



HEALTH QUALITY & SAFETY
COMMISSION NEW ZEALAND
Kupu Taurangi Hauora o Aotearoa

Quality and safety markers update

Quarter 3 (July–September) 2019

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Falls

Process marker 1: Percentage of older people assessed for the risk of falling

Nationally, 89 percent of older patients* were assessed for their falls risk in quarter 3, 2019 (Figure 1). This marker has dropped below the expected achievement level of 90 percent for the last three quarters. Prior to this, the target was achieved most quarters since quarter 4, 2013.

At the district health board (DHB) level, 12 out of 20 DHBs achieved the expected marker level for this current quarter; seven of them have remained at this level for at least six continuous quarters. Hutt Valley, Northland and Taranaki DHBs have consistently not met the expected marker level since quarter 4, 2012. Nelson Marlborough DHB has been consistently lower than the national rate in the assessment for the risk of falling from quarter 4, 2017.

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



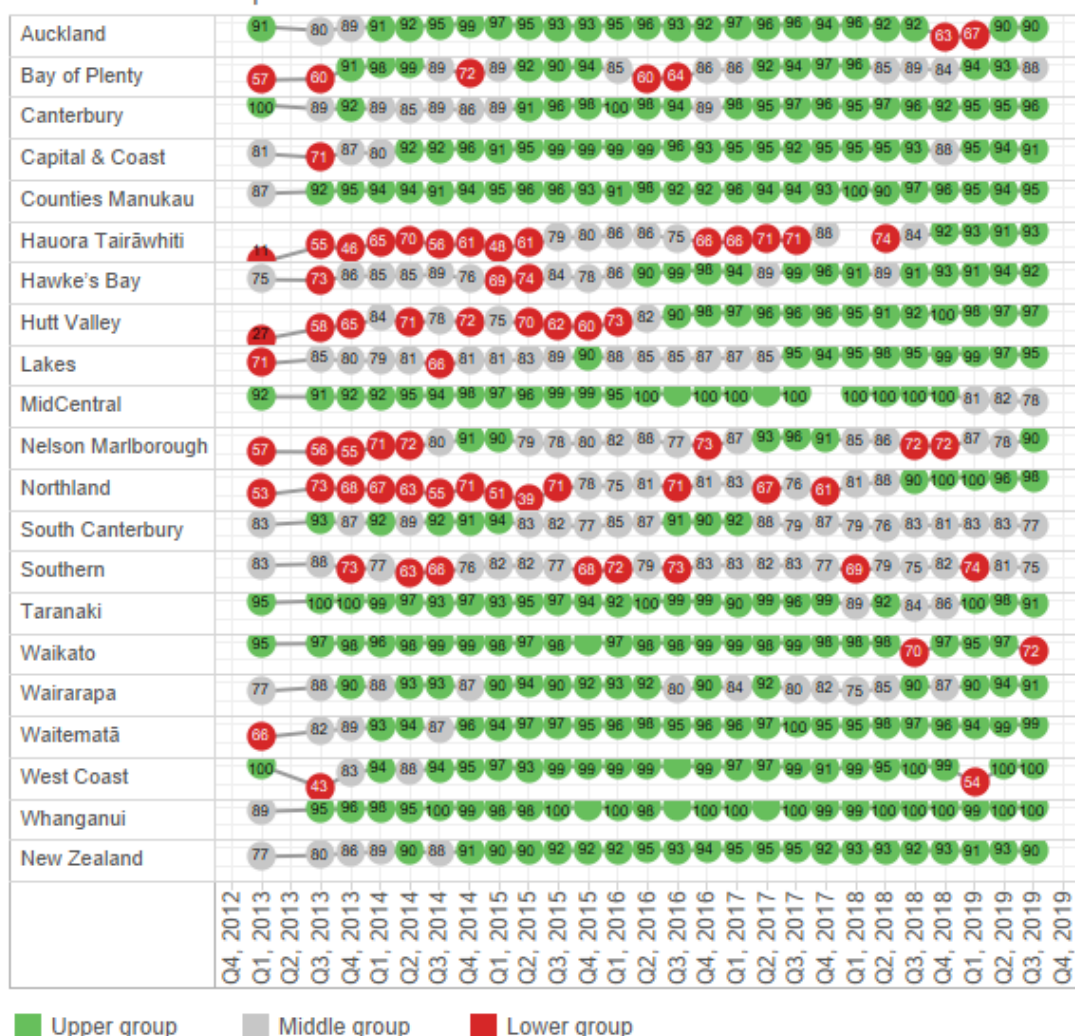
- Upper group: ≥ 90 percent
- Middle group: 75–89 percent
- Lower group: < 75 percent

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

Process marker 2: Percentage of older people assessed as at risk of falling who received an individualised care plan that addresses these risks

About 90 percent of patients assessed as being at risk of falling had an individualised care plan completed (Figure 2). This measure has increased 13 percentage points compared with the baseline in quarter 1, 2013. Achievements vary across DHBs. In quarter 3, 2019, there were 15 DHBs in the upper group compared with 16 in quarter 2, 2019. South Canterbury and Southern DHBs have been consistently lower than the national rate in the development of an individualised care plan. Northland has remained in the upper group since quarter 3, 2018 and Hauora Tairāwhiti has since quarter 4. Six DHBs have been present in the upper group for the most recent six quarters.

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

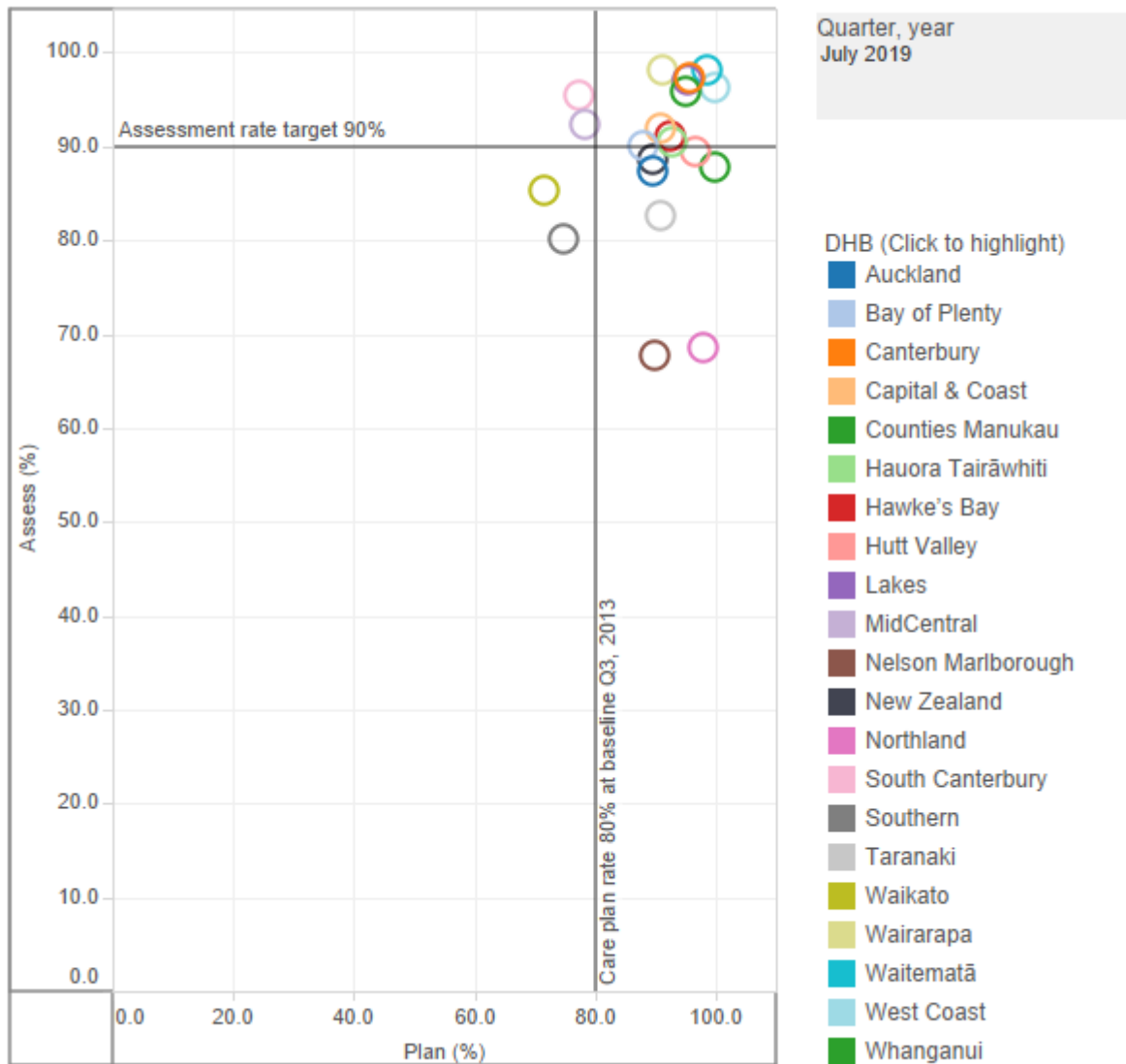


- Upper group: ≥ 90 percent
- Middle group: 75–89 percent
- Lower group: < 75 percent

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) in Figure 3. Five DHBs

sat at the top right corner in quarter 1, 2013; in quarter 3, 2019, nine DHBs are in this 'ideal' box (see Figure 3), the same as the last quarter.

Figure 3: Falls assessment compared with care planning



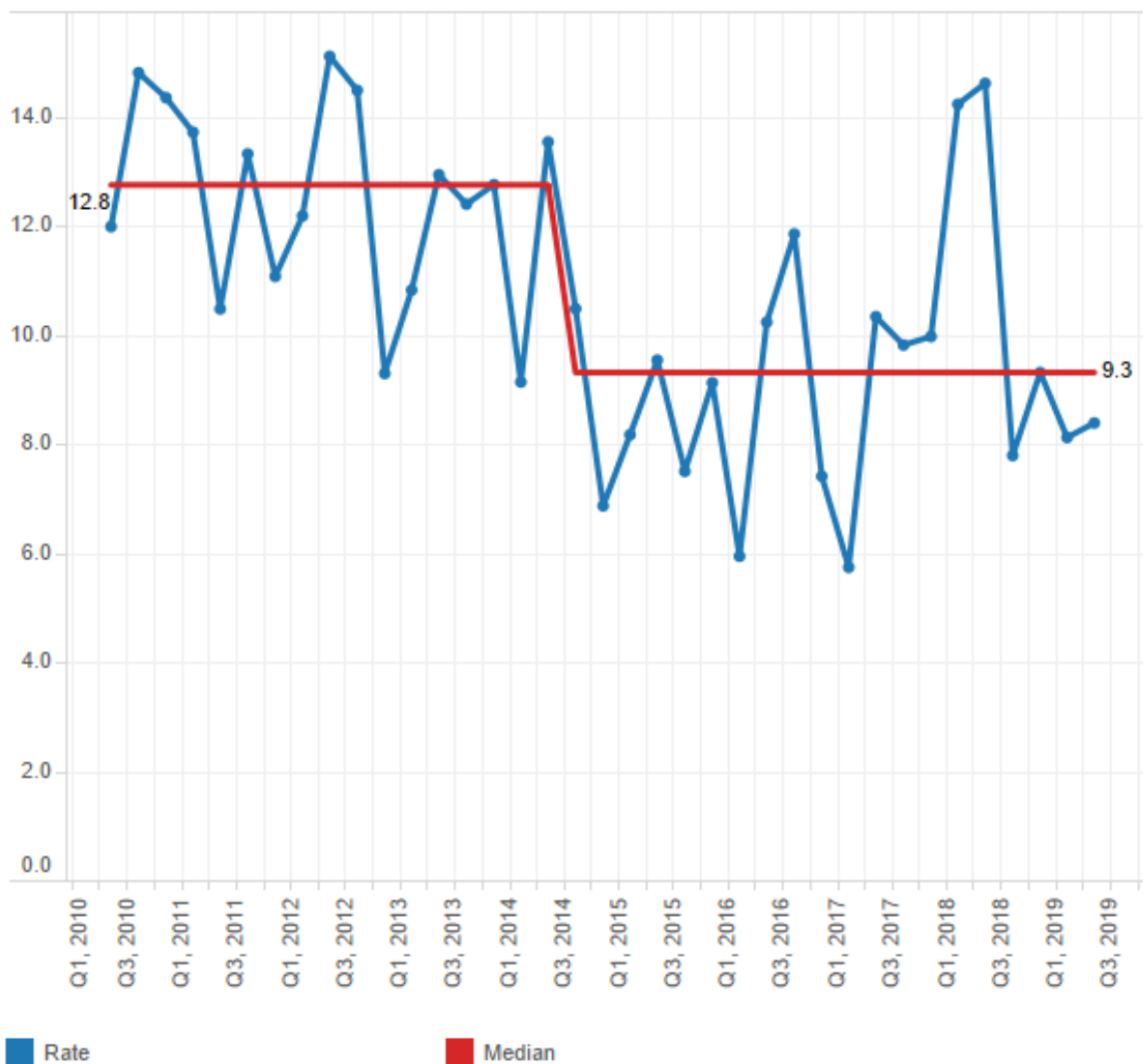
Outcome marker: In-hospital falls resulting in a fractured neck of femur per 100,000 admissions

There were 87 falls resulting in a fractured neck of femur (broken hip) in the 12 months ending September 2019.

To control the impact of changes in the number of admissions and to capture special causes of variation with a more robust time-series, the results will be reported quarterly instead of monthly. Figure 4 shows the quarterly rate of in-hospital falls causing a fractured neck of femur per 100,000 admissions.

The median of this measure was 12.8 in the baseline period of July 2010 to June 2012. It had moved down since September 2014, to 9.3 per 100,000 admissions, and shown a significant improvement. This reduction is supported by the observed improvement in the assessment and plan process markers results. There is some variation since the shift, especially in 2018. Further analysis is needed to understand the causes of the variations.

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

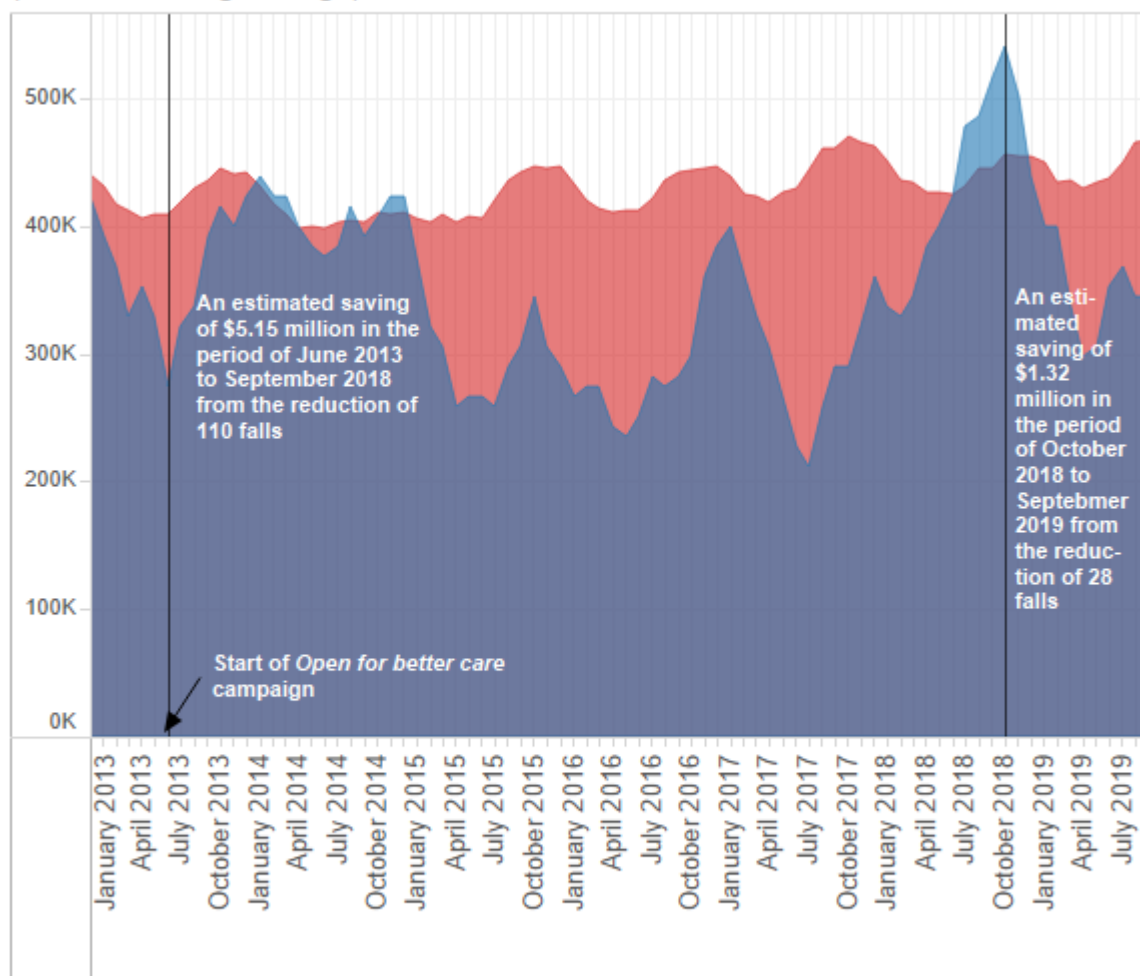


The number of 87 in-hospital falls resulting in a fractured neck of femur is significantly lower than the 115 we would have expected this year, given the falls rate observed in the period between July 2010 and June 2012. The in-hospital falls reduction is estimated to have saved \$1.32 million from October 2018 up until September 2019. This is based on an estimate of \$47,000¹ for a fall with a fractured neck of femur (Figure 5).

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 per occurrence.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 an aged residential care facility, the reduction in falls represents \$1.82 million in total avoidable costs since October 2018.

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.

² *Ibid.*

Hand hygiene

Process marker 1: Percentage of opportunities for hand hygiene taken

National compliance with the five moments for hand hygiene remains high. Nationally, DHBs maintained an average of 85 percent compliance for the period July–October 2019 compared with 62 percent in the baseline in July–October 2012. Hauora Tairāwhiti and Taranaki DHB have been consistently below the national target of 80 percent.

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

Auckland	70	75	75	76	77	76	76	79	78	81	83	84	84	84	85	86	85	85	86	86	86	86
Bay of Plenty	43	59	67	65	75	80	77	77	80	83	83	82	78	81	81	85	83	83	81	76	76	80
Canterbury	60	65	67	68	68	67	62	73	77	78	78	78	79	83	81	80	81	82	81	82	83	82
Capital & Coast	60	62	75	71	75	75	76	72	79	81	80	78	82	79	76	84	82	80	82	83	84	85
Counties Manukau	59	70	72	75	72	74	77	81	78	77	81	83	81	84	84	85	87	87	87	87	88	85
Hauora Tairāwhiti	74	73	79	78	81	70	72	69	72	73	73	73	69	72	71	71	64	66	72	72	77	
Hawke's Bay	54	65	73	72	70	72	81	81	85	86	90	87	88	89	87	88	89	85	87	88	85	89
Hutt Valley	47	62	73	82	61	50	60	66	78	78	80	80	80	80	82	80	78	79	81	83	86	84
Lakes	62	64	71	68	74	79	86	80	82	77	73	82	80	82	81	84	82	77	81	82	80	79
MidCentral	65	72	70	72	66	72	72	76	78	75	75	81	81	79	81	79	75	79	78	79	81	76
Nelson Marlborough	50	55	64	67	70	71	75	74	80	81	75	76	81	78	81	79	80	81	85	88	79	79
Northland	77	73	68	76	69	66	76	80	84	83	86	87	88	86	87	84	87	88	88	88	88	85
South Canterbury	60	54	63	72	75	86	78	84	84	80	72	67	80	66	76	79	75	82	83	84	83	77
Southern	63	62	59	69	72	75	76	78	85	86	85	83	86	83	86	82	82	82	81	81	83	83
Taranaki	65	64	63	71	68	60	69	77	77	84	78	78	70	72	73	82	78	66	70	70	74	
Waikato	67	60	72	66	71	76	79	77	82	79	83	86	87	84	85	82	84	83	78	79	80	79
Wairarapa	71	68	77	78	82	81	80	79	80	81	79	87	81	81	82	93	90	87	82	91	90	89
Waitematā	62	73	74	71	75	79	80	80	80	85	81	83	85	86	86	88	89	90	89	89	90	89
West Coast	66	66	73	71	72	77	80	81	83	86	78	81	79	80	82	79	78	82	81	84	86	82
Whanganui	70	74	75	77	78	79	83	82	84	85	84	84	84	85	86	87	86	88	84	85	86	87
New Zealand	62	67	71	71	73	73	75	77	80	81	81	82	83	84	84	85	85	85	85	86	85	85
	Jul–Oct 2012	Nov 2012–Mar 2013	Apr–Jun 2013	Jul–Oct 2013	Nov 2013–Mar 2014	Apr–Jun 2014	Jul–Oct 2014	Nov 2014–Mar 2015	Apr–Jun 2015	Jul–Oct 2015	Nov 2015–Mar 2016	Apr–Jun 2016	Jul–Oct 2016	Nov 2016–Mar 2017	Apr–Jun 2017	Jul–Oct 2017	Nov 2017–Mar 2018	Apr–Jun 2018	Jul–Oct 2018	Nov 2018–Mar 2019	Apr–Jun 2019	Jul–Oct 2019

■ Upper group

■ Middle group

■ Lower group

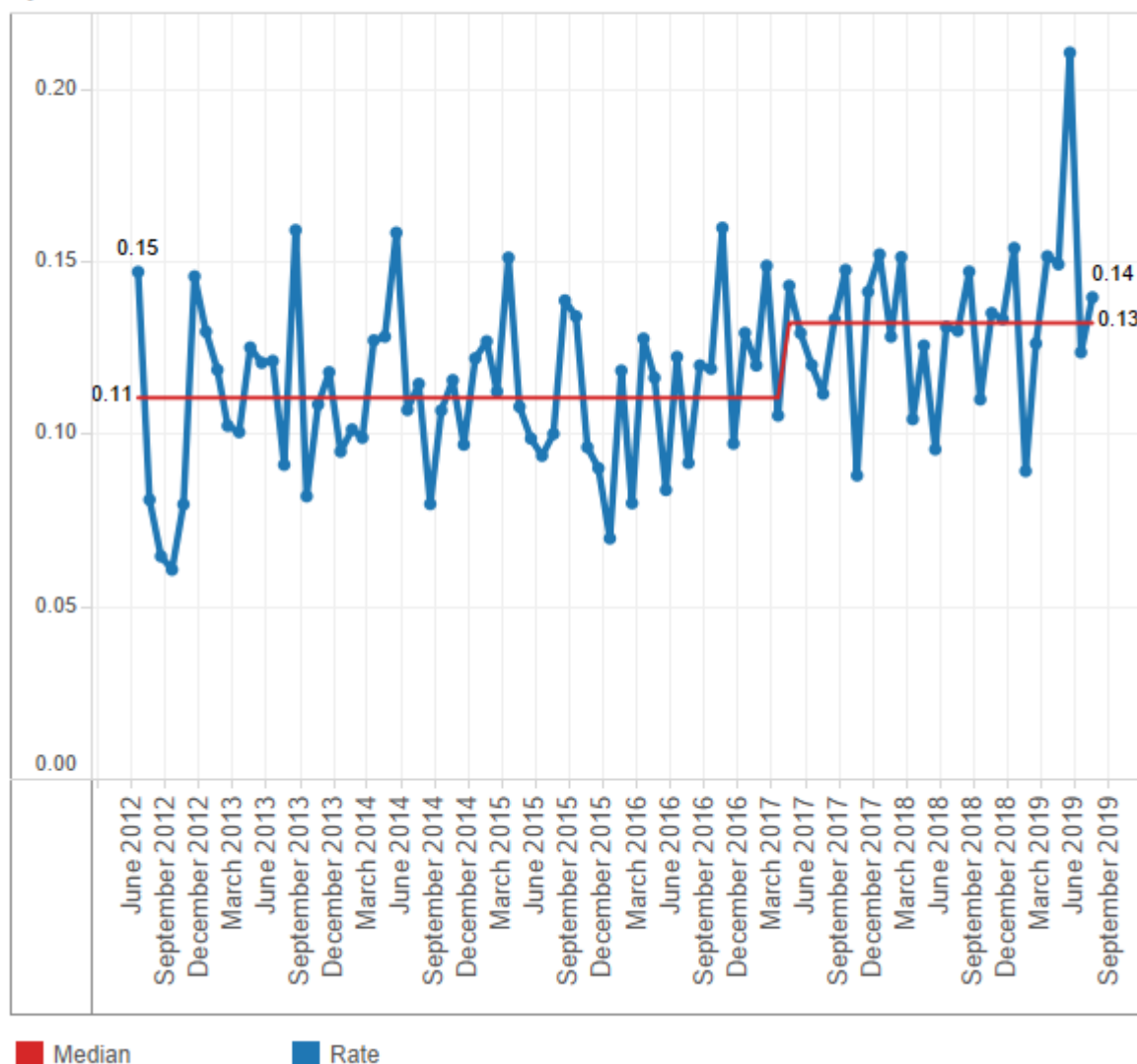
- Upper group: ≥ 70 percent before quarter 3, 2014; 75 percent in quarters 3 and 4, 2014; and 80 percent since quarter 1, 2015
- Middle group: 60 percent to target
- Lower group: < 60 percent
- Hand hygiene national compliance data is reported three times every year, not quarterly

Outcome marker: Healthcare associated *Staphylococcus aureus* bacteraemia (SAB) per 1,000 bed-days

Healthcare associated SAB can be associated with medical devices or surgical procedures which means the onset of symptoms may occur outside of the hospital (community onset).

Figure 7 displays the monthly healthcare associated SAB per 1,000 bed-days. Data for the last month, September, is omitted, due to denominator completeness issues. From May 2017, the median has increased from 0.11 to 0.13 per 1,000 bed-days. This is a statistically significant shift. We are working with DHBs to better understand this and will monitor closely in the coming quarters. The rate was at its highest in June 2019 at 0.21.

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 2, 2019.

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 2, 2019, 97 percent of hip and knee arthroplasty procedures involved the giving of an antibiotic within 60 minutes before knife to skin. Ten DHBs achieved the national goal. Counties Manukau, Northland and Waitematā DHBs have consistently been below the upper group since quarter 3, 2013.

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

Auckland	97	98	98	96	96	96	96	95	97	95	94	97	96	98	98	95	98	94	100	95	98	100	98	97	
Bay of Plenty	95	92	95	97	95	97	98	99	99	96	99	98	99	99	98	98	97	100	98	99	99	100	99	100	
Canterbury	94	95	97	96	94	99	97	100	100	98	99	100	99	100	99	98	100	100	100	100	100	100	99	99	
Capital & Coast	93	96	93	99	95	98	96	100	100	100	100	100	100	100	100	99	100	100	99	100	100	100	100	100	
Counties Manukau	52	70	80	83	84	97	99	97	97	98	94	99	94	92	95	96	95	93	96	94	93	98	95	95	
Hauora Tairāwhiti	91	91	88	48	88	95	97	95	100	91	97	97	94	100	92	100	93	93	90	93	100	100	100	100	
Hawke's Bay	93	88	95	93	100	98	100	100	98	100	100	100	100	97	100	99	100	100	100	100	100	100	100	100	
Hutt Valley	99	65	54	91	94	91	95	97	98	94	96	98	99	98	100	100	100	100	98	99	100	97	100	100	
Lakes	100	98	99	98	100	99	99	98	97	100	97	97	100	99	98	100	100	98	100	100	100	99	98	98	
MidCentral	91	94	96	99	97	96	90	100	99	98	98	98	99	98	100	98	100	100	97	96	100	99	99	100	
Nelson Marlborough	92	87	97	99	100	98	97	99	96	99	100	98	100	99	97	96	97	100	100	100	100	100	98	99	
Northland	98	89	98	97	95	96	93	91	92	98	98	99	98	99	95	93	90	96	96	90	90	85	98	96	
South Canterbury	93	84	95	100	100	100	100	96	100	100	95	100	100	95	98	95	100	100	96	100	100	97	93	93	
Southern	77	66	88	91	92	93	92	93	92	90	97	96	97	99	98	96	95	100	100	98	99	95	97	98	
Taranaki	93	91	100	97	98	90	95	78	84	89	100	100	99	100	97	100	100	100	100	99	97	100	100		
Waikato	85	88	90	87	92	91	93	92	94	97	98	98	99	96	99	97	99	99	98	100	99	99	97	96	
Wairarapa	97	100	100	97	100	96	100	100	95	100	100	94	100	100	100	100	100	100	100	100	100	100	100	100	
Waitematā	92	92	95	97	98	98	97	94	98	93	92	92	98	95	94	90	97	96	98	95	97	97	98	98	
West Coast	87	94	100	89	100	100	96	100	93	100	100	100	100	100	100	100	100	100	100	97	97	100	98	100	
Whanganui	90	93	100	100	100	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100	98	100	100	100	
New Zealand	90	90	93	94	96	95	96	96	97	97	97	98	98	98	98	97	98	98	99	97	98	98	98	97	
	Q3, 2013	Q4, 2013	Q1, 2014	Q2, 2014	Q3, 2014	Q4, 2014	Q1, 2015	Q2, 2015	Q3, 2015	Q4, 2015	Q1, 2016	Q2, 2016	Q3, 2016	Q4, 2016	Q1, 2017	Q2, 2017	Q3, 2017	Q4, 2017	Q1, 2018	Q2, 2018	Q3, 2018	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019

Note: For Auckland DHB, from Q3, 2017 to Q4, 2018, procedures conducted in private hospitals are excluded due to data collection issues.

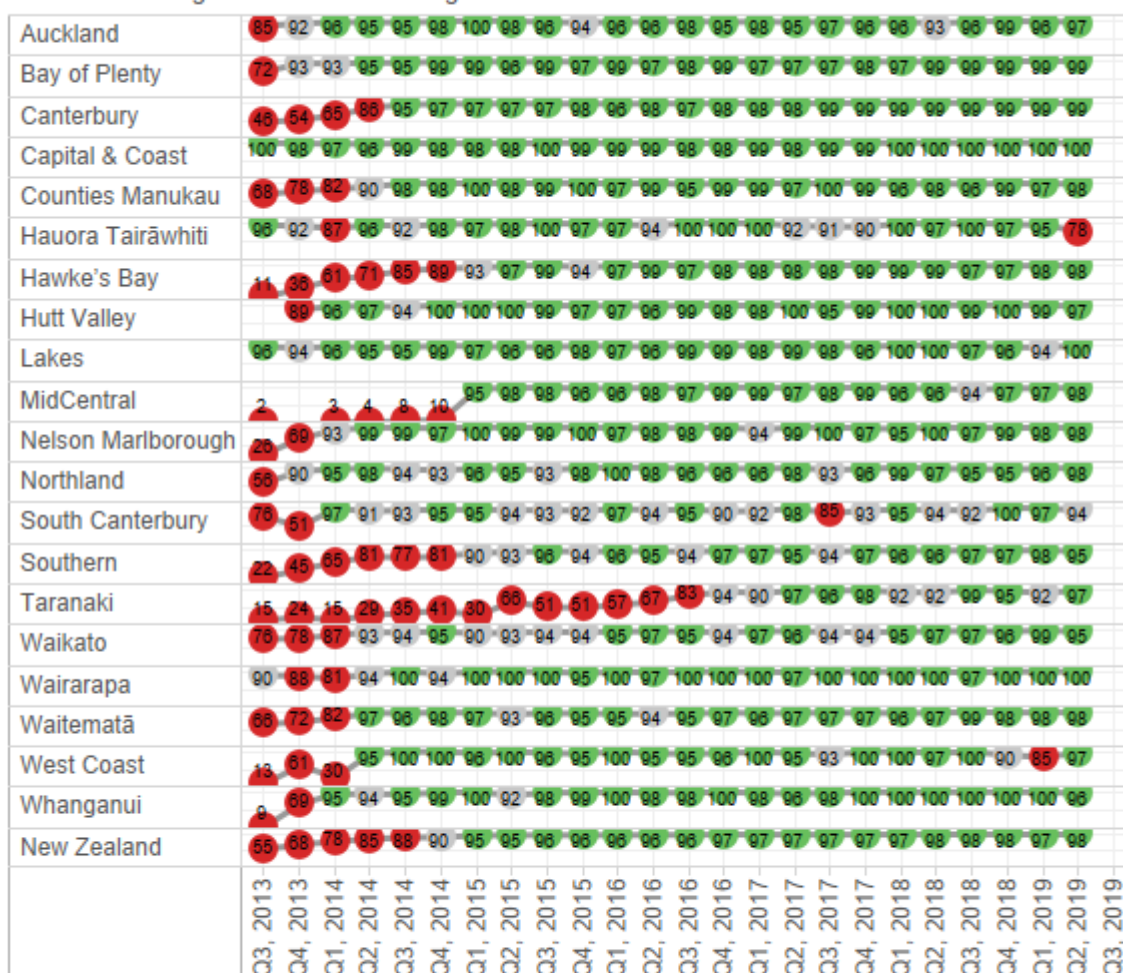
■ Upper group ■ Middle group ■ Lower group

- 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, 98 percent of hip and knee arthroplasty procedures received the recommended antibiotic and dose. Eighteen of the 20 DHBs reached the threshold level of 95 percent compared with only three in the baseline quarter.³

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



Note: For Auckland DHB, from Q3, 2017 to Q4, 2018, procedures conducted in private hospitals are excluded due to data collection issues.

■ Upper group ■ Middle group ■ Lower group

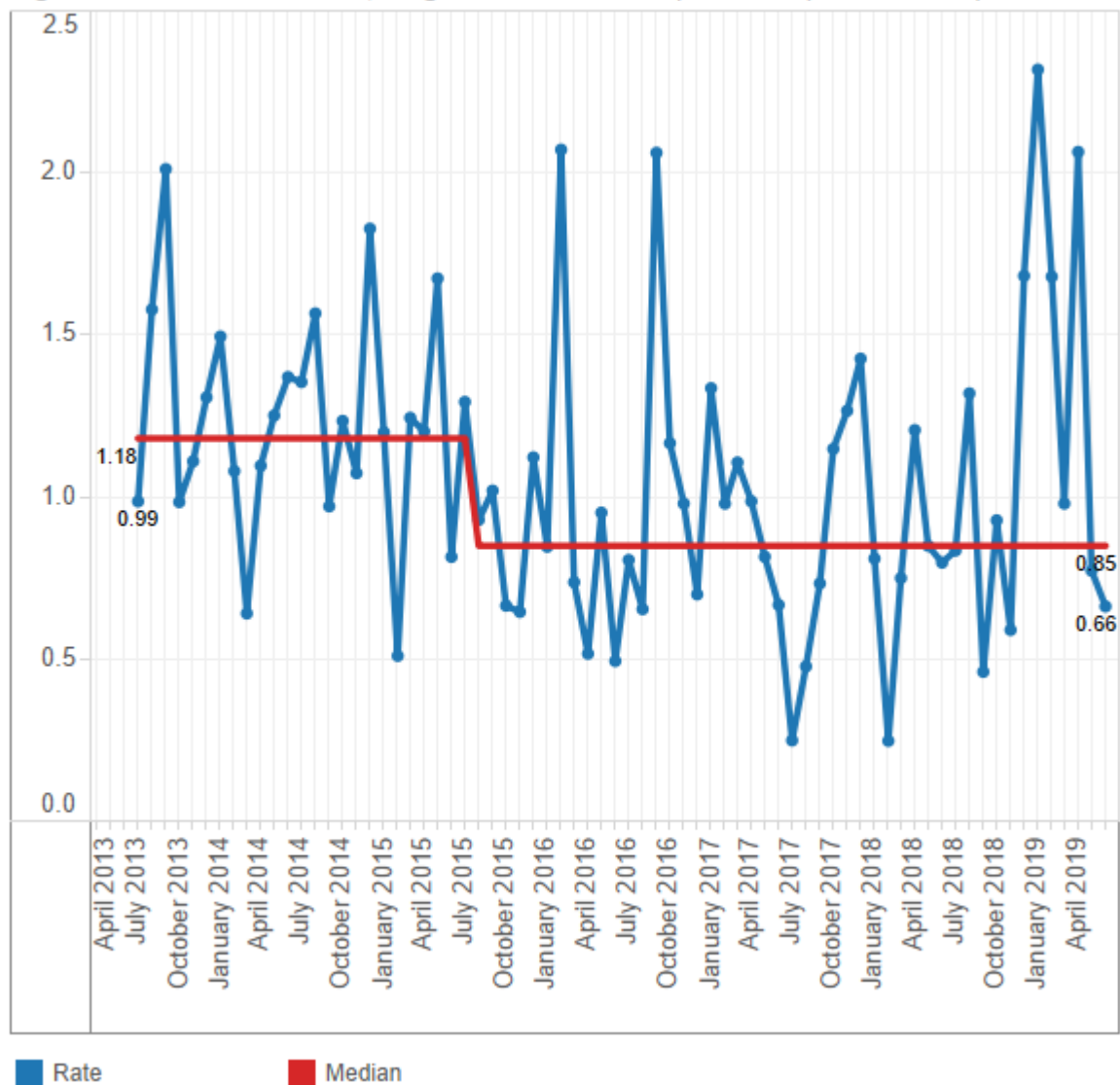
- Upper group: ≥ 95 percent
- Middle group: 90–94 percent
- Lower group: < 90 percent

³ 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: SSIs per 100 hip and knee operations

In quarter 2, 2019, there were 30 SSIs out of 2,717 hip and knee arthroplasty procedures, a quarterly SSI rate of 1.10 percent, which is higher than the current median of 0.85 percent since August 2015. There were five consecutive points above the median since December 2018 and a peak rate of 2.32 percent in January 2019. This high rate was seen consistently across the country. We will monitor this closely in the coming quarters.

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



Surgical site infection improvement (SSII) – cardiac surgery

This is the 11th 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 markers for orthopaedic surgery.

Process marker 1: Timing – an antibiotic to be given 0–60 minutes before knife to skin

The target is for 100 percent of procedures to achieve this marker. Auckland DHB paediatric achieved the target this quarter and Southern DHB has continued to meet the target for four successive quarters.

Figure 11: Process marker, percentage of cardiac procedures where antimicrobial prophylaxis is administered as a single dose 0–60 minutes before knife to skin



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

Process marker 2: Dosing – correct antimicrobial prophylaxis used in at least 95 percent of procedures

The antibiotic prophylaxis of choice is ≥ 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 performing cardiac surgery except Auckland paediatric achieved the target this quarter.

Figure 12: Process marker, percentage of cardiac procedures where the first choice for antimicrobial prophylaxis is 2 g or more of cefazolin



- Upper group: > 95 percent
- Middle group: 90–95 percent
- Lower group: < 90 percent

Process marker 3: Skin preparation – appropriate skin antisepsis is always used

Appropriate skin antisepsis in surgery involves alcohol/chlorhexidine or alcohol/povidone iodine. The target is 100 percent of procedures achieving this marker. Only Southern DHB did not meet the target this quarter.

Figure 13: Process marker, percentage of cardiac procedures where alcohol-based skin antisepsis is always used

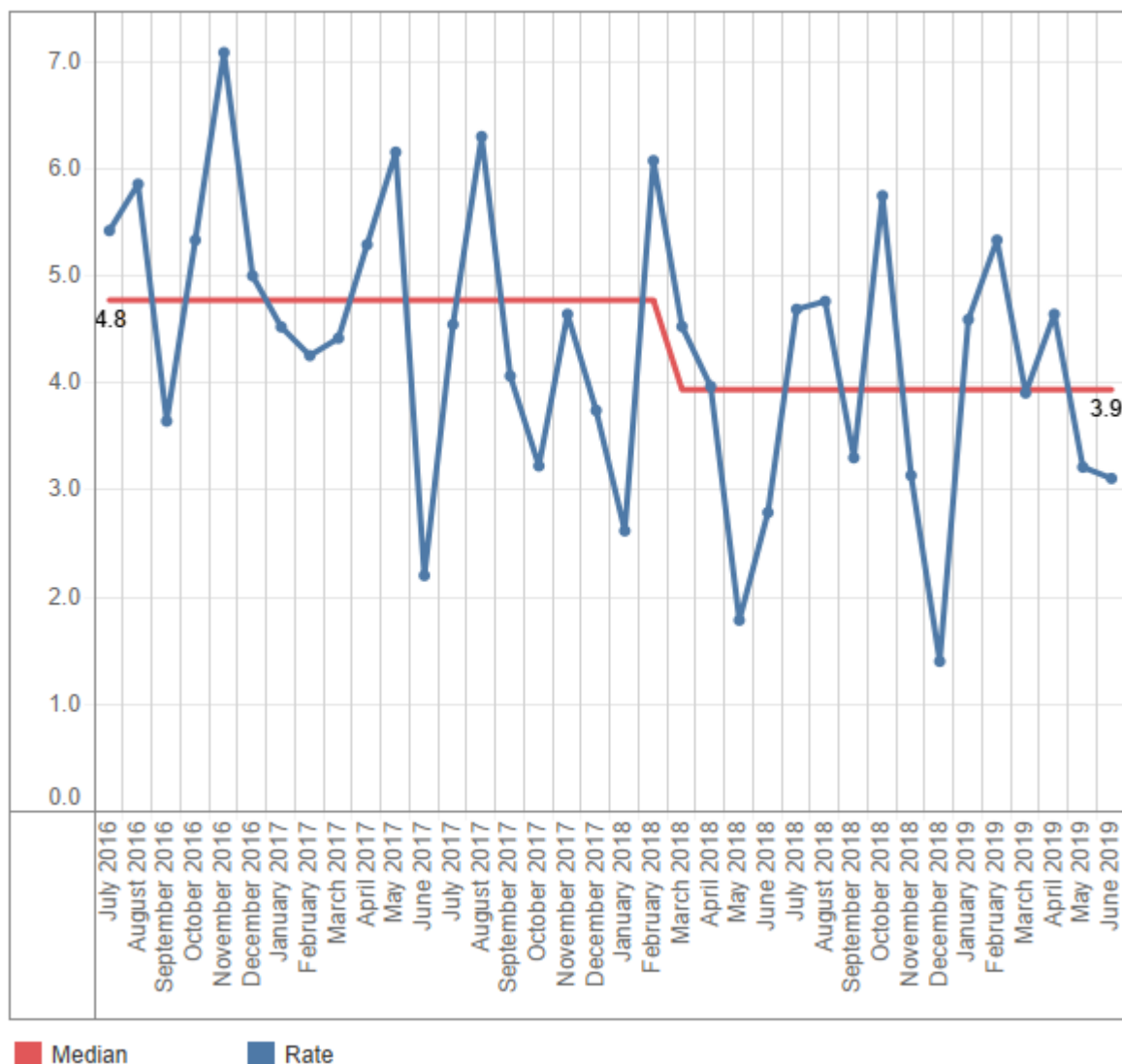


- Upper group: 100 percent
- Middle group: 95–99 percent
- Lower group: < 95 percent

Outcome marker: SSIs per 100 procedures rate

In March 2018 we see the median shift downwards from 4.8 SSI cases per 100 cardiac procedures to 3.9. This is a significant improvement since the beginning of the Surgical Site Infection Improvement Programme. Cardiac surgical services in DHBs are dedicated to ensuring high compliance with the process measures and implementing other quality improvement activities such as an anti-staphylococcus bundle.

Figure 14: Outcome marker, surgical site infections per 100 cardiac operations



Safe surgery

The safe surgery QSM measures levels of teamwork and communication relating to the paperless surgical safety checklist.

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 15 shows how many audits were undertaken for each part of the checklist. Fourteen out of the 20 DHBs achieved 50 audits for all three parts in quarter 3, 2019. Counties Manukau Health has a large auditor cohort, which explains its high numbers.

Figure 15: Observations – number of observational audits carried out (minimum of 50 per three months per checklist part)

	Sign in	Time out	Sign out
Auckland	125	138	89
Bay of Plenty	76	77	66
Canterbury	90	136	81
Capital & Coast	51	58	50
Counties Manukau	754	776	726
Hauora Tairāwhiti	69	66	53
Hawke's Bay	62	83	61
Hutt Valley	63	70	50
Lakes	57	56	50
MidCentral	39	36	27
Nelson Marlborough	38	43	53
Northland	53	68	50
South Canterbury	0	48	26
Southern	52	59	54
Taranaki	40	44	31
Waikato	1	1	1
Wairarapa	34	35	40
Waitematā	49	45	36
West Coast	53	51	51
Whanganui	83	83	72
New Zealand	1,789	1,973	1,667

■ Fewer than 50 observations ■ Target achieved

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 14 DHBs that achieved 50 audits in each checklist, 12 achieved the 100 percent uptake target in at least one part of the checklist, during the current quarter (see Figure 16). Data is not presented where there were fewer than 50 audits.



Figure 16: Percentage of audits where all components of the checklist were reviewed (target 100 percent)

	Sign in						Time out						Sign out						
	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019	
Auckland	98	99	98	97	100	100	93	98	98	94	100	99	98	97	98	94	98	98	
Bay of Plenty	97	100	100	100	100	100	96	99	99	99	100	100		99	100	97	100	100	
Canterbury	91	99	98	100	99	100	92	98	98	99	100	97	96	100	98	100	100	100	
Capital & Coast	96	100	100	100	100	100	97	100	100	100	100	100	97	100	100	100	100	100	
Counties Manukau	99	100	100	100	100	100	100	100	100	100	100	100	99	98	100	99	97	97	
Hauora Tairāwhiti	100	100	100	100		100	99	100	100	100		98		100				100	
Hawke's Bay		92	95	98	90	85	78	74	76	78	83	55		88	84	88	95	85	
Hutt Valley					93	98						96	99					98	100
Lakes					100	100						100	100					100	98
MidCentral	96		98	98	98		92	91	80	96	93		97	100		100			
Nelson Marlborough	88				100		93				98		91					97	94
Northland		96	96	95	95	100	91	95	96	97	88	99		98	100	96	96	100	
South Canterbury								93	83	100					80	100			
Southern		97		95	100	100	98	97	98	92	99	100				100	100	100	
Taranaki			79	75	44			70	58	73	73			96					
Waikato	81						67												
Wairarapa	97			90	80		98	98	100	99	95				100	98			
Waitematā	96	99	100	98			96	100	98	100	100		94		100	98			
West Coast		100	100	100	100	100		100	100	100	100	100		100	100	100	100	100	
Whanganui		94	85	92	98	98		97	94	96	99	98		99	96	99	100	100	
New Zealand	93	98	98	98	97	98	93	97	95	97	97	97	94	98	98	99	98	98	

For more information about rounding and colouring, see the note.

Baseline = the average of the first 4 quarters of the programme from Q3, 2016 to Q2, 2017.

Rolling = the average of the latest 4 quarters: Q4, 2018 to Q3, 2019.

- 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 17 shows, for the latest quarter, Bay of Plenty, Canterbury, Counties Manukau and Southern DHBs achieved the target in all three parts. Four other DHBs achieved the target in one or two parts, a decrease from eight DHBs last quarter. Data is not presented where there were fewer than 50 audits.

Figure 17: Percentage of audits with engagement scores of 5 or higher (target 95 percent)

	Sign in engage						Time out engage						Sign out engage					
	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019	Baseline	Rolling	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019
Auckland	97	95	92	94	99	95	94	90	89	93	92	88	93	92	91	93	95	90
Bay of Plenty	88	100	100	99	100	100	87	100	99	100	100	100		99	99	100	100	98
Canterbury	88	100	100	100	99	100	76	98	98	97	96	100	65	92	93	91	88	96
Capital & Coast	86	91	87	96	92	88	91	94	96	96	96	90	94	86	90	86	76	90
Counties Manukau	99	98	96	99	99	99	99	100	99	100	100	100	94	94	93	94	94	96
Hauora Tairāwhiti	85	86	90	90		80	89	86	87	91		80			94			83
Hawke's Bay		97	96	95	98	100	81	94	94	91	96	93		96	94	94	98	98
Hutt Valley					97	89					93	93					96	90
Lakes					71	70					77	70					67	76
MidCentral	95		98	96	100		87	98	96	100	98		85		100		98	
Nelson Marlborough	57				100		87				98		66				74	76
Northland		99	98	100	99	100	79	98	98	98	95	100		94	94	92	98	92
South Canterbury								80	55	97					41	83		
Southern		98		95	99	100	93	100	100	100	100	98				94	100	100
Taranaki			93	97	91			81	84	89	83				92			
Waikato	97						92											
Wairarapa	96			96	100		99	100	100	100	100					100	100	
Waitematā	83	93	88	89			86	98	94	100	98		91		92	98		
West Coast		95	100	96	90	92		98	100	100	96	96		87	96	90	78	82
Whanganui		97	96	99	100	93		92	84	92	99	93		92	89	95	98	86
New Zealand	90	96	96	97	97	96	89	96	95	97	97	95	84	93	91	93	93	93

For more information about rounding and colouring, see the note.

Baseline = the average of the first 4 quarters of the programme from Q3, 2016 to Q2, 2017.

Rolling = the average of the latest 4 quarters: Q4, 2018 to Q3, 2019.

Target achieved

Between 75% and the target

Less than 75%

Fewer than 50 observations

The safe surgery quality and safety domain 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?’ 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.

Figure 18 shows, in quarter 3, 2019, 16 DHBs reported that a start-of-list briefing was happening. There has been a general increase observed over time. The Safe Surgery NZ programme team continues to work with the auditing teams to promote briefings and improve data submission so the report better matches practice in DHBs.

Figure 18: Briefings – the number of times a briefing, including all three clinical teams, was done at the start of the list

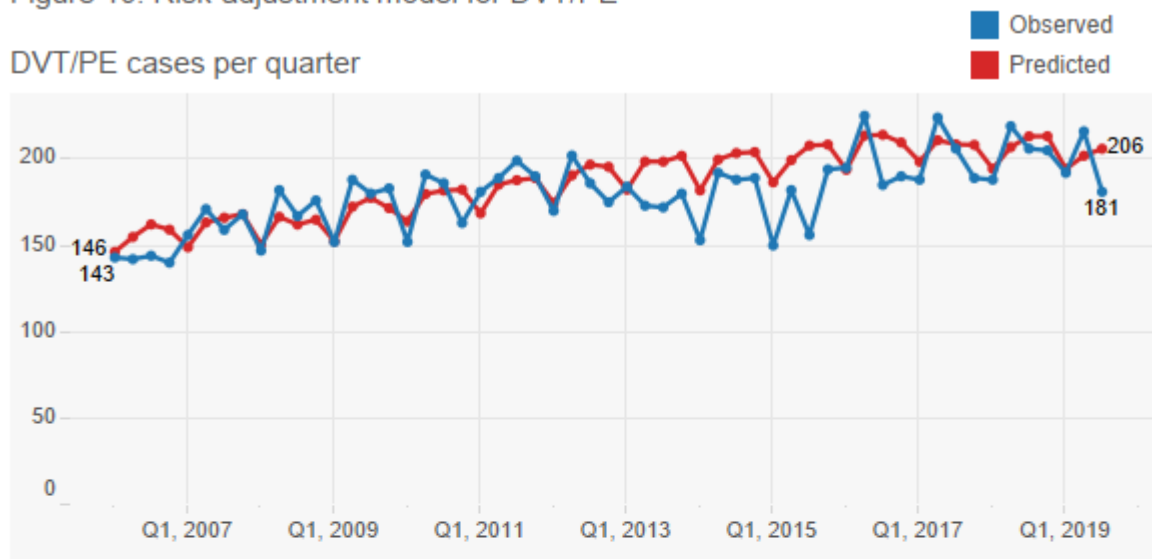
	2017		2018				2019		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Auckland			4	1	3	8	2	1	62
Bay of Plenty	20	11	15	11	16	17	7	13	12
Canterbury	1								1
Capital & Coast		6	3						
Counties Manukau	311	462	496	531	761	875	790	873	787
Haoura Tairāwhiti									50
Hawke's Bay	7								
Hutt Valley	14						5	4	4
Lakes	12	11	22	15	8	5	7	20	22
MidCentral	2	2			2	2	1	1	15
Nelson Marlborough			6						
Northland	18	6	5	7	12	26	18	20	16
South Canterbury			2				5	2	6
Southern	13	5			11	5	6	3	5
Taranaki	3								
Waikato	1		7	2					1
Wairarapa		3		2	9	6	26	32	15
Waitematā		10	36	23	13	13	27	21	15
West Coast	12	9	12	14	9	13	6		1
Whanganui					5	5	6	12	26

The rates of 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 markers.

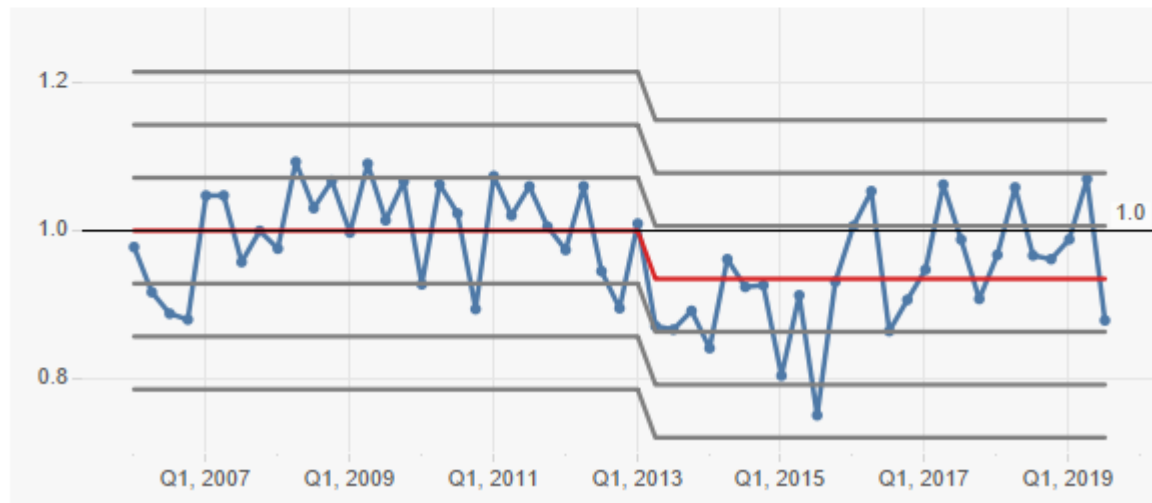
The model identifies how likely patients being operated on were to develop sepsis or DVT/PE based on factors such as their condition, health history and the operation being undertaken. From this, we calculated how many patients would be predicted to develop sepsis or DVT/PE based on historic trends. We then compare how many patients actually developed 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.

Figure 19 shows the DVT/PE risk-adjustment model results in two charts. 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. Over the past three years, a higher number of cases of DVT/PE have been observed in the second quarter.

Figure 19: Risk-adjustment model for DVT/PE



Control chart, O/E ratio per quarter



Electronic medicine reconciliation

This quality and safety domain focuses on medicine reconciliation where the process is supported with electronic data capture. Medicine reconciliation 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. Figures 20 and 21 show there are six 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 20: Structure marker, implementation of eMedRec

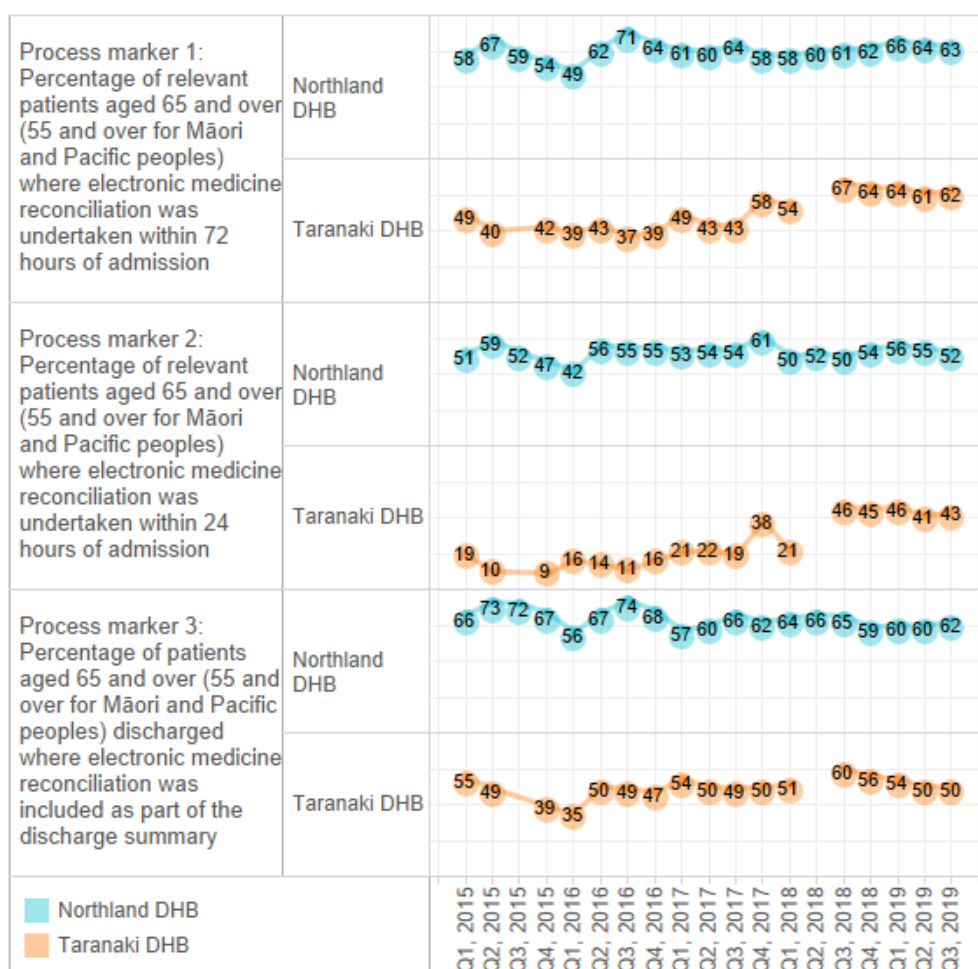
DHB	Status
Auckland	Implemented
Canterbury	Implemented
Counties Manukau Health	Implemented
Northland	Implemented
Taranaki	Implemented
Waitematā	Implemented
Bay of Plenty	Not implemented
Capital & Coast	Not implemented
Hauora Tairāwhiti	Not implemented
Hawke's Bay	Not implemented
Hutt Valley	Not implemented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

Figure 21: Structure markers, eMedRec implementation

Structure marker	Auckland DHB	Canterbury DHB	Counties Manukau Health	Northland DHB	Taranaki DHB	Waitematā DHB
Structure 1: eMedRec implemented anywhere in the DHB (yes/no)	Yes	Yes	Yes	Yes	Yes	Yes
Structure 2: Number and percentage of relevant wards with eMedRec implemented	32	60	29	6	7	33
	100%	100%	97%	61%	58%	87%

Within the six DHBs that have implemented eMedRec, only Northland and Taranaki DHB hospitals are reporting their process markers. Figure 22 shows the process marker change over time for these two DHBs. Further work is being undertaken on refining and agreeing the eMedRec marker definitions. Once this has been achieved the other DHB hospitals using eMedRec will report their process markers.

Figure 22: eMedRec process markers



Patient deterioration

This is the sixth quarter that structural, process and outcome measures for the patient deterioration QSM have been reported. They are now presented as quarterly data rather than monthly data.

DHBs were asked to provide both process and outcome measure data by ethnicity where possible. Despite an increase in ethnicity data submitted since the previous quarter, we have not included this in the national report because the majority of DHBs were still unable to submit. We acknowledge that, for some DHBs, it will take more time to start collecting and submitting ethnicity-level data.

Structural measure: Eligible wards using the New Zealand early warning score

The structural measure demonstrates the progress DHBs have made towards implementing improvements to their recognition and response systems and aligning with the New Zealand early warning score (NZEWS).

All DHBs have now implemented or are in the process of implementing the NZEWS in their hospitals. We have also seen an increase in the use of the tool across all eligible wards from the last quarter (now at 98 percent). Note: the structure measure of national level is calculated based only on those DHBs that have implemented the NZEWS.

Figure 23: Percentage of eligible wards using the New Zealand early warning score

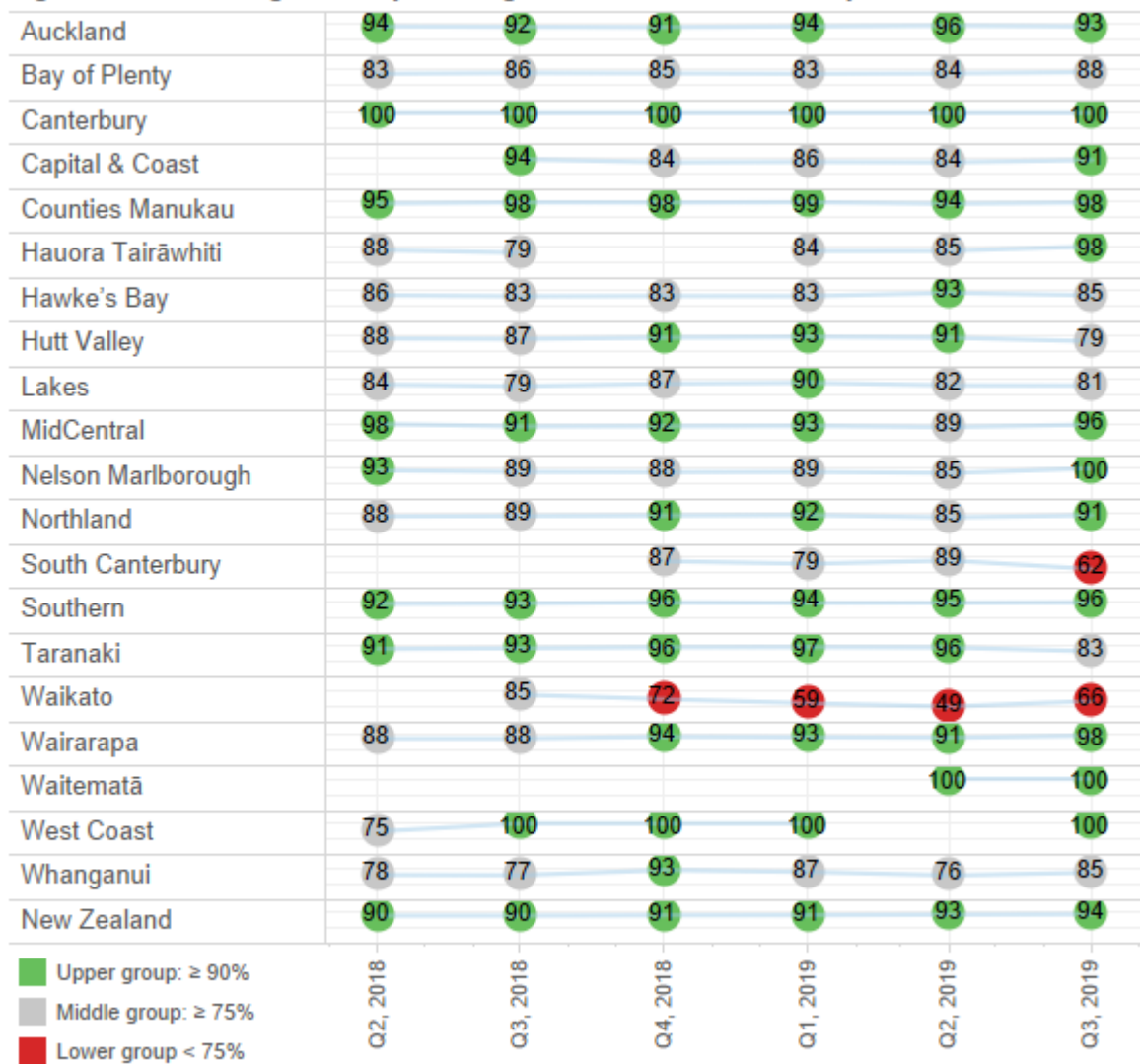
	2018				2019		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Auckland		100	100	100	100	100	100
Bay of Plenty	100	100	100	100	100	100	100
Canterbury	100	100	100	100	100	100	100
Capital & Coast	100		100	88	100	100	100
Counties Manukau	100	100	100	100	100	100	100
Hauora Tairāwhiti	100	100	100		100	100	100
Hawke's Bay	0	83	83	83	83	100	100
Hutt Valley	100	100	100		100	100	100
Lakes	83	83	100	100	100	100	100
MidCentral	100	100	100	100	100	100	100
Nelson Marlborough	90	90	89	89	89	89	89
Northland	45	80	70	70	70	100	100
South Canterbury	0	0	0	50	100	75	50
Southern		0	0	0	0	71	71
Taranaki	100	100	100	100	100	100	100
Waikato	100		100	100	100	100	100
Wairarapa	100	100	100	100	100	100	100
Waitematā	0	0	0	0	0	100	100
West Coast	0	100	100	100	100	100	100
Whanganui	100	100	100	100	100	100	100
New Zealand	96	97	98	96	98	98	98

Process measure 1: Correct calculation of early warning score

The first process measure (Figure 24) shows the percentage of audited patients with an early warning score calculated correctly for the most recent set of vital signs. This measure demonstrates how the recognition part of the system is working through the correct use of the NZEWS. The national figure is 94 percent for this quarter, an increase from the previous quarter of 93 percent.

All DHBs submitted data for this measure. Those using an electronic vital signs system in all their eligible wards will be able to achieve 100 percent consistently for this measure.

Figure 24: Percentage of early warning score calculated correctly



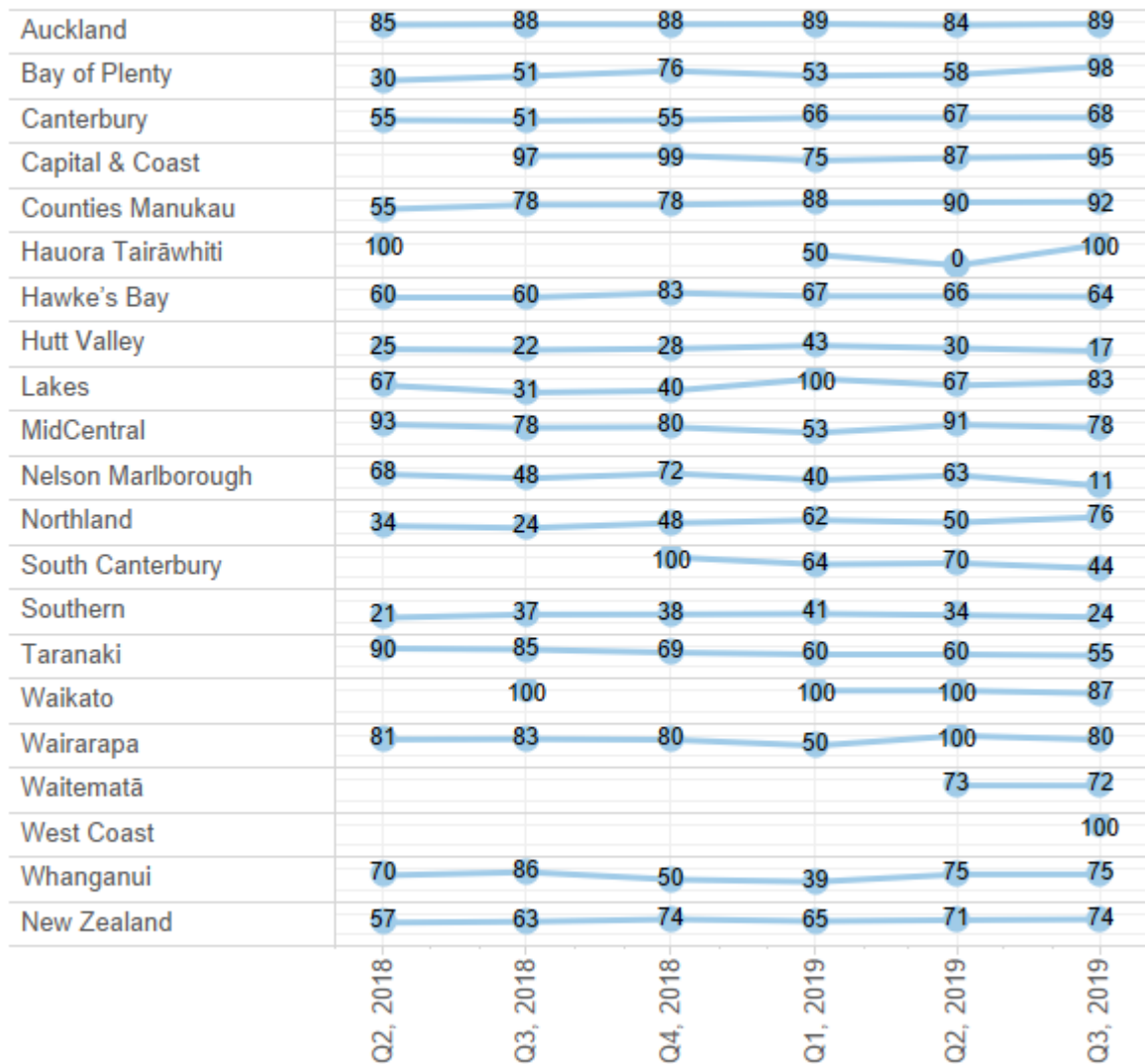
Process measure 2: Appropriate response to escalations

The second process measure (Figure 25) shows the percentage of audited patients that triggered an escalation of care and received the appropriate response to that escalation as per the DHB's agreed escalation pathway. This measure demonstrates how the response part of the system is working through the appropriate response to care that has been escalated.

The national figure for this measure was 74 percent, an increase from the previous quarter of 71 percent. There was considerably more variation between DHBs than for the first process measure, highlighting an opportunity for improvement. The Commission is currently working with DHBs to understand this variation in particular regarding the consistency of data collected, the sample size and timeframes regarding the escalation pathway.

All DHBs submitted data for this measure.

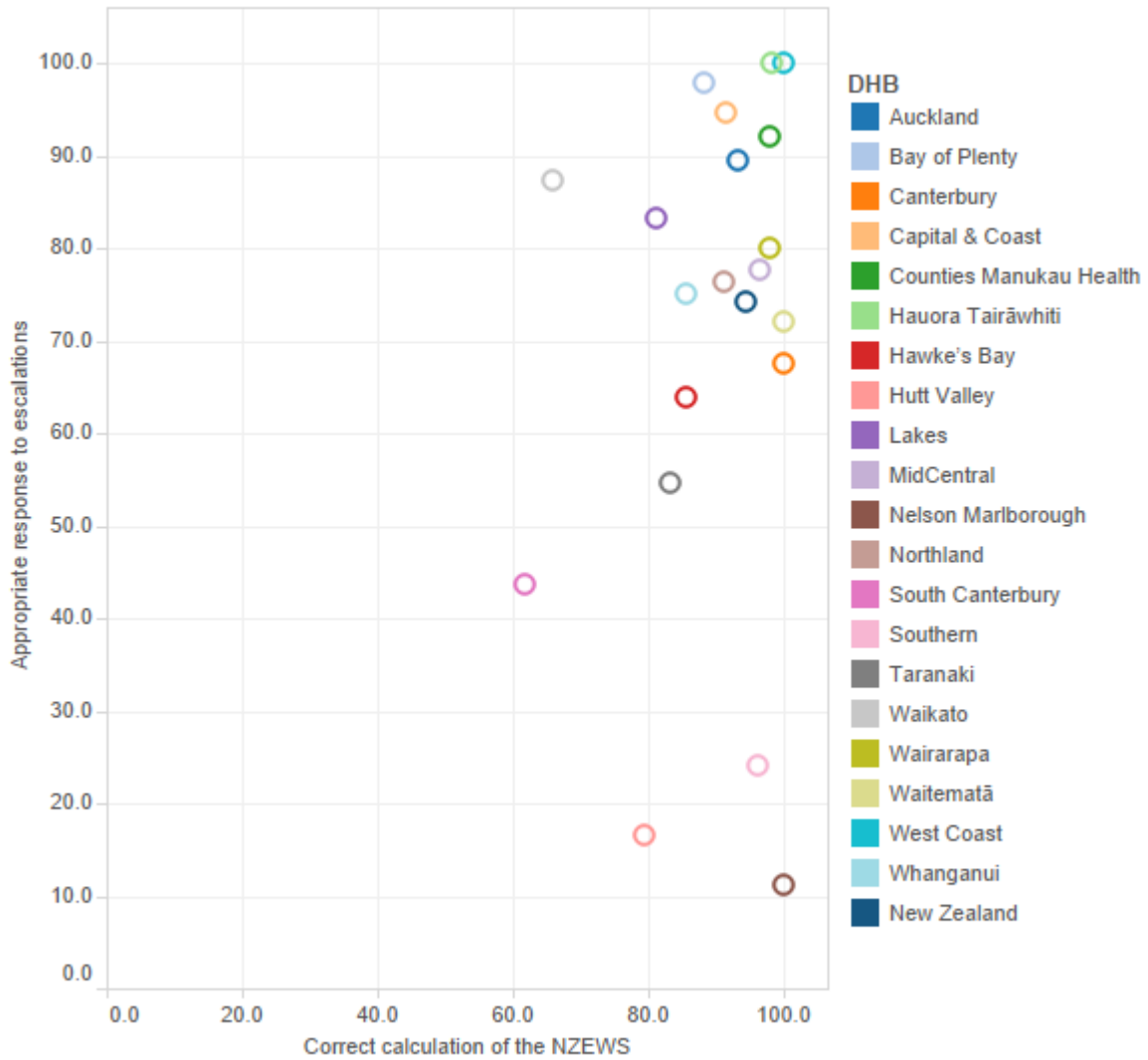
Figure 25: Percentage of patients that triggered an escalation of care and received the appropriate response



To further investigate the relationship between process measures 1 and 2, we have developed a scatterplot (Figure 26). The aim over time, is to have all DHBs locate in the top right corner, which reveals a high percentage of correct calculation of the NZEWS and appropriate response to escalations. It shows all DHBs had a high percentage of early warning score calculated correctly but there is more variation across all DHBs in the reported rates of appropriate response.

Figure 26: Scatter plot of NZEWS calculated correctly vs escalation of care appropriate response

Quarter of period
2019 Q3



Outcome measure 1: Rate of in-hospital cardiopulmonary arrests (preliminary results)

The following outcome measures will be used over time to determine whether the improvements to hospitals' recognition and response systems have improved patient outcomes. Both measures are shown in a rate per 1,000 admissions. It is important to note that the admissions data used to calculate the rate is taken from the National Minimum Dataset (NMDS) at a DHB level and may differ from rates generated from administrative systems locally.

The results (Figure 27) show a national rate of 1.5 cardiopulmonary arrests per 1,000 admissions for this quarter.

Eighteen DHBs provided data for this measure.

Figure 27: Rate of in-hospital cardiopulmonary arrests in adult inpatient wards, units or departments per 1,000 admissions

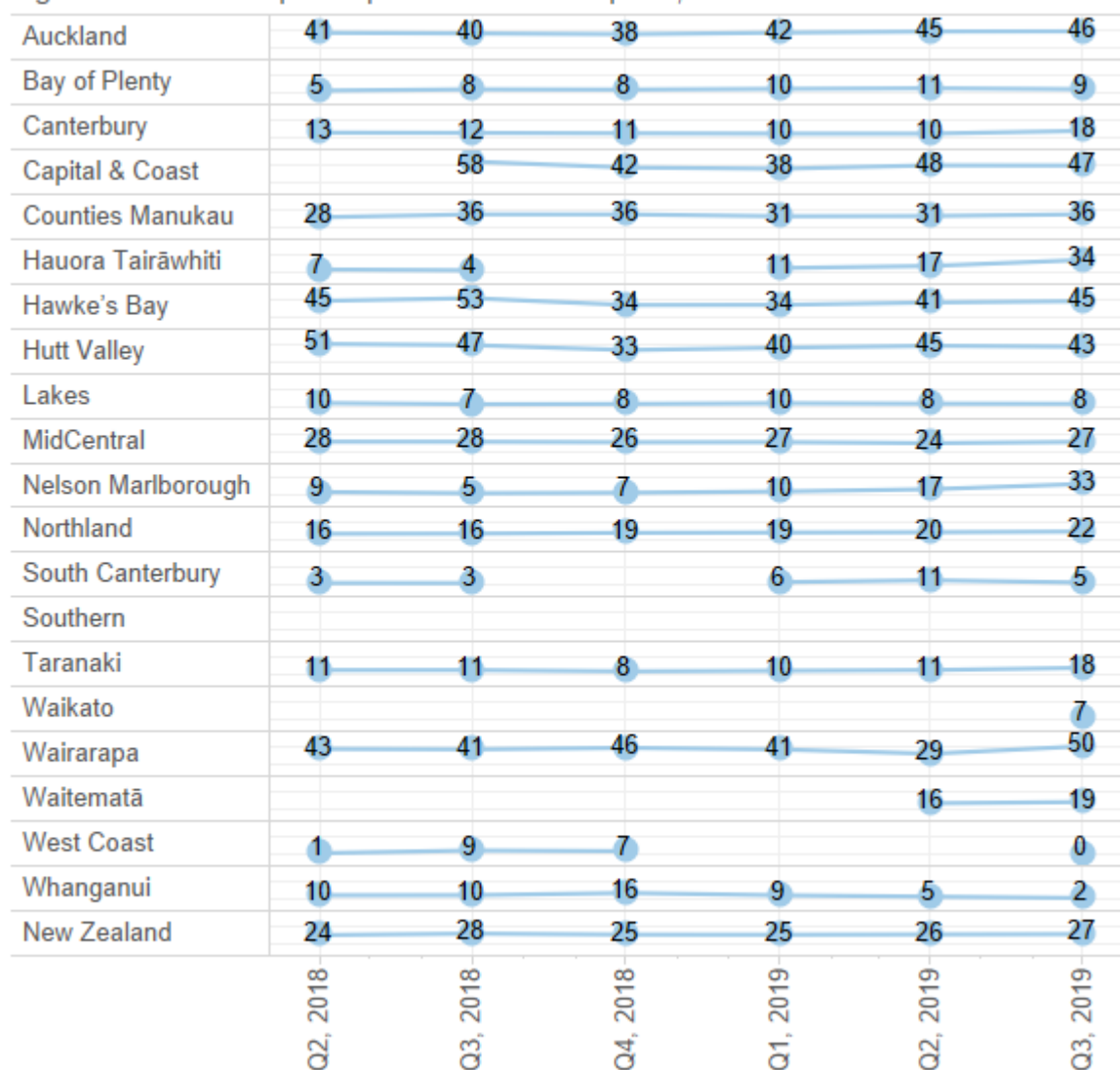
Auckland	1.6	1.6	1.7	0.9	1.4	1.9
Bay of Plenty	1.7	1.8	2.0	1.1	1.1	0.9
Canterbury	1.8					
Capital & Coast		1.3	2.2	2.1	0.3	1.3
Counties Manukau	0.6	0.7	0.8	1.2	0.7	1.3
Hauora Tairāwhiti	2.9	2.7		1.8	6.2	2.6
Hawke's Bay	2.0	0.9	0.5	1.9	0.5	2.2
Hutt Valley	1.7	3.8	3.6	2.1	2.4	2.1
Lakes	0.8	1.5	0.8	0.9	1.3	0.4
MidCentral	1.6	2.3	1.6	2.2	1.8	2.7
Nelson Marlborough	1.9	0.0	0.7	1.3	1.7	1.3
Northland	3.2	2.1	3.2	2.1	0.0	1.1
South Canterbury	0.9	0.8		0.0	0.0	1.6
Southern						
Taranaki	1.4	2.9	2.7	0.0	1.0	2.7
Waikato						2.3
Wairarapa	1.0	3.9	0.0	1.1	3.1	3.0
Waitematā	0.9	1.4	1.0	0.3	0.6	0.5
West Coast	4.2	9.1	1.4	1.5	0.0	0.0
Whanganui	1.8	4.5	1.2	4.7	1.2	0.0
New Zealand	1.5	1.7	1.5	1.3	1.0	1.5
	Q2, 2018	Q3, 2018	Q4, 2018	Q1, 2019	Q2, 2019	Q3, 2019

Outcome measure 2: Rate of rapid response escalations (preliminary results)

The second outcome measure (Figure 28) shows the rate of rapid response escalations per 1,000 admissions (excluding those mentioned previously). Consistent with the previous quarter, the results showed a national rate of 27 events per 1,000 admissions. Nineteen DHBs (95 percent) provided data for this measure.

International research has shown that an effective recognition and response system will result in an inverse relationship between outcome measures 1 and 2 (ie, a higher rate of rapid response escalations with a lower rate of in-hospital cardiopulmonary arrests). Another outcome measure used internationally is unplanned admissions to intensive care units. See the patient deterioration domain of the Atlas of Healthcare Variation for related data.

Figure 28: Rate of rapid response escalations per 1,000 admissions



Pressure injury

We aim to reduce the occurrence of and harm from pressure injuries (PIs). PIs (also known as pressure ulcers, decubitus ulcers, pressure areas and bed sores) are a cause of preventable harm for people using health care services, including hospital, aged residential care and home or community care.

PIs are often avoidable, have significant negative impact on patient's lives, whānau, and those providing their care, increase hospital length of stay and are associated with extra resource consumption.

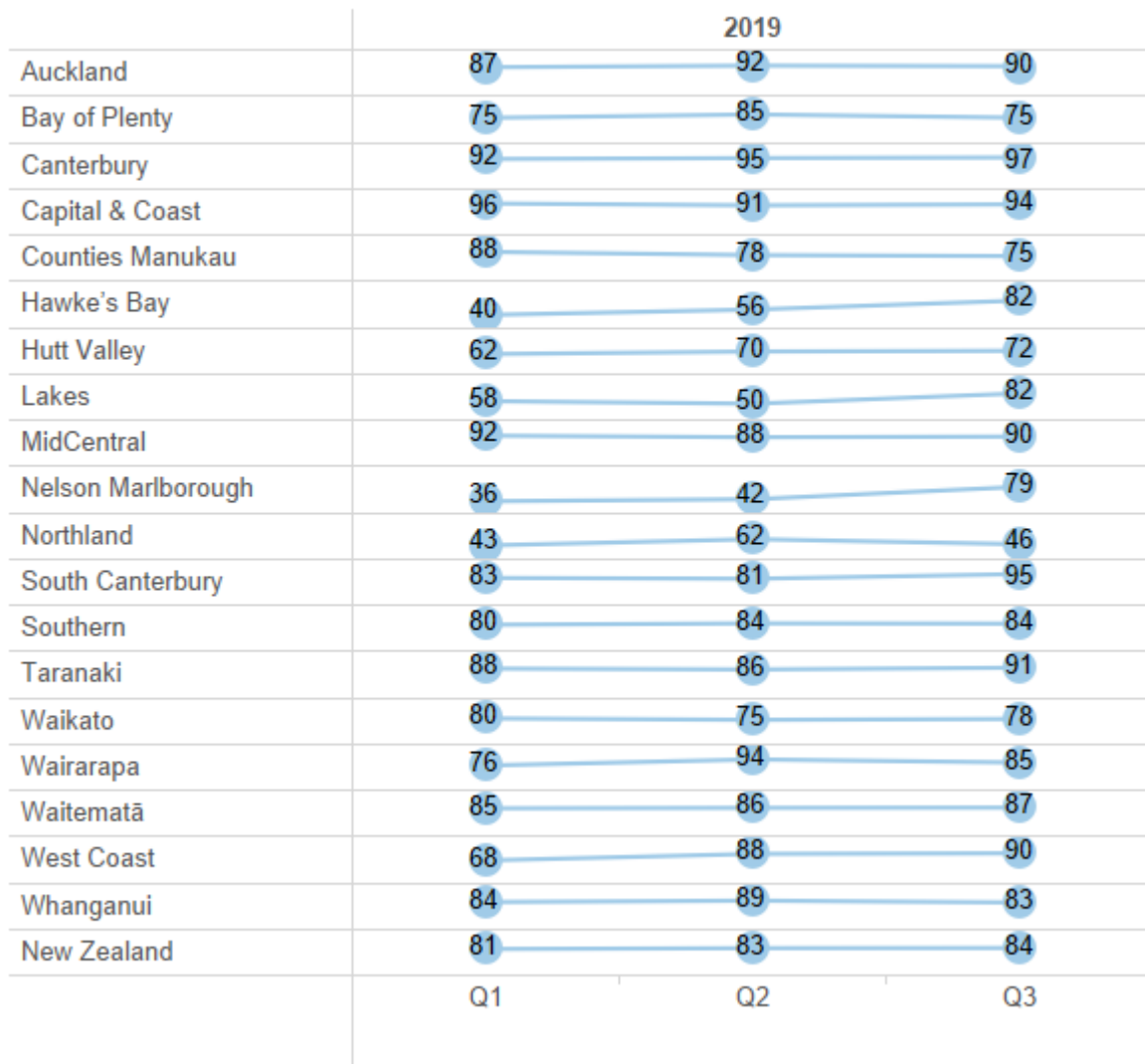
Following implementation of the PI QSM in July 2018 19 of the 20 DHBs (95 percent) are now submitting data. This is the third quarter in which process and outcome measures have been reported publicly. Following a review of data this quarter we are planning to engage with DHBs to better understand local data collection processes.

Process measure 1: Percentage of patients with a documented and current pressure injury risk assessment

The first process measure (Figure 29) shows the percentage of patients with a documented and current PI risk assessment. This measure is used to monitor how well DHBs are conducting PI risk assessments and recognising at-risk patients. This includes those at risk of developing a PI and those with an existing PI.

Results for this measure revealed a national figure of 84 percent, an increase from 83 percent during last quarter.

Figure 29: Percentage of patients with a documented and current pressure injury assessment

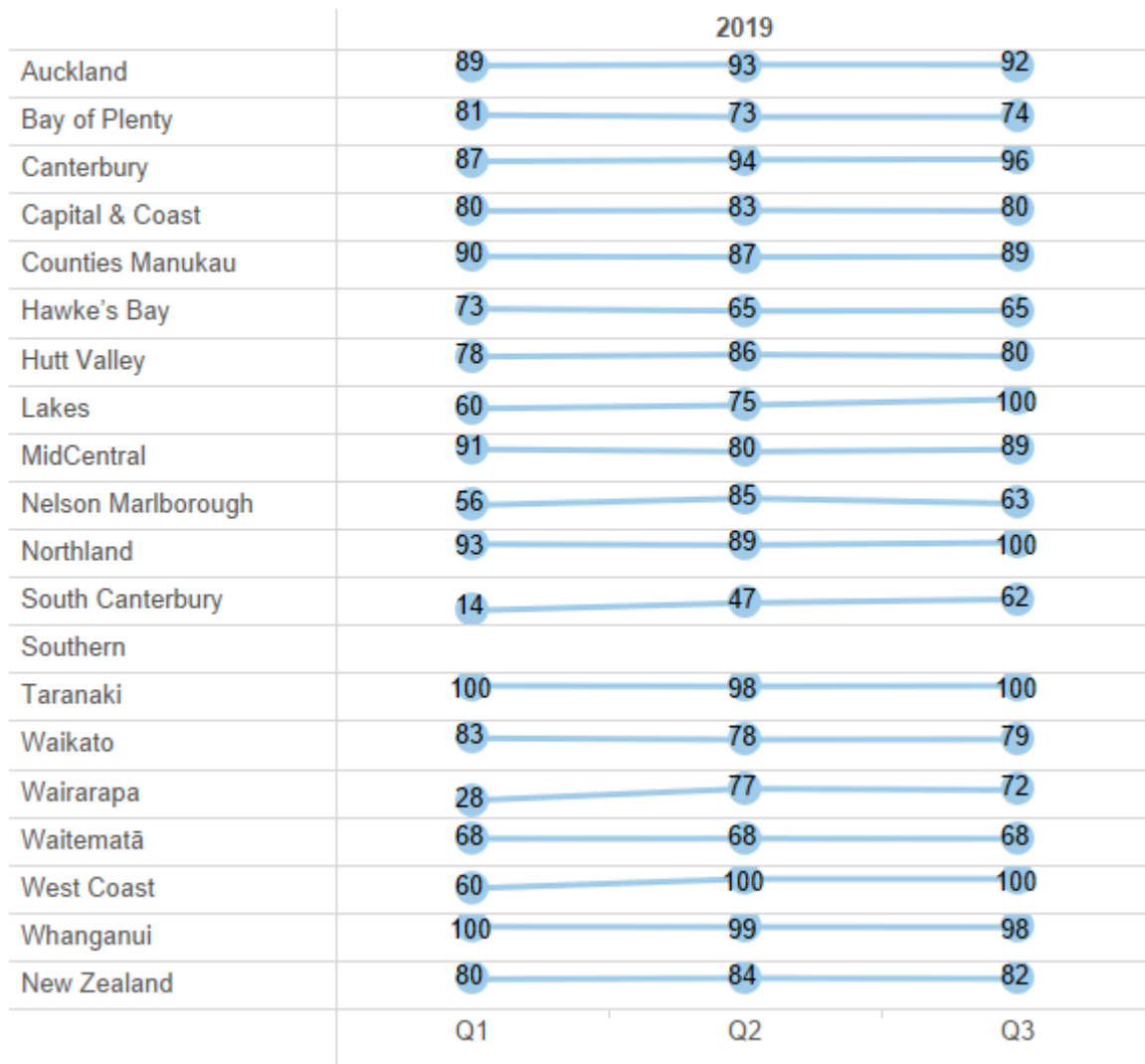


Process measure 2: Percentage of at-risk patients with a documented and current individualised care plan

The second process measure (Figure 30) shows the percentage of at-risk patients with a documented and current individualised care plan designed to address any risk (prevention) or manage any existing PIs. This measure is used to monitor how well DHBs are putting in actions to prevent or manage PIs for at-risk patients.

The national figure for this measure was a rate of 82 percent, a decrease from 84 percent during last quarter.

Figure 30: Percentage of patients with a documented and current individualised care plan



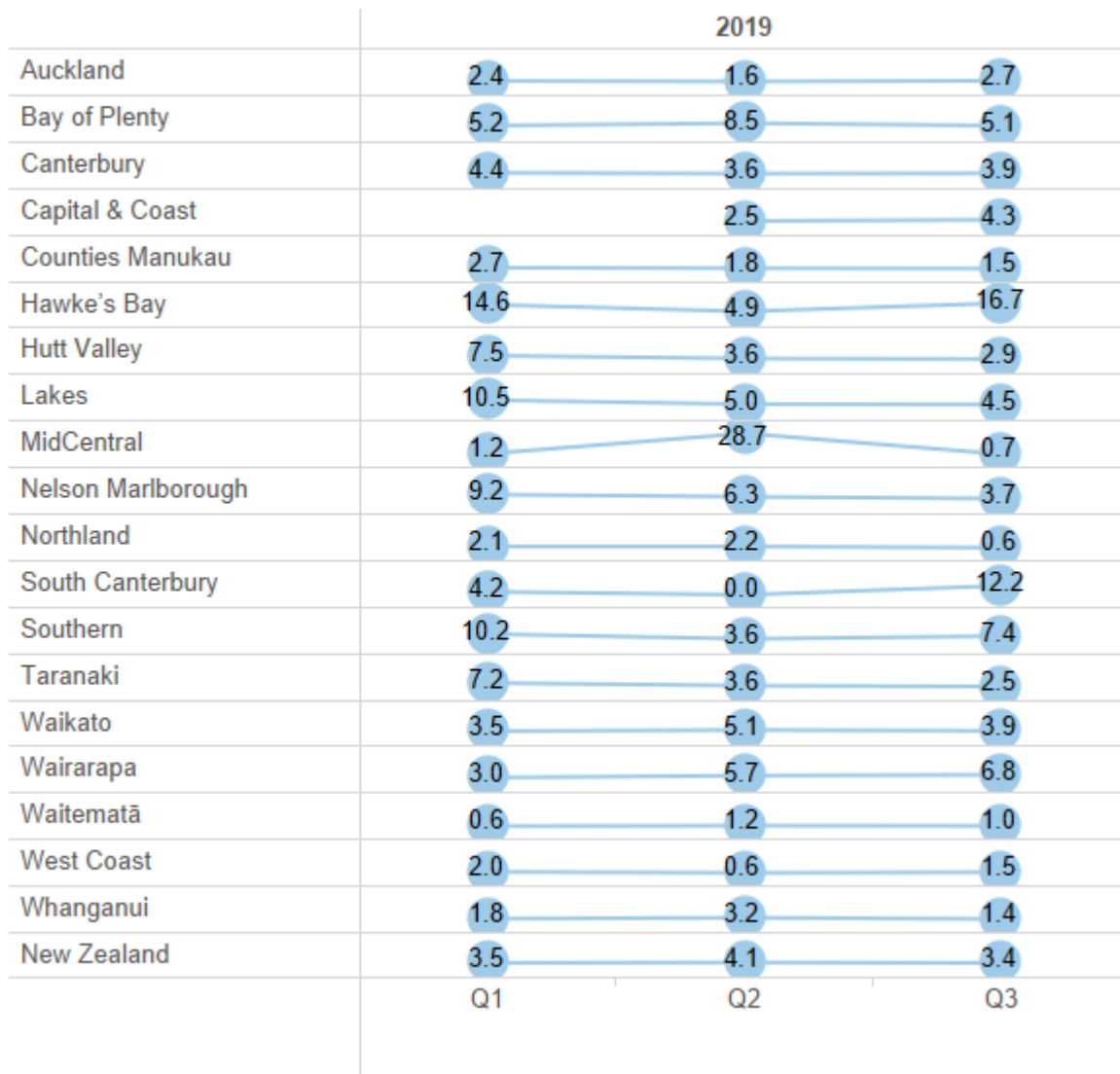
Outcome measure 1: Percentage of patients with hospital-acquired pressure injury

The following outcome measures will be used over time to determine whether the improvements to prevention and management of PIs have improved patient outcomes.

The first outcome measure (Figure 31) shows the percentage of patients with hospital acquired PIs (ie, PIs that formed while the patient was in hospital).

The national figure for this measure was a rate of 3.4 percent, a decrease from 4.1 percent during last quarter. There is also considerable variation between DHBs highlighting an opportunity for improvement. We are working with DHBs to improve consistency of data collection.

Figure 31: Percentage of patients with a hospital-acquired pressure injury

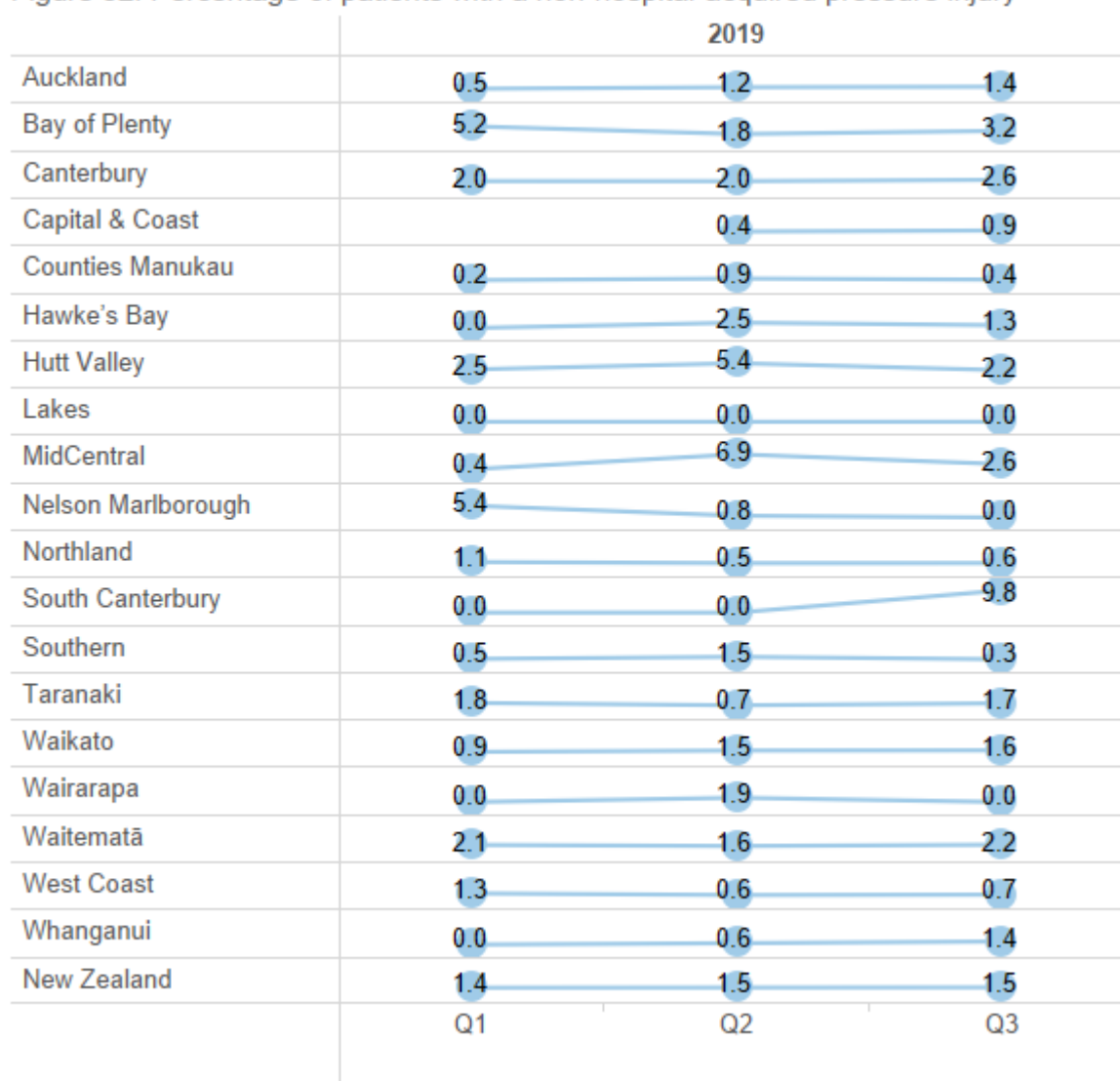


Outcome measure 2: Percentage of patients with a non-hospital-acquired pressure injury

The second outcome measure (Figure 32) shows the percentage of patients with non-hospital-acquired PIs (ie, patients that arrived at hospital with a PI that was formed in aged residential care, at home or in community care).

The national figure for this measure was a rate of 1.5 percent, consistent with last quarter. There is also considerable variation for this outcome measure highlighting an opportunity for improvement.

Figure 32: Percentage of patients with a non-hospital-acquired pressure injury



Safe use of opioids

This is the first report for the safe use of opioids QSM.

Opioid medicines (morphine, oxycodone, fentanyl, methadone, tramadol and codeine) are high-alert medicines, which are excellent at controlling pain but have a number of unintended side-effects (eg, constipation, nausea and vomiting, and urinary retention). Opioids can also cause serious harm when given in high doses, or in individuals who are at higher risk (eg, opioid-induced ventilatory impairment [OIVI] and cardiac arrest).

In response to these concerns, the Commission sponsored an 18-month formative collaborative from October 2014. The collaborative was aimed at building DHB and private hospital engagement and capacity to identify interventions to reduce opioid-related harm.

This work contributed to the development of a best-practice care bundle approach to decreasing opioid-related harm that includes interventions to reduce OIVI and opioid induced constipation (OIC).

Following the implementation of the opioid QSM in quarter 4, 2018, the majority of DHBs (75 percent; n=15) are now submitting data.

Process measure 1: Percentage of patients whose sedation levels are monitored and documented following local guidelines

Sedation levels are a marker for OIVI. The first process measure (Figure 33) shows the percentage of patients whose sedation levels are monitored and documented following local guidelines.

Results for this measure revealed a national figure of 81 percent of patients had their sedation scores monitored and documented.

A total of 15 DHBs (75 percent) submitted data for this measure.

Figure 33: Percentage of patients whose sedation levels are monitored and documented following local guidelines

	2019
Auckland	97
Capital & Coast	100
Counties Manukau	88
Hawke's Bay	6
Hutt Valley	98
Lakes	95
MidCentral	70
Nelson Marlborough	94
Northland	100
Taranaki	40
Waikato	16
Wairarapa	63
Waitematā	85
West Coast	3
Whanganui	81
New Zealand	81
	Q3

Process measure 2: Percentage of patients who have had bowel function activity recorded in relevant documentation

The second process measure (Figure 34) shows the percentage of patients who have had bowel function activity recorded, using the Bristol Stool Chart, in relevant documentation. Constipation is a common side-effect from the use of opioids; it can occur in 1 in 100 patients or more often.

The national figure for this measure was a rate of 25 percent. A total of 14 DHBs (70 percent) submitted data for this measure.

Figure 34: Percentage of patients who have had bowel function activity recorded in relevant documentation

	2019
Auckland	76
Capital & Coast	97
Counties Manukau	80
Hawke's Bay	56
Hutt Valley	93
Lakes	89
MidCentral	89
Nelson Marlborough	54
Northland	89
Taranaki	67
Waikato	41
Wairarapa	100
Waitematā	4
West Coast	
Whanganui	90
New Zealand	25
	Q3

Balance measure: Percentage of patients prescribed an opioid who have uncontrolled pain

To avoid adverse effects from opioids, there is a risk that patients may have their pain under-treated, and so experience uncontrolled pain. A balance measure of 'patients prescribed an opioid who have uncontrolled pain' has therefore been included to monitor for any under-treatment of pain.

The balance measure (Figure 35) shows the percentage of patients prescribed an opioid who have uncontrolled pain. A low value for uncontrolled pain is desirable, that is, we do not want patients to experience uncontrolled pain.

The national figure for this measure was a rate of 7 percent, with 14 DHBs (70 percent) submitting data for this measure.

Figure 35: Percentage of patients prescribed an opioid who have uncontrolled pain

	2019
Auckland	9
Capital & Coast	5
Counties Manukau	8
Hawke's Bay	19
Hutt Valley	9
Lakes	11
MidCentral	32
Nelson Marlborough	22
Northland	3
Taranaki	15
Waikato	19
Wairarapa	13
Waitematā	0
Whanganui	43
New Zealand	7
	Q3

Outcome measure: Opioid-related harm for surgical episode of care⁴

The outcome measure is taken from the DHBs' NMDS data that is submitted to the Ministry of Health. The outcome measure will be used over time to determine whether the improvements to the monitoring and use of opioids improve patient outcomes through reduced harm.

The outcome measure (Figure 36) shows the percentage of surgical admission episodes with opioid-related harm. The national figure for this measure was a rate of 0.43 percent.

Please note: these outcome measures **are not directly comparable** between DHBs. The NMDS data is derived from DHB coding. While the coding practices within a DHB are

⁴ A surgical episode of care. Opioid-related harm events are reported for all surgical patients in hospitals for the reporting quarter. Admissions to surgical services are treated as a single, continuous event or 'episode of care'. Events are joined if they overlap. If an event end date is the same as an event start date, then the two events are joined. The episode start date is the first surgical admission starting date. The episode end date is the last event admission end date. So, if a patient is transferred between surgical wards for the same admission this is counted as a single episode of care.

standardised and sustainable, documentation and coding practices between DHBs may not be consistent. Therefore, the outcome measure must only be used to monitor changes over time **within a single DHB**.

Figure 36: Opioid-related harm for surgical episodes of care, percent

	2019
Auckland	0.50
Bay of Plenty	0.29
Canterbury	0.37
Capital & Coast	0.67
Counties Manukau	0.35
Hauora Tairāwhiti	0.63
Hawke's Bay	0.51
Hutt Valley	0.30
Lakes	0.44
MidCentral	0.05
Nelson Marlborough	0.43
Northland	0.32
South Canterbury	0.53
Southern	0.72
Taranaki	0.06
Waikato	0.42
Wairarapa	0.22
Waitematā	0.49
West Coast	0.65
Whanganui	0.19
New Zealand	0.43
	Q3