Health Quality & Safety Commission New Zealand

Kupu Taurangi Hauora o Aotearoa

Global Trigger Tool

Using Data for Improvement

Update for Quality & Risk Managers 2014

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New Zealand

- The Commission has been supporting this work stream over the past two years.
- 14 DHBs currently doing the ADE / GTT at various stages and others considering.
- Additional Trigger Tools being implemented:
  - Mental Health
  - Paediatrics.
- Implementation of a Primary Care TT.

National Workshop

- Second National GTT Workshop held 11 April 2014.
- Attended by 50 people across 11 DHBs.
- Focus on using data for improvement:
  - A number of DHBs have sufficient data to identify patterns and trends.
  - Some are moving into establishing improvement projects.

Key messages from the workshop

- Recognition of the strengths of the GTT as a source of data about patient harm.
- Evidence from international literature about improving the utility of the GTT.
- Need for a consistent approach across all DHBs with respect to definitions and the GTT process
- Focus over the next year will be on strengthening regional GTT networks to support the process and to share learning.

GTT recap

- Targeted chart reviews using triggers as flags for patient harm
  - Provides a high level measure of patient harm
  - Provides an insight into patterns of harm
- Developed by IHI 2003
- Approach is widely used internationally

'Case note review for the real world'

Definition of Harm

'Unintended physical injury resulting from or contributed to by medical care that requires additional monitoring, treatment or hospitalisation or that results in death'

- *Physical harm*
- *Commission vs Omission*
- *Preventability*

Reference:

White Paper: IHI Global Trigger Tool for Measuring Adverse Events 2009

Methodology

- Random set of 20 records per month
- Inclusion criteria
  - Adult ≥18 years
  - Admitted ≥ 24 hrs
  - Completed record
- Exclusion criteria
  - Paediatrics
  - Mental Health
  - Obstetrics / neonatal
- Standardised chart review process

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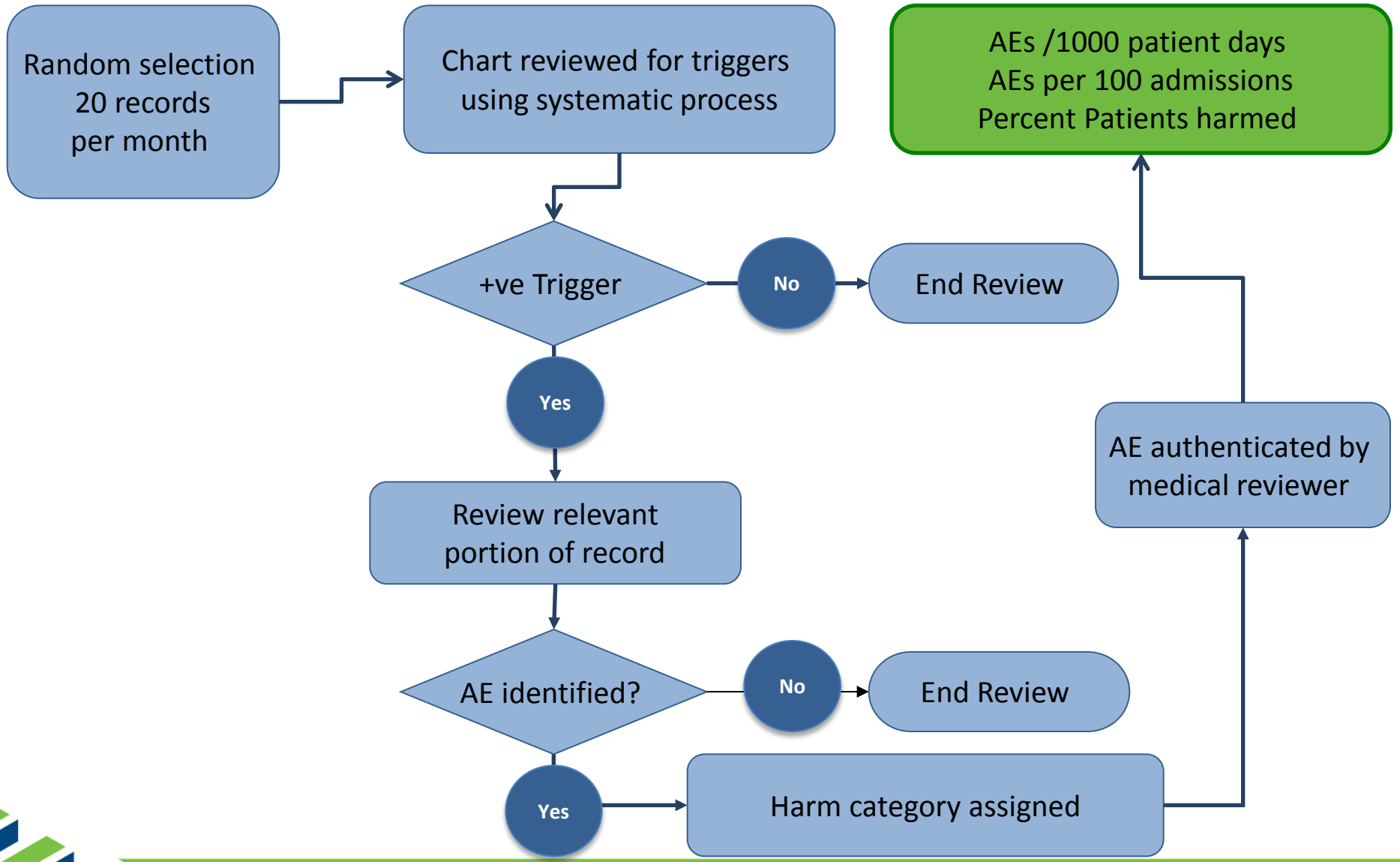
Triggers

- Flags for harm
- Filtering process
- Modules in GTT
  - Cares
  - Medication
  - Laboratory
  - Surgery
  - Intensive Care
  - Emergency Care

Section	Trigger
C	**Cares Module Triggers**
C1	Transfusion/use of blood
C2	Code/arrest/rapid response
C3	Acute dialysis
C4	Radiological investigation for PE/DVT
C5	Patient fall
C6	Pressure ulcer/injury
C7	Re-admission within 30 days
C8	Restraint use
C9	Healthcare associated infection
C10	In-hospital stroke
C11	Transfer to higher level of care
C12	Any procedure/treatment complication
C13	Early warning score (PUP) requiring response
C14	Decrease of greater than 25% in Hb or Hct
C15	Positive blood culture
C16	Other
M	**Medication Module Triggers**
M1	Vit K administration
M2	Antihistamine use
M3	Flumazenil use
M4	Naloxone use
M5	Anti-emetic use
M6	Over-sedation/Hypotension
M7	Abrupt medication stop
M8	Other
L	**Laboratory Module Triggers**
L1	C. difficile positive stool
L2	Partial thromboplastin time > 100 secs
L3	INR > 6
L4	Hypoglycaemia (< 3 mmol/L)
L5	Raised urea/creatinine (> 2 x baseline)

Flow chart of process



Harm categories

Harm Category	Description
E	Temporary harm to the patient and required intervention
F	Temporary harm to the patient and required initial or prolonged hospitalisation
G	Permanent patient harm
H	Intervention required to sustain life.
I	Patient death

National Coordinating Council for Medication Error Reporting and Prevention Index

Case 1: Category E

A 52-year-old patient admitted for elective removal of metal ware suffered two different types of harm as an inpatient. She suffered an allergic reaction to Morphine or Tramadol causing itching and scratching until bleeding, plus she suffered from nausea and vomiting from the same medications. She was treated with anti-emetics for nausea/vomiting and antihistamines for allergy.

Case 2: Category F

A 79-year-old gentleman was readmitted after three days following a recent discharge due to constipation from Codeine. He had been prescribed Codeine for pain relief in the prior discharge. Codeine is a well known medication that causes constipation, however, no laxatives had been prescribed and patient subsequently came back in with constipation. Codeine was stopped in the current admission.

Sub-classifications

- When
- Where
- Type

Inpatient
Non-inpatient

Discharge Speciality
Community

Florida Classification

Florida Hospital AE sub-categories

- Events related to:
  - Medication
  - Laboratory
  - Patient Care
  - Hospital Acquired infection
  - Surgery & Other procedures
  - Intensive Care

Events related to medications

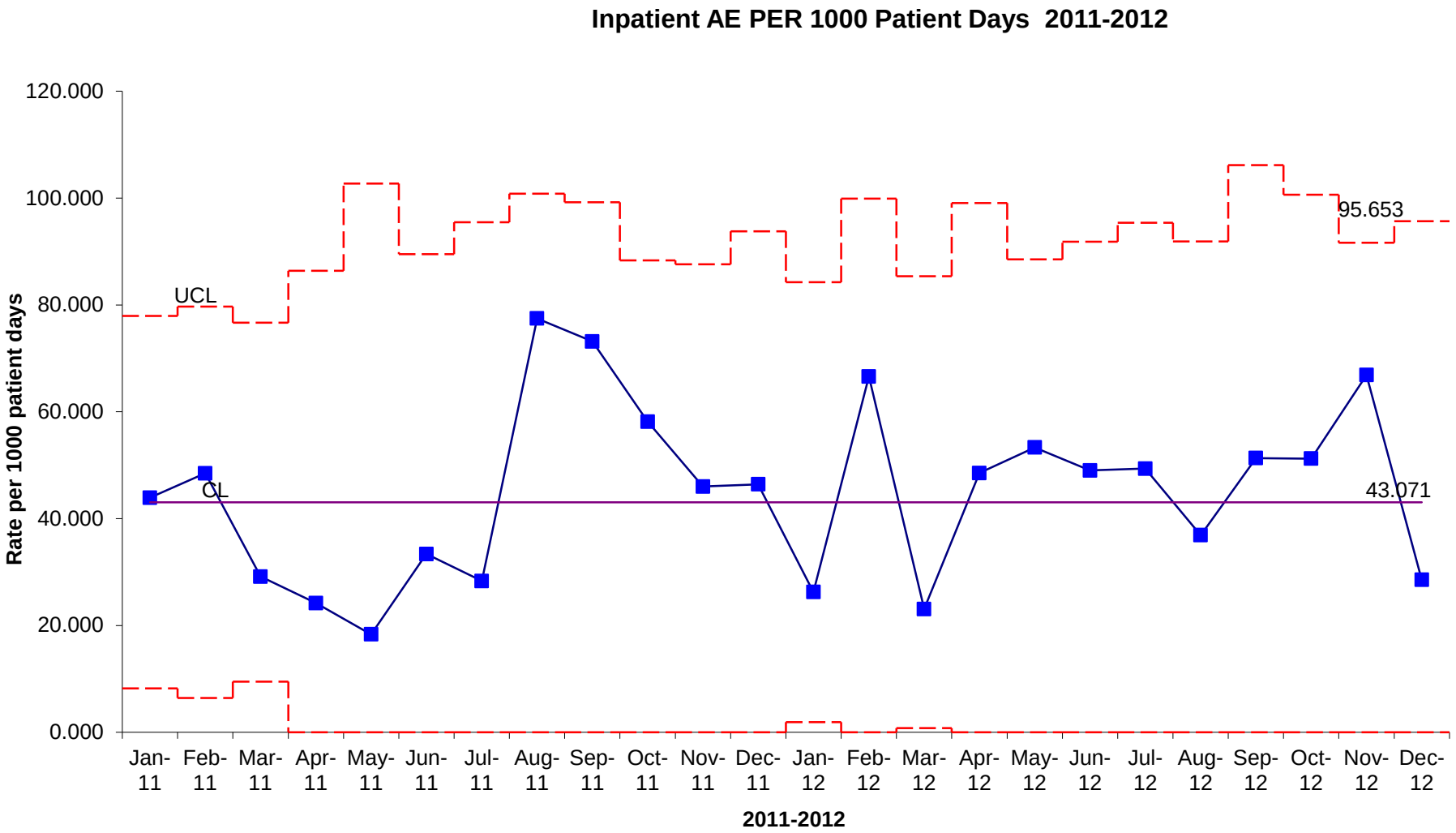
- Clostridium difficile medication associated infection
- IV volume overload/electrolyte imbalance
- Kidney damage due to contrast dye
- Medication related cardiac even/arrhythmia
- Medication related constipation
- Medication related renal insufficiency
- Medication related allergic reaction
- Medication related bleeding
- Medication related delirium, confusion, or over-sedation
- Medication related diarrhoea
- Medication related glycaemia events
- Medication related hypotension
- Medication related nausea and vomiting
- Other (eg, events related to laboratory)

How do we use it?

- Quantify patient harm: high level metrics
- Understand patterns & trends: drilling down
- Identify improvement opportunities

Quantifying patient harm

- Adverse events per 1000 patient days.
- Adverse events per 100 patient admissions.
- Percent admissions with an adverse event.


Inpatient AE PER 1000 Patient Days 2011-2012
Rate per 1000 patient days
120.000
100.000
80.000
60.000
40.000
20.000
0.000
UCL
CL
95.653
43.071
Jan-11
Feb-11
Mar-11
Apr-11
May-11
Jun-11
Jul-11
Aug-11
Sep-11
Oct-11
Nov-11
Dec-11
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Feb-12
Mar-12
Apr-12
May-12
Jun-12
Jul-12
Aug-12
Sep-12
Oct-12
Nov-12
Dec-12
2011-2012

Common Themes

Key Headings	
Medication Related	• Opioid related (delirium / over sedation / constipation) • Hypotension • Renal insufficiency • Med errors & problems with Med Rec
Hospital Acquired infections	• Urinary tract infections • Post operative pneumonias (admissions from other facilities) • Surgical infections • Aspiration pneumonia
Surgical / Procedures	• Bleeding • Procedural complications • Post-op ileus
Cares	• Falls with injury • DVT • Pressure injuries • Skin tears / abrasions

Projects undertaken

DHB	Project
Lakes	• Safer medicines project • Reducing harm from post-op ileus (Fast track surgery, ERAS) • Reducing surgical site infections (hand hygiene project, prophylactic antibiotics, chlorhexidine & alcohol skin prep…) • Educational focus on risks of opioids & alternatives • Reducing harm from omissions of care (e.g. re-admissions by providing acute surgery on index admission; social & community discharge support)

Waitemata	• Opioids use and management quality improvement project
	• A Pharmacological Pain Management teaching programme has been developed:
	  • E-learning) pain management module
	  • Pain management workshops
	  • Pain management guidelines (using Tayside NHS guidelines)

Counties	• Project to reduce harm from medication related constipation • Over sedation

A word about sampling

- SPC methodology uses small samples over time
- Sampling 2% of eligible population
  - CMH ~ 40 records
    - Minimum 10; Maximum 35 records (pragmatic)
    - Small hospitals over-sample
    - Large hospitals under-sample (Kennerly 2013)
- Confidence limits for 20,000-30,000 admissions in a year with 240 records ~ 6% +/- CI

"To do no harm going forward, we must be able to learn from the harm we have already done."

Marty Makary Wall St Journal Sept 21 2012

Surgeon Johns Hopkins Hospital

Understanding harm

- Incident reporting: Identifies 10-14% of patient harm
- Studies
  - US: To Err is Human: 44,000-98,000 PAEs per year
  - NZ:
    - NZ AE Study : Davis 2002
    - NZ ADE Study : Seddon 2013
- Other Sources

New estimates of PAEs

- Updated evidence based estimate of PAEs: ~210,000 per year (lower limit)
- 4 studies using GTT methodology:
  - Studies weighted according to number of medical records reviewed
    - Projected death rate from adverse events of 0.89%
    - ~ 69% preventable
    - 34.4 million discharges per
    - Maths: 34,400,000 x 0.69 x 0.89 = ~ 210,000

James: Journal of Patient Safety 2013

Why is the estimate higher?

- Threshold for identification of a PAE higher in the older studies
- GTT better able to identify AEs
- Possible that the frequency of PAEs has increased from 1984
  - Complexity of medical practice & technology
  - Increased incidents of ABx resistance
  - Overuse / misuse of medications
  - Aging population
  - Movement towards higher productivity, expensive technology, rapid patient flow
  - Overuse of risky, invasive and revenue-generating procedures

James: Journal of Patient Safety 2013

Further points to consider

- The estimate of patient harm is likely to be even higher– estimated up to 440,000 PAEs per year: one sixth of all deaths in US each year.
- GTT methodology likely to miss:
  - AEs associated with failure to follow guidelines (omission)
  - Evidence of adverse events not documented (Patient reports: Weissman 2008
  - Failure to make life-saving diagnoses
- To compensate for these known factors – reasonable to increase the estimate by a factor of 2 –and add ~ 20,000 for estimated undetected diagnostic errors in hospitals

James: Journal of Patient Safety 2013

Global Trigger Tool

Limitations

- Definition of harm likely to underestimate harm
- Retrospective –requires time to gather sufficient data to identify themes
- Resource issues
- Fairly blunt an instrument

What does GTT add?

- Provides a global measure of harm
- Identifies common harms not reported by other methods
- Identifies themes for improvement
- Takes a patient perspective
- Reasonable reliability
- It is the best measure we have at this point of time

Potential modifications:

- Preventability
- Hospital acquired vs present on admission
- Omission of clearly indicated care

Kennerly D et al 2013: Baylor Health Care System

Preventability

Classification	Definition	Example
Preventable	Definitely preventable based on reviewer's clinical knowledge	• Opioid related constipation where no preventive measures followed (laxatives)
Probably preventable	More than likely AE could have been prevented	• DVT with no documentation that VTE preventive measures were followed • Pressure injury
Possibly preventable	There is some chance the AE could have been preventable	• Spinal headache after epidural • C diff infection
Not preventable	Definitely not preventable	• AF after cardiac surgery • Thrush / yeast infection due to antibiotics / chemo
Unable to determine	Not able to determine preventability	

Hospital acquired vs present on admission

- Hospital acquired
  - Pneumonia diagnosed after 48 hours of admission
  - AE occurred while the patient was being treated in ED or outpatient facility and required inpatient admission
- Present on admission
  - Pneumonia diagnosed within 48 hours of admission
  - Patient readmitted with a postoperative complication or other problem
  - AE process started at previous hospital but was not diagnosed / recognised until patient was at receiving hospital

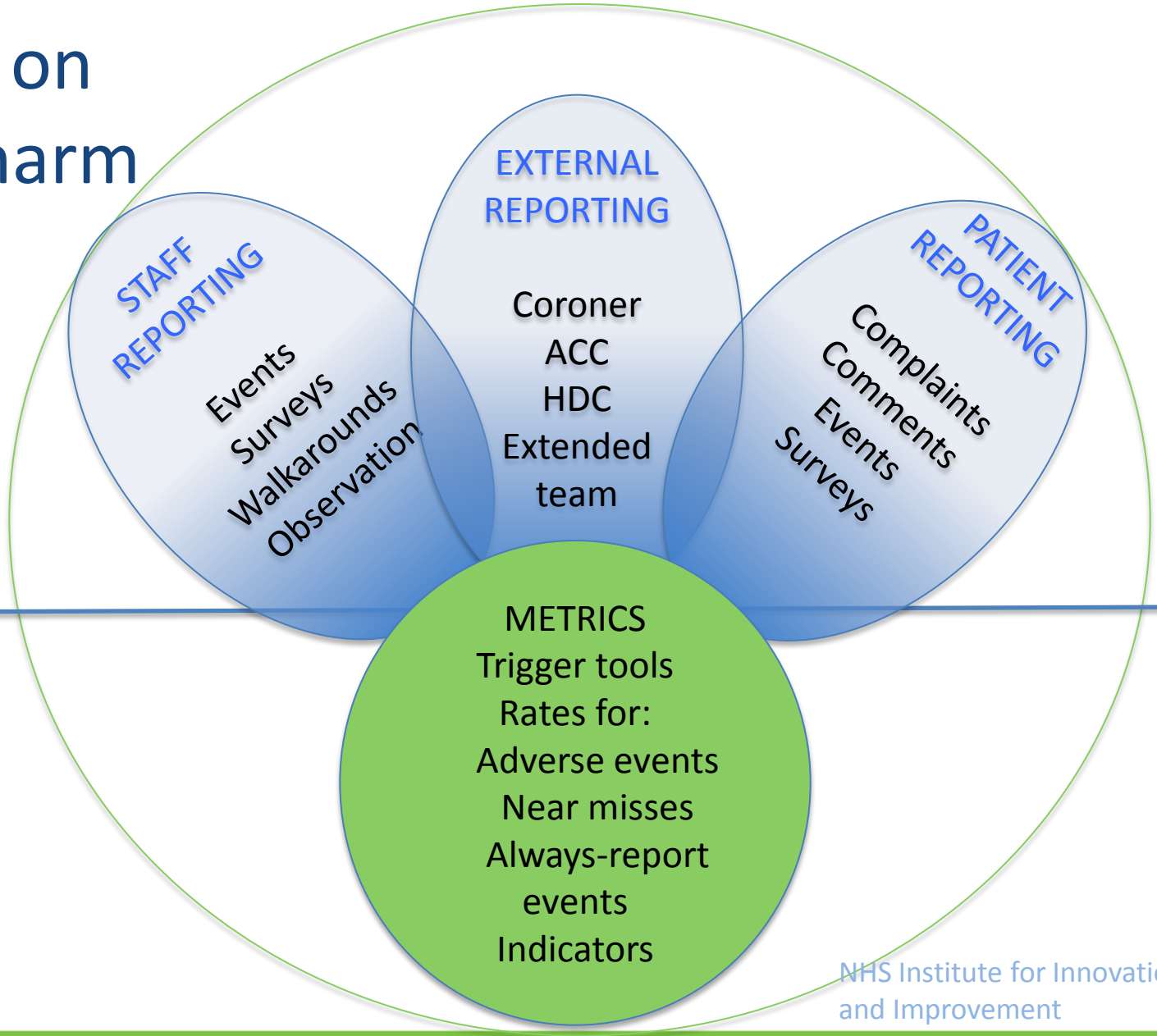
Care not provided (omission)

- Development of pressure injury
- An order for antibiotics for pneumonia written in ER but never executed
- Development of VTE in absence of prophylaxis
- Denmark:
  - Triggers for omission related to the deteriorating patient
    - Transfer to higher level of care
    - Code / Arrest / rapid response

Harm measurement

- Hogan 2008
  - Case notes have the potential to identify the largest number of incidents and provide the richest source of information
- Parry 2012
  - No consensus on a robust measurement strategy
  - ‘Multiple supplemental streams of information’ required to understand patient safety issue

Window on patient harm



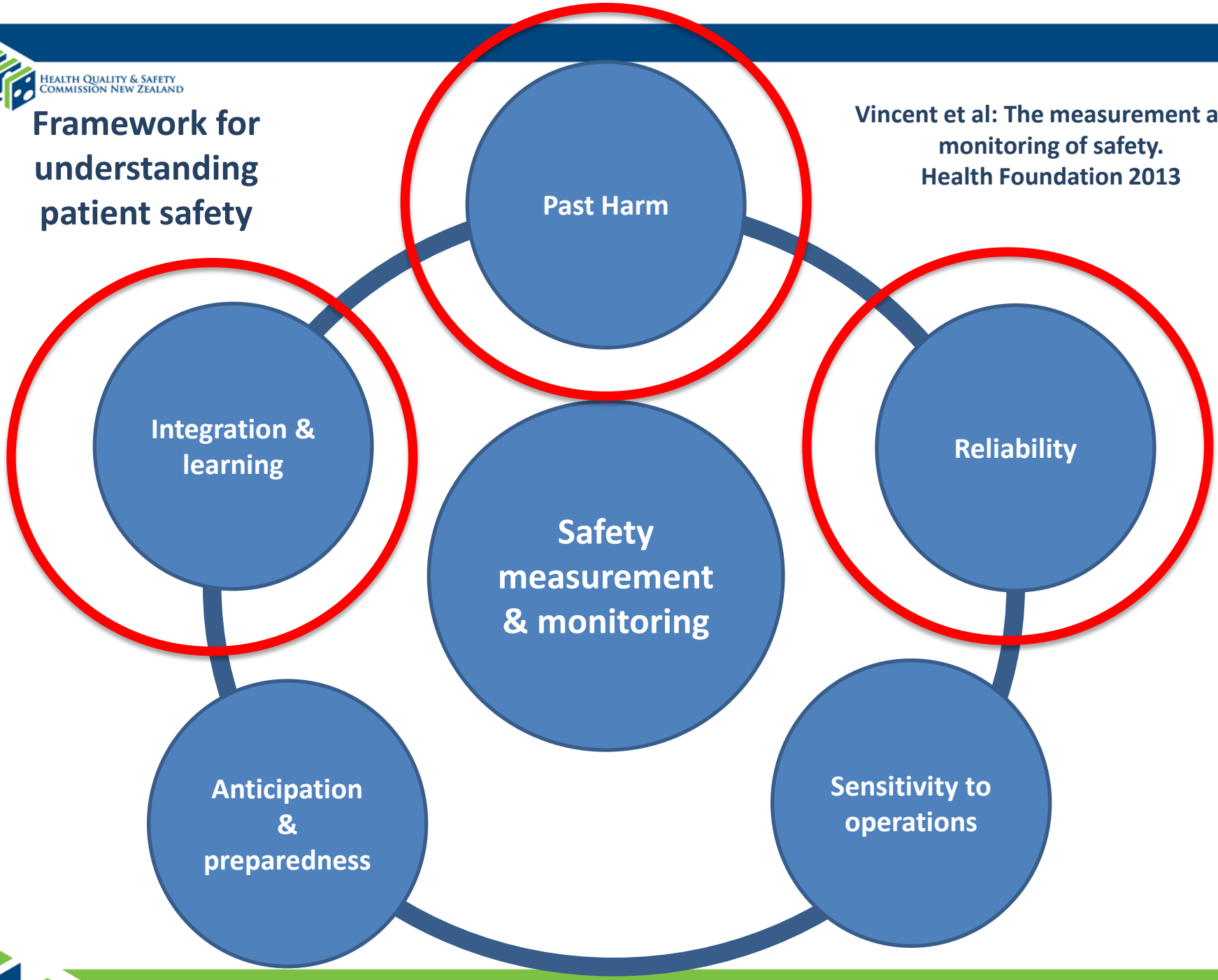
qualitative

quantitative

NHS Institute for Innovation and Improvement

Framework for understanding patient safety

Vincent et al: The measurement and monitoring of safety.
Health Foundation 2013



Key messages

- Incident reporting is a weak methodology for identifying preventable AEs.
- GTT is the best method we have for identifying preventable AEs – limitations.
- Modifications are starting to emerge to improve its utility / value.

Next steps

- Important to continue to pursue this methodology – to better inform us about harm
- Focus on regional collaborations
- Continue to work towards integrating this as part of our overall approach to understanding harm so that we can improve patient safety

Questions & Discussion