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NEW ZEALAND INSTITUTE OF ECONOMIC RESEARCH

Community pharmaceuticals

Expenditure trends

NZIER report to Medicines New Zealand

November 2022

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Executive summary

The report highlights that the amount of investment in medicines as a percentage of total District Health Board (DHB) funding was estimated to be 8.1 percent in real terms in 2007, but since then has fallen. Investment as a percentage of DHB funding had been declining, and despite a boost in 2018/19, it is continuing this long-term downward trend. In 2020/21, the level of investment in community medicines was 4.3 percent.

This report identifies a $332 million investment gap in medicines that are government-funded and made available through the public health system in New Zealand (the Combined Pharmaceuticals Budget (CPB)). Despite a boost to funding in 2018/19, this gap has almost returned to its 2017/18 level, reflecting year-on-year growth since 2006/07 in real terms, i.e., when considering population growth and inflation. This is the amount of additional investment that would be required on top of the current budget to have the same level of investment in medicines as in 2006/07 in real terms.

Budget 2022 announced a $14.9 billion injection into the health sector over the next four years. This was the first Budget to take a multi-year approach toward funding the health system. However, medicines have received only two years of funding, to a value of $191 million.

One solution to the CPB investment gap may be to include a 'corrective real terms adjustment' to maintain stability in pharmaceutical investment relative to other investments.

Within the CPB, continued erosion in the community pharmaceuticals component of the CPB has occurred alongside additions to the medicines budget, the most recent being hospital medicines, fully included in the CPB since 2018/19, as well as significant growth in other additions, such as pharmaceutical cancer treatments.

In future, it is likely that the Combined Pharmaceutical Budget (CPB) will continue to be redefined to include other medicines, just as it has with hospital medicines. COVID vaccines and therapeutics have not been included in the CPB, but it seems likely that they will in the future, with potential implications for expenditure on community pharmaceuticals. The newly established medicines appropriation will allow for closer scrutiny of medicines investment, including changes in what counts as CPB.

The health and disability system reforms envisage New Zealanders being supported to better manage their own health, particularly long-term conditions, to improve health outcomes and reduce the need for costly secondary care. Community pharmaceuticals are a critical enabler of New Zealanders' ability to self-manage and warrant investment that reflects these medicines' value. Just as funding for Tier 1 services is likely to be protected from continued erosion due to cost pressures in Tier 2 services, community pharmaceuticals require protection from ongoing erosion and alignment of its Budget appropriation to the broader health sector's 3-year budget and planning cycle.

This report does not factor in other key influencers, such as an ageing population and the burden of chronic diseases, which could further increase the level of investment required in medicines. The report, however, suggests that investment in medicines may not even be keeping up with population growth and/or inflationary pressures.

Glossary

Combined Pharmaceutical Budget (CPB)

This budget is for subsidies for community medicines and some medical devices (those medicines dispensed by your pharmacist), vaccines, haemophilia treatments, nicotine replacement therapy and cancer medicines which are sometimes given in hospitals. It does not include other hospital medicines and devices, which have, to date, been funded from District Health Board hospital budgets (now transferred to Te Whatu Ora).

Community Pharmaceutical Expenditure

Expenditure on pharmaceuticals and some medical devices dispensed at community pharmacies. Does not include vaccines, haemophilia treatment, nicotine replacement therapy, pharmaceutical cancer treatments, or medical devices not dispensed at community pharmacies.

Net

For the purposes of this report, "net" means net of rebates, where a rebate is the difference between a subsidy paid by PHARMAC and a lower price agreed between PHARMAC and the pharmaceutical supplier. For example, the net CPB is the CPB after rebates are subtracted.

Discretionary Pharmaceutical Fund (DPF)

This fund can be used to provide additional funding to Te Whatu Ora (previously the District Health Boards (DHBs)). The fund was established by the Minister of Health to enable the retention of pharmaceutical funding across financial years. This allows PHARMAC to take advantage of investment opportunities that might not otherwise be able to be funded in that year, as well as deal with the sometimes-lumpy effects of growth in pharmaceutical usage.

District Health Board (DHB) funding

Prior to Budget 2022, expenditure by each District Health Board (DHB) was funded through a separate appropriation under Vote Health within a category known as Non-Departmental Output Expenses. In total, more than three-quarters of the Vote Health funds were managed by the 20 DHBs to plan, purchase and provide health services, including the DHBs' combined budget for medicines known as the Combined Pharmaceutical Budget (CPB). There was no specific appropriation for the CPB, nor any definition that would limit scope for further inclusions to this element of the DHB appropriations.

Appropriation

An appropriation is a legislative provision that permits amounts of expenses or capital expenditure to be incurred for activities that fall within the defined scope of the provision.

Appropriations require Parliamentary authority.

Key points

Changes in scope complicate expenditure analysis

Since 2010/11, budget transfers from District Health Boards (DHBs) and the Ministry of Health (MOH) to the Combined Pharmaceutical Budget (CPB) used for pharmaceutical cancer treatments, nicotine replacement therapy, vaccines, haemophilia treatments, and hospital medicines have been included in the CPB, and the total amount of these additional investments has grown in value, obscuring the fact that, in nominal terms, the amount of expenditure (net of rebates and movements in the discretionary pharmaceutical fund (DPF)) on community pharmaceuticals has fallen. In addition to the increase in additional investments since 2010/11, rebates have quadrupled over the same period, resulting in a wider gap between gross and net expenditure.

Community pharmaceutical expenditure is not keeping pace with inflation and population growth

Based on net values for the CPB and community pharmaceutical expenditure, and after adjusting values for inflation, using the Consumer Price Index (CPI) as well as population growth, real population-adjusted expenditure on community pharmaceuticals has fallen significantly since 2006/07 while the CPB overall has increased. If only the health component of the CPI is used to adjust for inflation alongside population adjustment, the rate of decrease in pharmaceutical expenditure is greater.

Community pharmaceutical expenditure is not keeping pace with other health expenditure and is likely to get worse

The CPB and community pharmaceutical expenditure were analysed as a proportion of Vote Health (Budget estimate) and as a proportion of DHB[1] funding (Budget estimate) for the period 2006/07 to 2020/21. After adjusting all values for inflation and population growth, the CPB has either remained at the same level or grown. Meanwhile, community pharmaceutical expenditure fell significantly relative to Vote Health and DHB funding.

The 2020/21 community pharmaceutical investment is equal to 5.4 percent of DHB funding (after adjusting for CPI-Health and population), whereas the 2010/11 and 2006/07 levels of community pharmaceutical expenditure were both 8.1 percent of DHB funding. To return to the 2011 community pharmaceutical investment level, an additional investment of $316 million would be required, and an additional investment of $332 million would be required to return to the 2007 level.

Future community pharmaceutical investment requires re-alignment

In future, the CPB will likely continue to be redefined to include other medicines. COVID vaccines and therapeutics have not been included in the CPB, but with the COVID Response and Relief Fund (CRRF) disestablished and PHARMAC given full responsibility for procurement (including budget responsibility) from December 2022, it seems likely that they will in the future. Analysis of the CPB shows that additions to the CPB have continued to erode expenditure on community pharmaceuticals, and the addition of COVID vaccines and therapeutics is expected to exacerbate this situation.

[1] DHBs were disestablished in 2022 with responsibilities transferred to Te Whatu Ora.

Community pharmaceuticals are a critical enabler of New Zealanders' ability to effectively self-manage and warrant the level of investment that reflects the value these medicines provide. Just as funding for Tier 1 services is likely to be protected from continued erosion due to cost pressures in Tier 2 services, community pharmaceuticals funding requires protection from ongoing erosion associated with growth in other components of the CPB. For optimal health system-decision making, this also means aligning the CPB Budget appropriation to the broader health system and New Zealand Health Plan – a strategically important step that requires a three-year budget appropriation rather than the current two-year one.

Contents

Appendices

Figures

Tables

1 Introduction and context

This report is an update to the report released in 2018, which analysed PHARMAC's expenditure trends. It includes expenditure data for the years 2018/19 to 2020/21. This report describes the analysis of trends in the Combined Pharmaceutical Budget (CPB) and the community pharmaceutical expenditure component of the CPB. This expenditure data was based on publicly available information from Vote Health Budget Estimates, Official Information Act (OIA) responses received by Medicines New Zealand from PHARMAC, press statements from the Minister of Health on PHARMAC budgets (2017 and 2018) and PHARMAC annual reports. Expenditure data was checked for accuracy against PHARMAC annual reports and, in the case of Vote Health Estimates, against estimates published on the NZ Treasury website.

The objective of the analysis was to identify changes in the absolute and relative levels of expenditure on the CPB and community pharmaceuticals net of rebates and movements in the Discretionary Pharmaceutical Fund (DPF), taking into account inflation and population growth, and in comparison, with other measures of health expenditure.

The analysis does not assume that there is a 'right' amount to spend on pharmaceuticals but intends only to provide information for decision-making.

The analysis also did not include any consideration of outcomes of pharmaceutical investment; effectiveness of PHARMAC's functions or funded pharmaceuticals; effects of changes in the price of pharmaceuticals; the level of need for funded pharmaceuticals; the difference between the relative effectiveness of pharmaceuticals and other health services; or changes in the specific composition of community pharmaceutical expenditure. Interpretation of results may require that these additional issues be considered.

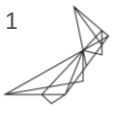
2 Baseline data

The expenditure data used for the original report, of which this report is an update, were obtained from a spreadsheet supplied by Medicines New Zealand and PHARMAC annual reports. Medicines New Zealand's spreadsheet was based on PHARMAC expenditure data extracted from responses to requests for information under the OIA about PHARMAC's CPB and expenditure on community pharmaceuticals. The Vote Health figures in the spreadsheet represent the estimated appropriations from the Budget released publicly by Treasury.

As a first step, the values obtained from PHARMAC through requests for information under the OIA were checked against PHARMAC's annual reports and against the Treasury's published estimates. The data obtained under the OIA, which is attached to the PHARMAC annual reports, is publicly available. Checks for internal consistency with regard to gross and net values of the CPB and community pharmaceuticals were also performed.

Minor issues were identified in the OIA responses provided to Medicines New Zealand:

- The amount of community pharmaceutical expenditure for 2007/08 in the OIA responses provided was not found in PHARMAC's 2008 Annual Report



- The "additional rebates" included in the OIA responses provided were not found in PHARMAC's annual reports.

Also, it was noted that the Vote Health figures represented the estimated appropriations (Budget figures), not actual expenditure, which is available from the Supplementary Estimates published by the Treasury later in each financial year. This is not expected to have a major impact.

The calculation of net values of CPB and community pharmaceutical expenditure appeared to be accurate, and these were used in the analysis for this report.

For this update, values for the years 2017/18 to 2020/21 were obtained from an OIA to Pharmac. These values included an update to the estimated values for 2017/18 used in our previous report and resulted in small differences in results for that year.

Data sources can be found in Appendix B.

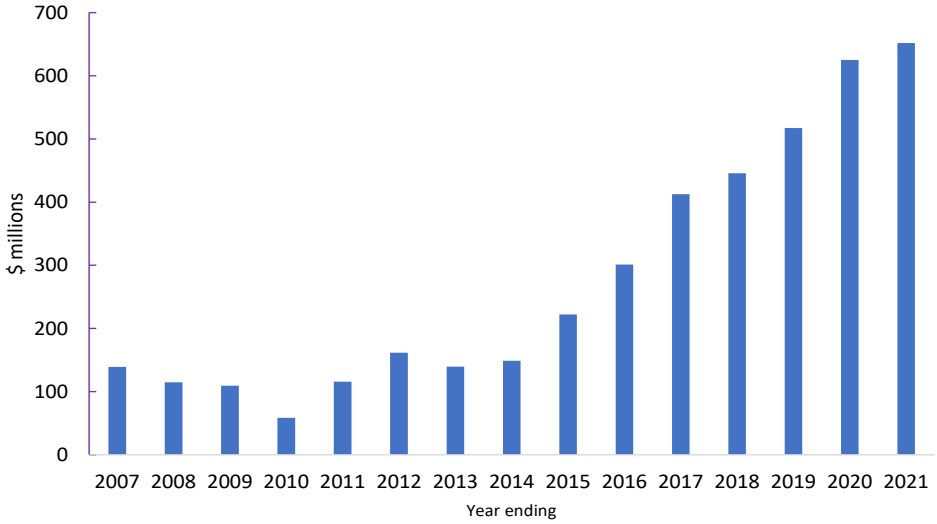
3 Pharmaceutical rebates

When analysing pharmaceutical expenditure trends, the total amount of rebates[2] is important to consider because rebates represent amounts paid by pharmaceutical companies back to DHBs via PHARMAC until July 2022 (DHB functions have now been merged into Te Whatu Ora). The higher the total amount of rebates, the greater the difference between gross expenditure and net expenditure, with net expenditure being a truer representation of cost.

Pharmaceutical rebates have experienced significant growth over time, particularly since 2013/14, as shown in Figure 1 below. This sharp rise is due to the inclusion of vaccine rebates, which were not included in previous years.

[2] See the definition of “net” in the Glossary.

Figure 1 Value of rebates



Source: NZIER, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.[3]

Because rebates have varied considerably and grown rapidly since 2013/14, values of community pharmaceutical expenditure and the CPB analysed for this report are the net values (after subtracting rebates).

4 The net CPB and community pharmaceutical expenditure

From 2006/07 to 2009/10, the net (after subtracting rebates and movements in the DPF) CPB expanded from $599 million to $694 million.

In 2010/11, expenditure on nicotine replacement therapy was added to expenditure on community pharmaceuticals and was subsequently reported as a CPB. Over time, expenditure on nicotine replacement therapy has decreased from its initial funding of nearly $13 million in 2010/11 to just under $6 million in 2016/17, then rising slightly to just $9 million in 2020/21.

In 2011/12, pharmaceutical cancer treatments were transferred from DHBs to the CPB. Unlike nicotine replacement therapy, pharmaceutical cancer treatment expenditure has expanded from $68.5 million to over $202 million in 2020/21, with expenditure increasing by 65% since 2017/18.

In 2012/13, vaccines were transferred from MOH to the CPB, increasing from just over $43 million in the first year to $165 million in 2017/18 to over $122 million in 2020/21. Expenditure on vaccines has fallen since 2017/18 and remained fairly constant since 2018/19.

In 2013/14, haemophilia treatments were transferred from DHBs/hospitals to the CPB, remaining fairly constant at $25 to $29 million per year from 2013/14 to 2018/19, then rising significantly to over $48 million in 2019/20 and remaining at that level for 2020/21.

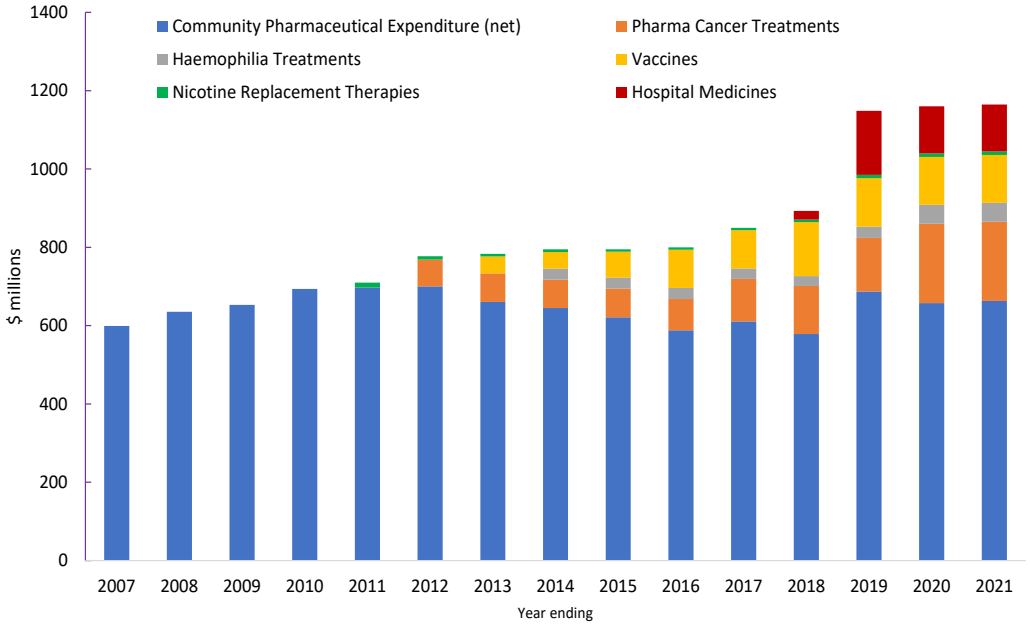
[3] Years ending 2015 and 2016 rebate values are higher due to gross (not net) numbers for rebates provided in the OIA responses.

The increase from 2018/19 to 2020/21 represents a growth in expenditure on haemophilia treatments of 66 percent.

In 2017/18, hospital medicines were transferred from DHBs/hospitals to the CPB, with a value of $22 million (a fraction of the total hospital medicines budget) being recorded under the CPB that year. Full implementation saw this figure rising to $164 million in 2018/19 before falling back to $120 million by 2020/21, likely due to savings achieved through Pharmac's commercial processes.

Figure 2 below shows the growing importance of these additional investments (from $12.92 million in 2010/11 to $314.2 million in 2017/18 to $502.1 million in 2020/21) as they contributed to the overall growth of the CPB, observed as continued annual increases. Community pharmaceutical expenditure declined in nominal terms by over 30 percent since 2010/11.

Figure 2 Breakdown of the net CPB (unadjusted)



Source: NZIER, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.[4]

5 Expenditure adjusted for population growth and inflation

The results presented so far are based on nominal values unadjusted for population growth. But over the 15 years of this dataset, the effects of inflation and population growth will have meant that ceteris paribus, the same level of funding, would not deliver the same value of pharmaceutical investments.

[4] Years ending 2015 and 2016 vaccine rebate values are higher due to gross (not net) numbers for vaccine rebates being provided in the OIA responses.

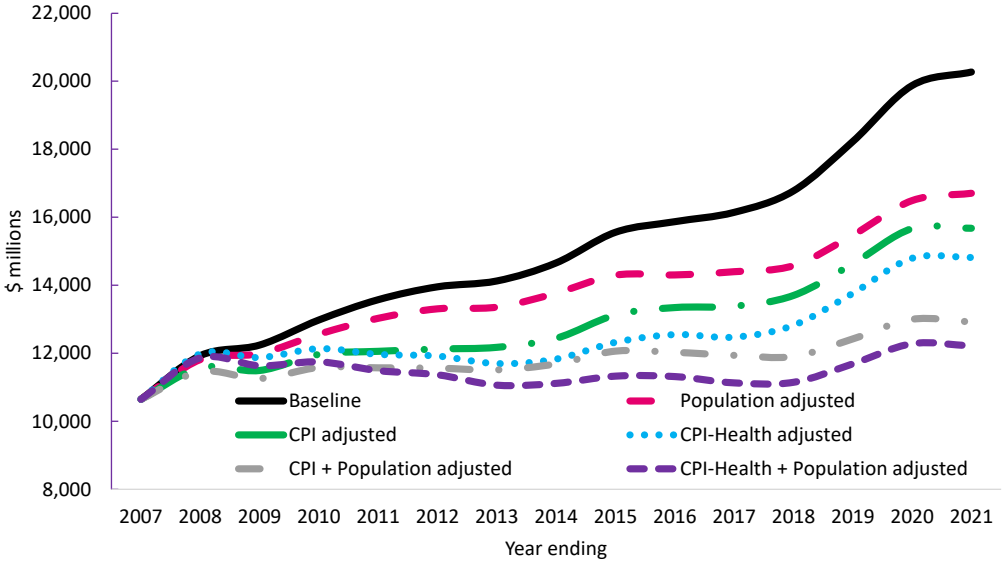
To get a more meaningful indication of the growth of Vote Health, the CPB and community pharmaceutical expenditure, the amount of expenditure on each was adjusted for:

- Inflation – using the Consumers Price Index (CPI) or the health component of the CPI (CPI-Health), the latter reflecting a greater rate of inflation, and
- Population growth – using Statistics New Zealand's population estimates.

Adjusting for inflation and population growth results in a more modest pattern of growth in Vote Health budgets, with price-related adjustments having a greater effect than the adjustment for population growth and the health component of the CPI having the greatest effect of the two inflation adjustments.

Figure 3 below shows the effects of these adjustments, using the Vote Health Budget estimate for illustration purposes. Adjusting for population growth alone has the least effect. Adjusting for inflation using the health component of the CPI (CPI-Health[5]) has a greater effect than using all components of the CPI. Unsurprisingly, the combined effects of population growth and health-related inflation cause the greatest erosion of values, resulting in Vote Health having an almost flat profile over time. Because all adjusted 2020/21 values of Vote Health have increased relative to 2006/07, one would expect, ceteris paribus, that Vote Health would deliver at least as much value in 2020/21 as it did in 2006/07.

Figure 3 Effect on Vote Health (Budget estimate) of adjusting for inflation and population growth[6]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[5] This index comprises pharmaceutical products, therapeutic appliances and equipment, medical services, dental services, paramedical services, hospital services and other medical products. But relates to out-of-pocket expenditure by consumers – rather than the full cost of these items. See more at: http://datainfoplus.stats.govt.nz/Item/nz.govt.stats/8b0860b8-cf63-4f12-a578-8eed8ba69ac3#/nz.govt.stats/a4ae9211-0415-4ef3-bf3e-46fef770e8c1/3

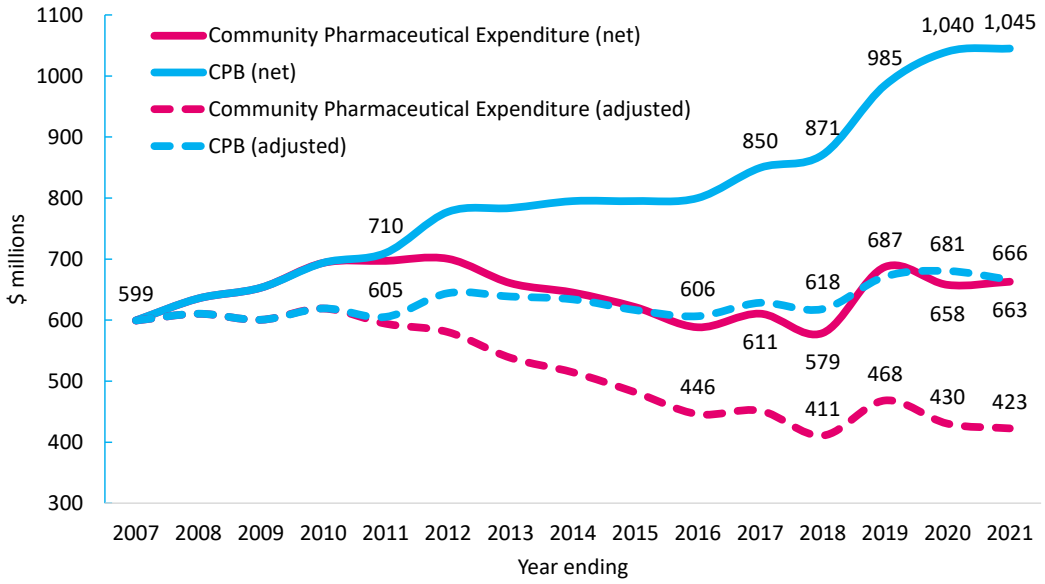
[6] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

5.1 CPI and population-adjusted CPB and community pharmaceutical expenditure

Adjusting for population growth and inflation (using the CPI), as shown in Figure 4 below, reveals that the growth in the net CPB (dotted blue line) has not been as significant as suggested by the unadjusted values of the net CPB (solid blue line). In fact, after adjusting for inflation (using the CPI) and population growth (dotted pink line), expenditure on community pharmaceuticals was significantly lower in 2020/21 than in 2006/07, whereas the unadjusted values suggest an increase.

The CPB, on the other hand, was higher in 2020/21 than in 2006/07 after adjusting for inflation and population growth (dotted blue line). The CPB rose in unadjusted and adjusted values to 2020/21. The unadjusted (solid pink line) values of community pharmaceuticals also increased to 2020/21, but the adjusted (dotted pink line) values of community pharmaceuticals declined significantly to 2020/21. This decline reflects the failure of the community pharmaceutical portion of the CPB to keep up with inflation and population growth over the 15 years since 2006/07, alongside the growing proportion of the CPB allocated towards additional investments.

Figure 4 Adjusted and unadjusted CPB and community pharmaceutical expenditure (CPI+Pop growth)[7]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[7] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

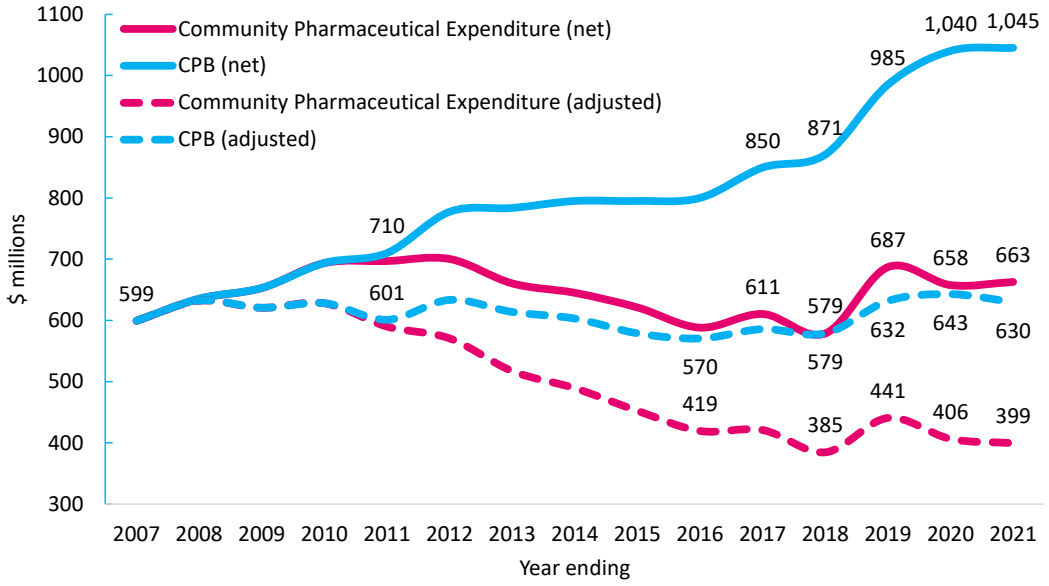
5.2 CPI-Health and population-adjusted CPB and community pharmaceutical expenditure

Performing the same adjustment as in the previous section but using only the Health component of the CPI along with adjustment for population growth results in slightly different values, as shown in Figure 5 below.

As health-related price inflation has been higher than general inflation, the decrease in the adjusted value of community pharmaceutical expenditure (dotted pink line) is greater than when adjusting using the CPI – a reduction of approximately 33 percent in real terms – while the growth in the net CPB is small (dotted blue line).

The CPB, in unadjusted values (solid blue line), rose year on year to 2020/21, while the unadjusted (solid pink line) has recovered slightly since 2017/18 but has not returned to its 2010/11 value. Meanwhile, the adjusted (dotted pink line) values of community pharmaceutical expenditure have continued to decline sharply despite a modest boost in 2018/19. This decline reflects the failure of the community pharmaceutical portion of the CPB to keep up with health-related inflation and population growth over the 15 years since 2006/07, alongside the growing proportion of the CPB allocated towards additional investments.

Figure 5 Adjusted and unadjusted CPB and community pharmaceutical expenditure (CPI-Health+Pop growth)[8]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[8] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

6 Net CPB and community pharmaceutical expenditure relative to Vote Health

PHARMAC's budget is a component of Vote Health and, at a basic level, might be expected to reflect overall trends in health expenditure.

In absolute terms, Vote Health expenditure (Budget estimates) has experienced annual increases from 2006/07 to 2020/21, from $10.6 billion to $20.2 billion. Budget 2022 announced a $14.9 billion[9] injection of new funding for Vote Health over the next four years, including up to $13.4 billion in new operating funding and up to $1.5 billion in new capital investment.

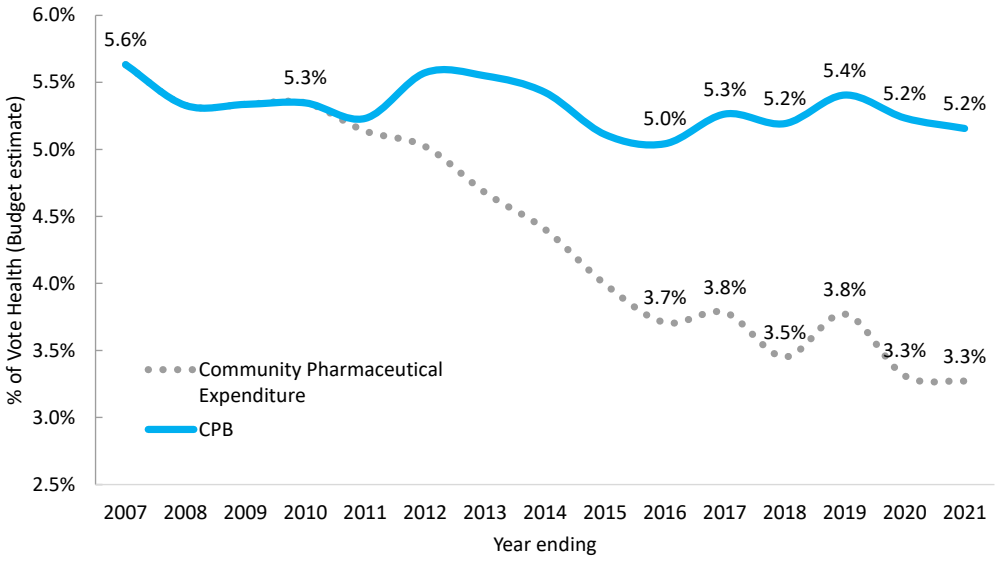
From the beginning of the 2018 government fiscal year, the CPB was redefined to include all DHB hospital medicines. Budget documents at the time indicated that savings from the combined pharmaceutical budget would be returned to Vote Health to be reprioritised to other areas.[10] That decision implied that overall expenditure on pharmaceuticals would fall as a proportion of Vote Health. This means that the proportion of health expenditure on community pharmaceuticals was expected to continue to decline.

Figure 6 on the next page shows that unadjusted expenditure on community pharmaceuticals as a proportion of Vote Health (Budget estimates) has fallen by 2.3 percentage points from 5.6 percent of Vote Health to 3.3 percent of Vote Health. The addition of nicotine replacement therapy, pharmaceutical cancer treatment, vaccines, haemophilia treatment, pharma cancer treatments and hospital medicines into that budget means the effect will have been even more marked than evident in the raw data.

9 https://www.health.govt.nz/about-ministry/what-we-do/budget-2022-vote-health

10 https://treasury.govt.nz/sites/default/files/2018-08/b18-3922457.pdf

Figure 6 Unadjusted net CPB and community pharmaceuticals as a proportion of Vote Health[11]



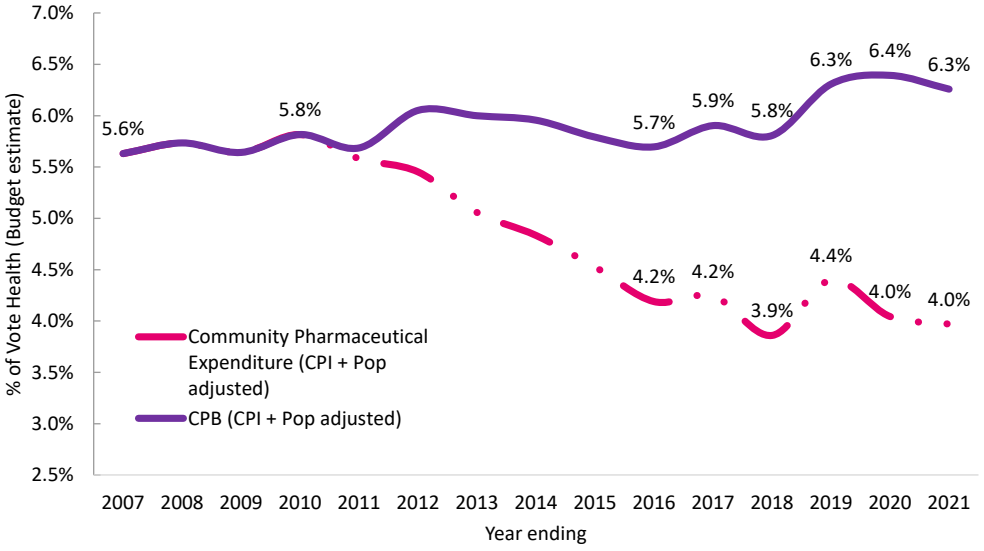
Source: NZIER, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

The CPB rose as a proportion of Vote Health in 2018/19 before dropping again in 2019/20, while the community pharmaceuticals showed a similar pattern. This decline could reflect the growing importance of the additional investments, i.e. pharmaceutical cancer treatments, vaccines, haemophilia treatments, and hospital medicines, as the proportion of the CPB allocated towards these additional investments is increasing.

[11] Differences between the series are small as a proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Figure 7 below shows the effect of adjusting for population growth as well as for inflation using the CPI. These adjustments show that the CPB had an almost flat profile from 2006/07 to 2017/18 before rising slightly from 2018/19. This suggests that CPB has kept up with Vote Health, even increasing slightly in later years relative to Vote Health, even after adjusting for population growth and inflation using the CPI. Community pharmaceutical expenditure, however, has almost continuously declined since 2011/12 and is now only 4 percent of Vote Health in 2020/21. But the adjustments clearly show that both the CPB and community pharmaceutical expenditure have done a better job of keeping up with Vote Health in real terms than in nominal terms (Figure 6 on the previous page).

Figure 7 Adjusted net CPB and adjusted net community pharmaceuticals as a proportion of Vote Health (CPI + pop growth)[12]

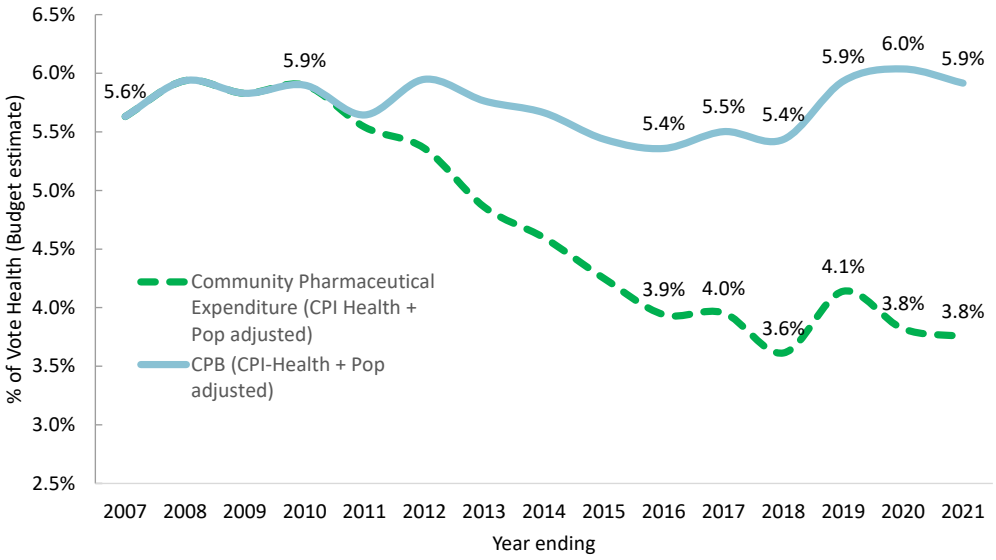


Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[12] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Figure 8 below shows how using the health component of the CPI (CPI-Health) affects these figures. These adjustments show that the CPB has almost had a flat profile since 2006/07, with some increase seen only in the last three years. This suggests that CPB has kept up with Vote Health even after adjusting for population growth and inflation using the health component of CPI. The decline in the value of community pharmaceutical expenditure is more significant than when the health component of the CPI is used to adjust for inflation because health-related inflation has been relatively high. Despite the greater decline due to health-related inflation, both the CPB and community pharmaceutical expenditure have done a better job of keeping up with Vote Health in real terms than nominal terms (Figure 6 on page 9).

Figure 8 Adjusted net CPB and adjusted net community pharmaceutical expenditure as a proportion of Vote Health (CPI-Health+pop growth)[13]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

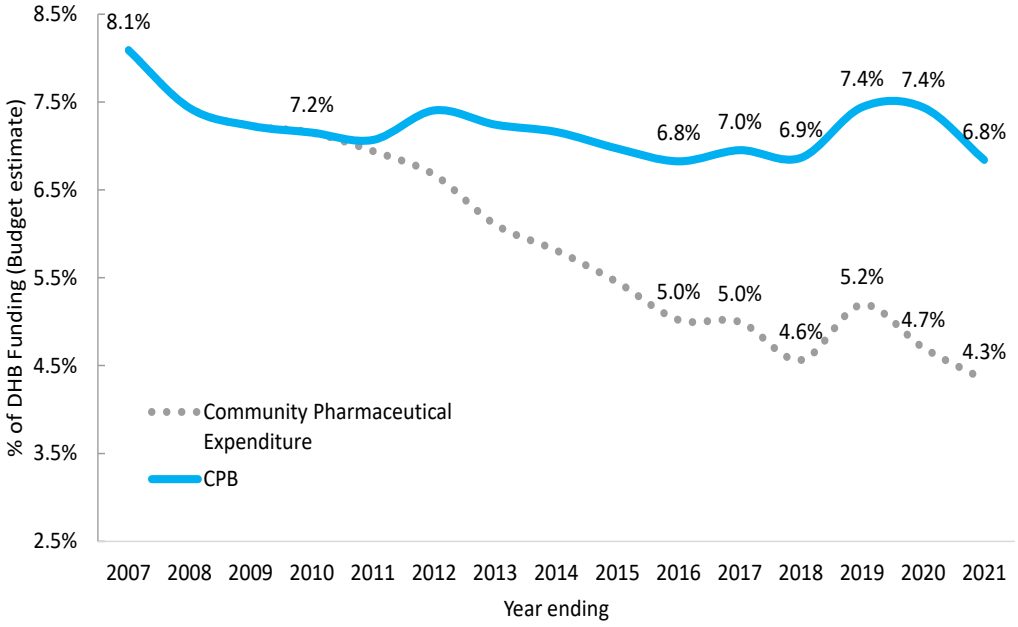
7 Net CPB and community pharmaceutical expenditure relative to DHB funding

Vote Health includes funding for administrative expenses (departmental appropriation). As an alternative point of reference, DHB funding (Budget estimate) was used to highlight trends in the CPB and community pharmaceutical expenditure. We think DHB funding is a better measure of how health care is funded, which is a better reference point for pharmaceutical spending. In future, due to the disestablishment of the DHBs and the merging of their functions into Te Whatu Ora, Te Whatu Ora funding to support the functions previously belonging to the DHBs will likely be the appropriate reference point.

[13] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Figure 9 below unsurprisingly shows that the CPB and community pharmaceuticals have been a greater proportion of DHB spending than of Vote Health. However, as a proportion of DHB spending, the CPB has declined from 8.1 percent to 6.8 percent and expenditure on community pharmaceuticals has declined from 8.1 percent to 4.3 percent. There was a sharp increase in community pharmaceuticals as a proportion of DHB funding in 2018/19 but a return to a decline in the subsequent years which could reflect the growing importance of additional investments, i.e. pharmaceutical cancer treatments, vaccines, haemophilia treatments, and hospital medicines as the proportion of the CPB allocated towards these additional investments is increasing.

Figure 9 Unadjusted net CPB and community pharmaceutical expenditure as a proportion of DHB funding (unadjusted)[14]

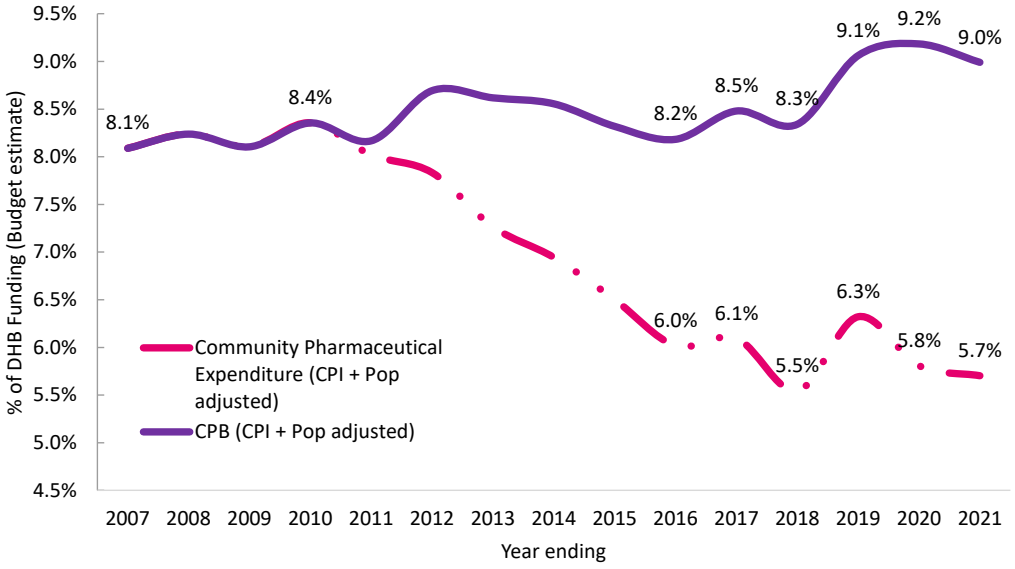


Source: NZIER, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[14] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Figures 10 below and 11 on the next page show the effects of adjusting for population growth and inflation using the CPI (Figure 10) or using the health component of the CPI (Figure 11). Using DHB funding as a reference point, the CPB has maintained an almost flat profile to 2017/18 with a boost in 2018/19 and 2019/20 that has started to erode slightly, suggesting that it has kept up with – even performed a little better than – other output-related investments even after adjusting for population growth and either of the two measures of inflation. Community pharmaceutical expenditure has declined over time despite a boost in 2018/19, suggesting it has not kept up with other output-related investments. But community pharmaceutical expenditure has done a better job of keeping up with DHB funding since our last report (2017/18) in real terms (adjusting for population growth and either of the two inflation measures) than in nominal terms (Figure 9 on the previous page).

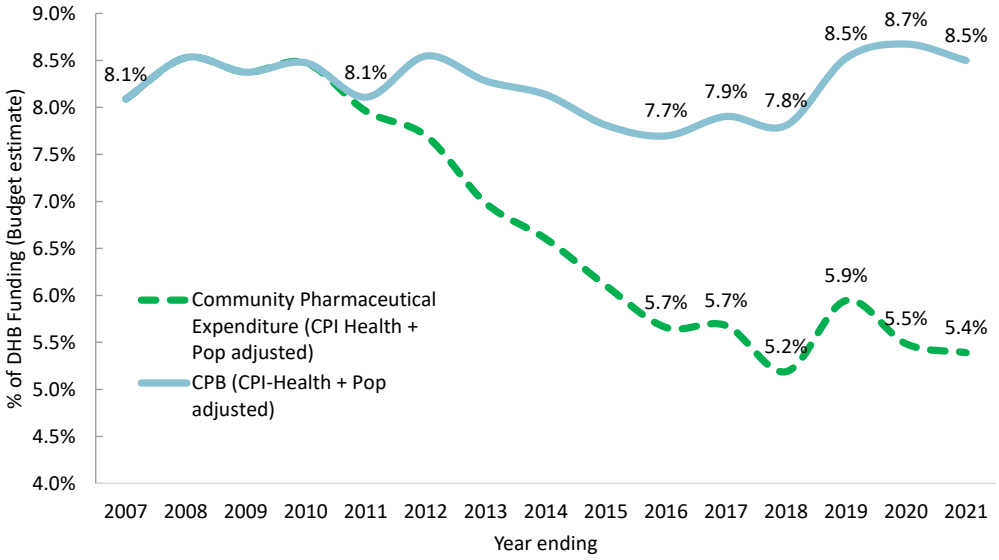
Figure 10 Adjusted net CPB and community pharmaceutical expenditure as a proportion of DHB funding (CPI + pop growth)[15]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

[15] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Figure 11 Adjusted net CPB and community pharmaceutical expenditure as a proportion of DHB funding (CPI-Health + pop growth)[16]



Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

8 Compound annual growth

An overall measure of growth for each series is needed to compare the growth rates of different series of values that have grown at different rates over time. Compound annual growth rates (CAGRs) are an appropriate measure in this context.

CAGRs are essentially mean annual growth rates over a period of time longer than one year. CAGRs provide a more meaningful picture of growth over a period in a series that has seen volatility from year to year. The CAGR is calculated by spreading the difference between expenditure in the first year of the series and expenditure in the last year evenly across all years.

CAGRs were calculated for the net CPB (2006/07-2020/21), net expenditure on community pharmaceuticals (2006/07-2020/21) and Budget estimates of Vote Health (2006/07-2020/21). These are shown in Table 1 below.

[16] Differences between the series are small as proportion of the total. The vertical axis has been truncated so that small proportionate differences can be seen more clearly.

Table 1 CAGRs with different adjustments for inflation and population growth

	CPB net (2006/07-2020/21)	Community pharms (net) (2006/07-2020/21)	Vote Health Budget (2006/07-2020/21)
Unadjusted values	4.0%	0.7%	4.7%
Population-adjusted	2.6%	-0.7%	4.3%
CPI-adjusted	2.2%	-1.1%	3.5%
CPI-Health-adjusted	1.7%	-1.5%	3.3%
CPI- and population-adjusted	0.8%	-2.5%	1.4%
CPI-Health and population-adjusted	0.4%	-2.9%	1.0%

Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

As shown in Table 1, the net CPB has a positive annual compound growth under all adjustments, although that growth rate is consistently lower than the annual compound growth of Budget estimates of Vote Health and barely registers once health inflation and population growth are accounted for. However, while the unadjusted values for community pharmaceuticals suggest a low positive CAGR, the CAGR of investment in community pharmaceuticals is negative when any adjustment for inflation or population growth is made, with the combination of adjustment using the health component of the CPI as well as population resulting in the greatest negative annual compound growth.

9 Value of "missing" investment

Table 2 below shows:

- The total investment required in 2021/22 to return to 2010/11 and 2006/07 net CPB investment as a percentage of DHB funding (8.1 percent both in 2010/11 and 2006/07 as shown in Figure 11).
- The value of *additional* investment required over the actual 2021/22 net CPB values to return to the 2010/11 and 2006/07 net CPB investment as a percentage of DHB funding (8.1 percent both in 2010/11 and 2006/07 as shown in Figure 11).

Table 2 Net community pharmaceutical investment required to return to 2006/07 and 2010/11 level of investment as a percentage of DHB funding

	Total investment required		Additional investment required	
To year	**2006/07**	**2010/11**	**2006/07**	**2010/11**
From year				
2017/18 (estimated for our 2018 report)	$902m	$888m	$375m	$360m
2020/21	$995m	$979m	$332m	$316m

Source: NZIER, Statistics NZ, Data obtained from OIA responses, PHARMAC Annual Reviews and Vote Health Budget Appropriations.

As seen in Figure 11 and as mentioned in our previous report, the net community pharmaceutical expenditure as a proportion of DHB funding remained relatively steady between 2006/07 and 2010/11. Consequently, the additional investment required to return to the 2006/07 and 2010/11 net community pharmaceutical expenditure levels is similar. However, as shown in Table 2, the additional investment required to return to 2006/07 or 2010/11 is now lower than it was in our previous report, even though the total investment required has increased (due to growth in DHB funding).

10 New foundations for future monitoring

The 2022/23 Budget has transferred funding for pharmaceutical expenditure from the previous district health board (DHB) appropriations[17] to a new National Pharmaceutical Purchasing appropriation specifically set up for this purpose.

Establishing a Parliamentary appropriation specifically for medicines in the *Estimates of Appropriations 2022/23 - Health Sector* means that there is a transparent, specific and defined scope of pharmaceuticals.

This will ease the way for future monitoring against other items of health expenditure over time. This is especially important for the newly established Te Whatu Ora and Te Aka Whai Ora so that pharmaceuticals expenditure can be compared with other expenditure choices in pursuit of health outcomes on a constrained budget.

However, the 2022/23 Budget sets out a 2-year appropriation of $191 million. The lack of funding direction for 2024/25 and 2025/26 is raised by the Treasury in the Budget Economic and Fiscal Update (BEFU) 2022, in which it points out further funding "may be required in subsequent years to maintain access to the same selection of funded medicines".

[17] The DHBs were disestablished in 2022 with their functions merged into Te Whatu Ora.

One major concern for the sustainability of expenditure on community pharmaceuticals is the likelihood of COVID vaccines and therapeutics being added to the CPB in future years. These investments have been removed from the COVID-19 Response and Recovery Fund (CRRF), which was disestablished in Budget 2022 while giving PHARMAC full responsibility for procurement (including budget responsibility) from December 2022 (financial year 2022/2023). The analysis in this report shows that as new medicines and vaccines have been added to the CPB, the overall budget has not been adjusted to allow for continued population- and inflation-adjusted expenditure on community pharmaceuticals. It seems likely, therefore, that the addition of COVID vaccines and therapeutics will further erode expenditure on community pharmaceuticals unless a more deliberate approach to protecting this element of the CPB is implemented.

The 2-year appropriation is also inconsistent with the overall health sector approach to planning in which Te Whatu Ora is tasked with developing 3-year plans for health service delivery. Without certainty as to the budget for community pharmaceuticals over three years, Te Whatu Ora will not able to confidently optimise planned expenditure across all service options. Community pharmaceuticals are a critical enabler of the health and disability system reforms, particularly in supporting more self-management and better management of long-term conditions within Tier 1 services. This system shift requires the ability to plan strategically with a comprehensive view of the system over as long a time frame as possible.

Appendix A Methods

Data originally commissioned by Medicines New Zealand

The expenditure data used for this report were obtained from PHARMAC annual reports and a spreadsheet supplied by Medicines New Zealand. The spreadsheet was based on PHARMAC expenditure data extracted from responses to requests for information under OIA about PHARMAC's Combined Pharmaceuticals Budget and expenditure on community pharmaceuticals. The Vote Health figures in the spreadsheet represent the estimated appropriations from the Budget released publicly by Treasury.

Updated data sought by NZIER

In 2022, NZIER requested information under the Official Information Act for updated data to extend the data obtained by Medicines New Zealand's original request. The data received from Pharmac included the years 2017/18 to 2020/21. The values for 2017/18 were slightly different from those used in our 2018 update, which had relied on estimated values for that year.

Additional data gathered for analysis

- Population, CPI and CPI-Health data obtained from Statistics NZ.
- DHB funding figures obtained from Treasury Vote history.

The data was then transformed to give a meaningful picture

As a first step, the values obtained from PHARMAC through requests for information under the OIA were checked against PHARMAC's annual reports and the Treasury's published estimates. This data obtained under OIA, which is attached to the PHARMAC annual reports, is publicly available. Checks for internal consistency with regard to gross and net values of the CPB and community pharmaceuticals were also performed.

Minor issues were identified in the expenditure data provided by Medicines New Zealand:

- The amount of community pharmaceutical expenditure for 2007/08 in the spreadsheet provided was not found in PHARMAC's 2008 Annual Report.
- The "additional rebates" included in the OIA responses provided were not found in PHARMAC's annual reports.
- The spreadsheet included the DPF and figures for a net DPF, but the latter was not explained, nor was any explanation found in PHARMAC's annual reports.

The net CPB and net community pharmaceutical expenditure figures were then adjusted for inflation (CPI and the health component of the CPI) and population growth. These adjusted figures were expressed as proportions of the Vote Health Budget and budgeted DHB funding. These formed the basis of the analysis in this report.

Sources of data

Statistics NZ: http://www.stats.govt.nz/infoshare/

Treasury Vote history: http://www.treasury.govt.nz/budget/votehistory/health

OIA requests:

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-18_Service_Budget_Document.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-18_Service_Budget_Document.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2016-17_CPB_funding_docs_-_previously_released.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2016-17_CPB_funding_docs_-_previously_released.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-18_CPB_Funding_Documents_Redacted.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-18_CPB_Funding_Documents_Redacted.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2016-17_Budget_Bid_Documents_-_previously_released_-_resending_Redacted.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2016-17_Budget_Bid_Documents_-_previously_released_-_resending_Redacted.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_04-11-2015_-_Medicines_New_Zealand__OIA_Request_for_Budget_Information.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_04-11-2015_-_Medicines_New_Zealand__OIA_Request_for_Budget_Information.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_2016-12-19_Graeme_Jarvis_-_OIA_request.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_2016-12-19_Graeme_Jarvis_-_OIA_request.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-06-27_-_Medicines_NZ_OIA_-_Budget_Bid_documents_-_response_letter.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/2017-06-27_-_Medicines_NZ_OIA_-_Budget_Bid_documents_-_response_letter.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_2017-03-08_Graeme_Jarvis_-_OIA_clarifications.pdf

https://www.medicinesnz.co.nz/fileadmin/user_upload/Response_to_2017-03-08_Graeme_Jarvis_-_OIA_clarifications.pdf

PHARMAC annual reports:

https://www.pharmac.govt.nz/assets/annual-report-2006-2007.pdf

https://www.pharmac.govt.nz/assets/annual-report-2007-2008.pdf

https://www.pharmac.govt.nz/assets/annual-report-2008-2009.pdf

https://www.pharmac.govt.nz/assets/annual-report-2009-2010.pdf

https://www.pharmac.govt.nz/assets/annual-report-2010-2011.pdf

https://www.pharmac.govt.nz/assets/annual-report-2011-2012.pdf

https://www.pharmac.govt.nz/assets/annual-report-2012-2013.pdf

https://www.pharmac.govt.nz/assets/annual-report-2013-2014.pdf

https://www.pharmac.govt.nz/assets/annual-report-2014-2015.pdf

https://www.pharmac.govt.nz/assets/annual-report-2015-2016.pdf

https://www.pharmac.govt.nz/assets/annual-report-2016-17.pdf

https://www.pharmac.govt.nz/assets/annual-report-2017-2018.pdf

https://www.pharmac.govt.nz/assets/annual-report-2018-2019.pdf

https://www.pharmac.govt.nz/assets/Uploads/Annual-Report-2019-2020.pdf

https://www.pharmac.govt.nz/assets/Annual-Report-2020-2021.pdf