Atlas of Healthcare Variation:
Methodology | Contraceptive use in women

November 2020

General points

Data is not presented where the number of people was less than 10. This is to preserve confidentiality.

People were assigned to their district health board (DHB) of domicile; where more than one domicile was recorded, the most recent value was selected. The same rule was applied to primary health organisation (PHO) enrolment, where people were assigned to the PHO in which they were most recently enrolled.

Ethnicity data presented is prioritised ethnicity (Māori, Pacific peoples, Asian and European/Other).

BSO – bulk supply order – an order made by a private hospital to a pharmacy to obtain supplies of medicines for the hospital's patients.

PSO – practitioner's supply order – means a practitioner has a supply of community pharmaceuticals, including contraceptive devices, that can be provided directly to patients. PSO pharmaceuticals and devices are intended for emergency use, for teaching and demonstration purposes, and for provision to certain patient groups where individual prescription is not practicable. In the context of contraceptives, the intention of PSO is to improve access to medicines to certain groups of women. A consequence of having a high proportion of a contraceptive dispensed via PSO is that data on who the contraceptive is supplied to is lost. This impacts on the ability to monitor access and uptake of contraceptives through quality measures.

Standard deviation
Data is presented as standard deviation from the mean on the map. Standard deviation is a statistical measure of variation from a mean. Assuming that recorded instances are normally distributed (ie, they are in the usual 'bell-shaped curve'), 95 percent of all recorded instances would be expected to be within two standard deviations either side of the mean. The two 'middle' shades will be within one standard deviation of the mean.

Confidence intervals
Data for each DHB is presented as a percentage. Upper and lower confidence intervals were calculated to 95 percent level of confidence.

Indicator #1	**Women dispensed a Jadelle implant in the year (includes community pharmacy dispensing and family planning)**
Numerator	Count of distinct master NHIs, a dispensing of a Jadelle subdermal implant in the year.
Denominator	Aotearoa New Zealand female population, using Statistics New Zealand population projections for the relevant years.
Analysis	By year (2016–18), age group (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile and PHO most recently enrolled with.

Chemicals/device	Parental progestogen-only levonorgestrel – subdermal implant (2 x 75 mg rods) (Jadelle), formulation ID = 175428.
Source	Pharmaceutical Collection, Family Planning, Statistics New Zealand population projections
Rationale	Jadelle is an example of a long-acting reversible contraceptive (LARC), the most effective and reliable form of contraception. https://bpac.org.nz/2019/contraception/options.aspx A review of pharmaceutical data found that Jadelle data was the most complete data set of all LARCs. Data for intra-uterine system (IUS) Mirena and Jaydess may become more complete in subsequent years following the expansion of funding since 1 November 2019. Treatment injury data from ACC shows that, over a nine-year period, there were 556 claims for injuries from the Jadelle implant. Seventy-two percent were the result of a misplaced implant, 18 percent were the result of an infection. How does this compare internationally? How long are Jadelle used for on average?
Commentary	**1. Women dispensed a Jadelle implant in the year** **Description**: Data for 2016–18 are presented by year, age group and ethnicity. This indicator includes women who were provided a Jadelle through a Family Planning clinic. Women who were provided a Jadelle via a PSO are not included in this indicator. This means that regions with a Family Planning clinic may appear to have higher rates than regions where use of PSO is higher. **Why is this important?** LARCs, including implants and inra-uterine devices (IUDs), are the most effective and reliable form of contraception.[1] They are recommended for women who do not wish to become pregnant for a number of years. IUDs and the subdermal implant have the highest rates of satisfaction and 12-month continuation compared with the oral contraceptive pill.[2] **What questions does this prompt?** • Where rates are lower, why might this be? • Are women being fully informed of different contraceptive options? Is there enough information available for women to make fully informed decisions? • Are there low-cost options for accessing contraception in your region? Do women know how to access these? 1. https://bpac.org.nz/2019/contraception/options.aspx 2. Peipert J, Zhao Q, Allsworth JE, et al. 2011. Continuation and Satisfaction of Reversible Contraception. *Obstet Gynecol* 117(5): 1105–13.

Indicator #2	Women dispensed an IUS in a year
Numerator	Count of distinct master NHIs. A dispensing of any IUS in a year.
Denominator	Aotearoa New Zealand population, using Statistics New Zealand population projections for the relevant years.
Analysis	By year (2016–18), age group (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile and PHO most recently enrolled with.
Chemicals	Levonorgestrel – IUS (Mirena 52 mg, Jaydess 13.5 mg)
Source	Pharmaceutical Collection, Statistics New Zealand population projections
Rationale	New Zealand Formulary: Intra-uterine contraception (IUC) can be suitable for women of all ages irrespective of parity. There are two types of IUC available; the progestogen-releasing IUS, which releases hormones and the copper IUD, which does not. All IUDs are dispensed via PSO, whereas around 99 percent of IUSs are dispensed to a known NHI. Since November 2019, IUSs have been available fully funded without special authority restrictions. Prior to this, use was limited to women with heavy menstrual bleeding, endometriosis and endometrial hyperplasia without atypia. Long-acting reversible IUSs are one of the most effective forms of contraception. The Jaydess is effective for three years and the Mirena is effective for five years.
Commentary	**2. Women dispensed an IUS in a year** **Description**: Data for 2016–18 are presented by year, age group and ethnicity. **Why is this important?** LARCs are the most effective and reliable form of contraception, of which IUSs are one.[1] These are recommended for women who do not wish to become pregnant for a number of years. IUDs, IUSs and the subdermal implant have the highest rates of satisfaction and 12-month continuation compared with the oral contraceptive pill.[2] **What questions does this prompt?** • Where rates are lower, what might the reason be? • Are women being fully informed of different contraceptive options? • Are there low-cost options for accessing contraception in your region? Do women know how to access these? 1. https://bpac.org.nz/2019/contraception/options.aspx 2. Peipert J, Zhao Q, Allsworth JE, et al. 2011. Continuation and Satisfaction of Reversible Contraception. Obstet Gynecol. 117(5): 1105–13.

<table>
<tr><th>Indicator #3</th><th>Female sterilisation rates, women aged 25–44 years</th></tr>
<tr><td>Numerator</td><td>Count of distinct master NHIs with a National Minimum Dataset (NMDS) procedure code for female sterilisation.</td></tr>
<tr><td>Denominator</td><td>DHB of domicile</td></tr>
<tr><td>Analysis</td><td>By year (2016–18), age group (25–29, 30–34, 35–39, 40–44 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other).
Region: DHB of domicile and PHO most recently enrolled with.</td></tr>
<tr><td>NMDS</td><td>Tubal ligation as a primary procedure (first block) or any procedure with caesarean section (082), termination of pregnancy or endometrial ablation.
<table>
<tr><th>clincode</th><th>description</th></tr>
<tr><td>3568800</td><td>Laparoscopic sterilisation</td></tr>
<tr><td>3568801</td><td>Sterilisation via vaginal approach</td></tr>
<tr><td>3568802</td><td>Sterilisation by open abdominal approach</td></tr>
<tr><td>3568803</td><td>Laparoscopic electrodestruction of fallopian tubes</td></tr>
<tr><td>3568804</td><td>Electrodestruction of fallopian tubes</td></tr>
<tr><td>Z302</td><td>Sterilisation (diagnosis code)</td></tr>
</table></td></tr>
<tr><td>Exclusions</td><td>Age was limited to between 25 and 44 years to exclude women who have the procedure for non-contraceptive reasons.
Hysterectomy and bilateral oophorectomy were not included as they are not performed for contraceptive purposes.</td></tr>
<tr><td>Inclusions</td><td>Only include diagnostic related groups with obstetric code MDC 13 and 14.</td></tr>
<tr><td>Source</td><td>Pharmaceutical Collection, Statistics New Zealand population projections</td></tr>
<tr><td>Rationale</td><td>Both male vasectomy and female sterilisation are intended to provide permanent contraception. There is no national data collection containing all male vasectomies performed in Aotearoa New Zealand because the majority are privately funded.</td></tr>
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Commentary	**3. Female sterilisation rates** **Description:** Data for 2016–18 is presented by year, age group and ethnicity**.** **Why is this important?** Female sterilisation is intended to provide permanent contraception. It involves tubal ligation or occlusion and is typically performed under general anaesthesia. Only publicly funded sterilisation procedures are reported here; most procedures are likely to be privately funded. It is possible that if private procedures were included, rates would be higher in non-Māori, non-Pacific women. Male sterilisation is not reported as all procedures are undertaken privately. **What questions does this prompt?** • Where rates are low why might this be?

Indicator #4	**Women aged 10–54 years dispensed oral contraceptive one or more times in a year**
Numerator	Count of distinct master NHIs. A dispensing of any oral contraceptive in the year.
Denominator	Aotearoa New Zealand population, using Statistics New Zealand population projections for the relevant years.
Analysis	By year (2016–18), age group (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile and PHO most recently enrolled with.
Chemicals	Use therapeutic group hormonal contraceptives to filter non-contraceptive uses. Oral/tablets only. Cyproterone acetate with ethinyloestradiol, ethinyloestradiol with desogestrel, ethinyloestradiol with levonorgestrel, ethinyloestradiol with norethisterone, levonorgestrel, norethisterone. Formulation ID: 147508, 147509, 147510, 147511, 147512, 147701, 147702, 147703, 14770, 171802, 171803, 171804, 171805, 171806, 171807, 171808, 171809, 17181, 171811, 171812, 172401, 187101, 270601, 270602.
Source	Pharmaceutical Collection, Statistics New Zealand population projections
Rationale	Oral contraceptives are the most common method of contraception in Aotearoa New Zealand (source: New Zealand Health Survey) and most women access contraception through their general practice. The purpose of this indicator is to see whether there are wide differences by age, ethnicity or region in the dispensing of oral contraceptives. This captures over 98 percent of oral contraceptives dispensed in Aotearoa New Zealand.
Commentary	**4. Women aged 10–54 years dispensed oral contraceptive one or more times in a year** **Description**: Data for 2016–18 are presented by year, age group and

	ethnicity. **Why is this important?** Oral contraceptives are the most common method of contraception in Aotearoa New Zealand. Wide variation between DHBs may highlight differences in contraceptive preferences or potential areas for improvement. In Aotearoa New Zealand, three quarters of oral contraceptive dispensing is for six months' supply. This means that most women need to fund the time and cost of a health care visit at least every six months. In the E Hine study,[2] women noted these barriers to obtaining timely contraception. The World Health Organization[3] (WHO) recommends that up to one year's supply can be given at any one time, depending on women's preference and use. **What questions does this prompt?** • Where rates are lower, are rates higher for other forms of contraception? • Where rates are higher, what percent of women are regularly taking oral contraceptives? • Why does Aotearoa New Zealand not align itself with the WHO recommendation? 1. Lawton B, Makowharemahihi C, Cram F, et al. 2016. E Hine: access to contraception for indigenous Māori teenage mothers. *J Prim Health Care* 8(1): 52–9. 2. World Health Organization Department of Reproductive Health and Research. 2016. *Selected practice recommendations for contraceptive use. Third edition.* URL: www.who.int/reproductivehealth/publications/family_planning/SPR-3/en/.

Indicator #5	**Women aged 10–54 years regularly dispensed oral contraceptives in a year (more than 252 pills dispensed in a year)**
Numerator	Count of distinct master NHIs. A dispensing of any oral contraceptive in three or four quarters in the year (see counting quarters for more detail).
Denominator	Aotearoa New Zealand population, using Statistics New Zealand population projections for the relevant years.
Analysis	By year (2016–18), age group (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile and PHO most recently enrolled with.
Chemicals	Use therapeutic group hormonal contraceptives to filter non-contraceptive uses. Oral/tablets only. Cyproterone acetate with ethinyloestradiol, ethinyloestradiol with desogestrel, ethinyloestradiol with levonorgestrel, ethinyloestradiol with norethisterone, levonorgestrel, norethisterone. Formulation_ID: 147508, 147509, 147510, 147511, 147512, 147701, 147702, 147703, 14770, 171802, 171803, 171804, 171805, 171806,

	171807, 171808, 171809, 17181, 171811, 171812, 172401, 187101, 270601, 270602.
Source	Pharmaceutical Collection, Statistics New Zealand population projections
Counting quarters	Analysis of data shows that 74 percent of oral contraceptives dispensed are six months' supply and 21 percent are three months' supply. One hundred and sixty-eight tablets is counted as two-quarters of medicine supplied.
Rationale	Oral contraceptives are the most common method of contraception in Aotearoa New Zealand (source: New Zealand Health Survey). The E hine study highlights some of the barriers young women experience around contraception including a lack of information, negative side effects and limited follow-up. WHO: Initial and return visits: • Provide up to one year's supply of pills, depending on the woman's preference and anticipated use. • Programmes must balance the desirability of giving women maximum access to pills with concerns regarding contraceptive supply and logistics. • The re-supply system should be flexible, so that the woman can obtain pills easily in the amount and at the time she requires them. The guideline development group concluded that restricting the number of cycles of pills can result in unwanted discontinuation of the method and increased risk of pregnancy.
Commentary	**5. Women aged 10–54 years regularly dispensed oral contraceptive in a year** **Description**: Data for 2016–18 is presented by year, age group and ethnicity. This indicator shows the percent of all women aged 10–54 years in a year who regularly received an oral contraceptive. **Why is this important?** Health systems and services play a key role in ensuring timely and appropriate access to contraception.[1] While not every woman dispensed an oral contraceptive in the year will take it continuously for various reasons, wide variation between DHBs or age group or ethnicity may highlight women who are missing out on regular contraception. In Aotearoa New Zealand, three-quarters of oral contraceptive dispensing is for six months' supply. This means that most women need to fund the time and cost of a health care visit at least every six months. In the E Hine study,[2] women noted these barriers to obtaining timely contraception. The WHO[3] recommends that up to one year's supply can be given at any one time, depending on women's preference and use. **What questions does this prompt?** • Are there groups of women in your region who are less likely to regularly receive oral contraceptives?

	• How easily can women access health care in your region? • Are there financial and other barriers to accessing health care and regular contraception in your area? • Why does Aotearoa New Zealand not align itself with the WHO recommendation to provide up to one year's supply at one time? 1. Swartzendruber A, Zenilman JM. 2010. A National Strategy to Improve Sexual Health. *JAMA* 304(9): 1005–6. DOI: 10.1001/jama.2010.1252 JAMA: https://jamanetwork.com/journals/jama/article-abstract/186484 2. Lawton B, Makowharemahihi C, Cram F, et al. 2016. E Hine: access to contraception for indigenous Māori teenage mothers. *J Prim Health Care* 8(1): 52–9. 3. World Health Organization. 2016. Department of Reproductive Health and Research. *Selected practice recommendations for contraceptive use. Third edition*. URL: www.who.int/reproductivehealth/publications/family_planning/SPR-3/en/.

Indicator #6	**Of women dispensed an oral contraceptive once in a year, the percent who received it regularly**
Numerator	Count of distinct master NHIs. A dispensing of any oral contraceptive in three or four quarters in the year (see counting quarters for more detail).
Denominator	Women dispensed an oral contraceptive at least once in the year (numerator indicator 1).
Analysis	By year (2016–18), age group (10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54 years) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile and PHO most recently enrolled with.
Chemicals	Use therapeutic group hormonal contraceptives to filter non-contraceptive uses. Oral/ tablets only. Cyproterone acetate with ethinyloestradiol, ethinyloestradiol with desogestrel, ethinyloestradiol with levonorgestrel, ethinyloestradiol with norethisterone, levonorgestrel, norethisterone. Formulation_ID: 147508, 147509, 147510, 147511, 147512, 147701, 147702, 147703, 14770, 171802, 171803, 171804, 171805, 171806, 171807, 171808, 171809, 17181, 171811, 171812, 172401, 187101, 270601, 270602.
Source	Pharmaceutical Collection, Statistics New Zealand population projections
Counting quarters	Regular is counted as at least 252 pills dispensed in the year (coverage for at least three quarters in the year)
Rationale	Oral contraceptives are the most common method of contraception in Aotearoa New Zealand (New Zealand Health Survey). The E hine study highlights some of the barriers young women experience around contraception including a lack of information, negative side effects and limited follow up.

	WHO: Initial and return visits: • Provide up to one year's supply of pills, depending on the woman's preference and anticipated use. • Programmes must balance the desirability of giving women maximum access to pills with concerns regarding contraceptive supply and logistics. • The re-supply system should be flexible, so that the woman can obtain pills easily in the amount and at the time she requires them. The guideline development group concluded that restricting the number of cycles of pills can result in unwanted discontinuation of the method and increased risk of pregnancy.
Commentary	**6. Women dispensed an oral contraceptive in a year who received it regularly** **Description**: Data for 2016–18 is presented by year, age group and ethnicity. **Why is this important?** Health systems and services play a key role in ensuring timely and appropriate access to contraception.[1] While not every woman dispensed an oral contraceptive in the year will take it continuously for various reasons, wide variation between DHBs or age group or ethnicity may highlight women who are missing out on regular contraception. In Aotearoa New Zealand, three-quarters of oral contraceptive dispensing is for six months' supply. This means that most women need to fund the time and cost of a health care visit at least every six months. In the E Hine study[2] women noted these barriers to obtaining timely contraception. The WHO[3] recommends that up to one year's supply can be given at any one time, depending on women's preference and use. **What questions does this prompt?** • Are there groups of women in your region who are less likely to regularly receive oral contraceptives? • How easily can women access health care in your region? • Are there financial and other barriers to accessing health care and regular contraception in your area? 1. Swartzendruber A, Zenilman JM. 2010. A National Strategy to Improve Sexual Health. *JAMA* 304(9): 1005–6. DOI: 10.1001/jama.2010.1252 JAMA: https://jamanetwork.com/journals/jama/article-abstract/186484 2. Lawton B, Makowharemahihi C, Cram F, et al. 2016. E Hine: access to contraception for indigenous Māori teenage mothers. *J Prim Health Care* 8(1): 52–9. 3. World Health Organization. 2016. Department of Reproductive Health and Research. *Selected practice recommendations for contraceptive use. Third edition.* URL: www.who.int/reproductivehealth/publications/family_planning/SPR-3/en/.

Indicator #7	**Women receiving LARC at time of abortion, by age group and ethnicity**
Numerator	Number of women receiving LARC at time of abortion.
Denominator	Number of women receiving an abortion
Analysis	By year (2014–18), age group (under 20, 20–24, 25–29, 30–34, 35–39, 40 years and over) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile.
Chemicals	LARCs: • Intra-uterine progestogen-only, levonorgestrel IUS (Jaydess, Mirena) • Parental progestogen-only, levonorgestrel subdermal implant (Jadelle) • Copper IUD (choice TT380, choice 375). Include any insertion or implant with another contraceptive, eg, condom.
Source	Statistics New Zealand
Rationale	Data was limited to the first trimester (until the end of the fourteenth week of pregnancy (1–12 weeks after conception, 0–104 days)). First trimester is from the last menstrual period date until the end of the 14th week of pregnancy (1–12 weeks after conception, 0–104 days). The standards of care for women requesting abortion in Aotearoa New Zealand (2018) note that abortion services play a very important role in preventing further unintended pregnancies. The Choice study[1] showed that when the barriers of cost, knowledge and access were removed, 75 percent of the study cohort chose LARC as their preferred contraceptive. Many women report using some form of contraception at the time of unintended pregnancy and the Choice study showed that women were not always aware of failure rates and the effectiveness of different methods. LARC users are 22 times less likely to experience an unintended pregnancy compared to those who use pills. And if younger, twice as likely as older women.

Commentary	**Description**: Data for 2014–18 is presented by year, age group and ethnicity. **Why is this important?** Many women report using some form of contraception at the time of unintended pregnancy and the Choice study showed that women were not always aware of failure rates and the effectiveness of different methods. LARCs are the most effective and reliable form of contraception.[2] The standards of care for women requesting abortion[3] specifies that all women should have post-abortion contraception discussed with them prior and supplies should be available, or prescriptions given on the day of the abortion. **What questions does this prompt?** • Are LARCs explained and offered to all women? • What is the impact of the type of abortion on LARC use? How can the barriers to LARC be removed? 1. McNicholas C, Tessa M, Secura G, et al. 2014. The Contraceptive CHOICE Project Round Up: what we did and what we learned. *Clin Obstet Gynecol* 57(4): 635–43. 2. https://bpac.org.nz/2019/contraception/options.aspx 3. Standards Committee to the Abortion Supervisory Committee. 2018. *Standards of Care for women requesting abortion in Aotearoa New Zealand. Report of a Standards Committee to the Abortion Supervisory Committee.* Wellington: Ministry of Justice. URL: www.justice.govt.nz/assets/Documents/Publications/Standards-of-Care-2018.pdf.
Note	Suppression rules are applied where there are counts of less than 10.

Indicator #8	**Women not receiving contraception at time of abortion, by age group and ethnicity**
Numerator	Number of women with no recorded contraception provided at time of abortion.
Denominator	Number of women receiving an abortion
Analysis	By year (2014–18), age group (under 20, 20–24, 25–29, 30–34, 35–39, 40 years and over) and ethnicity (Māori, Pacific peoples, Asian and European/Other). Region: DHB of domicile.
Chemicals	
Source	Statistics New Zealand
Rationale	This indicator only includes abortions in the first trimester (until the end of the 14th week of pregnancy (1–12 weeks after conception, 0–104 days)).

Commentary	**Description**: Data for 2014–18 is presented by year, age group and ethnicity. **Why is this important?** The standards of care for women requesting abortion[1] specifies that all women should have post-abortion contraception discussed with them prior and supplies should be available, or prescriptions given on the day of the abortion. We cannot tell from these data whether women were offered contraception and declined it or if contraception was not offered. **What questions does this prompt?** • What types of contraception is available in your region on the day of abortion? What is the relative effectiveness of each option provided? • Where rates are high, why might this be? 1. Standards Committee to the Abortion Supervisory Committee. 2018. *Standards of Care for women requesting abortion in Aotearoa New Zealand. Report of a Standards Committee to the Abortion Supervisory Committee.* Wellington: Ministry of Justice. URL: www.justice.govt.nz/assets/Documents/Publications/Standards-of-Care-2018.pdf.