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Usage and equity of access to isotretinoin in New Zealand by deprivation and ethnicity

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Abstract

Aims Oral isotretinoin, for severe acne, was until March 2009 fully funded in New Zealand only if the prescription was written by a vocationally registered dermatologist. This funding restriction was argued on the basis of complexity of management and an appreciable risk of teratogenicity if given during pregnancy or within a month of conception. However, this funding restriction had the potential to create inequitable access barriers. This study was an audit examining the use of isotretinoin by deprivation level and ethnicity, in order to examine potential inequities in use.

Method Dispensed prescription data for funded isotretinoin, for the year ending June 2008, held in a national repository was analysed using simple descriptive methods based on ethnicity and deprivation level. The same analysis was carried out for cyproterone acetate with ethinyloestradiol, another acne pharmaceutical available on prescription with no funding restrictions. There was demographic data on 60% of prescriptions based on the health identification number NHI.

Results People living in more deprived areas (as defined by NZDep Index) were less likely to use isotretinoin, as were Māori and Pacific people. The association with deprivation level was not present for cyproterone acetate with ethinyloestradiol, although disparities in use by ethnicity remained.

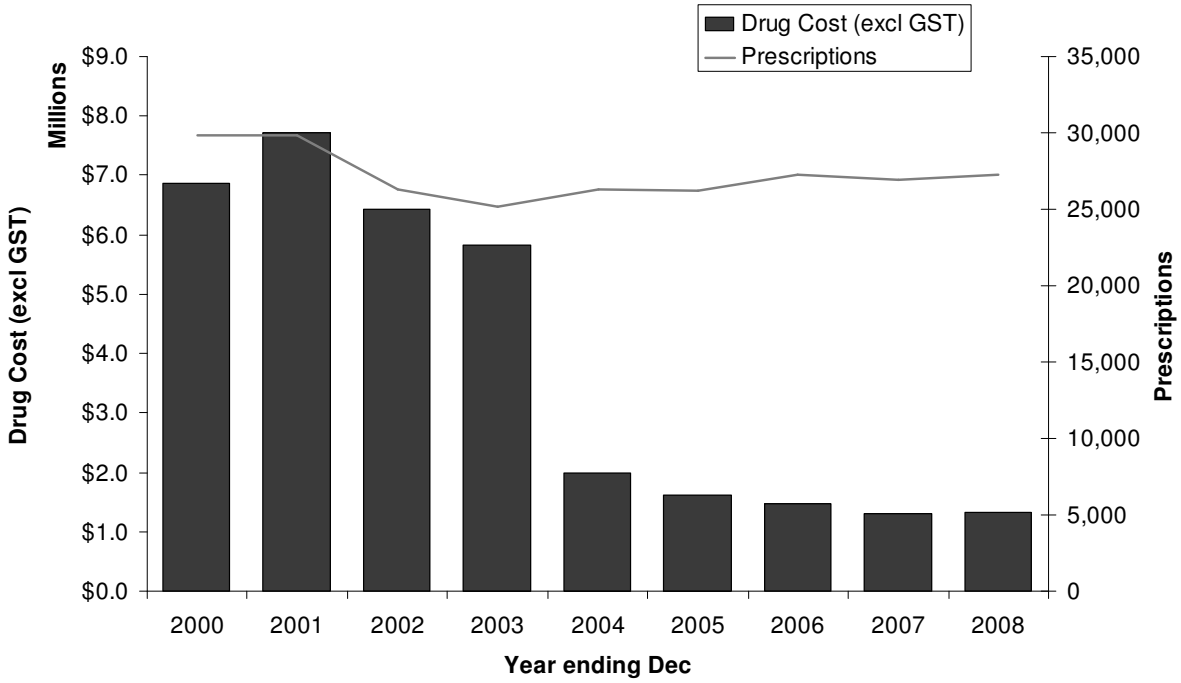
Conclusions Given there is no evidence for lower rates of acne for Māori and Pacific people, the reasons may include financial and other barriers.

Oral isotretinoin is a recognised treatment that has been available for over 20 years for severe refractory cystic and conglobate acne; however, until recently, funded access in New Zealand has been available only through prescriptions written by vocationally registered dermatologists. This funding restriction was created on the grounds that the medication was difficult to use and that there was an appreciable risk of teratogenicity if given during pregnancy or within a month of conception.[2] A number of other countries, including the United Kingdom and Australia, have similar restrictions.

As with many countries there is a shortage of dermatologists in New Zealand and access to them within the public health system is restricted because of long outpatient waiting times,[2,3] along with the prioritisation of other cases ahead of acne consultations. Therefore it is likely that the majority of prescriptions have been issued by dermatologists working in their private capacity where there is no funding subsidy for their consultations. Anecdotally these private practices are usually located in more affluent neighbourhoods while public dermatology services can be considerable distances from some suburbs.

Despite this funding restriction, other prescribers have always been allowed to issue prescriptions, albeit with a patient having to pay the full direct cost of isotretinoin along with pharmacy mark-ups and dispensing fees. Over recent years, with the arrival of generic isotretinoin, the actual cost of the medication has fallen quite significantly (Figure 1), to a point where the net cost to a patient for a consultation and a prescription issued by any primary care provider (usually a GP) would have been cheaper than a private dermatology appointment. It appears not many GPs or patients were aware of this option and GPs may have felt that they lacked experience in the use of this potentially difficult medication. The total number of prescriptions filled has not changed since this price reduction (Figure 1).

Figure 1. Expenditure and usage of isotretinoin in New Zealand, 2000–2008



In March 2009, the agency that manages New Zealand's community pharmaceutical budget, PHARMAC (Pharmaceutical Management Agency), widened funded access to oral isotretinoin such that vocationally trained general practitioners and nurse practitioners acting within their scope of practice were able to write fully subsidised scripts for their patients.

In making this decision, it was proposed that the funding restriction had led to unequal access to isotretinoin by deprivation level. Although moderate and severe acne is common amongst New Zealand school children with estimates ranging from 67% to 91% of school students,[4,5] there is no known association to deprivation level. However, previously unpublished data[6] from Auckland suggests deprivation level affects access to isotretinoin: 15% of students at a girls' school in and near affluent

neighbourhoods, had accessed isotretinoin, while no students from a school with students from poorer neighbourhoods, had.

When acne rates by ethnicity are considered, there is only minimal evidence for differing rates of acne amongst any ethnic groups. One study based on self-reported acne found that Pacific students more frequently reported 'problem acne'.[4] The same study found that Māori and Pacific students were more likely to report difficulty accessing treatment for acne. We identified no New Zealand-specific research examining ethnic differences in use of or access to isotretinoin in particular.

Despite this lack of New Zealand-specific research on differential access to isotretinoin, there is a large and well-documented New Zealand research base on the inequities in accessing health care and services. Māori have unequal access to diabetes care,[7] cancer services[8] and mental health services,[9] among others.

Access to health services also tends to be poorer for Pacific people.[10] Inequity of access is associated with deprivation level for a variety of services including primary health care.[11] Reasons that have been proposed for these inequities include financial barriers,[11] mobility, cultural and language issues—but it is likely to be a complex mix of a variety of factors.[12]

Given this background of limited research into this issue and the recent widening of funded access the aims of this study are to examine isotretinoin use in the year leading up to this funding change. The study aims to focus particularly on deprivation level and ethnicity. The study also aims to examine if use of isotretinoin is similar to other fully-funded pharmaceuticals used for the treatment of acne (in particular, cyproterone acetate with ethinyloestradiol).

Methods

Once a funded prescription is dispensed in New Zealand the data is collected in a national repository and available for analysis. In addition to prescriber details, the medication name, strength, quantity and dosage are recorded, along with an encrypted National Health Index (NHI) number where this is available.

The NHI number is a unique identifier for virtually everybody in New Zealand who has ever had contact with the health service. The number is linked to New Zealand census data and contains information about the individual's date of birth, ethnicity and socioeconomic status.

Most general practitioners in New Zealand have computerised prescribing systems and over 95% of all prescriptions recorded in the New Zealand Health Information Service (NZHIS) database have an NHI number attached. The one prescriber group that do not use NHI numbers routinely is private specialists because they do not have easy access to the numbers; however, the dispensing pharmacist will often know the NHI number of the patient (from previous prescriptions) and if they do they must transmit it along with the prescribing information to the national database.

Prescription data for isotretinoin and cyproterone acetate with ethinyloestradiol for the year ending June 2008 was accessed through PharmHouse. The PharmHouse database is a subset of the NZHIS database that contains records of all the claims for medicines dispensed within New Zealand.

The data was analysed using simple descriptive methods based on ethnicity and deprivation level. Age standardisation of ethnicity, deprivation level and gender results was completed using direct standardisation. Populations were standardised to the Segi World population. We used prioritised ethnicity so that if patients reported more than one ethnicity they would be classified as Māori, then Pacific then Other.

Individuals were assigned the deprivation level (a measure of socioeconomic status) of their area of residence based on the New Zealand Deprivation Index (NZDep). The NZDep Index is a population level index based on nine variables recorded on the 2001 New Zealand Census.[13]

There are other uses of isotretinoin and cyproterone acetate with ethinyloestradiol which may affect the comparisons made between them. For instance while only registered for use in acne a dermatologist may, although rarely, use isotretinoin for other skin conditions such as hydradenitis suppurativa. Cyproterone acetate with ethinyloestradiol is registered for use in androgen-dependent diseases in women (including acne), for oral contraception in women requiring treatment for androgen-dependent diseases and polycystic ovary syndrome.

Results

In the year ending June 2008 there were 27,056 funded isotretinoin prescriptions (approximately 3,000,000 capsules) dispensed. Of those prescriptions, only 60% contained a valid NHI number (Table 1). Once the available NHI information was scaled up it was estimated that 15,900 patients received a funded prescription for isotretinoin of which 43% were male and 57% female.

Table 1. Prescriptions of Isotretinoin by deprivation quintile and ethnicity

	Other	Māori	Pacific People	Unknown	Total
Q1	4,508	95	31	0	4,634
Q2	3,473	102	33	0	3,608
Q3	3,032	115	64	0	3,211
Q4	2,142	167	37	0	2,346
Q5	1,807	214	114	0	2,135
Unknown	0	0	0	11,122	11,122
Total	**14,962**	**693**	**279**	**11,122**	**27,056**

Although unfunded prescriptions are not recorded in the NZHIS database, a review of IMS Health New Zealand (personal communication, 2008) data suggests that less than one hundred unfunded prescriptions were dispensed. IMS Health New Zealand is a private organisation that provides data on pharmaceutical use in New Zealand.

Deprivation level—In New Zealand, there is a clear linear association between use of isotretinoin and deprivation level. People from the least deprived quintile are more than two and a half times as likely to access isotretinoin compared with people from the most deprived quintile (Figure 2 and Table 2).

Figure 2. Isotretinoin prescription rates by deprivation level, year ending June 2008

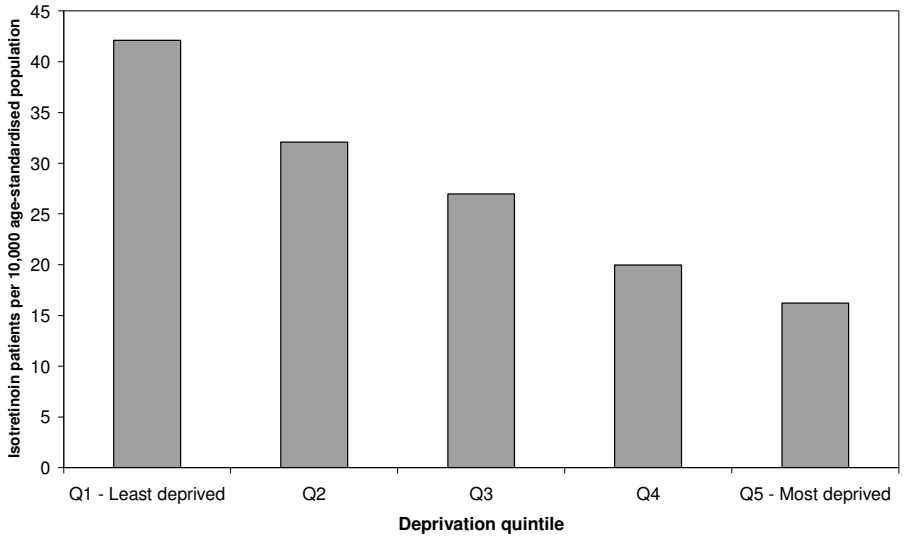


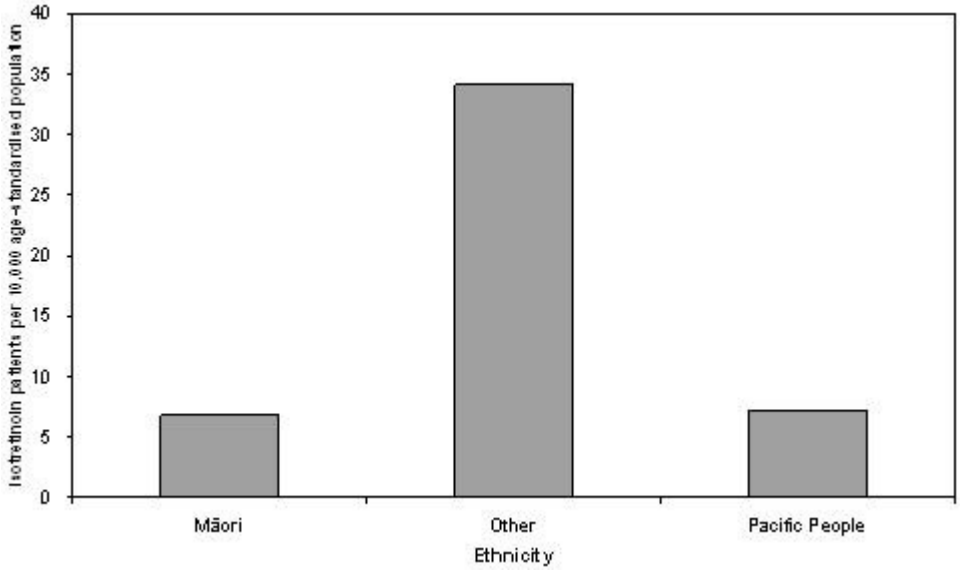
Table 2. Isotretinoin prescription rates and rate ratios by gender, deprivation level and ethnicity, year ending June 2008

Category	Rate*	Rate ratio
Gender		
Male	23.3	ref.
Female	30.1	1.3
Deprivation quintile		
Q5 – most deprived	16.2	ref.
Q4	20.0	1.2
Q3	27.0	1.7
Q2	32.1	2.0
Q1 – least deprived	42.1	2.6
Ethnicity		
Māori	6.8	ref.
Pacific people	7.1	1.0
Other	34.1	5.0

* All rates age-standardised and per 10,000 population

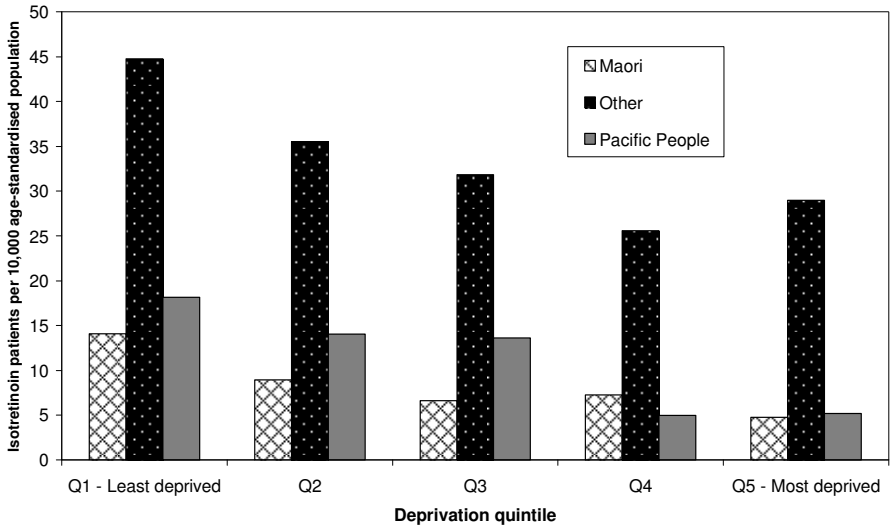
Ethnicity—Māori and Pacific people were far less likely to access isotretinoin than those of Other ethnicity (mainly New Zealand European) (Figure 3). Māori and Pacific people had similar levels of access to isotretinoin.

Figure 3. Isotretinoin prescription rates by ethnicity (isotretinoin patients per 10,000 age-standardised population), year ending June 2008



Deprivation and ethnicity—When comparing ethnicity across deprivation level it is clear that at all levels of deprivation Māori and Pacific people have far lower use of isotretinoin than the rest of the population (Figure 4). In fact, Māori and Pacific people in the *least* deprived quintile are using isotretinoin at about half the rate of the Other group in the *most* deprived quintile. Relative ethnic inequalities also appear greatest in the most deprived quintile.

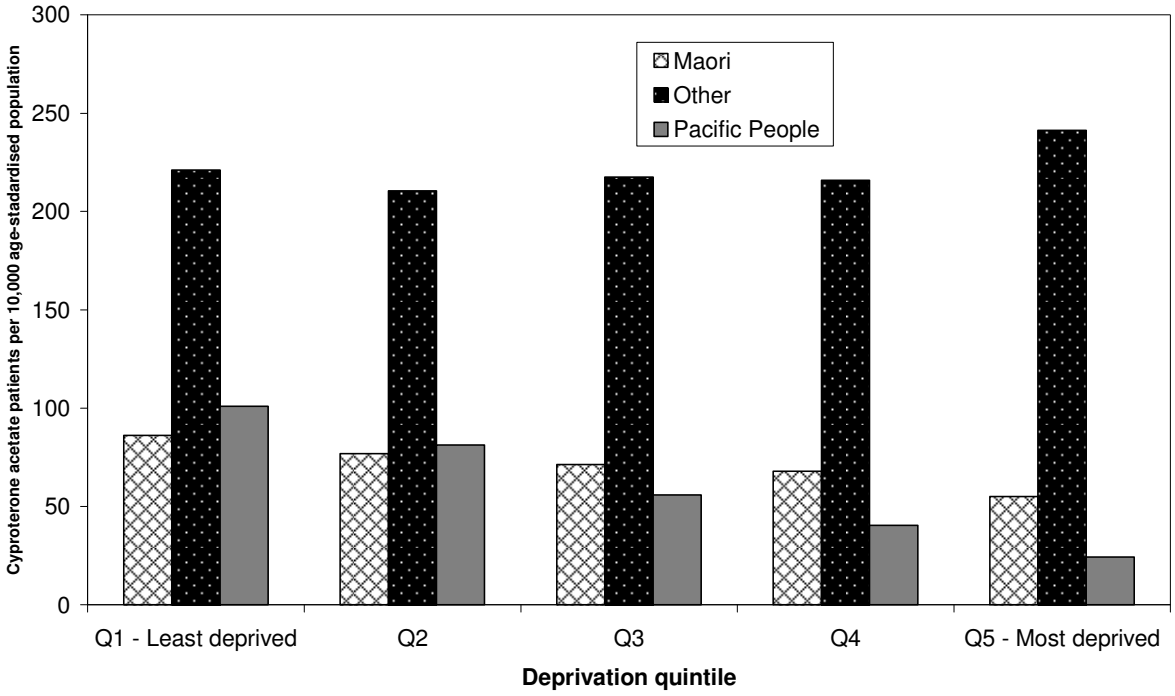
Figure 4. Isotretinoin prescription rates by deprivation level and ethnicity, year ending June 2008



Cyproterone acetate with ethinyloestradiol use—The association between cyproterone acetate with ethinyloestradiol and deprivation level is less clear than for isotretinoin (Figure 5). The clear association between deprivation level and pharmaceutical use identified for isotretinoin disappears for cyproterone acetate with ethinyloestradiol for those of Other ethnicity. However, this association is still present for Pacific people, and to a lesser extent for Māori.

There continues to be differences in use of cyproterone acetate with ethinyloestradiol by ethnicity as was seen for isotretinoin. That is, a far lower use by Māori and Pacific people.

Figure 5. Cyproterone acetate with ethinyloestradiol prescription rates by deprivation level and ethnicity, year ending June 2008



Discussion

This study has shown that the use of and access to isotretinoin in New Zealand varies by deprivation level and ethnicity. Those living in the most deprived areas and Māori and Pacific people have the poorest access to isotretinoin. Ethnic differences remain even when accounting for deprivation (by restriction). Similar access issues are not as pronounced for cyproterone acetate with ethinyloestradiol also used for the treatment of acne.

Equity of access by deprivation level—Inequity of access can occur for a variety of reasons, with financial barriers being commonly cited.[11] In the New Zealand setting it is likely that restriction of funded access for isotretinoin to dermatologists has unintentionally created this barrier. This is supported by the fact that the access disparity is not seen in the use of cyproterone acetate with ethinyloestradiol (which is fully funded and normally prescribed in primary care). While we suspect financial barriers play a large role in this disparity, we acknowledge that other barriers may influence this access disparity. These barriers could include the location of dermatologists' surgeries (and subsequent transport issues) and knowledge of the health service, amongst others.

Equity of access by ethnicity—Māori and Pacific people accessed isotretinoin less than Other groups (mainly New Zealand European), despite there being no evidence for lower rates of acne in these groups. This disparity held true regardless of deprivation level and also for the use of cyproterone acetate with ethinyloestradiol.

Clearly, the role ethnicity plays in access is different to the role of deprivation, although it is unclear why the ethnic disparities exist for both pharmaceuticals. Although financial and other barriers discussed above may play a part, it may be that cultural issues around the provision of the health service, cultural differences in the perception and importance of acne, or issues related to ethnicity and access to health services may be significant. These results support previous New Zealand research that suggests Māori and Pacific people have greater difficulty accessing treatment for acne and health care in general.[4,7,10]

Limitations—This data needs to be treated with some caution as 40% of prescriptions did not have an NHI number attached. Although our data set was not complete, we attempted to account for this by scaling through linear extrapolation. The relatively low proportion of prescriptions with NHI numbers is likely due to the non-routine recording of NHI numbers by private dermatologists.

This study was only a brief description of access differences by deprivation level and ethnicity, and (while providing hypotheses) cannot conclusively identify causes for the disparities shown. There is a theoretical bias with missing prescriptions from private dermatologists related to the ethnicities of the patients they see. If they were seeing predominantly Māori and Pacific patients, while anecdotally this is unlikely, the ethnic disparities may be less than observed.

The bias is more likely in the other direction and is likely to underestimate ethnic disparities (i.e. Māori and Pacific people are [presumably] less likely to visit a private dermatologist). Further research would be required to examine these issues. This is particularly so for Māori and Pacific people where disparities in access are present independent of deprivation level and regardless of pharmaceuticals compared.

It is also important to understand that the measure of deprivation used in this study (NZDep) is a population level measure. As such, it is not possible to identify the deprivation level of the individual for whom the prescription was written, rather the deprivation level of their resident neighbourhood.

Implications—As of March 2009, fully funded prescriptions of isotretinoin have been available through primary care providers. It is expected that the widening in access to funded isotretinoin will improve access to people in more deprived areas,

whereby the inequity of access no longer exists (as for cyproterone acetate with ethinyloestradiol). However, the extension of isotretinoin funding is unlikely to fully address the inequity of access by ethnicity. Other strategies will be required to address the ethnic disparities in access to acne-treating pharmaceuticals. Further research could attempt to identify the reasons behind this inequity and help inform future strategies.

Future implications include that with the funding restriction lifted, primary care providers who have had little or no experience using isotretinoin will have to upskill in this area. With the easier access it will be important that they are alert to the risks as well as the need to gain experience in the day-to-day use of isotretinoin. To support this, PHARMAC has arranged for training seminars along with a number of publications on the matter. Given the risks of isotretinoin use during pregnancy, it is a very real challenge for primary care providers to ensure that contraception is managed well in this group. It will be equally important for dermatologists to act as a backup to primary care in the use of isotretinoin.

The widening of access to isotretinoin funding has been made conditional on more rigorous reporting requirements; specifically, funded access will only be available if a written Special Authority application is made. This will mean that the recording of NHI numbers will be compulsory for all prescribers including dermatologists. In addition to accurate data on usage this will also mean that the prescribing data can be correlated to New Zealand termination of pregnancy data.

It would be important to continue to monitor isotretinoin use in the coming years to evaluate whether the extension of funding has had the desired effects on access. As such an appropriate area of further research would be a repeat audit post-funding changes as data becomes available.

Conclusions

The study aimed to examine isotretinoin use in the year leading up to a funding restriction change particularly with regard to deprivation level and ethnicity and then compare this to cyproterone acetate with ethinyloestradiol use. It found that the use of and access to isotretinoin varies by deprivation level and ethnicity.

Ethnic differences remain even when accounting for deprivation (by restriction). These results echo the well known disparities in broader health care access in New Zealand.

There are likely to be several reasons for the disparities seen, including financial barriers. Given there is no evidence for lower rates of acne for Māori and Pacific people, it is not clear why inequitable access to both pharmaceuticals existed for ethnic groups.

Competing interests: None.

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