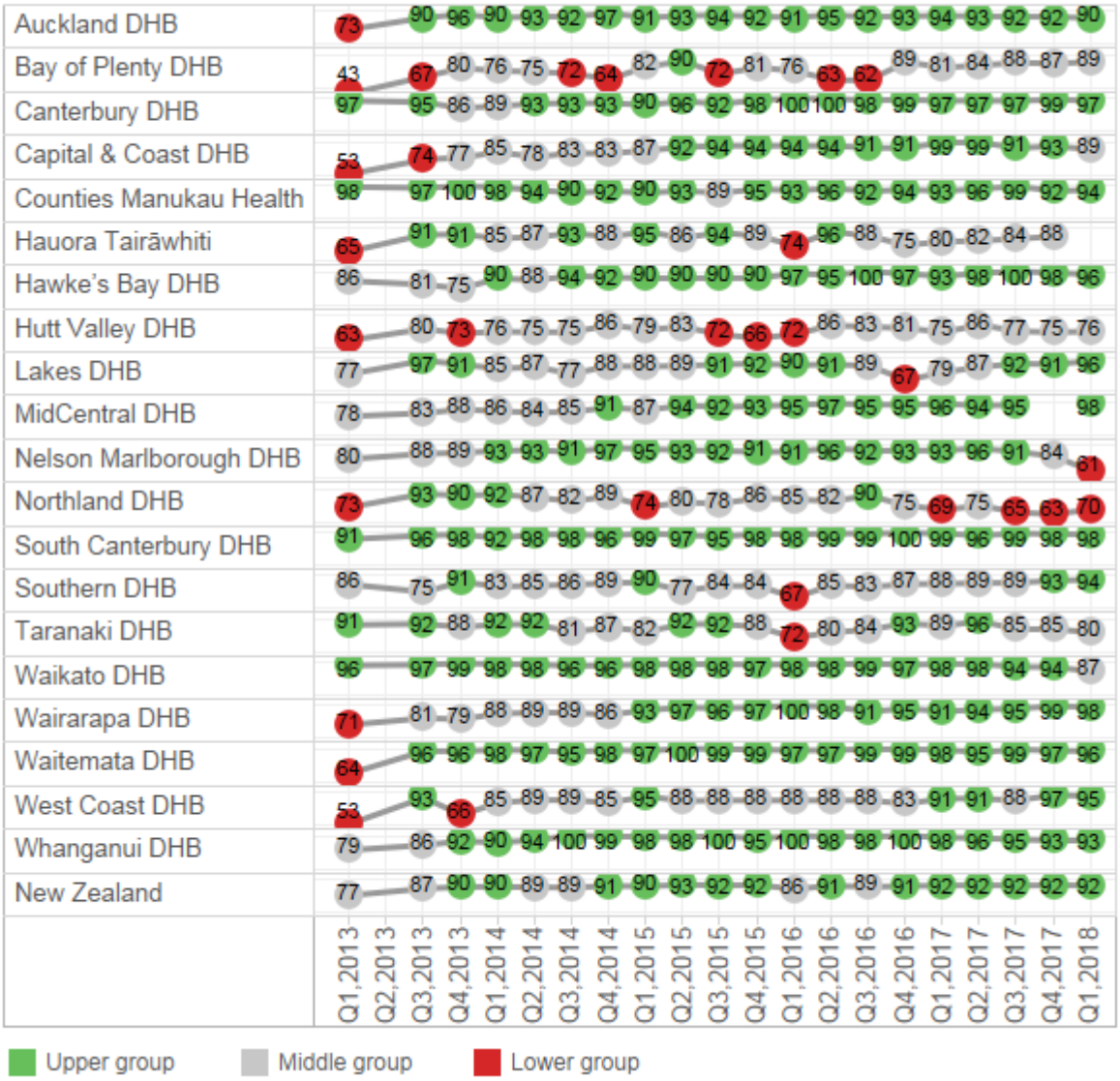
Quality and safety markers update, January to March 2018

Falls

Nationally, 92 percent of older patients* were assessed on their falls risk in quarter 1, 2018. The rate has remained around the expected achievement level of 90 percent since quarter 4, 2013, in spite of some variations in a few quarters. At the district health board (DHB) level, 12 out of 20 DHBs achieved the expected marker level. Northland DHB is the only DHB to be in the lower group for risk assessments completed in the last three quarters. This is being followed up with the DHB to understand what is contributing to this result. Nelson Marlborough DHB had a fall of 23 percentage points, which is due to earlier data inadvertently auditing discharge rather than admission ward, which did not ensure assessments had been completed within 24 hours of admission. Hauora Tairāwhiti did not submit data this quarter, due to staff transitions.

Figure 1: Process marker, percentage of older patients assessed for the risk of falling

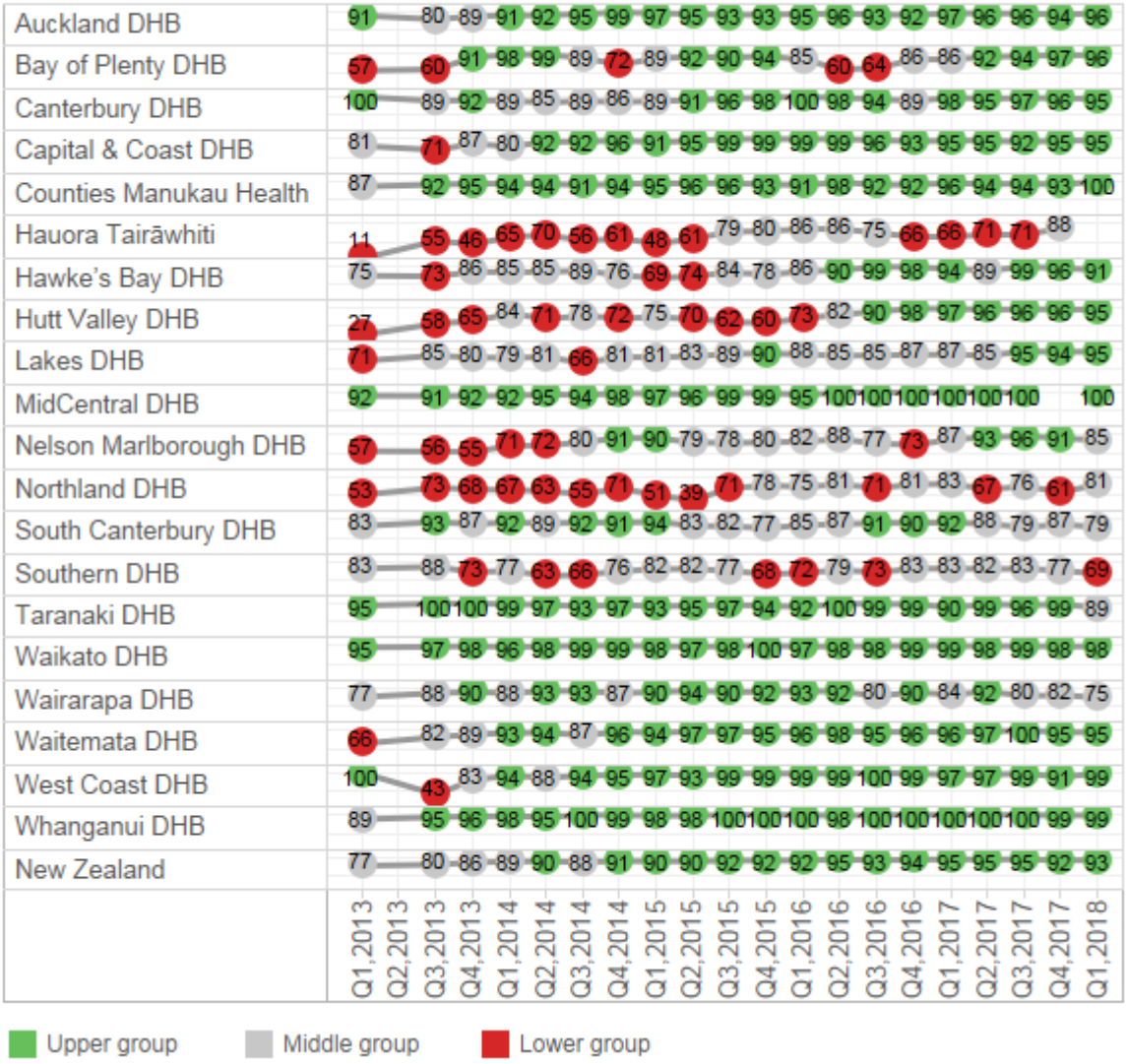


- Upper group: ≥ 90 percent
- Middle group: 75–89 percent
- Lower group: < 75 percent

* Patients aged 75+ (55+ for Māori and Pacific peoples)

About 93 percent of patients assessed as being at risk of falling had an individualised care plan completed. This measure has increased 16 percentage points compared with the baseline in quarter 1, 2013. Achievements at DHB level vary but, overall, where an individual has been assessed at risk of falling, completion of individualised care plans for that population group need to be at a consistently high level. We have on average 12 DHBs in the upper group. Hauora Tairāwhiti did not submit data this quarter, due to staff transitions.

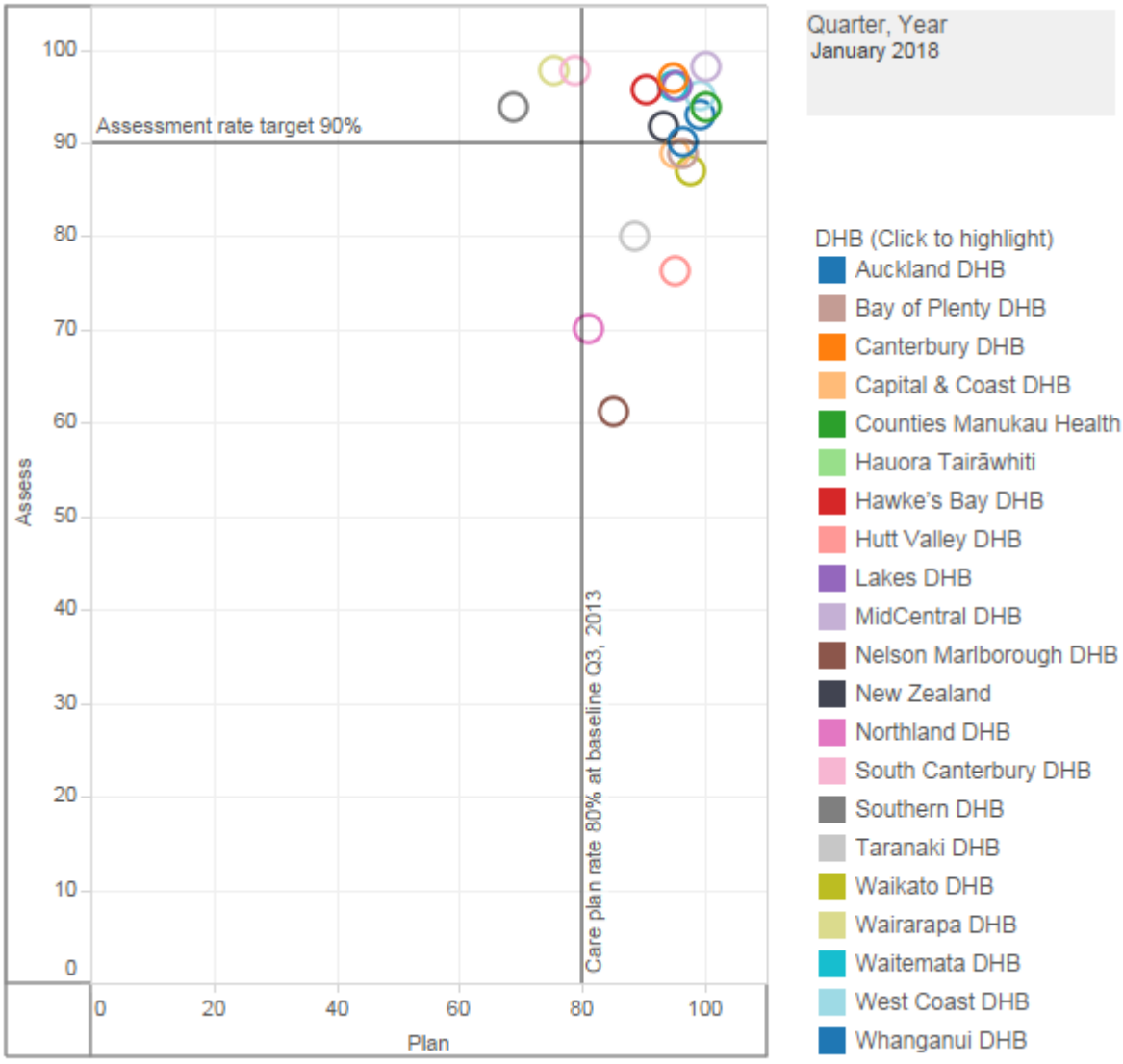
Figure 2: Process marker, percentage of older patients assessed as at risk of falling who received an individualised care plan that addresses these risks



- Upper group: ≥ 90 percent
- Middle group: 75–89 percent
- Lower group: < 75 percent

When assessments and care plans are plotted against each other, a trend of movement over time is shown from the bottom left corner (low assessment and individualised care plan) to the top right corner (high assessment and individualised care plan). Five DHBs sat at the top right corner in quarter 1, 2013; in the current quarter, 10 DHBs are in this 'ideal' box (see Figure 3), down from 12 in the last quarter.

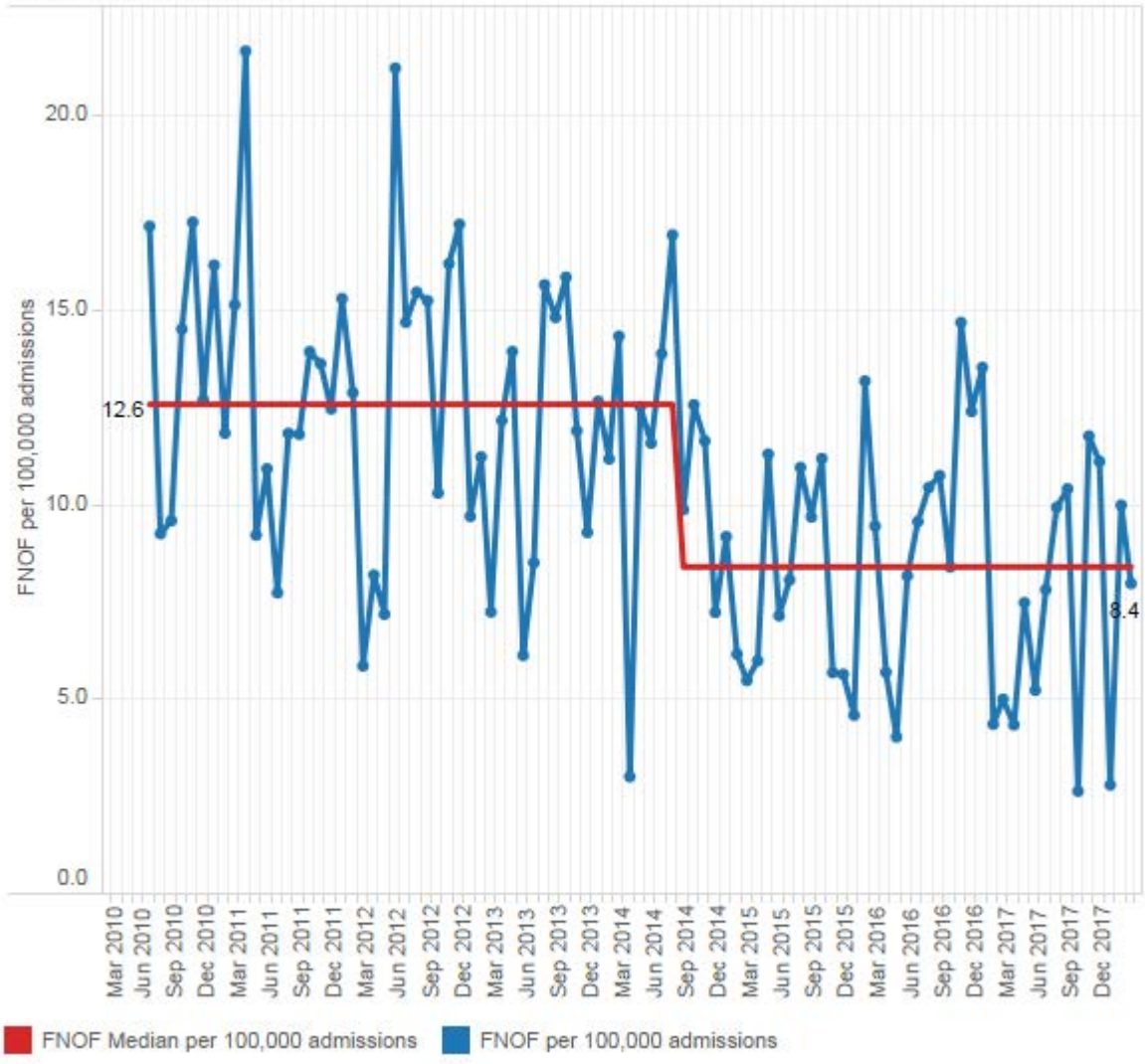
Figure 3: Falls assessment compared with care planning



There were 69 falls resulting in a fractured neck of femur (broken hip) in the 12 months ending March 2018.

To control the impact of changes in the number of admissions per month, Figure 4 shows in-hospital falls causing a fractured neck of femur per 100,000 admissions. The median of this measure was 12.6 in the baseline period of July 2010 to June 2012. It has moved down since September 2014, to 8.4 per 100,000 admissions, and shown a significant improvement.

Figure 4: Outcome marker, in-hospital falls with fractured neck of femur per 100,000 admissions by month

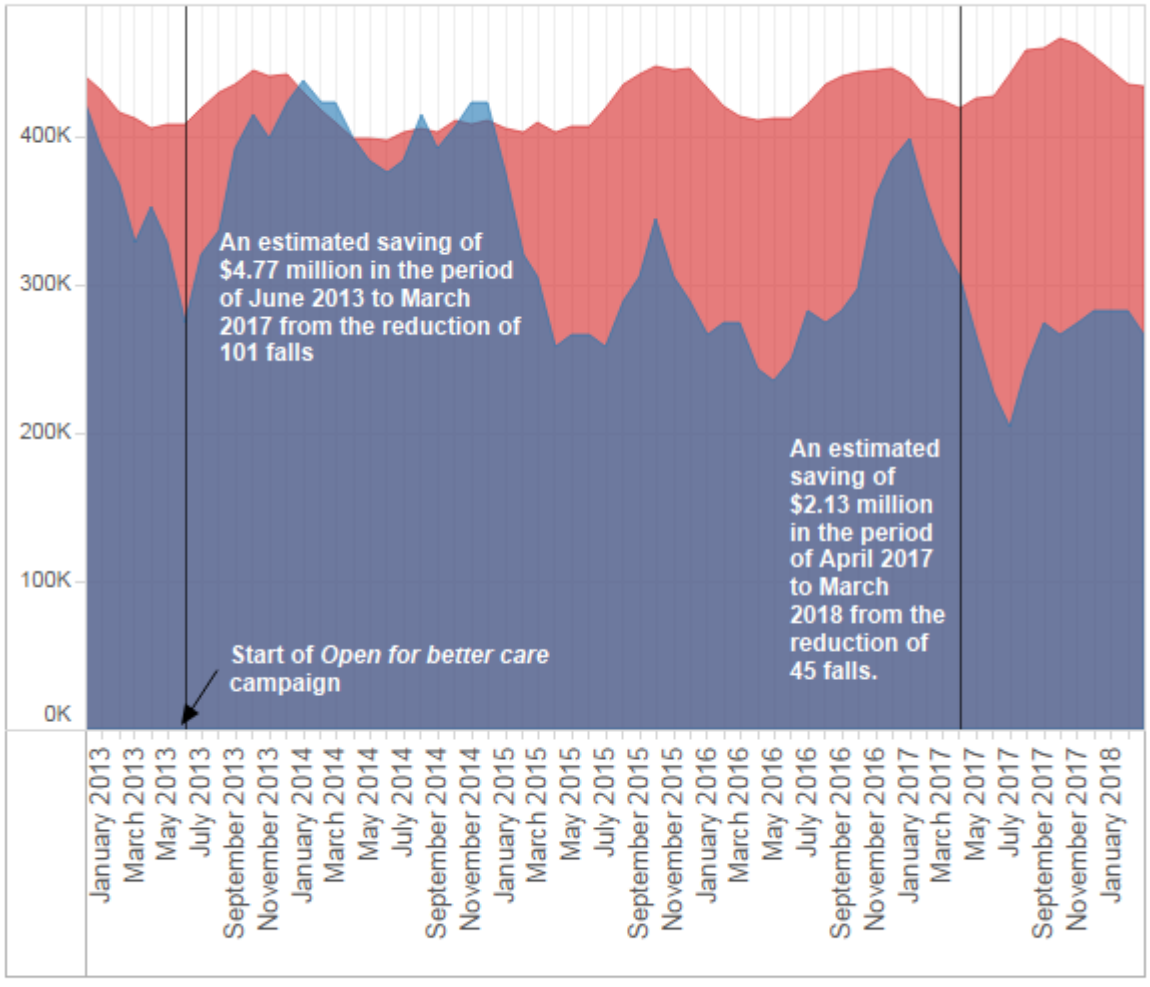


The number of 69 in-hospital falls resulting in a fractured neck of femur is significantly lower than the 114 we would have expected this year, given the falls rate observed in the period between July 2010 and June 2012. The reduction is estimated to have saved $2.13 million in the year ending March 2018, based on an estimate of $47,000[1] for a fall with a fractured neck of femur.

We know some of these patients are likely to be admitted to aged residential care on discharge from hospital, which is estimated to cost $135,000 each time it occurs.[2]

If we conservatively estimate that 20 percent of the patients who avoided a fall-related fractured neck of femur would have been admitted to a residential care facility, the reduction in falls represents $2.93 million in total avoidable costs since April 2017.

Figure 5: Cost/saving associated with in-hospital falls with fractured neck of femur (6-month moving average)



The saving is based on an estimated cost of $47,000 for a fall with a fractured neck of femur.

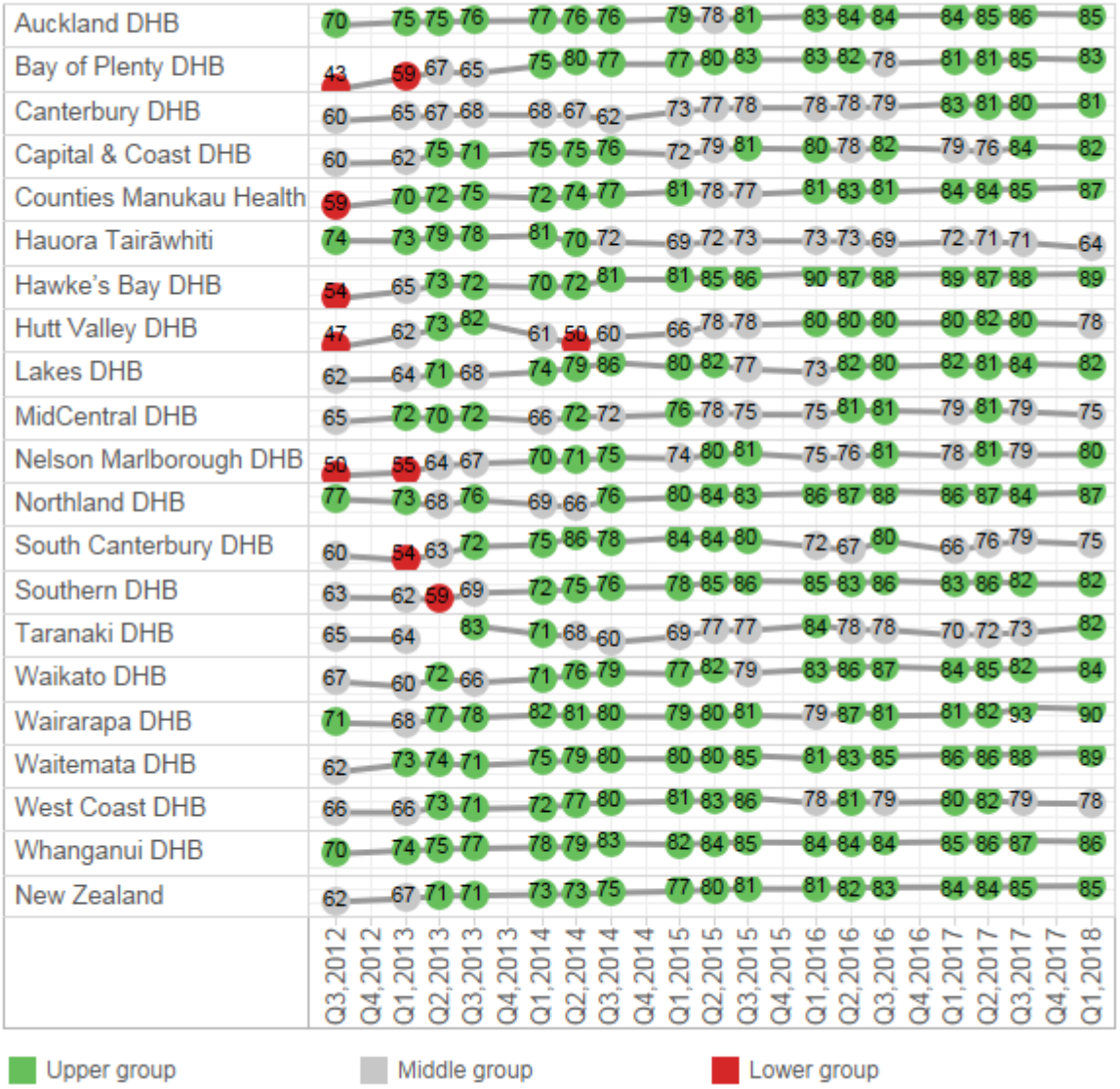
Expected cost Observed cost

[1] de Raad J–P. 2012. *Towards a value proposition: scoping the cost of falls.* Wellington: NZIER.

Hand hygiene

National compliance with the five moments for hand hygiene remains high. Nationally, DHBs maintained an average of 85 percent compliance in quarter 1, 2018, compared with 62 percent in the baseline in quarter 3, 2012.

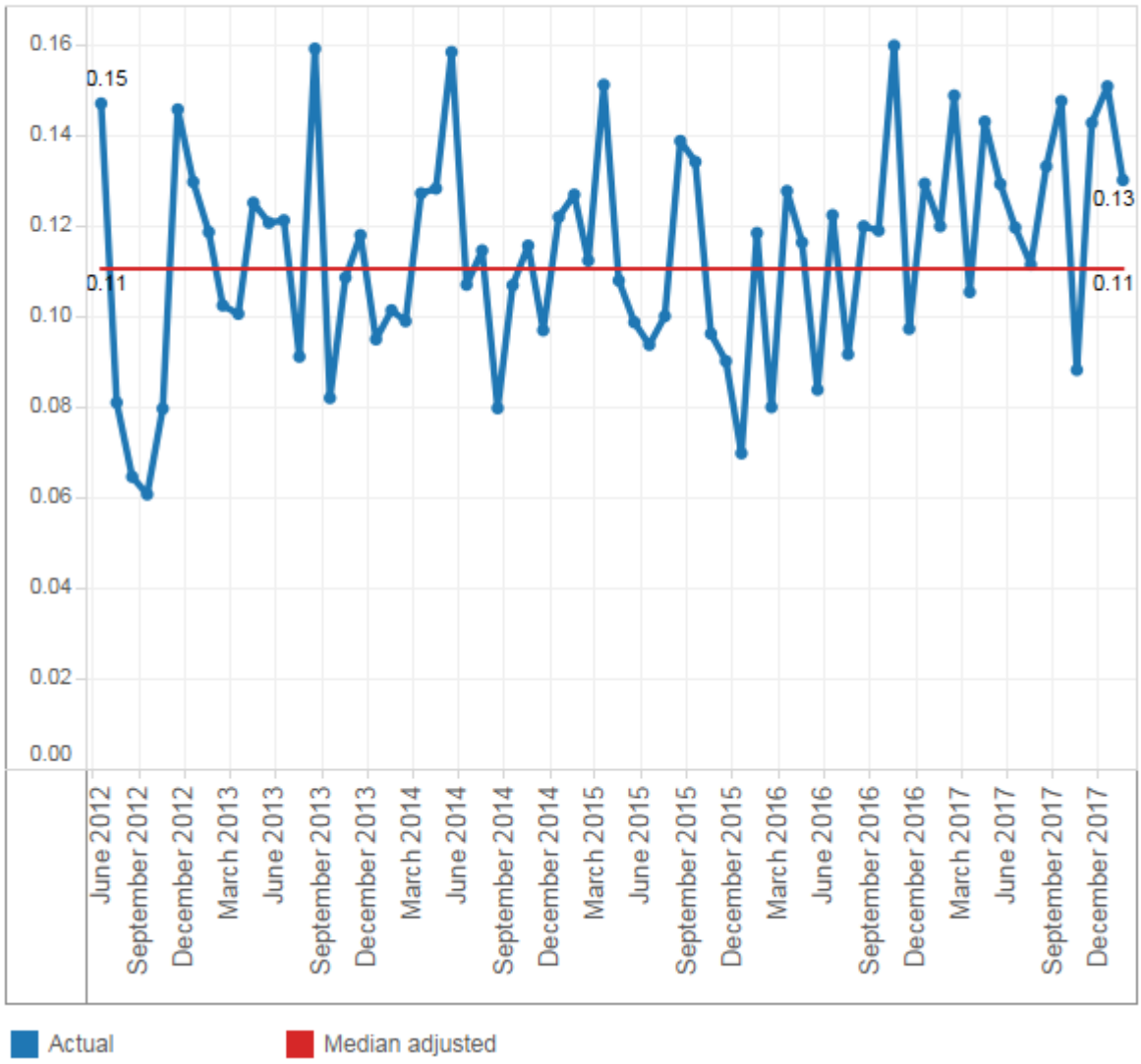
Figure 6: Process marker, percentage of opportunities for hand hygiene taken



- Upper group: ≥ 70 percent before quarter 3, 2014, 75 percent in quarters 3 and 4, 2014, and 80 percent since quarter 1, 2015.
- Middle group: 60 percent to target.
- Lower group: < 60 percent.
- Hand hygiene national compliance data is reported three times every year; therefore, no data point is shown specifically for quarter 4 in any year.

The hand hygiene outcome marker is healthcare associated *Staphylococcus aureus* bacteraemia (SAB) per 1,000 bed-days. In quarter 2, 2017, the calculation method for the denominator changed so the definition for calculating DHB bed-days is applied consistently. Figure 7 (monthly healthcare associated SAB per 1,000 bed-days) displays the recalculation of the entire series using the new method. The latest quarter's denominator is incomplete therefore the last month (March 2018) has been excluded from this update. The SAB outcome marker seems to be increasing despite improvements in hand hygiene compliance. SAB rates are complex and this increase could be due to social, environmental or economic determinants of health.

Figure 7: Outcome marker, *Staphylococcus aureus* bacteraemia per 1,000 bed-days by month



Surgical site infection improvement (SSII) – orthopaedic surgery

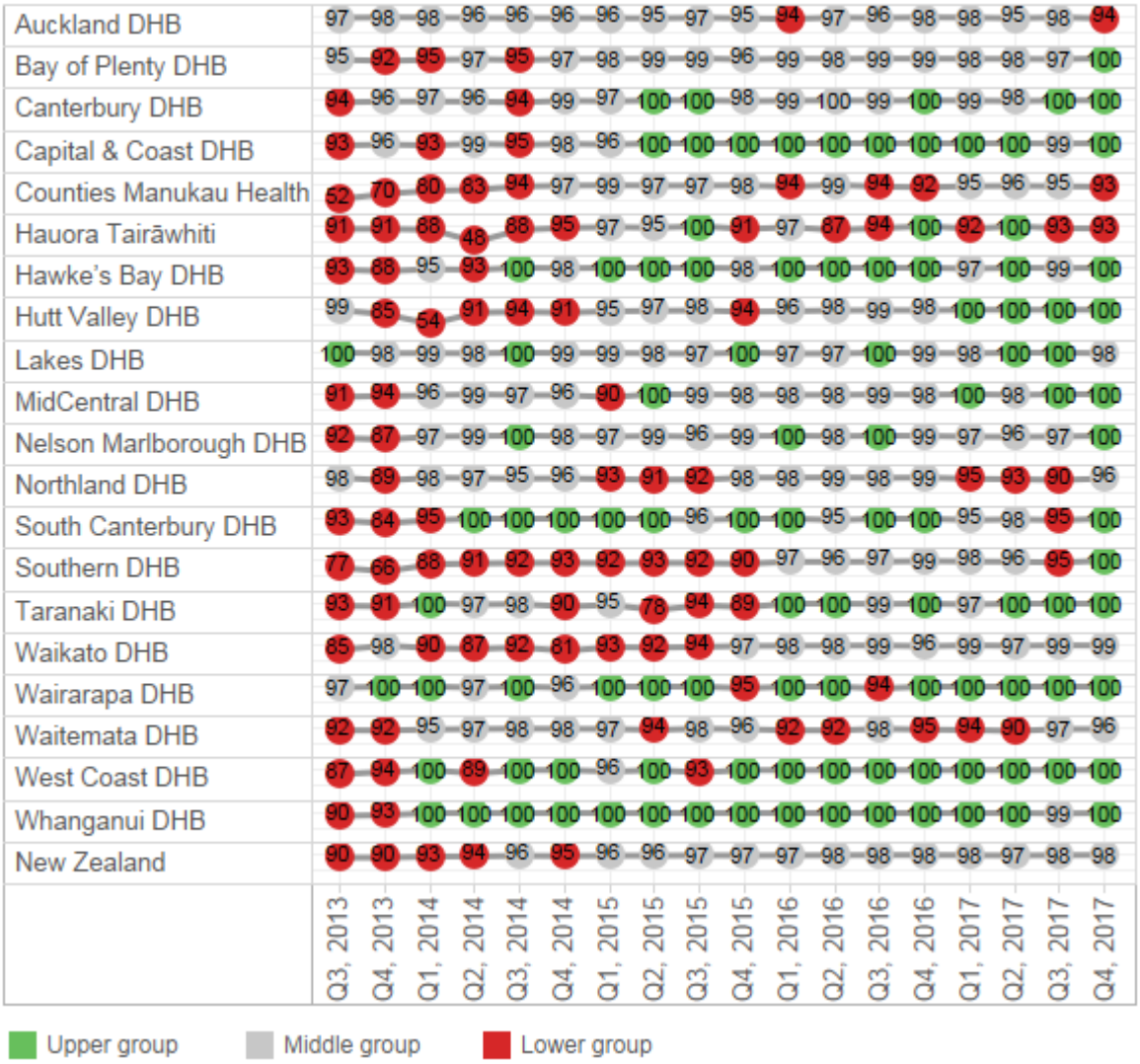
As the Commission uses a 90–day outcome measure for surgical site infection (SSI), the data runs one quarter behind other measures. Information in this section relates to hip and knee arthroplasty procedures from quarter 3, 2013 to quarter 4, 2017.

During quarter 3, 2017, the SSII programme worked with DHBs to reconcile and review the historic programme data. This report reflects the changes made to historic data as a result. In December 2017, the group boundaries for the process markers changed to match the SSII programme reports.

Process marker 1: Antibiotic administered in the right time

For primary procedures, an antibiotic should be administered in the hour before the first incision (‘knife to skin’). As this should happen in all primary cases, the threshold is set at 100 percent. In quarter 4, 2017, 98 percent of hip and knee arthroplasty procedures involved the giving of an antibiotic within 60 minutes before knife to skin. Thirteen DHBs achieved the national goal. This is the highest number of DHBs achieving the goal historically.

Figure 8: Process marker, percentage of hip and knee arthroplasty primary procedures where antibiotic given 0–60 minutes before 'knife to skin'

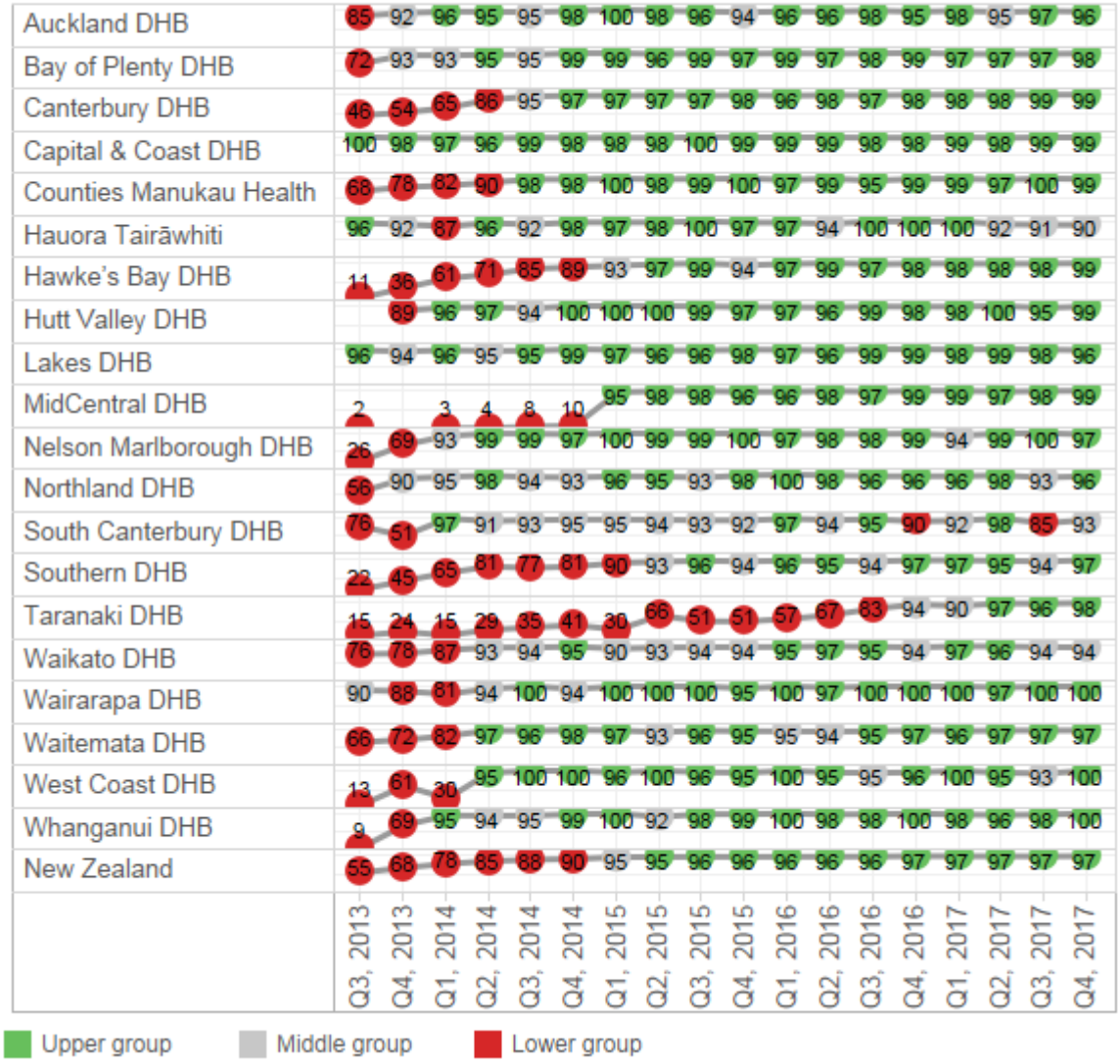


- Upper group: 100 percent
- Middle group: 95–99 percent
- Lower group: < 95 percent

Process marker 2: Right antibiotic in the right dose – cefazolin 2 g or more or cefuroxime 1.5 g or more

In the current quarter, 97 percent of hip and knee arthroplasty procedures received the recommended antibiotic and dose. Seventeen DHBs reached the threshold level of 95 percent compared with only three in the baseline quarter.[2]

Figure 9: Process marker, percentage of hip and knee arthroplasty procedures where 2 g or more cefazolin or 1.5 g or more cefuroxime given



- Upper group: ≥ 95 percent
- Middle group: 90–94 percent
- Lower group: < 90 percent

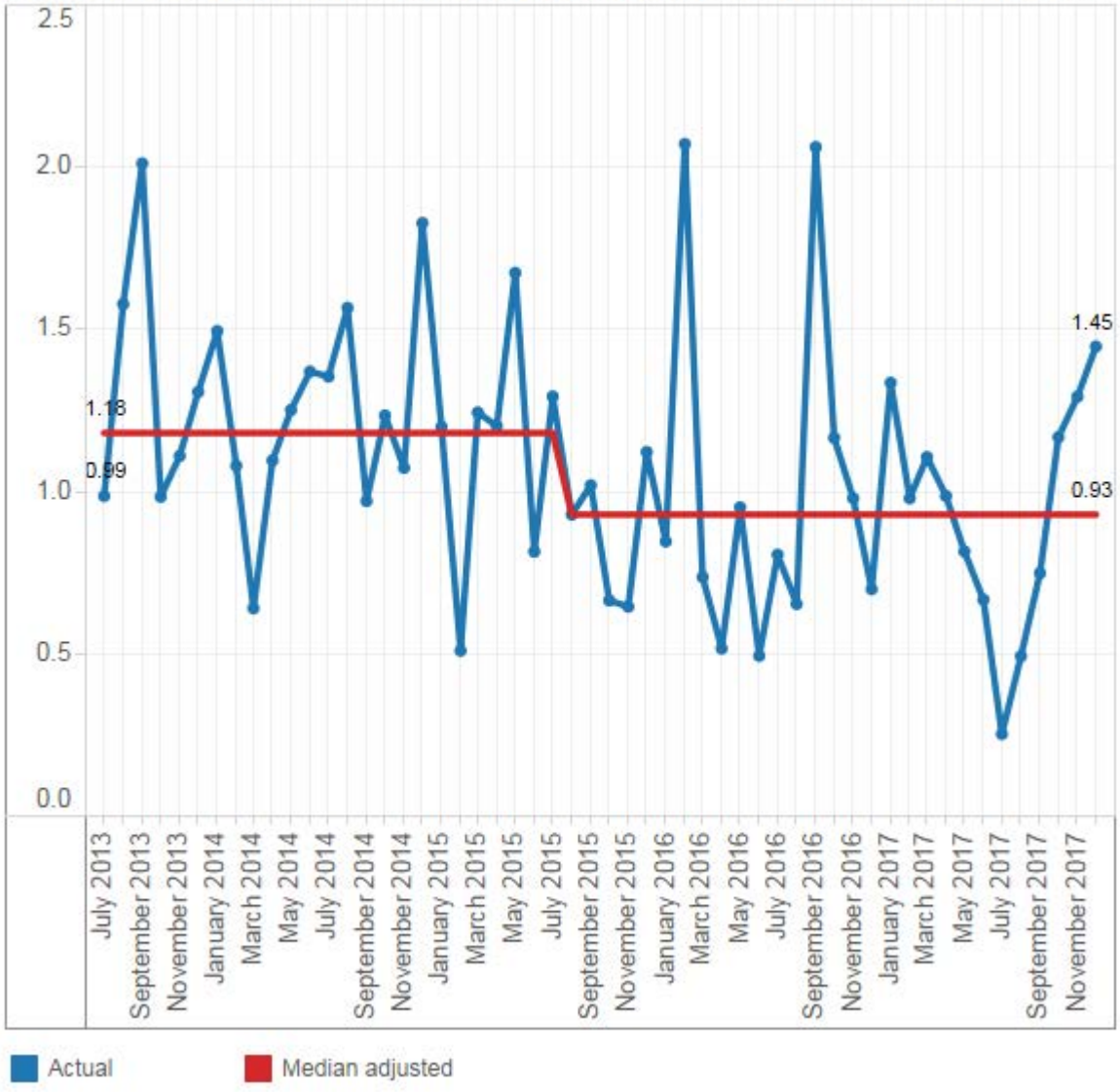
[2] In quarter 1, 2015, 1.5 g or more of cefuroxime was accepted as an alternative agent to 2 g or more of cefazolin for routine antibiotic prophylaxis for hip and knee replacements. This improved the results of this process measure for MidCentral DHB significantly, from 10 percent before the change to 96 percent immediately after the change. It also increased the national result from 90 percent to 95 percent in quarter 1, 2015.

Outcome marker

The outcome marker is surgical site infections (SSIs) per 100 hip and knee operations. Previous reports had a 12-month baseline period beginning March 2013. Recent work to reconcile and review the historic programme data showed considerable variation in data quality in the first four months' worth of data collected. Since December 2017, we have excluded the months March to June 2013 from our analysis. July 2013 was the point at which all 20 DHBs were participating in the SSII programme. The effects of this recalculation are minimal. A shift in the median is detected from August 2015 with the reduction being from 1.18 percent SSIs during the baseline period to 0.93 percent following it.

During the reduction period, there are spikes in February and September 2016. Examination of the September DHB-level data shows the number of SSIs increased by one or two cases in seven DHBs compared with their baseline levels of zero or one case per month. Figures in both February and September 2016 are higher outliers. They indicate some one-time occurrences of special cause variation. Since July 2017 the percentage of SSIs has increased every month, which may give an early indication of an upward shift. This occurred after the lowest ever recorded percentage of operations which had an SSI.

Figure 10: Outcome marker, surgical site infections per 100 hip and knee operations



Surgical site infection improvement – cardiac surgery

This is the sixth quality and safety marker (QSM) report for cardiac surgery. Since quarter 3, 2016, all five DHBs performing cardiac surgery have submitted process and outcome marker data from all cardiac surgery procedures, including coronary artery bypass graft with both chest and donor site and with chest site only. There are three process markers and one outcome marker, which are similar to the QSMs for orthopaedic surgery.

Process marker 1 is ‘timing’, which requires an antibiotic to be given 0–60 minutes before knife to skin. The target is 100 percent of procedures achieving this marker. Canterbury, Capital & Coast and Southern DHBs all achieved the target this quarter.

Process marker 2 is ‘dosing’, which requires the antibiotic prophylaxis of choice to be ≥ 2 g or more of cefazolin for adults and ≥ 30 mg/kg of cefazolin for paediatric patients, not to exceed the adult dose. The target is that either dose is used in at least 95 percent of procedures. All DHBs, except Auckland paediatric achieved the target this quarter.

Process marker 3 is ‘skin preparation’, which requires use of an appropriate skin antisepsis in surgery using alcohol/chlorhexidine or alcohol/povidone iodine. The target is 100 percent of procedures achieving this marker. All DHBs, except Auckland adult achieved the target this quarter

The outcome marker is SSIs per 100 procedures rate. In quarter 4, 2018, there were 25 SSI in 641 procedures, an infection rate of 3.9 percent. This is the lowest recorded rate and is one percentage point lower than the previous quarter and the baseline quarter, with respective rates of 5 percent and 4.9 percent.

Figure 11: Process markers and outcome marker for cardiac surgical site infection

			2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4
Process	Auckland adult	Timing	96.0	96.7	96.2	95.7	97.1	96.4
		Dosing	97.6	96.3	97.3	96.2	96.3	95.0
		Skin preparation	99.2	99.6	99.6	99.1	98.8	99.1
	Auckland paediatric	Timing	96.3	90.9	98.6	95.5	98.6	98.6
		Dosing	97.6	97.7	97.3	92.1	98.6	94.2
		Skin preparation	100.0	100.0	100.0	100.0	100.0	100.0
	Canterbury DHB	Timing	98.5	100.0	100.0	98.1	100.0	100.0
		Dosing	96.9	96.4	100.0	94.3	100.0	100.0
		Skin preparation	100.0	100.0	100.0	100.0	100.0	100.0
	Capital & Coast DHB	Timing	100.0	100.0	100.0	99.2	100.0	100.0
		Dosing	100.0	97.6	99.3	100.0	99.3	100.0
		Skin preparation	100.0	100.0	100.0	100.0	99.3	100.0
	Southern DHB	Timing	100.0	97.8	100.0	100.0	100.0	100.0
		Dosing	100.0	97.8	95.7	100.0	98.0	98.0
		Skin preparation	97.8	100.0	100.0	97.4	98.0	100.0
	Waikato DHB	Timing	94.4	94.7	95.0	94.7	95.0	96.3
		Dosing	96.8	97.7	97.5	99.2	97.1	100.0
		Skin preparation	100.0	99.2	100.0	100.0	100.0	100.0
	New Zealand	Timing	96.7	96.5	97.5	96.6	97.9	97.8
		Dosing	97.8	97.1	97.8	97.0	97.7	97.5
		Skin preparation	99.5	99.7	99.9	99.6	99.3	99.7
Outcome	New Zealand	SSI number	31.0	40.0	30.0	31.0	35.0	25.0
		SSIs per 100 procedures	4.9	5.8	4.4	4.6	5.0	3.9

Upper group Middle group Lower group National total

Safe surgery

This is the seventh report for the safe surgery QSM, which measures levels of teamwork and communication around the paperless surgical safety checklist.

The safe surgery QSM now includes a start-of-list briefing measure, to reinforce the importance of the briefing as a safe surgery intervention. The measure is described as 'Was a briefing including all three clinical teams done at the start of the list?'.

Figure 12 shows, in quarter 1, 2018, 11 DHBs reported this was happening. There is no specific target for this part of the measure; the aim is to have all 20 DHBs increasingly undertaking and reporting briefings over time. The programme team will work with the auditing teams to increase data collection so that the report better matches practice in DHBs.

Figure 12: Briefings – the number of times a briefing, including all three clinical teams, was done at the start of the list

	2017		2018
	Q3	Q4	Q1
Auckland DHB			4
Bay of Plenty DHB	20	11	15
Canterbury DHB	1		
Capital & Coast DHB		6	3
Counties Manukau Health	311	462	496
Hawke's Bay DHB	7		
Hutt Valley DHB	14		
Lakes DHB	12	11	22
MidCentral DHB	2	2	
Nelson Marlborough DHB			6
Northland DHB	18	6	5
South Canterbury DHB			2
Southern DHB	13	5	
Taranaki DHB	3		
Waikato DHB	1		7
Wairarapa DHB		3	
Waitemata DHB		10	36
West Coast DHB	12	9	12

Note: Data not submitted for Hauora Tairāwhiti and Whanganui DHB.

Direct observational audit was used to assess the use of the three surgical checklist parts: sign in, time out and sign out. A minimum of 50 observational audits per quarter per part is required before the observation is included in uptake and engagement assessments. Rates are greyed out in the tables below where there were fewer than 50 audits.

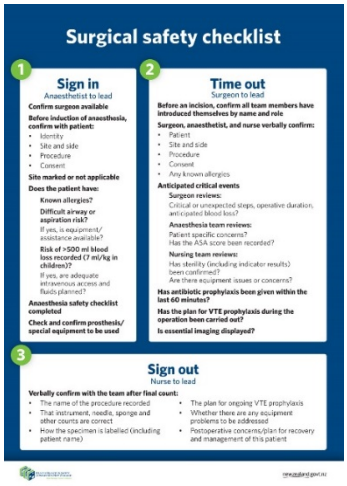
Figure 13 shows, for each part of the checklist, how many audits were undertaken. Ten out of the 20 DHBs achieved 50 audits for all three parts in quarter 1, 2018. Southern and Wairarapa DHBs are not presented as their data was not available.

Figure 13: Observations – number of observational audits carried out (minimum of 50 per three months per checklist part)

	Sign in	Time out	Sign out
Auckland DHB	40	48	35
Bay of Plenty DHB	94	97	81
Canterbury DHB	93	79	62
Capital & Coast DHB	52	74	53
Counties Manukau Health	448	491	474
Hauora Tairāwhiti	57	63	54
Hawke's Bay DHB	43	89	47
Hutt Valley DHB	50	53	50
Lakes DHB	60	63	40
MidCentral DHB	52	51	50
Nelson Marlborough DHB	39	55	52
Northland DHB	41	47	32
South Canterbury DHB	1	138	129
Southern DHB	0	0	0
Taranaki DHB	9	15	2
Waikato DHB	73	68	28
Wairarapa DHB	0	0	0
Waitemata DHB	56	64	55
West Coast DHB	55	57	50
Whanganui DHB	63	75	59

Target achieved Fewer than 50 observations

Rates for uptake (all components of the checklist were reviewed by the surgical team) are only presented where at least 50 audits were undertaken for a checklist part. Uptake rates were calculated by measuring the number of audits of a part where all components of the checklist were reviewed against the total number of audits undertaken. The components for each part of the checklist are shown in the poster on the right. Of the 10 DHBs that achieved 50 audits in each checklist, nine achieved the 100 percent uptake target in at least one part of the checklist, during the current quarter (see Figure 14). Data is not presented where there were fewer than 50 audits.



Sign out has had a four percent decrease nationally since quarter 2, 2017. This is due to the denominator being low in quarter 2, 2017 while the numerator remained stable.

Figure 14: Percentage of audits where all components of the checklist were reviewed (target 100 percent): Baseline Q3, 2016

	Sign in						Time out						Sign out					
	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018
Auckland DHB	98	99	98	100	96		93	94	97	95	91		98		100	90		
Bay of Plenty DHB	97	99	95	100	100	99	96	99	96	99	100	100		98	91	100	100	99
Canterbury DHB	91	97	94	97	98	99	92	97	99	94	99	95	96	99	100	98	100	97
Capital & Coast DHB	96	99	99	100		98	97	98	99	100	91	99	97	99	100	100		100
Counties Manukau Health	99	98	99	98	96	100	100	100	100	100	100	100	99	97	100	100	93	95
Hauora Tairāwhiti	100	100	100	100	100	100	99	98	98	98	98	97		98		98	100	98
Hawke's Bay DHB				97			78	87	88	87	88	87				97		
Hutt Valley DHB		96	94	98	92	100		96	96	96	92	100					94	88
Lakes DHB			100		96	82		99	100		96	98			100		98	
MidCentral DHB	96	96	96	93	94	100	92	97	95	95	100	100	97	100	100	100	98	100
Nelson Marlborough DHB	88	95	91	91	100		93	97	95	96	98	100	91	83	98	91	67	75
Northland DHB		88	85	84	96		91	90	87	97	92				96	96	100	
South Canterbury DHB								90	100	84	93	83		87	100	83	96	78
Southern DHB			97	88	98		98		100	99					98	82		
Taranaki DHB			88						89									
Waikato DHB	81	67	77		48	59	67	59	64	76		40				97		
Wairarapa DHB	97			96			98		95	97						98		
Waitemata DHB	96	99	100	100	98	98	96	99	100	100	100	97	94	98		100	92	100
West Coast DHB		98	98	94	100	100		96	89	96	100	100		97	90	96	100	100
Whanganui DHB		75		64	82	92		93		94	92	100		97		100	96	97
New Zealand	93	95	95	94	95	95	93	95	96	95	95	94	94	95	97	96	94	93

For more information about rounding and colouring, see the description.
Baseline = the average of the first 4 quarters of the program from Q3, 2016 to Q2, 2017.
Rolling = the average of the latest 4 quarters: Q2, 2017 to Q1, 2018.

Target achieved
Between 75% and the target
Less than 75%
Fewer than 50 observations

The levels of team engagement with each part of the checklist were scored using a seven-point Likert scale developed by the World Health Organization. A score of 1 represents poor engagement from the team and 7 means team engagement was excellent. The target is that 95 percent of surgical procedures score engagement levels of 5 or above. As Figure 15 shows, for the latest quarter, Counties Manukau Health, MidCentral and West Coast DHBs achieved the target in all three parts and three other DHBs achieved the target in one or two parts. Data is not presented where audits were fewer than 50. As this is only the seventh quarter in which DHBs have measured the impact of the safe surgery programme, the focus is still on embedding the programme and the auditing method. Better results are expected in subsequent quarters.

Note: the numbers in Figures 14 and 15 have been rounded but the colours are assigned based on whether the target was achieved.

Figure 15: Percentage of audits with engagement scores of 5 or higher (target 95 percent)

	Sign in engage						Time out engage						Sign out engage					
	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018	Baseline	Rolling	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018
Auckland DHB	97	94	97	100	87		94	88	97	89	78		93		89	96		
Bay of Plenty DHB	88	95	92	96	100	92	87	90	84	93	92	92		81	76	81	88	81
Canterbury DHB	88	94	86	97	98	93	76	86	79	83	91	88	65	80	61	82	84	90
Capital & Coast DHB	86	90	95	95		80	91	93	96	99	84	90	94	91	98	98		85
Counties Manukau Health	99	99	99	99	98	98	99	99	99	99	99	100	94	96	94	98	96	98
Hauora Tairāwhiti	85	81	73	83	84	82	89	74	76	60	75	84		83		74	77	94
Hawke's Bay DHB				95			81	88	98	89	81	90				77		
Hutt Valley DHB		89	84	84	89	100		92	84	90	94	100					91	91
Lakes DHB			78		26	82		80	100		66	66			84		44	
MidCentral DHB	95	98	98	98	98	98	87	96	88	96	100	100	85	93	94	90	92	96
Nelson Marlborough DHB	57	86	65	98	95		87	74	96	92	53	56	66	41	82	42	20	8
Northland DHB		97	94	96	98		79	90	81	94	93				82	96	74	
South Canterbury DHB								79	83	68	85	77		74	65	70	84	71
Southern DHB			87	79	90		93		98	96					66	72		
Taranaki DHB			91						94									
Waikato DHB	97	96	95		100	100	92	93	92	92		96				81		
Wairarapa DHB	96			100			99		98	99						100		
Waitemata DHB	83	86	75	94	84	93	86	88	89	84	89	90	91	89		83	94	95
West Coast DHB		99	100	100	100	96		98	98	96	100	100		97	96	100	94	98
Whanganui DHB		82		66	89	88		78		65	79	93		80		67	88	86
New Zealand	90	93	92	92	92	94	89	91	92	90	89	91	84	86	87	85	86	88

For more information about rounding and colouring, see the description.
Baseline = the average of the first 4 quarters of the program from Q3, 2016 to Q2, 2017.
Rolling = the average of the latest 4 quarters: Q2, 2017 to Q1, 2018.

Target achieved
Less than 75%
Between 75% and the target
Fewer than 50 observations

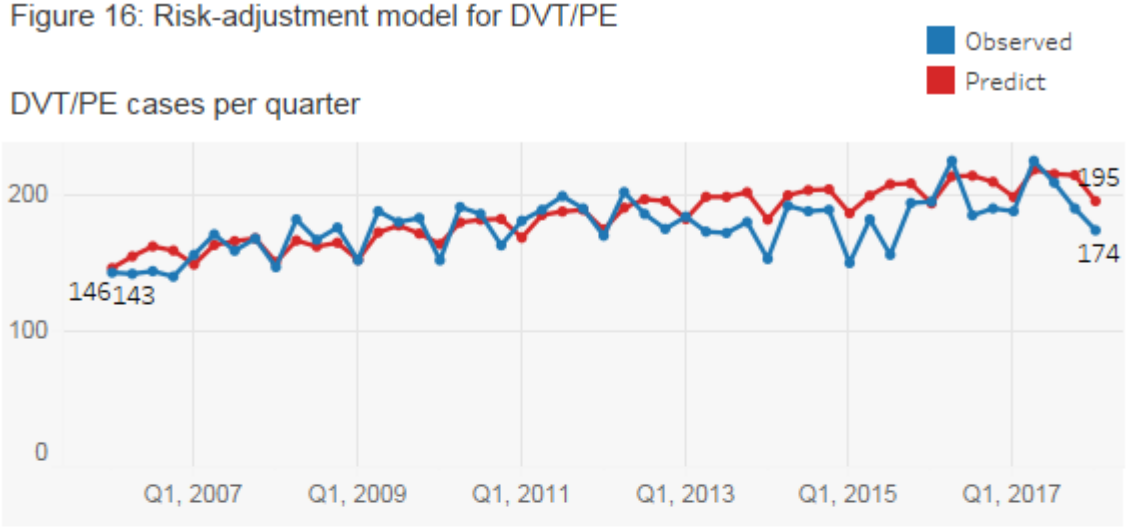
The rates for postoperative sepsis and deep vein thrombosis/pulmonary embolism (DVT/PE) are the two outcome markers for safe surgery. The rates have fluctuated over time. To understand the factors driving the changes and to provide risk-adjusted outcomes in the monitoring and improvement of surgical QSMs, we have developed a risk-adjustment model for these two outcome measures.

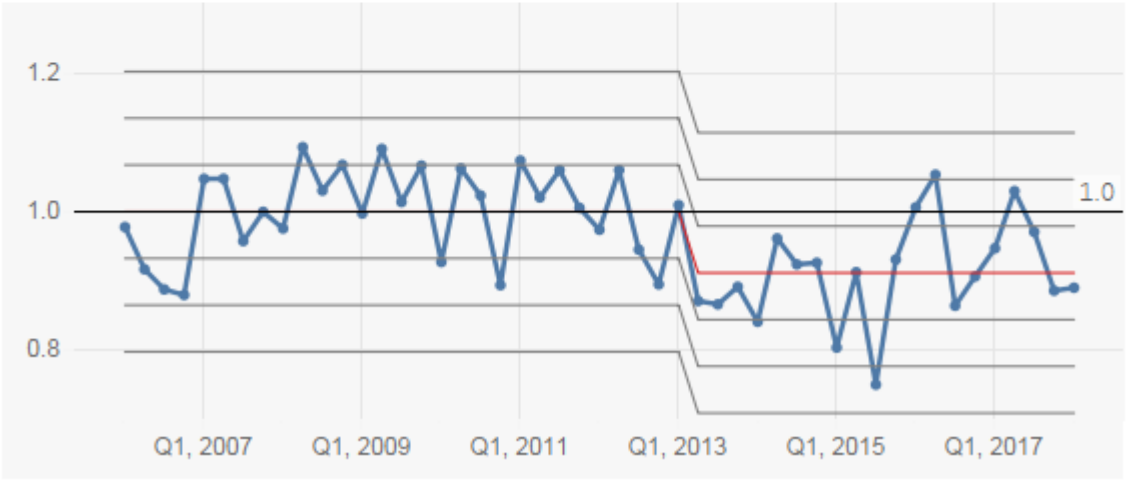
The model is used to identify how likely patients being operated on were to develop sepsis or DVT/PE based on factors such as their conditions, health history and the operation being undertaken. From this, we can calculate how many patients we would have predicted to develop sepsis or DVT/PE based on historic trends. We can then compare how many actually did develop sepsis or DVT/PE, to create an observed/expected (O/E) ratio. If the O/E ratio is more than 1 then there are more sepsis or DVT/PE cases than expected, even when patient risk is taken into account. A ratio of less than 1 indicates fewer sepsis or DVT/PE cases than expected.

We are currently reviewing and analysing the definition of postoperative sepsis, we will update the O/E ratio charts in the next quarter’s report.

Figure 16 shows the DVT/PE risk-adjustment model results in two charts. Using the same methodology as above, the O/E ratio control chart shows there were 11 consecutive quarters in which the observed numbers were below the expected numbers since quarter 2, 2013. This indicates a statistically significant downwards shift, taking into account the increasing number of high-risk patients treated by hospitals and more complex procedures undertaken by hospitals.

Figure 16: Risk-adjustment model for DVT/PE





Medication safety

The QSM for medication safety focuses on medicine reconciliation. This is a process by which health professionals accurately document all medicines a patient is taking and their adverse reactions history (including allergy). The information is then used during the patient's transitions in care. An accurate medicines list can be reviewed to check the medicines are appropriate and safe. Medicines that should be continued, stopped or temporarily stopped can be documented on the list. Reconciliation reduces the risk of medicines being:

- omitted
- prescribed at the wrong dose
- prescribed to a patient who is allergic
- prescribed when they have the potential to interact with other prescribed medicines.

The introduction of electronic medicine reconciliation (eMedRec) allows reconciliation to be done more routinely, including at discharge. There is a national programme to roll out eMedRec throughout the country; Figure 17 shows there are five DHBs that have implemented the system to date. Further uptake of eMedRec is limited until the IT infrastructure is improved in each DHB hospital.

Figure 17: Structure marker, implementation of eMedRec

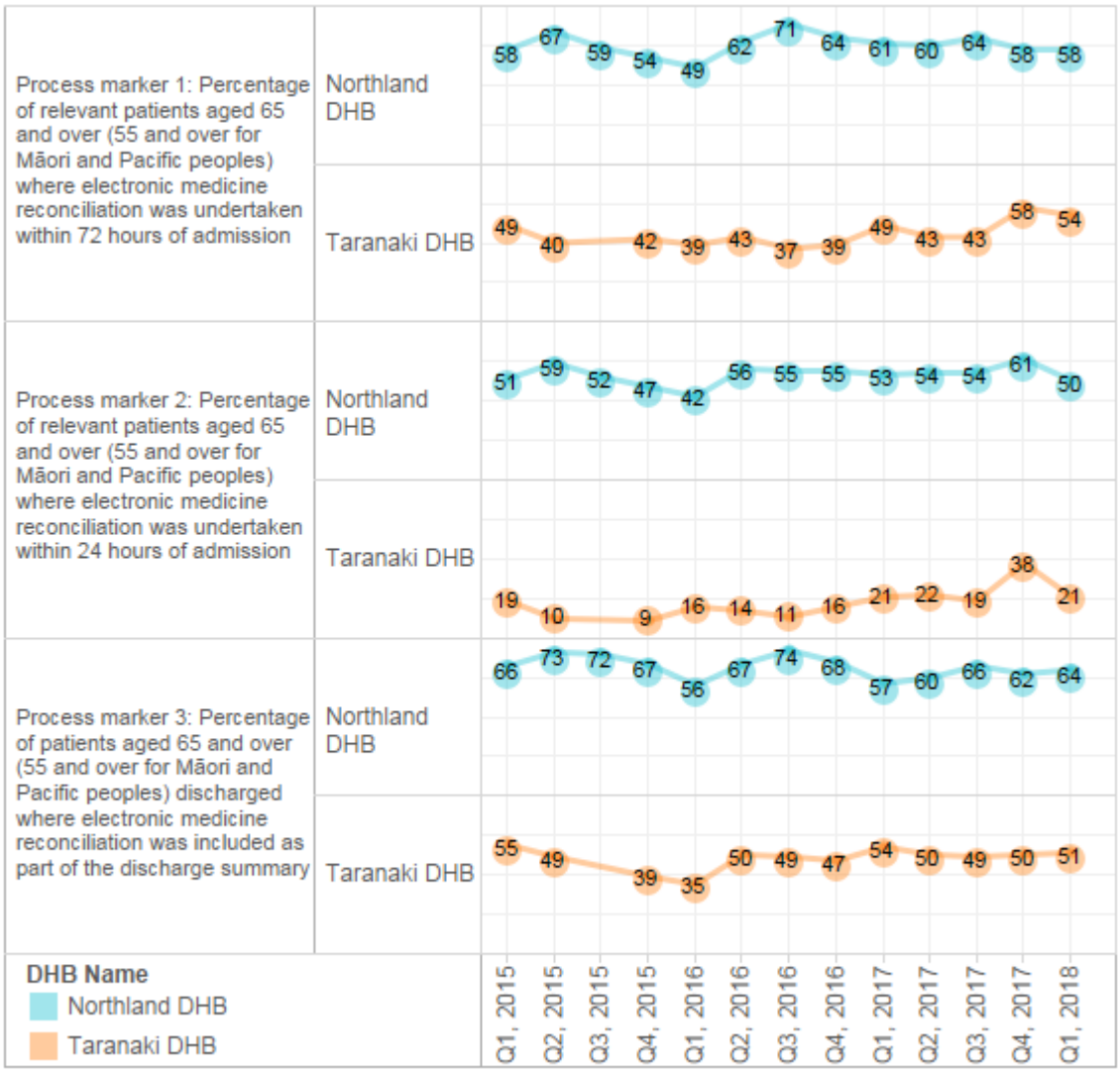
DHB	Status
Counties Manukau Health	Implemented
Northland	Implemented
Taranaki	Implemented
Waitemata	Implemented
Canterbury	Implemented
Auckland	Not implemented
Bay of Plenty	Not implemented
Capital & Coast	Not implemented
Hawke's Bay	Not implemented
Hutt Valley	Not implemented
Lakes	Not implemented
MidCentral	Not implemented
Nelson Marlborough	Not implemented
South Canterbury	Not implemented
Southern	Not implemented
Hauora Tairāwhiti	Not implemented
Waikato	Not implemented
Wairarapa	Not implemented
West Coast	Not implemented
Whanganui	Not implemented

Figure 18: Structure markers, eMedRec implementation

Structure marker	Northland DHB	Taranaki DHB	Counties Manukau Health	Waitemata DHB	Canterbury DHB
Structure 1: eMedRec implemented anywhere in the DHB (yes/no)	Yes	Yes	Yes	Yes	Yes
Structure 2: Number and percentage of relevant wards with eMedRec implemented	6	7	29	33	60
	61%	58%	97%	87%	100%

Within the five DHBs that have implemented eMedRec, only Northland and Taranaki DHBs reported process markers. Figure 19 shows the process marker change overtime for these two DHBs.

Figure 19: eMedRec process markers



Patient deterioration

This is the first time DHBs have submitted data for the patient deterioration QSM. The structural measure demonstrates the progress that DHBs have made towards implementing improvements to their recognition and response systems as at 31 March 2018.

The majority of DHBs (75 percent) have implemented or are in the process of implementing the New Zealand early warning score into their hospitals. This has been done through changing to the national vital signs chart or having the New Zealand early warning score within their electronic vital signs system.

Figure 20: Percentage of eligible wards using the New Zealand early warning score.

DHB Name	2018 Q1
Auckland DHB	86%
Bay of Plenty DHB	100%
Canterbury DHB	100%
Capital & Coast DHB	100%
Counties Manukau Health	100%
Hauora Tairāwhiti	100%
Hawke's Bay DHB	0%
Hutt Valley DHB	100%
Lakes DHB	83%
MidCentral DHB	100%
Nelson Marlborough DHB	90%
Northland DHB	45%
South Canterbury DHB	0%
Taranaki DHB	100%
Waikato DHB	100%
Waitemata DHB	0%
West Coast DHB	0%
Whanganui DHB	100%

Southern and Wairarapa are missing as they have not submitted data for this quarter.