

Review Article

Are General Practices Adequately Funded to Serve High Proportions of High Need Patients?

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Abstract

Background: A capitation formula takes into account some of the characteristics of the enrolled population, to estimate the funding required to meet varying levels of need. Capitation formulas are used to calculate funding for General Practices in Aotearoa. The current formula is based on age and sex, but no other determinants of complex health needs. We sought to quantify the levels of funding received by general practices who serve high proportions of high need people, to assess if general practices are adequately funded to do so.

Method: Ministry of Health enrolment data was used to estimate the demographic spread of five hypothetical 5,000-patient practices consisting of: 30%, 50%, 70%, 90% and 100% high need people. High needs were defined as those who are of: Māori or Pacific ethnicity, and/or reside in an area of high socioeconomic deprivation. Annual first level services payments, High User Health Card, and additional funding streams including Very Low-Cost Access (VLCA), Community Service Cards (CSC) and Fees-free for under 14s were taken from the Primary Health Organisation Services Agreement contract to calculate levels of income for the hypothetical practices.

Results: Age is a strong determinant of capitation funding. Due to age differences, a 100% high need practice receives \$818,887 per annum in first level service payments and a 100% non-high need practice receives \$809,660.

Practice level funding does not increase in proportion to the level of need of the populations served. Accounting for all other streams of capitation funding, the practices of 30%, 50%, 70% and 90% high- need patients received \$970k, \$1.25m, \$1.32 and \$1.29m respectively.

Conclusion: Use of age and sex as the main determinants for capitation funding is evidence of structural discrimination within the health system. Funding schemes aimed at helping high need populations do not always result in adequate funding for general practices to serve these communities well.

Keywords: Equity; Māori health; Capitation; Primary care funding; Formula; General practice

Introduction

Capitation funding is a payment model used to finance healthcare providers, a fixed payment is provided for each enrolled person. Capitation formulas are used in many OECD countries, including the United Kingdom (UK), Italy, Australia, Canada and Aotearoa New Zealand to fund primary and/or secondary health care services [1]. A capitation funding formula takes into account the size and characteristics of the population served, as a way of estimating the funding required to meet their health need [2].

Primary care services in Aotearoa New Zealand are mainly funded through capitation-based payments to general practices, supplemented by a user co-payment. The introduction of capitation was part of a radical reform in 2001 called the Primary Health Care Strategy (PHCS) [3]. Through the PHCS, 'first level service' (i.e., GP consultations, diagnosis and health promotion) capitation payments are provided to practices on the basis of the age and sex of people enrolled, as determined by the Primary Health Organisation Service Agreement Amendment Protocol (PSAAP) [4]. The capitation formula was created based on 1998/99 average General Practitioner (GP) utilisation rates. These payments were not weighted for ethnicity or deprivation because at the time of creation, there existed limited data. The data that did exist showed similar utilisation rates for all groups, in spite of the knowledge that Māori, Pacific peoples and those living in deprivation are more likely to have poorer health and face greater barriers to accessing care (Ministry of Health, 2022). These payments account for 80% of total funding to Primary Health Organisations (PHOs) [5], which are meso-level organisations contracted by the government to work with and support general practices [6]. Higher levels of capitation funding are provided according to whether someone has a High Use Health Card (HUHC) or not. To be eligible for a HUHC, a patient must have visited a practice 12 or more times in one year, for specific ongoing condition(s); GPs have to apply for such cards on behalf of their patients.

The government later added the Flexible Funding Pool (FFP) payments, which include Services to Improve Access (SIA) and Health Promotion (HP). Both SIA and HP funds were weighted for ethnicity and deprivation. However, these pools were provided to the PHOs rather than to the general practices themselves. Despite this effort to acknowledge the greater health needs of certain population groups, the FFP only accounts for 16% of overall PHO funding [5].

In order to combat barriers to access for key population groups, various additional policies have been developed over time. Between 2006 and 2009, Very Low Cost Access (VLCA) practice funding was introduced [7]. These practices must serve at least 50% "high need" patients: high need being defined as those who fit one or more of these three criteria: being Māori or Pacific ethnicity or living in an area that is classified as NZDep quintile 5. The NZDep is an area-based measure of socioeconomic deprivation; deprivation scores are ranked and split into quintiles, with 1 being the lowest level of deprivation and 5 being the highest [8]. VLCA practices receive a higher amount of capitation funding but are required to cap user co-payments; at the time of writing, this cap is set at \$19.50 for adults.

In 2018, additional funding was provided to allow similar benefits for holders of Community Service Cards (CSCs), an initiative aimed at reducing the cost of health care for low-income families. Non-VLCA practices receiving such funding must also agree to cap user co-payments to the same level as VLCA practices.

Each of these policies was designed to provide more equitable funding for practices and to reduce key barriers to accessing care for key population groups [9]. Yet in spite of such policies, the funding formula in Aotearoa New Zealand has continued to be criticised for failing to recognise differing health needs by ethnicity and consideration of case complexity [10]. The current formula also does not recognise the earlier age onset of often multiple long-term conditions such as diabetes and cardiovascular disease in Māori compared to non-Māori [11].

Despite the PHCS objective to reduce health inequities between different population groups, primary care funding has not been sufficiently redressed to achieve this goal. We have recently demonstrated that high need populations have higher levels of morbidity, multimorbidity and general practice utilisation than non-high need populations [12]. The aim of this research is to determine whether the current funding formula accounts for the increased financial burden of serving high need populations and contribute to the assessment of whether there is evidence of structural discrimination within the health sector based on capitation formula.

Methods

Our work was based on five hypothetical practices, each with an enrolment of 5,000 patients, but differing according to their density of high need patients: 1) 30% high need, 70% non-high need, 2) 50% each of high and non-high need, 3) 70% high need, 30% non-high need, 4) 90% high need, 10% non-high need, and 5) a side-by-side comparison of a 100% high need practice with a 100% non-high need practice. We assumed that the high need populations in each of our hypothetical practices had an age and sex distribution of the Māori population, and that the non-high need population had an age and sex distribution of the non-Māori population. Using the general population to model our practices would mean that age would confound our results as we know high need groups have a different age distribution, i.e. they are typically younger [13]. Age categories were those defined by the Ministry of Health funding formula; 0-4, 5-14, 15-24, 25-44, 45-64 and 65+.

Aggregated Ministry of Health PHO enrolment data (June 2021) [14] was used to determine the age and sex distribution and the need status (high need/non-high need) of the five hypothetical practices. The enrolment data also provided us with a breakdown of people with and without a CSC and HUHC.

The PHO Services Agreement is a contract between PHOs and the Government and includes funding criteria and funding rates which we used to calculate our models for First level capitation funding (capitation funding), VLCA, CSC and HUHC [4]. All funding figures are annual. Current funding formulas from the PHO agreement were used to inform our models for capitation and VLCA funding. For example, we have 133 patients in our 0-4 years, high need male group in our 50% practice. This age group is funded NZ\$480.55 in capitation payments, per patient; therefore, funding for this group would come to NZ\$63,913.15 per year ($480.55 \times \133). This approach was then repeated for each age/sex category in each of the five hypothetical practices. We repeated this distribution formula for the VLCA payments. We did not include the 30% high need practice in these calculations as they would not qualify for VLCA payments based on the criteria of needing 50% high need enrollees to qualify. CSC and HUHC are different as not all patients qualify for this payment. Our method for calculating these payments was slightly different because we had to include the proportion of people who do and do not have one of the cards.

First-Level Services Capitation

There are two types of first-level services capitation funding, one for Access practices and one for non-Access practices. The categories are historical, being put in place in the early years of the PHCS, to enable new funding for primary care to be rolled out first to Access practices and then, by age groups, to non-Access practices. Since the completion of the roll out in 2007, there now exists little difference between the funding amount of these two practice types. There is a very slightly higher level of funding for younger people, who do not have a HUHC, in an Access practice but not enough to make a meaningful difference in overall funding. We chose to use figures for the Access practices because these practices were originally intended to serve a high need population.

High User Health Cards

These cards are applied for by the practice, on behalf of the patient. They are allocated to patients who consult a GP 12 or more times a year. Funding for HUHC is part of the capitation payment; we present the HUHC payments separately for transparency. For example, capitation rates for someone with a HUHC, for a female age 0-4, are NZ\$682.27; rates for someone without a HUHC are NZ\$456.42; the difference (NZ\$225.85) is the HUHC payment that we used in our calculations.

VLCA Practices

To be a VLCA practice, 50% or more of the enrolled population must be high need.

These practices also agree to keep patient co-payment fees capped (currently at NZ\$19.50 for adults) in return for receiving an additional payment on top of the capitation funding, for each enrolled person in the practice, including an extra payment for CSC holders.

Community Services Card holders

CSC are available to those households with a low household income, in public housing, or receiving an accommodation supplement. Eligibility includes; older people on government superannuation, students and veterans. Since 2018, practices have been entitled to a higher rate of capitation funding for each enrolled person who holds a CSC, provided that the practice has joined the scheme and agreed for co-payments to be capped (to the same level for VLCA practices).

Results

Table 1 shows capitation funding for two hypothetical practices, one which serves 100% non-high need population and another that serves 100% high need population. We see that age is a strong determinant of capitation funding. There is a difference of \$9,227 between funding for the two practices. The difference between these totals is due to the different age structure of the two populations. Non-high need populations receive a large proportion of funding from the oldest age bands, whereas the high need populations receive a larger proportion of funding in younger age bands.

Table 2 shows the overall income, from the streams we have modeled, for a non-VLCA practice. Overall funding totals show that with each 20% increase in high need patients, the practice received approximately \$30,000 of funding. Both CSC and fees-free Under 14s funding increase in a sequential way, although not proportionally to the increase in high need patients. HUHC has minimal impact in relation to other funding sources and decreases as the proportion of high need patient's increase.

Table 1: Hypothetical First level service capitation funding totals for 100% high need and 100% not high need practices. (Figures does not include HUHC payments which are paid as part of First Level funding to eligible non-VLCA practices) (Figures in NZ\$).

	100% High need	100% Non-high need
Age group (years)		
0 - 4	\$241,496	\$133,301
5 - 14	\$146,789	\$70,932
15 - 24	\$90,847	\$63,546
25 - 44	\$122,458	\$114,732
45 - 64	\$137,936	\$190,222
65+	\$79,471	\$236,927
Total	\$818,887	\$809,660

Table 2: Annual practice income from all funding streams for hypothetical non-VLCA practices (Figures in NZ\$).

Proportion of high need patients	First level service Capitation	Fees-free under 14s	CSC	HUHC	Overall funding (Totals)
30%	\$802,251	\$91,763	\$170,178	\$1,942	\$1,066,134
50%	\$814,328	\$102,413	\$185,864	\$1,917	\$1,104,522
70%	\$816,196	\$113,063	\$201,550	\$1,890	\$1,132,699
90%	\$818,063	\$123,713	\$217,235	\$1,865	\$1,160,876

Table 3 shows the overall revenue, from the streams we have modelled, for a VLCA practice. The same categories as Table 2 apply here, except for the addition of VLCA funding and the exclusion of Fees-free Under 14s funding. The 90% high need practice has a lower amount of overall funding than the 70% high need practice. CSC increases sequentially, as the proportion of high need patients in each practice increases. HUHC funding decreases as the proportion of high need patients increase. There is little difference between VLCA funding for the 50% high need and the 70% high need practices, and larger overall funding is allocated to the 70% high need practice than the 90% high need practice.

Table 3: Annual practice income from all funding streams for hypothetical VLCA practices (Figures in NZ\$).

Proportion of high need patients	First level service Capitation	VLCA	CSC	HUHC	Overall funding (Totals)
30%	\$802,251	N/A	\$170,178	\$1,943	\$974,372
50%	\$814,328	\$249,438.27	\$185,864	\$1,917	\$1,251,548
70%	\$816,196	\$296,181.37	\$201,550	\$1,891	\$1,315,818
90%	\$818,063	\$250,892.89	\$217,235	\$1,865	\$1,288,057

Discussion

Based on our five hypothetical practices, the demonstrated levels of revenue show that both VLCA and non VLCA practices are not equitably funded to serve high proportions of high need patients. Our modeling shows that VLCA practices, (who are required to serve at least a 50% proportion of high need people), receive a smaller amount of overall funding when they serve a population of 90% high need patient then when they serve a population of 70% high need patients and that there is little difference in VLCA payments between practices that serve a population of 50% high need population compared to that which serve a 90% high need populations. For non VLCA practices, higher proportions of high need patients are not reflected in total revenue across our hypothetical practices. Although

the increase between adjacent practices is roughly equal, the formula assumes that the difference in funding between practices who serve lower needs populations is sufficient to cater for the increased financial burden of practices who serve a high proportion of high need patients. Both practice funding totals demonstrate the inequitable funding implications of a formula that uses age and sex as its key demographics to inform need status amongst Māori, Pacific people and people living in areas of high deprivation.

Despite the knowledge that high need populations have different demographic characteristics than non-high need populations (i.e., high need groups have a different age distribution which are more skewed towards younger age groups compared to non-high need groups) the VLCA formula use the same demographic information as the first level capitation formula, a funding stream which serves a different population and purpose. If the VLCA formula was successful in its goal to support practices serving high levels of high need patients, we would expect to see funding increase as proportions of high need patients increase. The VLCA formula is not weighted according to prevalence of illness despite the known importance of weighting as a tool to increase accuracy when harnessing funds for an established priority [15]. A recent comparison of population based funding formula across seven high income countries, observed that there needs to be a viable connection between policy goals and funding formula to deter unintended policy consequences [16]. In this case, that would mean better aligning the equity goals of the PHCS to funding formula, to avoid underfunding practices which serve a high proportion of high need patients.

User copayments are the fees that service users pay at the point of access, this payment per visit supplements government funding to contribute to the overall revenue for general practices. In Aotearoa, user copayments vary from \$0 to \$65 per appointment, depending on age and CSC status. We chose to not model user copayments because 1) we wanted to focus on the capitation funding model so we could evaluate potential inequity and 2) others have done so [17]. Young and Comendant, demonstrated that the drawbacks associated with serving high need populations, means that VLCA practices can stand to be further financially burdened by serving higher proportions of high need people. These drawbacks include but are not limited to; the caveat of having to cap user co-payments to a considerably lower rate than non VLCA practices, higher patient turnover and higher levels of unpaid copayments. When these factors were taken into account, hypothetical modelling showed that VLCA practices received an overall lower revenue from all sources than non VLCA practices [17]. Moreover, lower copayments may also be failing to enable better access for high need people, enrollment data shows that 44% of patients enrolled in non-VLCA practices met the criteria for being high need [18].

Capitation formula must recognise differences in needs if they are 1) to be fair, 2) if those with higher need are to receive the services they require, and 3) if the practices serving a higher need population are to be financially sustainable. Capitation formula typically do recognise need in terms of age, as older people are more likely to have higher needs, often from having multiple long-term conditions. However, in Aotearoa New Zealand, the funding formula should acknowledge the fact that Māori and Pacific populations typically develop longer term conditions at a younger age and are more likely to have multiple conditions [17]. Initiatives including HUHCs and CSC aim to reduce this inequity, but our results show that their efficacy on

practice income, and hence on the ability of the primary health care team to deliver care, is small. Issues such as low level of uptake and inefficiency at capturing the nuance of low income (for example, some eligibility thresholds for single people sit below the minimum wage) mean that the CSC scheme does not always reach its intended population [9]. HUHC have not been evaluated in the literature, but Ministry of Health data shows that the uptake may be far less than eligible population [19].

Implications

The implications of this study are that practices which serve a high proportion of high need patients may be forced to make a choice between financial stability and serving people who are most in need of care. Thus, the financial incentives built into the funding formula in Aotearoa New Zealand may lead to practices choosing to not enrol high need patients as a result of the funding being insufficient to support working with more complex populations. Emerging data from our team suggest that this may be the case (Irurzun Lopez, personal communication). Enrolment rates for Māori groups are lower than for others and have been dropping for some time [20]. Aotearoa New Zealand and Australia are the only OECD countries which recognise indigenous ethnicity as a standalone predictor of health status and incorporate it into some aspect of national funding formulas (Some countries, such as The Netherlands and Australia include ethnicity in their measures of socio-economic status) [21]. This study could be used to inform decisions on formula for other countries such as Canada or the United States who have indigenous populations who suffer poorer health status than non-indigenous populations [22,23].

Strengths and Weaknesses

Whilst this study covers the main sources of funding for general practice, some are left out. Some, we considered the contribution to net income as negligible and for others the information was not accessible or relevant for inclusivity. SIA funding, for example, which accounted for 5% of total PHO funding in 2021 [24] was designed to improve access to primary care services. This funding was intended to acknowledge the fact that high need groups had been shown to have very similar usage rates of primary care services, even though they have worse health status, likely due to significant barriers to accessing care (e.g., from co-payments, lack of transport or caregiving support, inability to get time off work, etc.). This scheme is funded on a case-by-case basis for specific initiatives, with the funding going to PHOs in the first instance rather than practices. Whilst Service to Improve Access funding is targeted specifically for high need populations; it serves a different purpose and would be difficult to quantify using our modelling approach. The same reasons apply for the exclusion of Care Plus funding, a pool designed at creating unique care plans for people with 2 or more chronic conditions. The income that Care Plus generates for practices only totals 7% of overall income and is limited to 5% of the population [24]. Care Plus funding goes directly to practices and criteria are specific to each PHO. It is worth mentioning that the HUHC are in the process of being replaced with Care Plus and this may contribute to the low impact of HUHC payments on total practice income. Other funding streams we did not incorporate include rural funding and funds delegated to help practices serving a high proportion of nonresidents.

One strength of this study is the use of up-to-date enrolment data which provided us with an accurate demographic spread. This means our results can be fairly generalisable to the popula-

tion of Aotearoa New Zealand. However, the hypothetical nature of our models limits the inferences that we can make for real practices. The actual demographic breakdown will differ from one practice to another, and hence so will the revenue received from capitation funding.

Use of enrolment data was appropriate for our study, but does not show the level of unmet need or unenrolled people who are seeking care [20]. Future research could further address high need populations to assess the number of people with multiple chronic conditions who go on to use greater levels of secondary or tertiary care due to their condition not being appropriately treated at a primary level.

In conclusion, information from our hypothetical modelling shows that the use of age as a main determinant for practice funding perpetuates the longstanding neglect from the health system, to acknowledge the younger age distribution of high need populations. Our results confirm that practices who serve a high proportion of high need patients are not adequately funded to do so. With the advent of another health reform, the government has stated that addressing historic underfunding is one of their key aims [25]. General practices located in high need areas have been promised increased funding to accommodate longer opening hours and more appointments. The structure of this funding is yet to be detailed; we therefore urge the Government to base a renewed funding formula on evidence, to reflect the accurate needs status of the population served.

Author Statements

Consent for publication

All authors give consent for the manuscript to be published.

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Authors' Contributions

Mona Jeffreys, Maite Irurzun Lopez, Jacqueline Cumming, Peter Crampton and Kenny Hau contributed to the design of the work.

Mona Jeffreys obtained the funding for the project. Tessa Senior collected the data and performed the analysis. All authors collectively interpreted the data. Tessa Senior drafted the manuscript. All authors critically commented for intellectual content and approved the final version of the manuscript.

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