017-2020) following the release of the Australian Government's *Our North, Our Future: White Paper on Developing Northern Australia,* which included the aim "to position the north as a global leader in tropical health" [17]. The approach taken by the HOT North program has been to improve health outcomes by value-adding to existing northern health research and implementation activities with a focus on three components of the health research ecosystem – researcher retention and recruitment, researcher-practitioner collaborations, and on-country knowledge translation. From the outset the emphasis has been on forming cross-jurisdictional and multi-disciplinary networks and on-country engagement to address in part, northern Australia's geographical health outcome equity challenges. The personal, practice and policy outcomes to date from the HOT North program are summarised in its Impacts Report [18].

Northern researcher capacity has been developed using a series of training awards, scholarships, and fellowships, with 50 individuals supported to date. All recipients are encouraged to live and work in northern Australia as it is known from medical workforce studies that within-region training leads to health professionals returning to those regions to practice [19]. Research and translation project funding has been used to build collaborations and researcher capacity across the north, with priority given to projects which have cross-jurisdictional partners and impact. In total, 25 research institutions and 80 health implementation organisations across northern Australia and neighbouring countries participated in HOT North activities in the first three years of operation [20]. As the major burden of disease across northern Australia is within the First Nations populations, all relevant applications were subject to review by Indigenous health professionals. When coupled with a grant program specifically for Aboriginal and Torres Strait Islander applicants, over 30% of HOT North supported projects to date have Indigenous recipients or participants.

Although there are more similarities in the disease burdens and determinants of health across northern Australia than with southern, more urbanised locations, both decision-making and training provision are mostly south → north and urban → regional and non-Indigenous → Indigenous in direction (Fig. 1). This could be argued as another version of the entrenched core-periphery relationship where the practices of the normative "core" are the default [21]. Is there an appetite and capacity for sustainably reshaping the service delivery and research landscape in response to the remoteness, cultures, power relations, social ties, and other dynamics in rural and remote settings?

HOT North has attempted to address this imbalance by holding 15 forums attended by over 1600 participants in regional locations from Broome to Thursday Island, with local health challenges and solutions the focus. At first, these meetings were met with some resistance as locals, weary of yet more fly-in researchers, expressed their frustrations at the lack of reciprocal benefits from previous interactions. But as the local community took more and more control over the agenda, presentations and participation in the forums, their feedback on the benefits of learning-in-place became highly positive, especially from the junior front-line health workers who had much less opportunity to travel than senior health staff. In addition to local participation, across-the-north peer-to-peer learning at the workshops was facilitated by HOT North travel support for Indigenous participants from other jurisdictions.

We believe that improving health outcomes outside of cities can be achieved by increased focus on local community input and control of research and practice (especially for First Nations communities), more opportunities for on-country professional development and peer-to-peer learning and more cross-border policies, programs, and funding. The most relevant example is how the Aboriginal Community Controlled Health Service sector has been shown to improve the health and wellbeing of Aboriginal peoples through multiple pathways [11] and as observed by one com-

Table 1
Potential policy opportunities arising from the HOT North program's experiences.

Activity Domain	HOT North Approaches	Future Opportunities
Cross-cultural	Aboriginal and Torres Strait Islander review of all project applications. Aboriginal and Torres Strait Islander Researcher and Stakeholder participation in Executive Steering Committee. Designated funding rounds for Aboriginal and Torres Strait Islander applicants working at any level in health sector. Community design and participation in workshops and training. Understanding and implementing cross-cultural health communication.	Aboriginal and Torres Strait Islander input into research funding scheme design, promotion, and assessment. Aboriginal and Torres Strait Islander paid leadership and participation in research, not just advisors. Supporting Aboriginal and Torres Strait Islander clinicians and health workers to participate in research. Co-designed health communication using appropriate languages and formats – social media, video, music.
Cross-disciplinary	Project's led by any level of health professional. Assessment of awards based on proposal quality and impact, not seniority/record. Specific funding streams for each level of researcher – student, early-, mid-career. Cooperation rather than competition with related national programs – joint projects and workshops.	Increased focus by research funders on health outcomes, not just academic record. Target funding towards pinch points in researcher training pipeline. Prioritise research that includes capacity-building. Supplement competitive research calls with commissioned collaborative cross-disciplinary research.
Cross-sectoral	Partnerships with over 80 organisations to conduct and implement research. Pivoted to support translation of research in second half of term. Included new workshop topics in response to community feedback – housing and environmental health, mental health, youth.	Support community and practitioner co-design and participation in research. Ensure that all research is translated through to appropriate practitioners. Link health researchers to social and environmental determinant researchers.
Cross-jurisdictional	Regional workshops to listen to community priorities and discuss research findings. Equitable split of funding across northern jurisdictions. Support for peer-to-peer learning across borders. Cross-border networks to support remote researchers – Women in Tropical Health.	Develop opportunities for remote and regional communities to contribute to research priorities. Facilitate collaborations through pan-northern funding schemes and networks [19]. Encourage peer-to-peer learning through f2f or virtual cross-border interactions.
Cross-the water	Value-add to research and capacity building activities in near neighbours.	Position northern Australia as a leader in tropical health research and training.

mentator, their model is successful because Aboriginal community members are not just in an advisory role that can be ignored [22]. Community input into research is an increasing trend, for example the Kimberley Aboriginal Health Research Alliance aims to have Aboriginal leadership and participation in research, and it also plays a key coordination and collaboration role to ensure that research is translated into policy and practice change [23]. Examples of cross-border collaboration in northern health are more difficult to find, as funding is mainly state-based. The Australian Government funded both HOT North and the Cooperative Research Centre for Northern Australia, but both are fixed-term programs rather than an ongoing and independent cross-jurisdictional northern Australian health system network, a key priority action suggested by the recent situational analysis of northern Australia health service delivery [10]. In Table 1 we suggest policies that can build upon the successful activities of HOT North to create further improvements in health outcomes in northern Australia and similar regions.

Many potential disconnects and inefficiencies in health delivery still exist in remote areas in Australia: state-based regulations and accreditations; the regional blind-spots of very distant capital city governments and bureaucracies; trust and communication between researchers, policy-makers and practitioners, and competition between research institutions [24]. So, despite the hard work of many individuals across the north in remote and difficult environments, faced with these many barriers it is no wonder that equitable health outcomes in non-urban Australia remain so elusive.

In summary, we argue that the process of building networks of researchers, clinicians and other practitioners can break down cross-jurisdictional and geographical boundaries. When coupled with projects that take direction from local communities these initiatives build the capacity of regional and remote health sectors while better supporting the people they serve. HOT North workshop participant Elaine Clifton, an Aboriginal Community Researcher for the Telethon Kids Institute, eloquently validated this approach in an impact interview '*It would be so wonderful if more health services did the sorts of things that HOT North does… they come with an open heart and walk with us on our journey to find answers and to innovate. It's exciting to see that things can change… going forward as a nation we all benefit from it.*'

Declaration of Competing Interest

KW, SR, HD, and BC have nothing to disclose.

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