Mobile primary health care clinics for indigenous populations in Australia, Canada, New Zealand and the United States: a scoping review protocol

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ABSTRACT

Objective: The objective of this review is to explore and examine the available evidence on mobile primary health care clinics for indigenous populations in Australia, Canada, New Zealand and the United States.

Introduction: Despite the evidence for the effectiveness of primary health care in improving health outcomes, accessing primary care services is often problematic for indigenous populations in Australia, Canada, New Zealand and the United States. Improving the accessibility of primary health care services for indigenous populations is considered essential to alleviating the burden of disease and improving well-being.

Inclusion criteria: The review will consider literature that discusses the implementation of a mobile primary health clinic for indigenous populations. Mobile primary health care clinics targeting indigenous populations of all ages will be included in this review. Transportable clinics (e.g. van, truck or bus) fitted with health care equipment that deliver health services in a defined geographical area will be included. Only literature published in English from 1 January 2006 will be included.

Methods: Ovid MEDLINE, CINAHL, Embase, Cochrane Database of Systematic Reviews and SocINDEX will be searched, as well as gray literature sources. The full-text of selected literature will be retrieved and assessed in detail against the inclusion criteria by two independent reviewers. Data will be extracted by two independent reviewers, and a narrative summary will be provided on the objectives, concepts and results of the review question.

Keywords Global health; health services; indigenous health; mobile health clinics; primary health care

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Introduction

Accessible primary health care services are an inherent human right for all populations, as stipulated by the Declaration of Alma-Ata (1978).[1] Despite the evidence for the effectiveness of primary health care in improving health outcomes, accessing primary care services is often problematic for indigenous populations in Australia, Canada, New Zealand and the United States.[2-4] Defined internationally as essential health care, primary health care forms the frontline of the health system and delivers a range of services to improve health and well-being across a person's lifespan.[1,5] Examples of services include health promotion, child and maternal health, disease prevention (primary and secondary) and chronic disease management.[5] Evidence supports the effectiveness of primary health care services in improving health outcomes by addressing disease risk factors,[6,7] improving maternal and child health outcomes[8] and enhancing the management of chronic disease across a range of contexts.[9]

Indigenous populations across the globe are culturally and linguistically diverse, with differing environmental contexts (e.g. climate), cultural practices (e.g. lore, customs) and ancestry.[2] Australia, Canada, New Zealand and the United States are nations that share similarities in the history of

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colonization and discrimination endured by indigenous populations, resulting in ongoing trauma and poor health outcomes.[10] Although indigenous populations in these nations constitute a small proportion of the total population (approximately 3%, 2.5%, 14.9% and 2% of the total Australian, Canadian, New Zealand and United States populations, respectively), they experience a greater burden of preventable chronic disease, such as type two diabetes and cardiovascular disease.[2,11] As a result of these health inequities, indigenous populations have a higher premature mortality rate than their non-indigenous counterparts.[11-13] Similar disadvantage exists when accessing primary health care services.[2] Key issues include geographical distance from services, expenses associated with health care, transport barriers, distrust of the health system, a paucity of publicly funded health services, a lack of cultural safety and cultural competency, as well as explicit and implicit racism and discrimination.[2,4,14-17]

Improving the accessibility of primary health care services for indigenous populations is considered essential to alleviating the burden of disease and improving well-being.[2] For example, there is evidence that strengthening the provision of cardiovascular disease prevention services in remote Indigenous communities in Australia enables Indigenous people to achieve cardiovascular risk reduction targets.[18] Accessibility is a multi-dimensional concept that has evolved to encompass a range of social, cultural, economic and physical factors that affect people's ability to access health care.[19] It is well established that in order to be accessible, health services need to be physically approachable, available, affordable, culturally appropriate and acceptable.[20] Known interventions for improving accessibility include the provision of local health services, nurse-led clinics, telehealth models of care, flexible clinic locations, home visits and mitigating the financial burden of out-of-pocket expenses.[20] Internationally, mobile health care clinics have been implemented as a strategy to provide under-served or otherwise marginalized population groups with geographically accessible and cost-effective primary health care.[21-23] Research examining the consumer experience of mobile health care clinics demonstrates satisfaction with this model of health care,[21,24] yet there is a paucity of available evidence supporting how mobile clinics improve service accessibility and health outcomes.[23,25]

Although mobile health care clinics are one potential strategy to improve the geographical accessibility of primary health care services for indigenous populations, little is documented about them in peer-reviewed literature. Literature referring to mobile clinics implemented for indigenous populations is predominately descriptive in nature[26,27] with few studies providing evaluative data.[28-30] Numerous mobile clinics implemented for indigenous populations can also be found in gray literature and through indigenous health service web pages,[31-34] but this does not provide insight into how widespread the use of mobile health clinics targeting indigenous communities is. Furthermore, it is not known how these clinics have contributed to improving the accessibility of health services, and by extension, their success in improving indigenous health outcomes.

There is, however, strong evidence to support the need for geographically and culturally accessible health care services for indigenous populations.[20,35] Evidence from Canada indicates that primary health care services delivered on-reserve result in lower rates of hospitalization for chronic, vaccine preventable and acute conditions in indigenous populations.[36] Likewise, on-reserve diabetes screening and management delivered by a mobile clinic has been shown to improve clinical indicators of diabetes longitudinally in a sample of First Nations people.[29] This indicates that health services delivered in close proximity to indigenous populations can improve health outcomes. Additionally, evidence supports the efficacy of indigenous-governed primary health care services in delivering culturally appropriate care.[14,37] Embedded in the principles of self-determination, indigenous-governed primary health care services are able to offer health care to indigenous populations based on a shared cultural understanding.[1,14,15,38,39] Key characteristics of indigenous-governed health services that are valued by indigenous people include a holistic approach to health care delivered by indigenous health workers, a community capacity-building approach to the provision of care, the incorporation of local knowledge, values and perspectives and the use of local language.[14,40] These factors highlight the potential for indigenous-governed mobile clinics to improve the geographical and cultural accessibility of primary health care services for indigenous populations, and therefore, improve health outcomes.

In the literature focusing on the health and wellbeing of indigenous populations in Australia, Canada, New Zealand and the United States, there has been an increase in the implementation of community-based health programs[41] and participatory research projects[42,43] aiming to improve the health of indigenous people. For example, efforts have focused on increasing the engagement of indigenous communities in health research and the development of culturally safe health programs.[42,43] Often embedded in participatory paradigms, these projects have recognized the need to work in partnership with indigenous populations in order to improve health outcomes, and by doing so, generate evidence for successful strategies that may be implemented in other indigenous contexts.[43]

There is also a large body of international literature focusing broadly on the provision of primary health care to indigenous populations.[14,35,44-46] This includes examining barriers to accessing primary health care services,[4,14,35] community developed strategies to improve the provision of primary health care[29,47,48] and the impact of community-based primary health services on clinical outcomes.[36,49-51] However, it is not known where mobile primary health care clinics delivering services to indigenous communities have been implemented. Furthermore, it is not known whether these mobile clinics have been effective in improving service accessibility and health outcomes for indigenous populations. It is this knowledge gap that demonstrates the need for this review. The findings from this review will be used to inform subsequent research seeking to evaluate the effectiveness of mobile health clinics in improving health outcomes for indigenous communities.

A preliminary search for existing reviews on this topic was conducted in PubMed, *JBI Database of Systematic Reviews and Implementation Reports* and PROSPERO. No reviews examining the use of mobile primary health care clinics specifically for indigenous populations were identified. A review exploring primary health care models within the Australian Indigenous context was identified.[38] In this review, there was no discussion regarding the use of mobile primary health care models.[38] A literature review examining models of mobile health care in the United States was also located, but there was no focus on models targeting indigenous populations.[23]

Review question

What is the evidence surrounding the use of mobile primary health care clinics implemented for indigenous populations in Australia, Canada, New Zealand and the United States?

Specific objectives are to:

i) Scope the models of mobile primary health care clinics for indigenous populations (in Australia, Canada, New Zealand and the United States) as described in the literature.

ii) Determine geographically where mobile primary health care clinics for indigenous populations (in Australia, Canada, New Zealand and the United States) have been implemented.

iii) Examine the findings of any evaluations of mobile primary health care clinics for indigenous populations (in Australia, Canada, New Zealand and the United States) that have been published in the literature.

Inclusion criteria

Participants

The review will consider literature that discusses the implementation of mobile primary health clinics for indigenous populations. The terms ''indigenous people'' and ''indigenous communities'' will also be used when referring to specific tribal groups or clans. Often these terms are used interchangeably in the literature with ''indigenous populations.'' The definition of ''indigenous populations'' provided by the World Health Organization will be used for the purpose of this review.[52] This defines indigenous populations as:

> ''communities that live within, or are attached to, geographically distinct traditional habitats or ancestral territories, and who identify themselves as being part of a distinct cultural group, descended from groups present in the area before modern states were created and current borders defined''.[52(para.1)]

For each country, this includes: Aboriginal and Torres Strait Islander people (Australia), First Nations, Inuit and Métis people (Canada), Māori people (New Zealand) and Native American, Native Hawaiian and Alaskan Native people (United States).

Mobile primary health care clinics targeting indigenous populations of any and all ages (e.g. infants, children, adolescents and adults) will be included in this review.

Concept

The review will determine geographically where mobile primary health care clinics targeting indigenous populations have been implemented and scope models described in the literature. Universal mobile primary health care clinics that were not specifically implemented for indigenous populations will be excluded from this review.

For the purpose of this review, mobile clinics will include a transportable clinic (e.g. van, truck or bus) that has been equipped with health care equipment and delivers health services in a defined geographical area. This will exclude teams of health professionals who travel to fixed health care clinics (e.g. visiting outreach services) without an equipped clinic bus, truck or van. This will also exclude the delivery of health care services remotely using mobile technology (e.g. mobile health services).

Furthermore, this review will also examine the evaluation of these models (if available). Evaluation involves an assessment of the outcomes of an intervention against the intervention's objectives.[53] Models evaluated by any party to any level will be included (i.e. pilot studies, feasibility studies, impact, outcome and process evaluations), in addition to models that have not been evaluated.

Context

Mobile primary health care clinics implemented within the Australian, New Zealand, Canadian or United States health care contexts across all geographical areas will be included in this review. This will include mobile clinics that are part of a fixed primary health care service (e.g. Aboriginal Community Controlled Health Organization) or other health care organizations including hospitals and community-based health care services (i.e. non-government organizations).

The definition of primary health care, as applied by other reviews[14,38] and research focusing on the delivery of primary health care services[54] to indigenous populations, will be used:

> "...socially appropriate, universally accessible, scientifically sound first level care provided by health services and systems with a suitably trained workforce comprised of multi-disciplinary teams supported by integrated referral systems in a way that: gives priority to those most in need and addresses health inequalities; maximizes community and individual self-reliance, participation and control; and involves collaboration and partnership with other sectors to promote public health. Comprehensive primary health care includes health promotion, illness prevention, treatment and care of the sick, community development and advocacy and rehabilitation."[5(p.1)]

Primary health care teams consist of general practitioners, nurses and allied health professionals.[5] Therefore, mobile primary health care clinics will involve communicable (e.g. infectious disease) and non-communicable (e.g. lifestyle induced disease) disease prevention (e.g. health promotion, primary and secondary prevention) and management (e.g. chronic disease self-management) activities delivered at multiple locations within a specified region. Mobile health care clinics delivering only specialist services (e.g. cardiovascular specialist outreach services) or rehabilitation services will be excluded from this review. However, clinics delivering both specialist and primary care services will be included.

Types of studies

To align with the review question and objectives, this review will include all literature discussing or evaluating the implementation of a mobile primary health care clinic targeting indigenous populations in Australia, Canada, New Zealand and the United States. This review will consider both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies, and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports, descriptive cross-sectional studies and mixed methods studies for inclusion. Qualitative studies, including but not limited to, descriptive, phenomenological, grounded-theory and ethnographic studies evaluating the experience of participants utilizing a mobile primary health care clinic will also be considered for inclusion.

Non-peer reviewed articles, such as gray literature, will also be used in order to minimize any publication biases. Thus, this review will consider

any form of literature (i.e. newspaper article, media release, web page, report, dissertation or book) relevant to the topic.

Only literature published in English will be included due to resource constraints of the review. Literature published from 1 January 2006 will be included. Since 2006, there has been a greater focus on the rights of indigenous populations and the need to work in partnership with indigenous communities to improve health outcomes.[55] Examples of key policy implemented during this period include the ''United Nations Declaration on the Rights of Indigenous Peoples'' (2007),[56] which stipulates access to health care and self-determination as a right for indigenous peoples, and ''Closing the Gap'' (2007)[57] in which the Australian Government committed to improving the health of Aboriginal and Torres Strait Islander peoples.

Methods

The proposed scoping review will be conducted in accordance with JBI methodology for scoping reviews.[58]

Search strategy

The search strategy will aim to find both published and unpublished literature. The JBI three-stage search strategy will be used to develop searches. The first stage will involve an initial limited search of MEDLINE and CINAHL to identify key words contained in the text and title of relevant literature. These key words will be used with index terms to develop a search strategy for each database and gray literature source. The second stage will use all identified key words and index terms to tailor the search to each information source. A full search strategy for MEDLINE is detailed in Appendix I. The third stage will involve a search of the reference lists of included citations for additional literature. Where appropriate, authors may be contacted for additional information.

Information sources

The databases to be searched include: Ovid MEDLINE, CINAHL (EBSCOhost), Embase (Elsevier), Cochrane Database of Systematic Reviews and SocINDEX (EBSCOhost).

The search for unpublished studies and gray literature will include: Australian, Canadian, New Zealand and United States indigenous-specific research websites, indigenous organization websites, health services and health research websites, rural, remote and mobile health research websites and open access websites, repositories and catalogues.

A full list of unpublished sources to be searched is provided in Appendix II.

Study selection

Following the search, all identified citations will be collated and uploaded into EndNote X7.5 (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will then be screened by two independent reviewers (HB, GE) for assessment against the inclusion criteria for the review. Literature that may meet the inclusion criteria will be retrieved in full and their details imported into Covidence (Veritas Health Innovation, Melbourne, Australia).

The full text of selected literature will be retrieved and assessed in detail against the inclusion criteria. Full text papers that do not meet the inclusion criteria will be excluded and reasons for exclusion will be provided in an appendix in the final systematic review report. The results of the search will be reported in full in the final report and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.[59] Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer (RM).

Data extraction

Data will be extracted from papers included in the review using the data extraction tool developed for this scoping review, by two independent reviewers (HB, GE) (Appendix III). This tool may be modified depending on the nature of literature retrieved. Descriptors of the research will be extracted and will include the author(s), year of publication, name of the mobile primary health care clinic, name of the service provider and geographical region of the clinic. Additional information pertaining to the clinic model will include targeted population (e.g. indigenous children), services provided (e.g. health promotion, disease prevention, and/or chronic disease management), whether there is indigenous community involvement in the delivery of the model and evaluation methods used (if any), including participant sample and evaluation outcomes. Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer

(RM). Authors of papers will be contacted to request missing or additional data, where required.

Data presentation

A narrative summary will be provided on the objectives, concepts and results of the review question. This will include a discussion of the extracted mobile primary health care models and whether an evaluation of the described model has been conducted. The geographical region of where the mobile clinic was implemented will be plotted using either the geographical coordinates included in the original source or assigning coordinates based upon localities described. This approach has been used in other scoping reviews exploring health programs in the indigenous context.[60] A geographical analysis of the location of extracted papers will be undertaken using a Geographical Information System (GIS) program, ArcGIS ArcMap 10.6.1 (ESRI, CA, USA) and will be included in the review. This GIS program allows researchers to visualize, explore and model multiple layers of data on a map, and subsequently identify relationships between variables. Extracted information will be presented in a data extraction table (Appendix III) and any additional information will be categorized appropriately at the time of the review.

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Appendix I: Ovid MEDLINE search strategy

Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations and Ovid MEDLINE(R)

1	(Australia* or Tasmania* or Victoria* or New South Wales* or Queensland* or Northern Territory* or Western Australia* or South Australia*).tw,kf. or exp Australia/
2	(Aborig* or First People* or First Nation*1 or indigenous or Native* or Islander* or "Torres Strait Islander" or Tribe* or Tribal).tw,kf.
3	Oceanic Ancestry Group/ or Health Services, indigenous/
4	2 or 3
5	1 and 4
6	(New Zealand* or Northland or Auckland or Waikato or Bay of Plenty or Gisborne or Hawkes Bay or Taranaki or Whanganui or Manawatu or Wellington or Marlborough or Nelson or Tasman or West Coast or Canterbury or Otago or Southland).tw,kf. or exp New Zealand/
7	(Aborig* or First People* or First Nation*1 or indigenous or Native* or Maori or Iwi or Hapu or Tribe* or Tribal).tw,kf.
8	Oceanic Ancestry Group/ or Health services, indigenous/
9	7 or 8
10	6 and 9
11	(North America* or United States or USA or American).tw,kf. or exp United States/
12	Canada*.tw,kf. or exp Canada/
13	11 or 12
14	(Native or indigenous or First Nation*1 or First People* or Tribe* or Tribal or Indian*1 or Nation*1 or Inuit* or Aborig*).tw,kf.
15	Indians, North American/ or Alaska Natives/ or Inuits/ or Health services, indigenous/
16	14 or 15
17	13 and 16
18	5 or 10 or 17
19	mobile health unit/
20	(mobile outreach or mobile outreach clinic*1 or mobile health or mobile clinic*1 or mobile health clinic*1 or mobile health care clinic*1 or mobile primary health care clinic*1 or mobile unit*1 or mobile health unit*1 or mobile health care unit*1 or mobile primary health care unit*1 or mobile facilit*3 or mobile health facilit*3 or mobile health care facilit*3 or mobile primary health care facilit*3).tw,kf.
21	((health adj3 van) or (health adj3 bus)).tw,kf.
22	19 or 20 or 21

23	(ambulatory health service*1 or ambulatory health care service*1 or ambulatory primary health care service*1).tw,kf or Ambulatory care/ or exp Ambulatory care facilities/
24	(health service*1 access or health service*1 accessibility or health care service*1 access or health care service*1 accessibility).tw,kf. or exp Delivery of health care/
25	exp Health promotion/ or exp Population health/ or exp Primary health care/
26	24 or 25
27	(mobile or mobiles or wheel based or travelling or outreach).tw,kf.
28	26 and 27
29	22 or 23 or 28
30	18 and 29
31	(disaster or disaster relief or disaster response).tw,kf.
32	(animals not (humans and animals)).sh.
33	31 or 32
34	30 not 33
35	limit 34 to yr="2006-Current"

Appendix II: Unpublished information sources

Source	Website
Australian and New Zealand indigenous-specific research	
Lowitja Institute	https://www.lowitja.org.au/
Australian Institute of Aboriginal and Torres Strait Islander Studies	https://aiatsis.gov.au/
Indigenous Healthinfonet	https://healthinfonet.ecu.edu.au/
Closing the Gap	https://closingthegap.pmc.gov.au/
National Aboriginal Community Controlled Organization (NACCHO)	https://www.naccho.org.au/
Māori Health Clearinghouse	https://www.health.govt.nz/our-work/populations/maori-health
Whakauae Research for Maori Health and Development	https://www.whakauae.co.nz/
United States and Canadian indigenous-specific research	
Indigenous Studies Portal	https://iportal.usask.ca/
Canadian Institute of indigenous Peoples' Health	http://www.cihr-irsc.gc.ca/e/8668.html
U.S. Department of Health and Human Services Office of Minority Health	https://minorityhealth.hhs.gov/
Centers for American Indian and Alaska Native Health	http://www.ucdenver.edu/academics/colleges/PublicHealth/research/centers/CAIANH/Pages/CAIANH.aspx
First Nations Health Authority	http://www.fnha.ca/
Indian Health Service	https://www.ihs.gov/
American Indian and Alaska Native Health	https://americanindianhealth.nlm.nih.gov/
United States and Canadian indigenous organizations	
Assembly of First Nations	http://www.afn.ca/
Inuit Tapiriit Kanatami	https://www.itk.ca/
National Congress of American Indians	http://www.ncai.org/
Native Women's Association of Canada	https://www.nwac.ca/
Alaska Federation of Natives	https://www.nativefederation.org/
North American Youth and Family Center	https://nayapdx.org/about/
Congress of Aboriginal Peoples	http://www.abo-peoples.org/
Métis Nation	http://www.metisnation.ca/
Native Canadian Centre of Toronto	https://ncct.on.ca/
Pauktuutit Inuit Women of Canada	https://www.pauktuutit.ca/
Alaska Native Tribal Health Consortium	https://anthc.org/

(*Continued*)	
Source	**Website**
Association on American Indian Affairs	https://www.indian-affairs.org/
Administration for Native Americans	https://www.acf.hhs.gov/ana
Northwest Portland Area Indian Heath Board	http://www.npaihb.org/
National Indian Council on Aging	https://nicoa.org/
Native American Community Development Institute	https://www.nacdi.org/
Alliance of Colonial Era Tribes	http://www.acet-online.org/
Affiliated Tribes of Northwest Indians	http://www.atnitribes.org/
Tribal Alliance of Sovereign Indian Nations	http://www.usetinc.org/
Rocky Mountain Tribal Leaders Council	https://www.rmtlc.org/
Center for Native American Youth	http://www.cnay.org/
National Council of Urban Indian Health	https://www.ncuih.org/index
National Indian Child Welfare Association	https://www.nicwa.org/
National Indian Health Board	http://www.nihb.org/
National Native American EMS Association	http://www.nnaemsa.org/
Indspire	https://indspire.ca/
British Columbia Aboriginal Network on Disability Society	http://www.bcands.bc.ca/links/aboriginal-organizations/
Aboriginal Infant Development Program	http://aidp.bc.ca/
First Nations Health Council	http://fnhc.ca/
National Collaborating Centre for Aboriginal Health	https://www.nccah-ccnsa.ca/en/
Indigenous Physicians Association of Canada	http://www.ipac-amac.ca/
Aboriginal Sexual Health	http://www.aboriginalsexualhealth.ca/index_e.aspx
First Nations Child and Family Caring Society	https://fncaringsociety.com/welcome
Health services or health research	
Government of Canada	https://www.canada.ca/
National Institutes of Health	https://www.nih.gov/
New Zealand Ministry of Health	https://www.health.govt.nz/
Health Research Council	http://www.hrc.govt.nz/
Department of Health	http://www.health.gov.au/
Australian Institute of Health and Welfare	https://www.aihw.gov.au/
Canadian Institutes of Health Research	http://www.cihr-irsc.gc.ca/
U.S. Department of Health and Human Services	https://www.hhs.gov/
Agency for Healthcare Research and Quality	https://www.ahrq.gov/

(*Continued*)	
Source	**Website**
Australian Health Services Research Institute	https://ahsri.uow.edu.au/
Canadian Association for Health Services and Policy Research	https://www.cahspr.ca/
World Health Organization	https://www.who.int/
Primary Health Care Research and Information Service (PHCRIS)	http://www.flinders.edu.au/medicine/sites/general-practice/primary-health-care-research-and-information-service/
Rural, remote or mobile health research or associations	
Mobile Healthcare Association	http://www.mobilehca.org/
Centre for Rural and Northern Health Research	https://www.cranhr.ca/
Services for Australian Rural and Remote Allied Health	https://sarrah.org.au/
Rural Health Information Hub	https://www.ruralhealthinfo.org/
Open access, repositories or catalogues	
WorldCat	https://www.worldcat.org/
informIT	Through Deakin University
Google	http://www.google.com
Trove	https://trove.nla.gov.au/
ProQuest Dissertations and Theses Global	Through Deakin University
OAIster	https://www.oclc.org/en/oaister.html

Appendix III: Data extraction table

DESCRIPTORS					MOBILE PRIMARY HEALTH CARE MODEL					
Authors	Year of publication	Name of mobile health clinic	Service provider	Geographical region	Target population	Services provided	Indigenous community involvement	Evaluation methods	Participant sample	Evaluation outcomes