Dementia diagnostic and treatment services in the Western Pacific: challenges, preparedness and opportunities in the face of amyloid-targeting therapies

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Summary

Here we first review the limited available literature addressing the current landscape of specialist assessment services for dementia and cognitive decline and the preparedness for new amyloid-targeting therapies for Alzheimer's disease across the Western Pacific region. Considering the scarcity of literature, as national representatives of Western Pacific nations we were then guided by the World Health Organization's Global Action Plan on Dementia to provide country-specific reviews. As a whole, we highlight that the existing diverse socioeconomic and cultural landscape across the region poses unique challenges, including varying access to services and marked differences among countries in their preparedness for upcoming amyloid-targeting therapies for Alzheimer's disease. Therefore, there is an urgent call for intergovernmental collaboration and investment across the Western Pacific to ensure that for all nations, citizens living with dementia and cognitive decline have access to effective and equitable methods of diagnosis, treatment and care.

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Background

In 2017 the World Health Organization (WHO) launched the Global Action Plan on the Public Health Response to Dementia, with targets by 2025 to prioritise dementia awareness; reduce risk; improve diagnosis, treatment and care; and strengthen information systems, research and innovation.[1] As of 2022 targets are

far from being reached, and in the Western Pacific only six countries have implemented a national dementia plan.[2] The population of the Western Pacific Region represents approximately a quarter of the world's entire population.[3] Over 240 million people aged 65 years and over live in the Western Pacific region, a number expected to double by 2050.[4] Across the region, rapid transitions are occurring from an *ageing* population (i.e., >7% of people over 65 years) to an *aged* population (i.e., >14% of people over 65 years).[5,6] Considering projection estimates from 2019 to 2050, while high-income Western Pacific counties have smaller predicted percentage changes in the number of projected dementia cases (53%), other Western Pacific countries have some of the larger projected increases by global standards (e.g., Malaysia 249%; Indonesia 244%; Vietnam 230%; China 197%).[7] In the Western Pacific, the age-standardised rate per 100,000 of disability-adjusted life-years for Alzheimer's disease and other dementias is 377, which is higher than the global rate of 339; with dementias contributing to the second highest burden of disability-adjusted life-years when compared to other neurological disorders.[8] In light of these demographics, improving dementia services is a key priority. Looking ahead, such improvements will be critical to support equitable and efficient access to and delivery of new amyloid-targeting therapies for the most common form of dementia, Alzheimer's disease.

The Western Pacific faces unique challenges for dementia services and care. There is wide economic variation in the region, including upper-middle and high-income countries (e.g., China, Japan, Singapore) as well as low- and lower-middle-income countries (e.g., Fiji, Vietnam, Indonesia). There is also considerable cultural diversity, including "westernised" cultures in contrast to "traditional" ones, where there is often an emphasis on intergenerational living and caregiving.[9] These socio-cultural and economic differences have implications for dementia services and attitudes toward dementia. Furthermore, within countries there exist considerable disparities in terms of access to services based on rural versus urban location, and with unique needs and risk factors for different ethnic groups and indigenous populations.[10–13]

Access to dementia health services should be considered a universal human right. In this respect, not only is provision of high-quality dementia services needed, but dementia diagnosis must be timely and accurate—as it is the necessary entry point to access those services.

Despite the considerable variation across the region, there are nevertheless common targets that need to be reached to improve dementia prevention, diagnosis, symptom management and care. While many non-complex cases of dementia are diagnosed in primary care, memory clinics, when available, play a unique role in addressing many of the above targets and are often considered gold-standard. Memory clinics are an interdisciplinary service for the specialised assessment of cognitive decline and dementia, providing diagnostic assessment, case management and post-diagnostic support.[14] In high-income countries, dementia diagnosis and management is routinely delivered by memory clinics.[15] Indeed, in countries with well-established memory clinics there are already plans in place to extend their reach to cover dementia prevention based on modifiable risk factors,[15] and to coordinate identification and recruitment of the earliest possible cohorts that may benefit from amyloid-targeting therapy.[16]

This paper had two specific objectives: first, to review what was considered to be a scarcity of literature addressing the current landscape of specialist assessment services for dementia and cognitive decline and the preparedness for new amyloid-targeting therapies for Alzheimer's disease across the Western Pacific region; and second, in a collaborative effort based on expert input from national representatives and guided by the WHO's Global Action Plan on Dementia, to receive country-specific reviews to identify the current challenges and opportunities in the delivery of comprehensive dementia services and readiness for amyloid-targeting therapies for Alzheimer's disease across the Western Pacific region. In doing so, we aimed to identify some of the current challenges facing dementia diagnosis and interventions in the Western Pacific, and outline opportunities for advancement.

Methods

Search strategy and selection criteria for literature review
References for this Review were identified through searches of PubMed with the search terms "Memory Clinic", "Memory and cognition clinic", "Cognitive decline assessment service", "Mild cognitive impairment", "Amyloid-lowering therap*", "Disease-modifying therap*" from 2019 until April 2024. This timeframe was designed to capture the period since the Global Action Plan on the Public Health Response to Dementia (published 2017) and the most recent Global Burden of Disease Study (published 2019).[17] The search was conducted for each country/region represented in this review (i.e., Australia, Brunei, Mainland China, Fiji, Hong Kong SAR, China, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Tonga, Vietnam). Articles were also identified through searches of the authors' own files. Only papers published in English were reviewed. The final reference list was generated on the basis of originality and relevance to the health services focus of this paper.

Survey methodology
Additional country/region-specific information was collected from the co-authors. A total of 14 countries/

special administrative regions (SARs), including Australia, Brunei, China, Fiji, Hong Kong SAR, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Tonga and Vietnam were therefore included (see Fig. 1), representing 95.8% of the population of the Western Pacific Region (including Indonesia and Taiwan). Half of these countries/regions are defined as low- or middle-income countries.[18] Input from these national representatives was primarily collected using an electronic survey format[19] supplemented by two online meetings, before and after survey dissemination.

The national representatives for this work were identified as being key experts in the dementia field for the 14 countries/regions identified. The group comprised neurologists, geriatricians, psychiatrists, neuropsychologists and academics working in health policy, public health or health services. The group met via videoconferencing to determine the scope of a survey, and once drafted input was provided. A Qualtrics survey was then created and each country/region member was asked to complete the survey and consult with relevant health departments, publicly available information or consumer organisation groups to check or verify information as appropriate. The survey was designed by CO, JCM and SLN based on similar scoping exercises conducted in Australian memory clinics. The survey comprised items designed to assess memory clinic services and the capability to support the clinical implementation of amyloid-targeting therapies for Alzheimer's disease (survey questions included in Supplementary Material). Respondents were encouraged to consult relevant guidelines and/or resources, and to liaise with colleagues and members of government and non-governmental sectors to complete the survey (full details of respondents and additional

Fig. 1: Countries and regions represented in this review.

sources consulted are included in Supplementary Material). The group met again via videoconferencing before final results were drafted and circulated, with the opportunity to clarify responses. Responses were categorised into a) memory clinics and services and b) preparedness for new amyloid-targeting therapies for Alzheimer's disease.

Results

Available literature review results

After screening for duplicates, the literature yielded a total of 780 articles across all countries/regions. These articles underwent independent abstract review first by CO and JCM, which identified a total of 27 articles that met eligibility criteria based on their topic and relevance to the current manuscript. To achieve consensus, the 27 articles were then reviewed by SLN and followed by a consensus discussion between CO, JCM and SLN, resulting in the identification of 19 articles that were considered to fit the scope of the review (Australia, n = 7; Mainland China, n = 7; Japan, n = 1; New Zealand; n = 1; Philippines, n = 2; Taiwan, n = 1). The following countries/regions did not yield results relating to the search criteria and health system focus: Brunei, Fiji, Hong Kong SAR, China, Indonesia, Malaysia, Singapore, Tonga, Vietnam.

In Australia, the majority of articles (n = 5) were led by initiatives of the Australian Dementia Network. These included two surveys scoping the nature and characteristics of memory clinic services,[20,21] two articles describing the development of Australia's first Clinical Quality Registry[22,23] and one paper reviewing five year progress of the Australian Dementia Network including the 'Screening for Trials Initiative'. Altogether, findings indicated that across Australia, there is considerable heterogeneity of diagnostic services for mild cognitive impairment (MCI) and dementia within primary care,[24] and within memory clinic services, with minimal historical efforts for harmonisation and standardisation of processes.[14,20] In addition, one new service in Tasmania was described showing reduced wait times for one-stop-shop integrated services.[25] Finally, a consensus paper describing management recommendations for Mild Cognitive Impairment (MCI; a prodromal form of dementia), was published.[26] While these papers scoped current memory clinic services, readiness for anti-amyloid therapies was not addressed.

China has the largest population of people living with dementia globally (9.83 million people aged ≥60 years with Alzheimer's disease and 38.77 million with MCI)[27] and will increasingly face considerable health system challenges, costs and societal and economic burden. The Academy of Cognitive Disorders of China released in 2020[28] an expert consensus statement on care and management of cognitive impairment. They produced guidance and suggestions across a range of
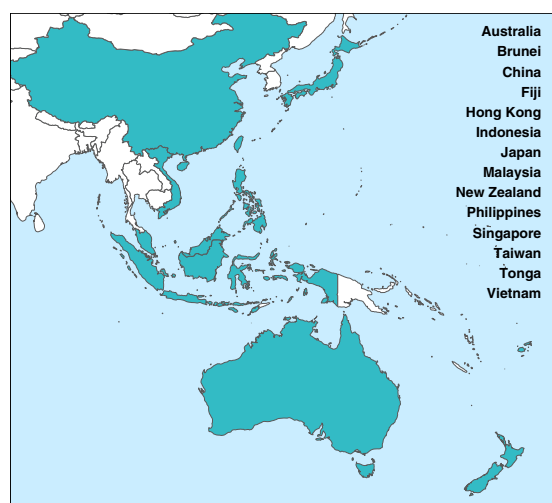
areas in MCI care and management; cognitive maintenance and training; daily care; psychological behaviours; environment, recreational activities; end-stage dementia; and caregiver stress. Chen et al.[29] also conducted a systematic review on non-pharmacological interventions, including physical activity interventions, cognitive interventions, dietary and nutritional interventions, and acupuncture for use in MCI. Two papers[30,31] reported on the common use of anti-dementia drugs in memory clinics, with Yu et al.[31] additionally reporting treatment compliance was poor, especially in those with poorer education. Huang et al.[32] reported on consensus neurologist review of assessment methods for prodromal Alzheimer's disease and noted that electronic cognitive tools require continued development for sensitivity to amyloid positivity, and for real-world application including in people of low socioeconomic status and living in diverse environments. Other forms of peripheral biomarkers, imaging and suggested workflows were considered.

Also in China, Chen et al.[33] described the key role for Smart Eldercare, which encompasses digital health care for healthy ageing, including comprehensive use of sensor equipment, global positioning systems, the internet of things, cloud computing, mobile devices, and other technical means to collect and process relevant information and provide services to older adults. It is expected that such platforms will reduce relevant communication and transaction costs and have functions such as life care, safety monitoring, chronic disease management, route navigation, and digital payment. Smart Eldercare is a government initiative that includes a series of policies from the central government down to the city municipal government with industry as key partners.

None of the studies in China focused on health system capacity or readiness for MCI and dementia nor on new therapies. However, in 2023 Mattke et al.[34] summarised the preparedness of China's health care system for disease modifying therapies. They concluded that the reliance on memory clinics alone, without a prior assessment in primary care, would overwhelm China's existing capacity. They noted that while there is adequate specialist capacity, there is limited capacity for Alzheimer's disease biomarker testing, such that even with triage and screening using the new plasma biomarkers, wait times for disease modifying treatments would remain over two years for decades. They noted a need to expand the use of cerebrospinal fluid (CSF) testing, and positron emission tomography (PET) capacity.

In New Zealand, a 2018 survey[35] revealed there are seven dedicated memory clinics across the 20 district health boards, which service between 1 and 12 new cases per week and predominantly include more complex or younger onset presentations. In areas without memory clinics, the majority of cases are seen in primary care, which utilised dementia care health pathways and referrals to secondary care. The proportion of cases with MCI or earlier disease stages across and between these settings is unknown.

Japan has been active in their involvement of amyloid-targeting monoclonal antibody therapies having participated in trials of lecanemab[36] and donanemab.[37] Simulated modelling of lecanemab[38] revealed extended life years (0.73) and quality adjusted life years (0.91–0.96) when compared to standard care. Also, significant healthcare cost savings were revealed including less intensive care and more time living in the community before requiring residential care. The health system capacity for identifying MCI and early Alzheimer's disease and delivering such interventions was not addressed.

In the Philippines, one study[39] described the characteristics of people with MCI attending a memory clinic service. They reported that 58% of attendees were female with mean Mini-Mental State Examination and Montreal Cognitive Assessment scores being 27 and 21 respectively. They described vascular risk factor profiles as well as Vitamin B12, D and homocysteine with implications for disease prevention. Health service characteristics were not addressed. Anlacan et al.[40] reviewed the current status and gaps in dementia care. They identified cost as a major barrier, as health care coverage is limited, with dementia diagnosis and treatment relying primarily on out-of-pocket payments—with these costs being prohibitive for much of the population. They also identified a low specialist-to-population ratio, resulting in dementia being managed by people without specialist training. Currently, without a national dementia plan in place, the burden of improving dementia care is falling to non-governmental organisations.

Huang et al.,[41] in Taiwan conducted a study on willingness to pay for Alzheimer's medications. Amongst 1134 informal caregivers of those with amnestic MCI and Alzheimer's disease, willingness was associated with higher income levels, and of patient characteristics, having Alzheimer's disease and being more apathetic.

Results from a survey seeking expert input from Western Pacific representatives
Memory clinics & services
In all countries/regions except for Fiji and Tonga, multidisciplinary specialist assessment services for dementia and cognitive decline are available. However, the estimated number of these services varied widely, as shown in Table 1 (column 1). To put these numbers in context, in Table 1 we have estimated the number of MCI and dementia cases per year based on population numbers. The final column of Table 1 gives an estimate of how many potential MCI and/or dementia cases would need to be serviced in order to meet the estimated

	Estimated services available, number[a]	Population ≥65 years, number (million)	Proportion of population ≥65 years, %	Estimated new MCI cases/ year[b]	Estimated new dementia cases/year[c]	Estimated new MCI + dementia cases/year[b,c,d]	Potential MCI + dementia cases/year per service, number[c,d]
Australia	160	4.2[42]	16.0	168,000	70,560	238,560	1491
Brunei	3	0.03[43]	6.4	1200	504	1704	568
Mainland China	20–30	190.6[44]	13.5	7,624,000	3,202,080	10,826,080	360,869
Fiji	0	0.05[45]	6.0[45]	NA	NA	NA	NA
Hong Kong SAR, China	40–50	1.48[46]	20.0	59,200	24,864	84,064	1681
Indonesia	15	18.6[47]	6.7	744,000	312,480	1,056,480	70,432
Japan	499	36.23[48]	29.0	1,449,385	608,741	2,058,126	4124
Malaysia	6	2.2[49]	6.8	88,000	36,960	124,960	20,827
New Zealand	5–10	0.87[50]	16.6	34,800	14,616	49,416	4942
Philippines	10	5.86[51]	5.4	234,400	98,448	332,848	33,285
Singapore	10–20	1.13[52]	19.1	45,200	18,984	64,184	3209
Taiwan	116	4.30[53]	18.4	172,000	72,240	244,240	2106
Tonga	0	0.007	6.5	NA	NA	NA	NA
Vietnam	27	7.64[54]	7.9	305,600	128,352	433,952	16,072

MCI, Mild Cognitive Impairment; NA, Not applicable/not appropriate to provide estimation. Note: References in column two denote the source for population estimates. [a]As provided by the national representatives of each country/region. Where a range was provided, the upper limit was subsequently used to calculate the final column. [b]MCI incidence varies widely, between 2.25% and 6.01% in international samples.[55] A lower incidence rate of 4% has been used in accordance with Ritchie (2004),[56] assuming not all MCI cases are help seeking for specialist assessment. [c]Based on an estimated dementia incidence rate of 1.68% in older adults aged ≥65 years as previously estimated in an Australian study.[57] [d]Projections of younger onset cases or MCI diagnosed under age 65 years not included in these estimates.

Table 1: Estimated number of multidisciplinary, specialist assessment services for dementia and cognitive decline in each Western Pacific country/region, and the estimated number of MCI and dementia cases to be serviced each year.

diagnosis rates were memory clinics in a country the preferred avenue for assessment for cognitive decline and dementia. With every country/region, apart from Brunei, at estimates of needing to service over 1000 new cases per year, there is a clear need to increase capacity or to utilise alternative models of service delivery.

For the countries/regions with multidisciplinary specialist assessment services, six require a GP referral to access these services (i.e., Australia, Brunei, Hong Kong, Japan, Malaysia, New Zealand). In eight countries/regions with memory clinic services, these can reportedly be freely accessed or accessed at a heavily subsidised rate. That is, accessing minimal services for a dementia diagnosis is at no-cost to the patient or less than an estimated US$50. The exceptions are China, Philippines, Singapore, Taiwan and Vietnam where the lower bound estimates range between US$100–$US650. Notably, however, no-cost services are limited in some countries. In Australia, for example, memory clinics can be accessed via the public health system (~45 clinics nationwide) but when using private services with potentially shorter wait times and greater regional distributions, out-of-pocket costs for the range of multidisciplinary services can be as high as US$5000. Together, these data highlight that access to gold-standard dementia diagnosis and care is not universally freely accessible across the Western Pacific. Average wait times to access these services vary widely by country/region, with between no wait time (Vietnam) to up to 120 days (Malaysia).

One strategy to improve accessibility to specialists and cost-effectiveness is to increase capacity through provision of virtual memory clinic services. Indeed, several countries/regions implemented these during the COVID-19 pandemic and are now addressing the technological and bureaucratic challenges of implementing virtual care models of care as part of regular services. At best estimate, six countries, including Brunei, Japan, Malaysia, Philippines, Australia and Singapore, have commenced virtual services for the specialist assessment of dementia and cognitive decline. While these still incur an out-of-pocket cost to the patient in some countries, the estimated cost is less than the estimates of attending a memory clinic in person within that country. Notably, however, across the six countries virtual clinics are currently only single-discipline and not yet equipped to deliver the gold-standard multidisciplinary services offered at an in-person centre, such as full neuropsychological assessment in addition to medical and/or allied health services (e.g., occupational therapy). Of the countries implementing these services, virtual assessments have utilised adopted widely available technology platforms (Zoom, WhatsApp, Google Meet), with Japan, Brunei and Australia using additional bespoke telehealth platforms (Curon, BruHealth, Pexio). It is noted, however, that while the COVID-19 pandemic

necessitated the need to adopt non-bespoke videoconference technology platforms to ensure the critical continuation in health assessment, treatment and management – these systems are not optimally designed to facilitate virtual healthcare, lacking appropriate or comprehensive features and cyber-security protocols that are now mandated for Telehealth platforms.

In addition, challenges to virtual delivery of memory clinic services were identified by the national representatives. Prominently, were the medico-legal implications of assessing people with suspected cognitive impairment, which necessitate the initial first assessments to be in person (e.g., Singapore). While this accords with national guidelines, it negates some of the accessibility improvements that come with virtual clinics if the initial consult must be in person. Other general issues related to poor digital literacy in older patients, poor internet access in rural regions and the inability to conduct some forms of examination.

Among other initiatives identified in order to improve accessibility and awareness of memory clinics, for both the general public and primary referrers, is a centralised online finder/location map so that the clinics can be identified by people with MCI or dementia, or by their carers or referring healthcare professionals. To this end, five countries/regions reported an online tool (weblinks are provided in Table 2), with one currently under development in Vietnam via the e-DiVA project (https://ediva.org/). Beyond improving accessibility, a national online registry of memory clinics is a starting point for initiatives that could improve quality of care and standardisation of services. In the Australian context, a clinical quality registry has been established, with a view to harmonising and benchmarking care and enabling a coherent national registry to drive quality improvements and dementia data collection.[21,23]

In terms of post-diagnostic support services available to people with dementia, in all countries/regions, psychosocial services and rehabilitation services were available; assessment and management of behavioural and psychological symptoms of dementia were available in all countries/regions except Fiji; activities of daily living support services were available in every country/region except Tonga and Indonesia—and similarly for social and financial protection and benefits. Primarily, these services were restricted to capital cities and main cities only. Only Japan had all services extended into rural areas, with limited services extending rurally in Fiji, New Zealand and Taiwan. A lack of coverage for rural areas for post-diagnostic support could potentially be mitigated by virtual memory clinics that extend beyond diagnostic services.

Preparedness for new amyloid-targeting therapies for Alzheimer's disease

As shown in Table 3, availability of specialised centres and biomarkers (blood, CSF and PET) to support the clinical implementation of amyloid-targeting therapies for dementia vary greatly between countries/regions of the Western Pacific represented here. In particular, only half of the countries/regions reported the availability of personnel with specialised neuroradiological expertise (MRI) to support the frequent monitoring of Amyloid Related Imaging Abnormalities (ARIA). Firstly, this is of particular importance, as greater than 90% of observed ARIAs in the phase 3 clinical trials for donanemab and lecanemab were detected during scheduled safety MRI scans in asymptomatic patients.[58,59] Secondly, as ARIA cases with cerebral oedema (ARIA-E) and micro-hemorrhage/hemosiderosis (ARIA-H) are common for both donanemab (ARIA-E 24.0%; ARIA-H 31.4%)[58,60] and lecanemab (ARIA-E 12.6%; ARIA-H 17.3%)[59] therapies (with ApoE4 homozygote carriers at a significantly higher risk as reported for the lecanemab phase 3 clinical trial: ARIA-E 32.6%; ARIA-H 39.0%),[59] the close and frequent monitoring of patients for ARIA risk with MRI is critical. Therefore, it is conceivable that until personnel with specialised neuroradiological expertise are available in Western Pacific countries/regions of Fiji, Hong Kong, Indonesia, Japan, New Zealand, Taiwan and Tonga (representing ~20% of the entire Western Pacific region), amyloid-targeting therapies are unlikely to receive country-specific Food and Drug Administration (FDA)-equivalent approval and be implemented clinically. Further, even in countries such as Australia and Singapore, that have specialist neuroradiological expertise, such services are not necessarily available at memory clinics nationwide and would not yet have capacity for the regular monitoring required. Lastly, while it has been postulated in the literature that recent advancements in blood-based biomarkers may serve the clinical implementation of amyloid-targeting therapies, only two countries (China and Singapore) reported that they currently or will use blood-based biomarkers for screening and monitoring of disease alongside such therapies. Hence, implementation efforts across the Western Pacific will require substantial

	Source	URL
Australia	Australian Dementia Network	https://www.australiandementianetwork.org.au/initiatives/clinical-quality-registry/find-a-clinic-or-service/
Hong Kong SAR	656 Carer	https://656carer.com/
Japan	Japan Society for Dementia Prevention	https://www.ninchi-k.com/list.html
Taiwan	Taiwan Dementia Society	http://www.tds.org.tw *URL geoblocked for access within Taiwan only*
Philippines	Alzheimer's Disease Association of the Philippines	https://www.alzphilippines.org/memory-clinics/

Note: URLs were working at the time of publication, but may no longer be working at the current time.

Table 2: **Countries with an online map or finder tool to locate memory clinic services.**

	Availability of specialised infusion centres,	Specialised diagnostic centres with capabilities for AD (i.e., PET and/or CSF sampling)	Availability of CSF biomarkers,	Availability of PET biomarker,	Availability and use (or planned) of blood-based biomarkers for screening,	Availability and use (or planned) of blood-based biomarkers for disease monitoring,	Availability and use (or planned) of blood-based biomarkers in combination with amyloid-targeting therapies	Personnel with specialised neuroradiological expertise (MRI) to support the frequent monitoring of Amyloid Related Imaging Abnormalities (ARIA) for at least 12 months,	Centres at a single location with a) Infusion capability; and b) PET and CSF diagnostic capability
Australia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	0–5
Brunei	Yes	No	No	No	No	No	No	Yes	0
Mainland China	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	10–20
Fiji	No	No	No	No	No	No	No	No	0
Hong Kong	No	No	Yes	Yes	No	No	No	Yes	2
Indonesia	No	No	No	No	No	No	No	No	0
Japan	Yes	Yes	Yes	Yes	No	No	No	Unknown or information not publicly available	Unknown or information not publicly available
Malaysia	Yes	Yes	Yes	No	No	No	No	Yes	5
New Zealand	No	No	Yes	Yes	No	No	No	Unknown or information not publicly available	0
Philippines	Yes	Yes	Yes	Yes	Yes	No	No	Yes	5
Singapore	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	2
Taiwan	Unknown or information not publicly available	Yes	Yes	Yes	No	Yes	No	Unknown or information not publicly available	10
Tonga	No	No	No	No	No	No	No	No	0
Vietnam	Unknown or information not publicly available	Yes	No	Yes	No	No	No	Yes	Unknown or information not publicly available

Data from respondent survey.

Table 3: Preparedness for new amyloid-targeting therapies for Alzheimer's disease (AD) coded as present, absent or unknown.

CSF, PET and MRI infrastructure and workforce investments for screening alone.

Every country/region identified barriers to implementing amyloid-targeting therapies for Alzheimer's disease, with the proposed cost of treatment, lack of infrastructure (i.e., PET, infusion centres) and specialist clinical expertise, and low dementia awareness impeding early diagnosis, most commonly listed. These barriers were even more distinct in low-income Western Pacific countries such as Tonga and Fiji, where national representatives reported that in addition to the absence of clear national standards, guidelines or protocols for dementia, there was no dialogue process to enable the acquisition and implementation of amyloid-targeting therapies at a national or subnational level. To this end, at the time of publication, only three countries/regions (Australia, Singapore and Taiwan) reported that a formal submission to their FDA equivalent of an amyloid-targeting therapy for Alzheimer's disease was under review for approval. China and Japan reported that the amyloid-targeting therapy lecanemab had received approval.

Notwithstanding issues of affordability and accessibility, testing of ApoE genotype for informing ARIA risk is guarded by serious ethical and regulatory guidelines which varies between countries. Indeed, a preprint from a national survey of Australian memory clinics reported that ApoE genotyping was not available for testing in more than 60% of clinics.[61]

Discussion
As a whole, representatives of surveyed Western Pacific countries/regions noted that in order to increase their system preparedness for amyloid-targeting therapies, the following factors would need to be addressed: i) increased government spending to expand infrastructure and workforce capacities; ii) expansion of specialist

memory clinics/diagnostic services to improve early diagnostic rates; iii) increased public and health sector awareness around the safety and efficacy of amyloid-targeting therapies. It is also noted that with increased awareness and new treatment options, the pressures and demands on primary care will increase. Given there are already significant delays with timely diagnosis within the primary care sector, investment in supporting general practitioners (GPs) will be paramount. In many countries (e.g., New Zealand, Fiji, Tonga), primary care remains the predominant setting for new diagnoses and management.[35] Recent modelling work from China estimated that access to Alzheimer's disease-modifying treatments would incur a waitlist of about two years—with the biggest bottleneck occurring in the primary care setting where accurate diagnosis and triage is needed before referring patients for specialist care.[34] While primary care is clearly critical for case identification and diagnosis, in many countries (including six of the countries/regions surveyed here) a GP referral is required to access specialist memory clinic services. This further increases pressures on the primary care setting, and may result in additional wait times and costs to the patient.

Considering alternative models of care whereby there is increased specialist support of GPs and local doctors, and/or mixed services with co-location (face to face or virtual) of dementia medical and allied health specialists, will be paramount and such models have been developed internationally.[62] The emergence of amyloid-targeting therapies will raise awareness and likely result in increased case identification. However, since only 10% of memory clinic clients may be eligible to receive these drugs based on proposed amyloid, clinical, and imaging criteria,[63] it is likely that post-diagnostic support will need to be much more comprehensive than what is currently available. For example, improved personalised medicine strategies to manage cognitive and psychiatric symptoms,[64] as well as evidence-based non-pharmacological treatments such as cognitive interventions,[65] physical activity,[66] multifaceted online and group-based interventions,[67–69] reablement,[70] carer support, inter-generational programs and care coordinators would ideally be available. Working together across the Western Pacific to share and adapt interventions for diverse ethnic groups with unique access and feasibility challenges could certainly facilitate the availability and uptake of such supports.

Taken together, despite the significant advancements in amyloid-targeting therapies for Alzheimer's disease worldwide, for countries/regions within the Western Pacific there exists a great divide between those who are somewhat prepared and those who are not. While certain countries/regions (i.e., Australia, Singapore, Taiwan and Japan) have taken meaningful steps towards the clinical approval and implementation of amyloid-targeting therapies, low-income countries (i.e., Fiji and Tonga) face significant barriers. Ultimately, the disparities in infrastructure, specialist personnel and current awareness between countries/regions, calls for urgent intergovernmental collaboration and spending across the Western Pacific to ensure that all nations and peoples have access to the most optimal treatment and care. It is also important to note that upcoming amyloid-targeting therapies are indicated for Alzheimer's disease only, and while it is the most common form of dementia, it acknowledged that a significant proportion of people living with dementia may be ineligible for treatment. Finally, it is noted that particular attention will need to be devoted to the inclusion of ethnic and minority groups to ensure the current inequalities in healthcare access and provision are not further compounded. Even with regulatory approval, the cost of therapy (~US\$26,500pa per person)[71] and associated medical investigations and monitoring will likely be prohibitive and unsustainable for many countries without alternative pricing, contractual and payment models. Of relevance, this inequality will likely be compounded in low and middle income countries, if they are unable to subsidise the costs of drug and investigations, in turn restricting access to only those who can afford to pay.

With continued developments in memory clinic services and preparedness for amyloid-targeting therapies, close monitoring and evaluation is required. This may be aided by the availability of national registries for real world data collection, as well as continued research efforts to evaluate the current state of dementia services—this is noteworthy given the scarcity of literature in this area with a focus on the Western Pacific.

Challenging prevailing assumptions

As part of the diverse Western Pacific countries/regions included in this Review, we acknowledge that a focus on memory clinics as the gold standard of care is biased towards a westernised, high-income country model.[15] A further limitation is that we restricted reviewed literature to papers published in English, which may not capture the full diversity and health service profile of the region. Indeed, A current challenge is to determine whether the memory clinic model that has been shown to work well in high-income countries is viable in lower resource settings and across cultures. Continued efforts to develop and validate memory clinic models that meet the specific needs of a region are needed.[25,72] Furthermore, in low-income countries with limited resources a key area of focus advised by the WHO has been to build capacity for primary care and for community based management and care for of people with dementia.[73] More training for GPs and primary care clinicians for the diagnosis of MCI and non-Alzheimer's dementias, and for the management of complex dementia cases, will help build this capacity.[35,74] In this respect, we stress that it is the key principles of memory clinics (multidisciplinary team-based care, referral systems,

continuity of care/follow-up) that are the gold standard of care, which should be the goals across health systems. The key challenge is now to determine whether these services should, and can be, implemented across the Western Pacific using the classic memory clinic model, whether the memory clinic model can be optimally integrated into primary care, or whether bespoke adaptations for distinct countries/regions are required.

Conclusions and outlook

Access and provision of healthcare is a universal right. For persons experiencing MCI and dementia, efforts to maintain independent functioning and community living are pivotal, not only for the dignity and quality of life of a person with dementia and their significant others but also to reduce healthcare expenditure, reduce admissions to aged care (or the reliance on family members) and to maintain productivity. Currently, it is clear that there are substantive challenges to accessing dementia services across the Western Pacific, and whilst the higher income countries are certainly more advanced, most still lack comprehensive services and equitable access particularly for those in regional, rural and maritime areas, those with lower socioeconomic status or those from ethnic or indigenous communities. Of concern, the recent major breakthroughs in dementia diagnostics and treatment are likely to compound and indeed exacerbate the healthcare disparities faced by those experiencing cognitive decline. We call for intergovernmental and multisector collaboration and investment to raise awareness, share knowledge, document major gaps, devise solutions and implement strategies for system readiness.

Appendix A. Supplementary data
Supplementary data related to this article can be found at https://doi.org/10.1016/j.lanwpc.2024.101183.

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