Health Quality & Safety Commission New Zealand

Kupu Taurangi Hauora o Aotearoa

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Australasian College for Infection Prevention and Control

2016 CONFERENCE

Health Quality & Safety Commission New Zealand

SSII Surgical Site Infection Improvement Programme

The New Zealand Surgical Site Infection Improvement Programme: A Quality Improvement Programme Supporting Systems-based Practice Change

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No Conflicts to Disclose

Outline

- New Zealand district health boards
- Health Quality & Safety Commission
- IPC programme
- SSIIP
  - Quality & safety markers
  - Successes & barriers
  - Future work

Health Quality & Safety Commission New Zealand

New Zealand 20 District Health Boards

NZ Health Quality & Safety Commission

- Formally established under the NZ Public Health & Disability Act 2010
- *Triple Aim:*
  - Improved quality, safety and experience of care
    - Lead quality improvement activities
    - Provide accurate and consistent SSI measurement and reporting via National Monitor
    - Drive culture and behaviour change
  - Improved health and equity for all populations
    - Reduction in SSI rates
  - Better value for public health resources
    - National monitor as data warehouse

SSIIP data captured

- Patient identification
  - NHI and DHB-specific case form number
- Patient demographics
  - Age (date of birth), gender, ht, wt and BMI
- Admission and discharge (or date of death) dates
- Procedure
  - Code, location, primary or revision, emergency, surgeon grade, surgeon code
- Risk score
  - Wound class, length of surgery, ASA score
- Anaesthetic
  - Type given
- Antibiotics
  - “right drug, right dose, right time”
- Skin preparation
- Readmission within 90 days of the procedure
- SSI
  - Timing
  - Type of SSI (NHSN definitions)
  - Microbiology

Approach to improvement

- Clinical and executive leadership
- Multidisciplinary teamwork
- Consumer engagement
- Evidence-based improvement interventions
- Effective use of data – national & local reports
- Publicly reported *quality & safety markers*
- Appropriate improvement methodology used
- Regional networking to share successes and sustain practice improvement

Consumer engagement

What can you and your family/ whānau do to help prevent SSIs?

Before your operation:

- tell your doctor about other health problems you might have, such as diabetes – these could affect your surgery and your treatment
- If you smoke, talk to your doctor or ask to be referred to your local smoking cessation programme for support to stop smoking before your surgery – patients who smoke get more infections
- don't shave where you will have surgery.

At the time of your operation:

- speak up if someone tries to shave you with a razor before surgery. Ask why you need to be shaved rather than clipped
- ask if you will get antibiotics before surgery.

What are hospitals doing to prevent SSIs?

To prevent SSIs, doctors, nurses and other health care staff:

- clean their hands and arms up to their elbows with an antiseptic just before the operation
- wear hair covers, masks, gowns and gloves during the operation to keep the surgery area clean
- remove your hair around the operation site using electric clippers – not a razor, which could irritate the skin and make it easier to develop an infection
- give you antibiotics before your surgery starts
- clean the skin at the operation site with an antiseptic that kills bacteria (germs)
- clean their hands with soap and water or an alcohol-based hand rub before and after caring for you and other patients.

National Patient Safety Campaign

open FOR BETTER CARE

Preventing infection after surgery

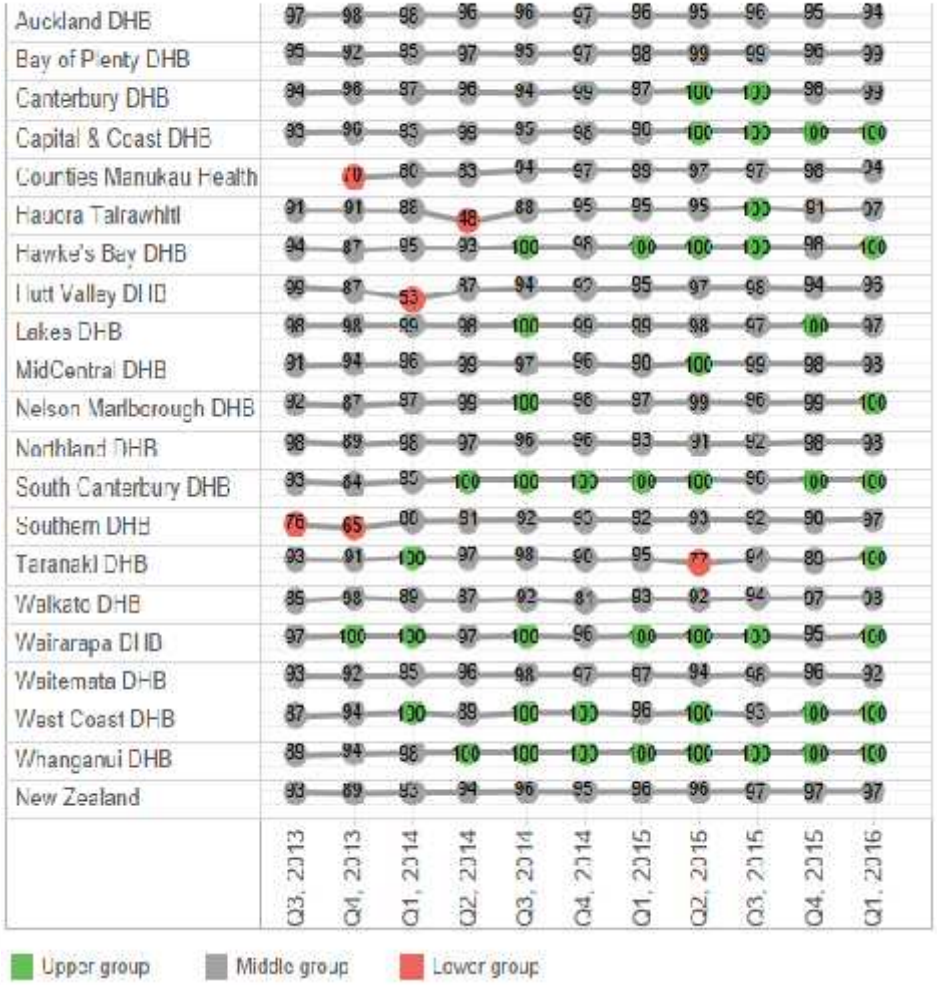
SSII Surgical Site Infection Improvement Programme

SSII Programme process measures

- **Antibiotic prophylaxis given on time**
  - 0-60 minutes before knife to skin
- **Correct dose of recommended antibiotic**
  - ≥ cefazolin 2g or ≥ cefuroxime 1.5g
- **Alcohol-based skin preparation**
  - with chlorhexidine or povidone iodine
- **Additional interventions encouraged but not reported as QSM**
  - Clipping not shaving the surgical site
  - Duration of post-operative surgical antibiotic prophylaxis

‘On time’ antibiotic prophylaxis

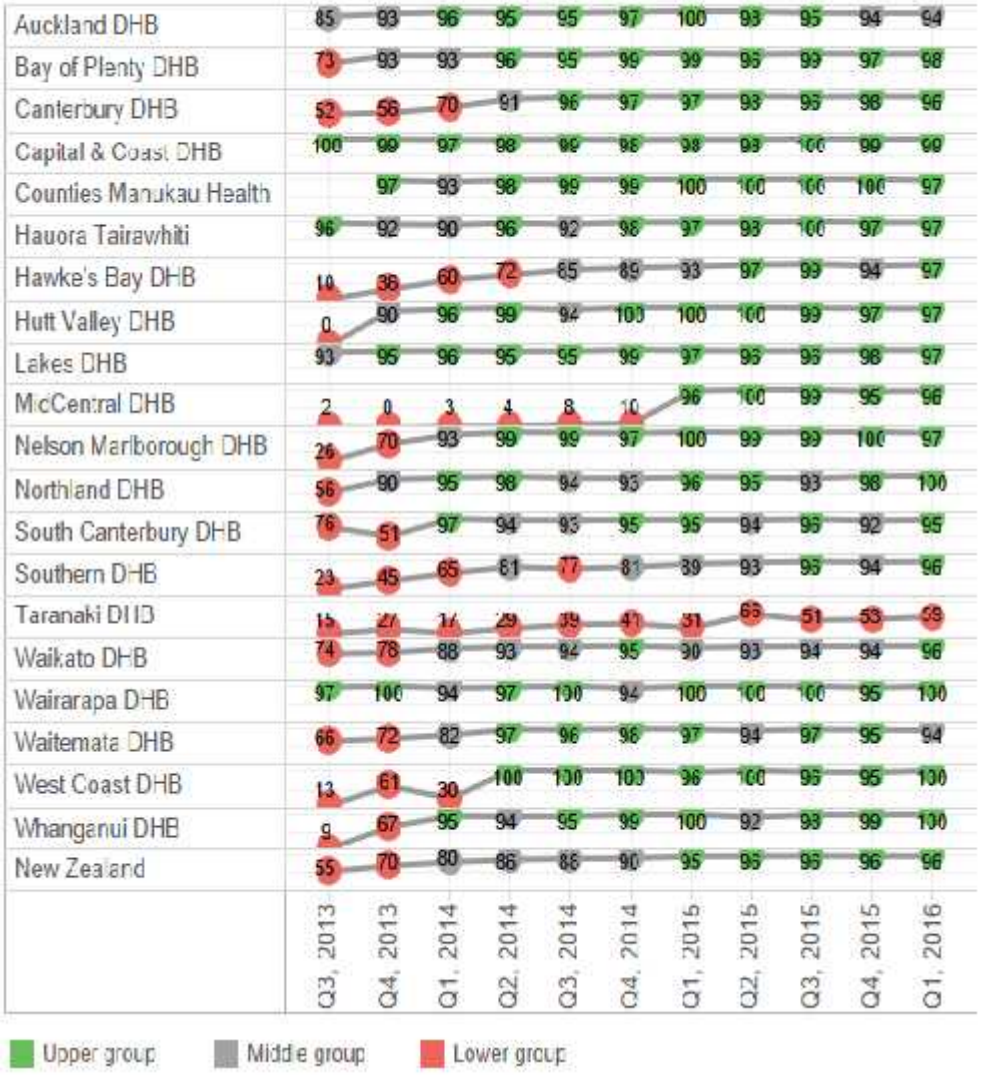
Figure 8: Process marker, percentage of operations where antibiotic given 0-60 minutes before 'knife to skin'



Intervention	Sep 2013	Mar 2016	Diff
Patients receiving antibiotic on time for primary procedure (within 60 mins of knife to skin)	89%	97%	+8%
Patients had surgical antibiotic prophylaxis stopped within 24 hours of surgery	56%	96%	+40%

Correct dose of antibiotic

Figure 9: Process marker, percentage of operations where 2g or more cefazolin or 1.5g or more cefuroxime given



Intervention	Sep 2013	Mar 2016	Diff
Patients receiving the correct dose of antibiotic before surgery	63%	96%	+33%

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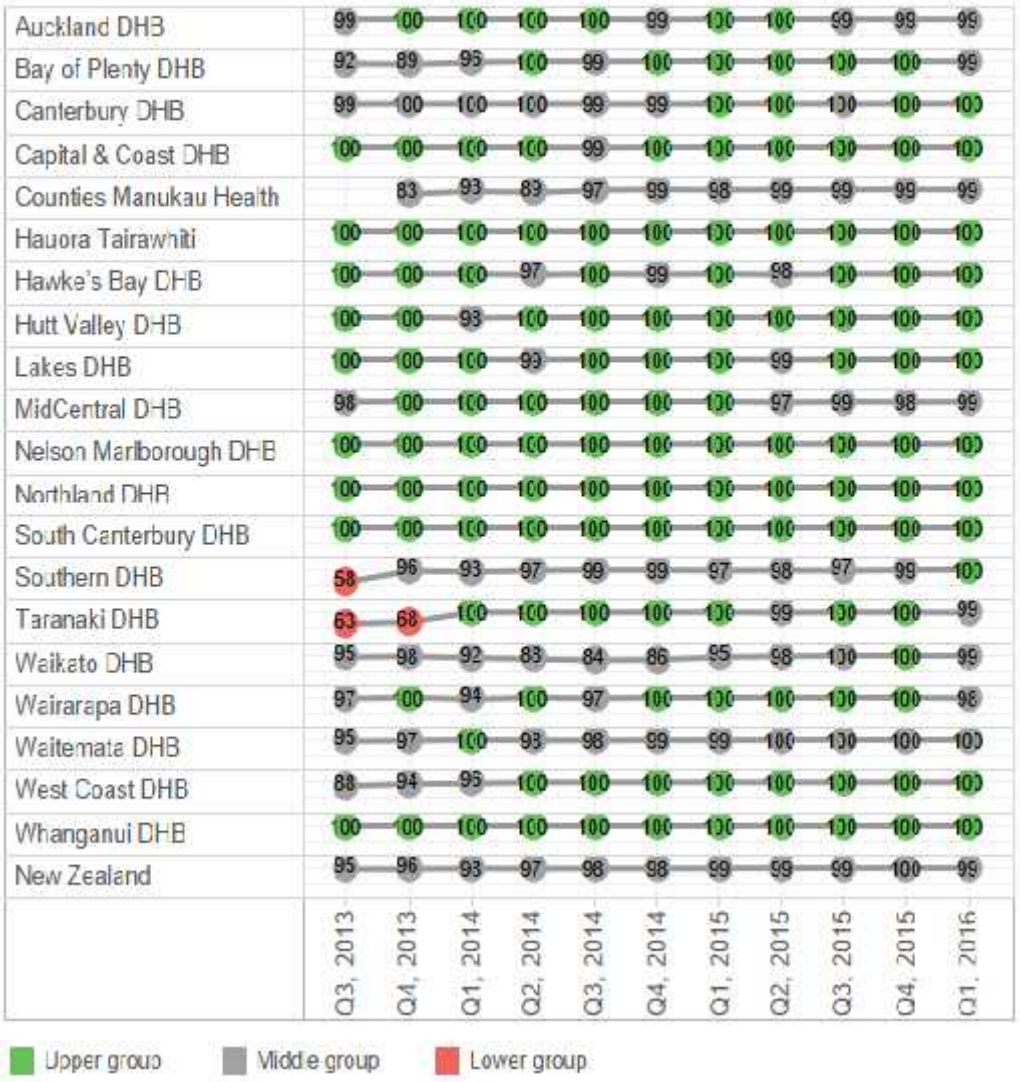
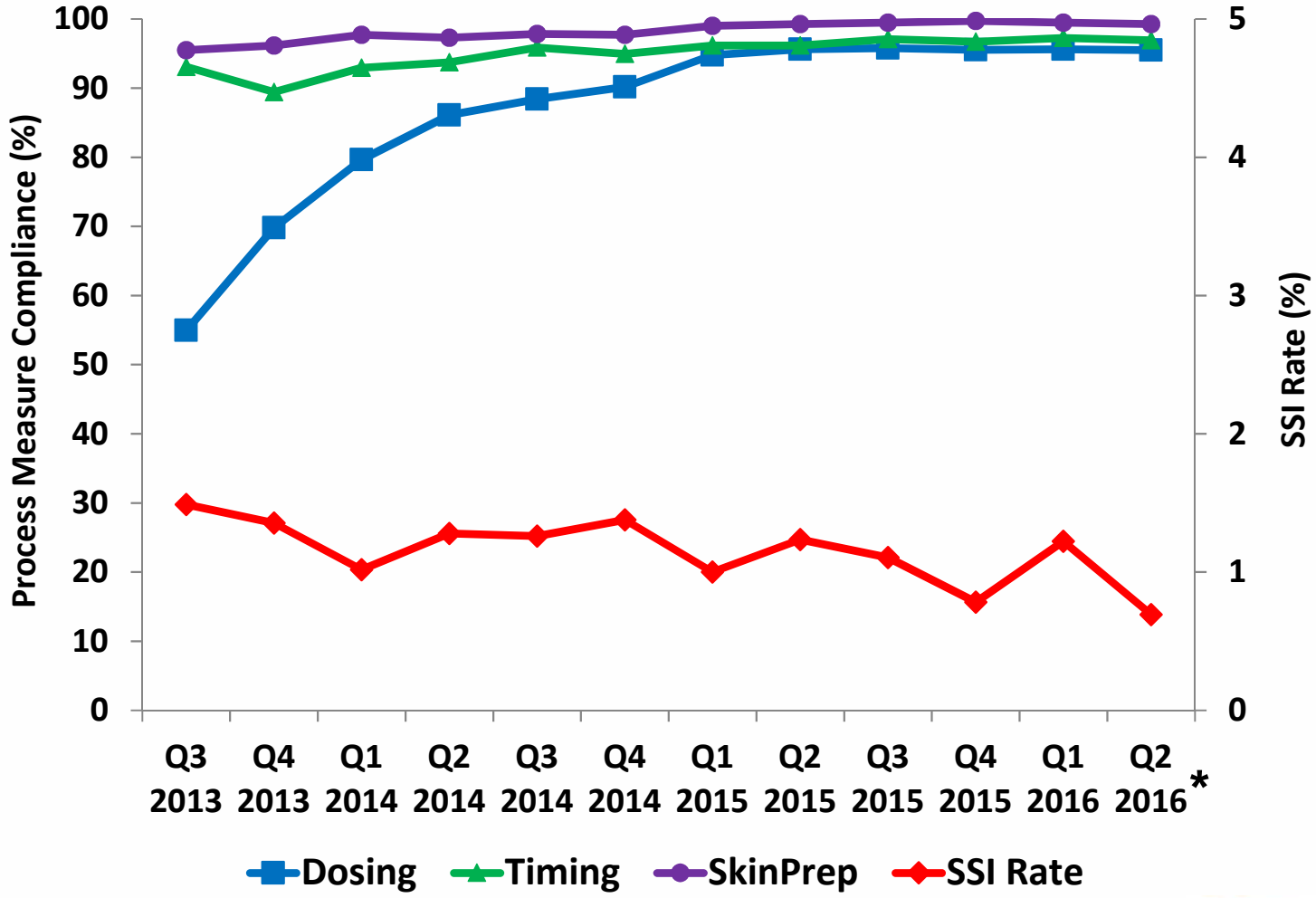
Use of alcohol-based skin prep

Figure 10: Process marker: percentage of operations given appropriate skin preparation



Intervention	Sep 2013	Mar 2016	Diff
Patients had an alcohol-based skin antisepsis	97%	99%	+2%

Orthopaedic SSIIP: Jul 2013-Mar 2016

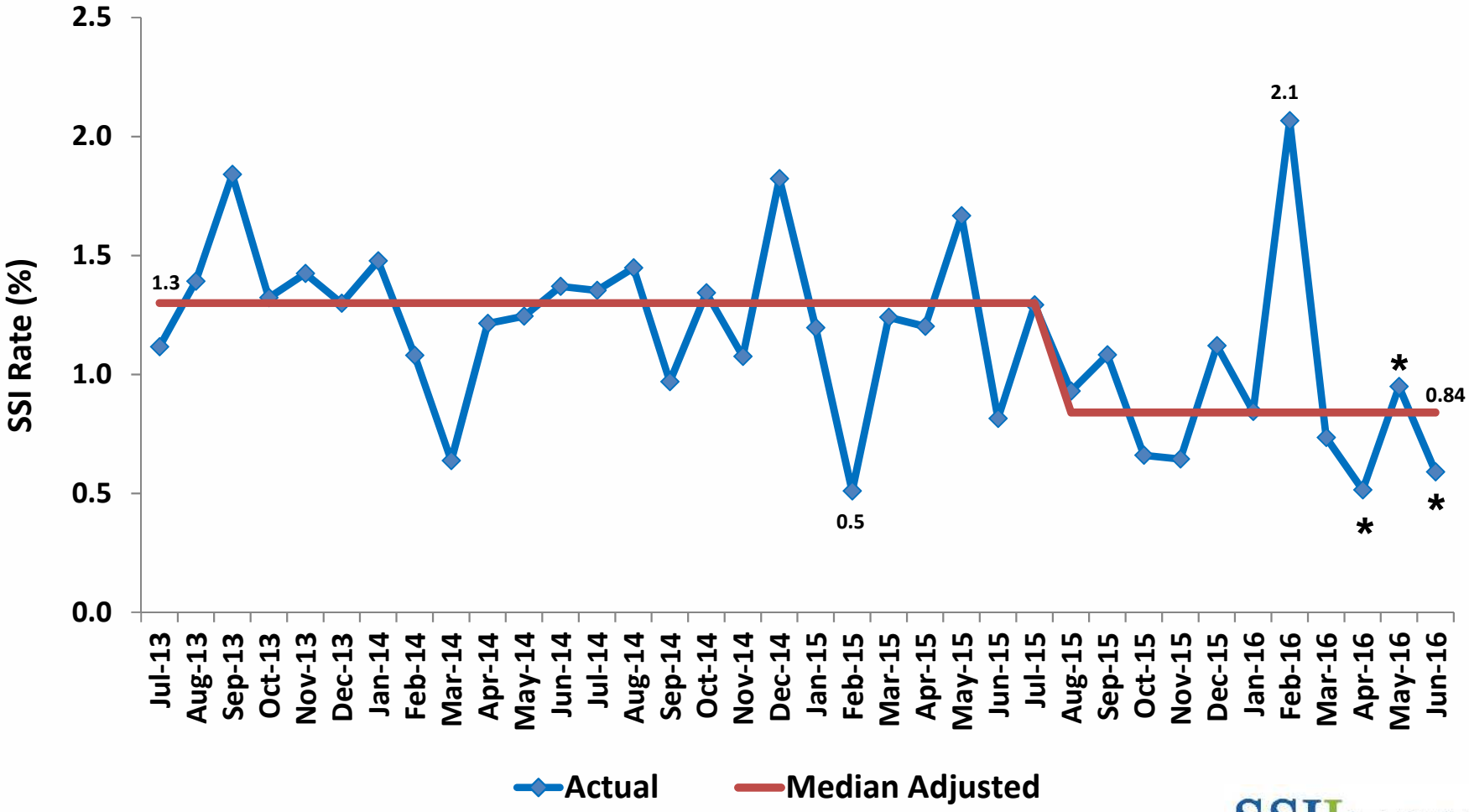


SSII Surgical Site Infection Improvement Programme

*Draft figures

Outcome measure:

Hip and knee SSI rate (Jun 2013-Jun 2016)

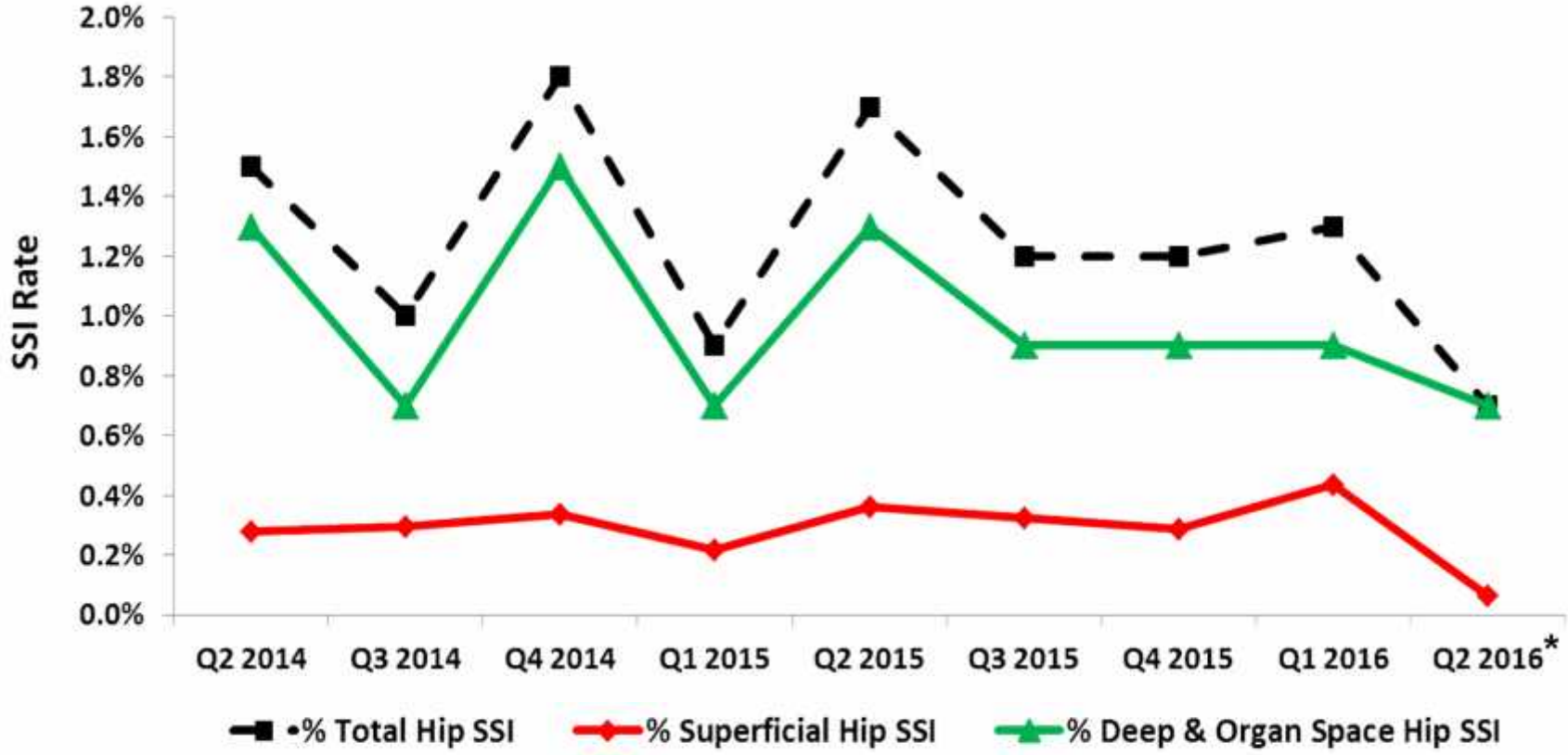


SSII Surgical Site Infection Improvement Programme

*Draft figures

National Hip SSI Rates

(April 2014 - June 2016)

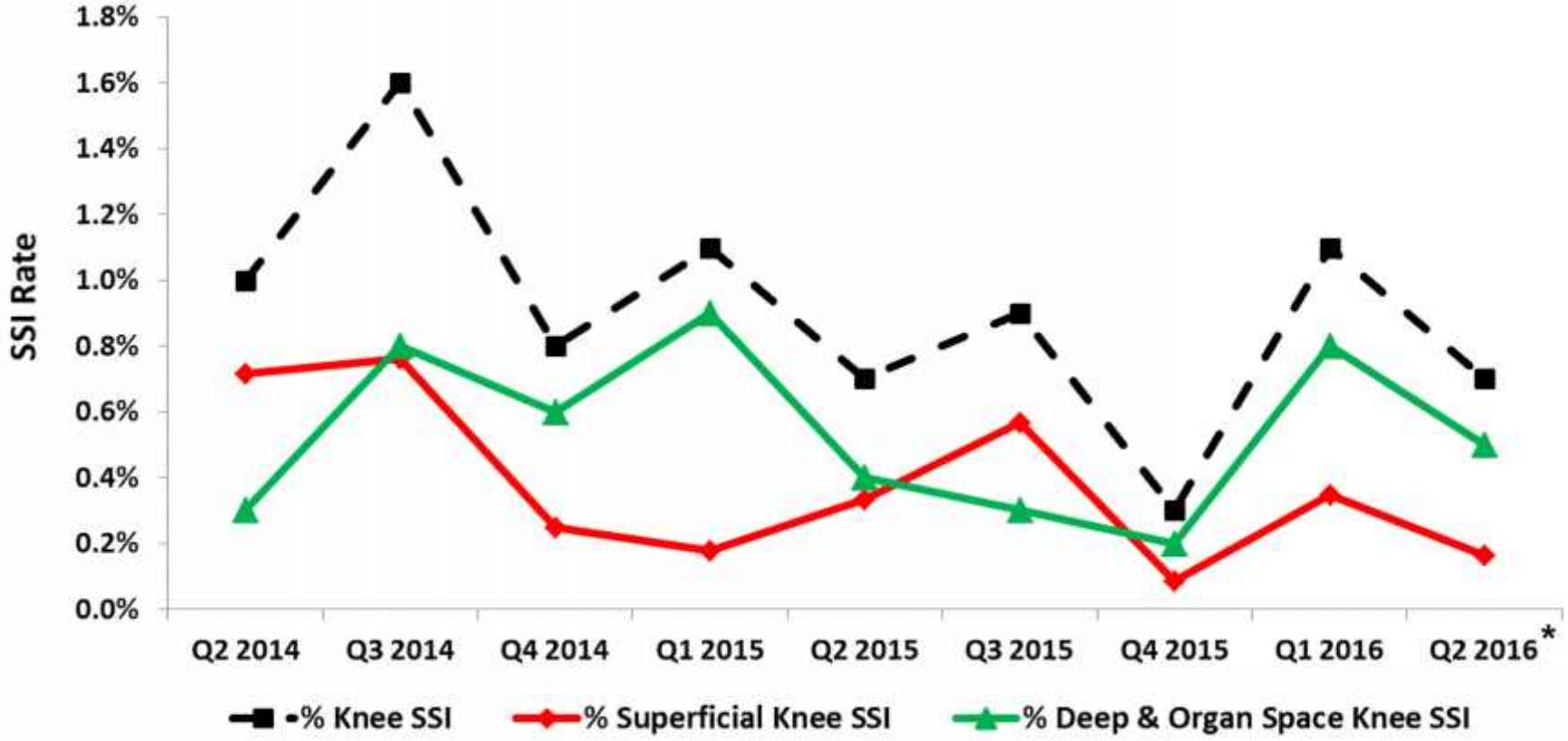


# SSI	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016*
Total	22	14	27	13	23	19	17	18	11
Superficial	4	4	5	3	5	5	4	6	1
Deep & OS	18	10	22	10	18	14	13	12	10

*Draft figures

National Knee SSI Rates

(April 2014 - June 2016)



# SSI	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016*
Total	13	19	10	12	9	11	3	13	8
Superficial	9	9	3	2	4	7	1	4	2
Deep & OS	4	10	7	10	5	4	2	9	6

*Draft figures

Risk Factors for SSI

Risk Factor	Significance	Odds ratio (95% confidence intervals)
Surgeon-specific 1. Expertise (consultant vs registrar)	NS	
Procedure-specific 1. Unilateral vs bilateral procedure 2. Revision procedure	NS P <0.001	 3.1 (2.2-4.1)
Patient-specific 1. Overweight (BMI >25-30) 2. Obese (BMI >30)	NS P <0.004	 1.9 (1.23-3.05)
Surgical antimicrobial prophylaxis 1. Addition of gentamicin to cephalosporin 2. Administration of prophylaxis > 60mins before knife to skin (KTS) or after KTS	NS P=0.002	 2.2 (1.3-3.6)
Skin antisepsis 1. Alcohol-based skin preparation povidone iodine vs chlorhexidine	P=0.04	0.67 (0.47-0.97)

Financial benefits

- Excess cost avoided due to length of hospital stay required to manage infection
- ***August 2015 – June 2016 (NZ $)***
  - ~$40,000 avoided per SSI prevented[1]
  - 37 fewer SSIs have occurred in 11-month period between Aug 2015 to June 2016
  - ~$1,480,000 costs avoided
- ***March 2013 – June 2016***
  - ~$14.4M cost of orthopaedic SSI

[1]Gow N, McGuinness C, Morris AJ, et al. 2016. Excess cost associated with primary hip and knee joint arthroplasty surgical site infection: a driver to support investment in quality improvement strategies to reduce infection rates. *New Zealand Medical Journal* 129(1432): 51–8. URL: https://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2016/vol-129-no-1432-1-april-2016/6848

Where SSIIP is now …

- Good engagement in all 20 DHBs
- Quality improvement central focus
- Multidisciplinary approach
- Significant improvement in orthopaedic QSM
- Starting to see improved outcome measure
- Significant improvement in dose of antibiotic given
- Variation in duration of postop antibiotic prophylaxis
- Cardiac programme growing
- Results are posted on the Commission website at: www.hqsc.govt.nz

Key learnings so far

- Executive sponsorship is vital
- Multidisciplinary teams are needed for a QI approach:
  - management, clinical, quality, IPC, IT, consumers
- Start with sustainability in mind
- Identify barriers/local solutions - consider the FLO approach – no one person can change culture alone

Local barriers to engagement

Issues particular to SSIIP:

- Time involved in manual data capture
- Limited engagement with IT departments in DHBs

Issues similar to other improvement initiatives:

- Lack of senior executives actively involved
- Teams working in silos (lack of multidisciplinary approach)
- Local ‘ownership’ of improvement not created

Looking forward

- Working in partnership with Accident Compensation Corporation (ACC)
- Increase in automated data collection a priority
  - Support DHBs to build case for investment in IPC IT surveillance system
- Building quality improvement capability key to ensuring sustainability
- Ensuring consumer engagement at all levels of the programme
- Establishing a firm foundation for the SSI ‘hub’ in the long-term including possible spread to:
  - private providers/hospitals
  - other surgical procedures
- New interventions (anti-staph bundle)

Acknowledgements

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