Reducing opioid-related harm and building quality improvement capability in New Zealand:
a national formative collaborative

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Health Quality & Safety Commission New Zealand
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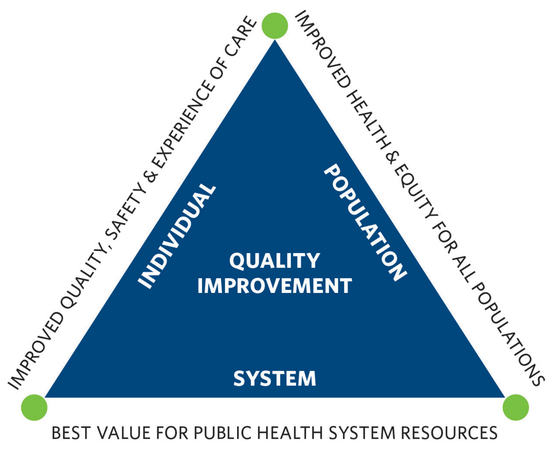
Who are we?

The Health Quality & Safety Commission New Zealand (the Commission) is an independent crown entity funded by the government. It is mandated to lead and coordinate work nationally across the health and disability sector to improve the quality and safety of care and to advise government. We work towards achieving the New Zealand Triple Aim for quality improvement:

- improved quality, safety and experience of care
- improved health and equity for all populations
- better value for public health system resources.



The problem

Opioids are essential medicines for treating pain but are the most common class of medicines that cause harm to inpatients.[1] Harms range from life-threatening over-sedation and respiratory depression to less severe, such as constipation.[2] There is no universally accepted 'bundle' of evidence-based interventions to reduce harm from opioids.

1 Seddon ME, Jackson A, Cameron C et al. The Adverse Drug Event Collaborative: a joint venture to measure medication-related patient harm. NZMJ 25 January 2013, Vol 126.

2 Institute for Safe Medication Practices (ISMP). ISMP's List of High-Alert Medications. http://www.ismp.org/tools/highalertmedications.pdf (accessed Oct 2016).

Up to $158m

is the estimated annual cost of preventable ADEs in New Zealand.[3-5]

3. Briant R, Ali W, Lay-Yee R, Davis P. Representative case series from public hospital admissions 199: drug and related therapeutic adverse events. NZ Med J 2004; 117 (1188).
4. Brown P, McArthur C, Newby L et al. Cost of medical injury in New Zealand: a retrospective cohort study. J Health Serv Res Policy 2002; 7: 29–34.
5. Kunac DL, Kennedy J, Austin N et al. Incidence, preventability and impact of adverse drug events (ADEs) and potential ADEs in hospitalized children in New Zealand. Pediatr Drugs 2009; 11 (2): 153–16.

ADE collaborative

The medicines that were most commonly implicated for causing an ADE were:[6]

33% opiods **10%** anticoagulents

6. Seddon ME, Jackson A, Cameron C et al. The Adverse Drug Event Collaborative: a joint venture to measure medication-related patient harm. NZMJ 25 January 2013, Vol 126: 9–20.

The collaborative

The Commission partnered with 20 district health board* (DHB) hospitals from across New Zealand in an 18 month-long national 'formative' collaborative.

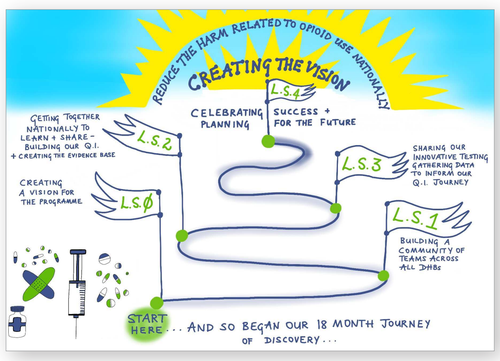
Aim

To reduce the harm related to opioid use nationally by 25 percent in all participating areas of DHB hospitals by April 2016.

Goals

1. Develop care bundles for opioid safety.
2. Increase the capability of participating teams in improvement science.
3. Create a reusable clinical network across New Zealand for further medication safety work

* DHBs are responsible for providing health and disability services to populations within 20 defined geographical areas.



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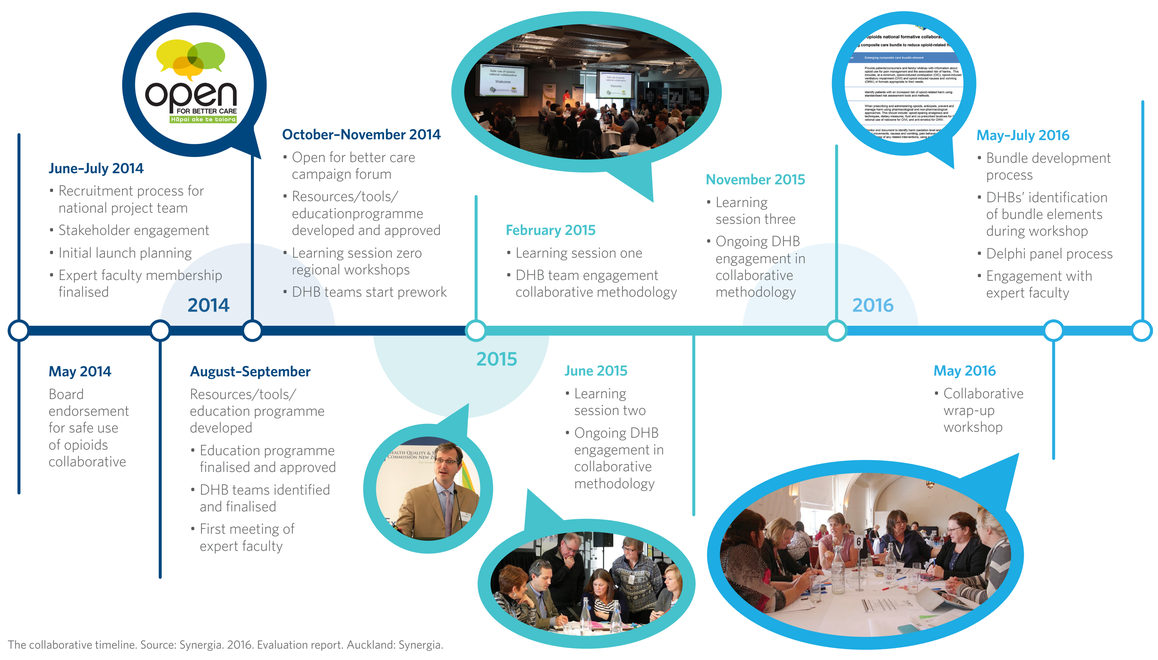
Design

The Commission used the Institute for Healthcare Improvement's (IHI) collaborative model underpinned by the Model for Improvement to develop care bundles to reduce opioid-related harm.

National and regional learning sessions and site visits supported teams in the use of quality improvement tools and methods.

Teams developed SMART aim statements, theory of change using driver diagrams, and data collection tools. They then tested their change ideas using plan–do–study–act (PDSA) cycles to address an opioid-related harm area of their choice.

Consumers were involved at all levels.



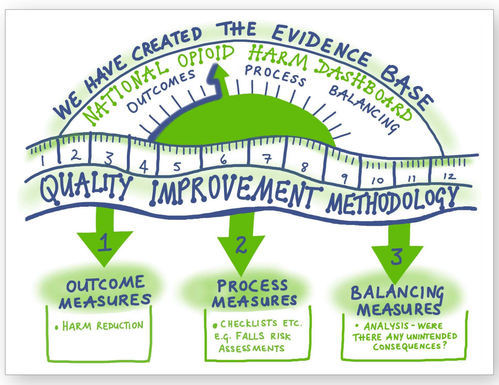
The collaborative timeline. Source: Synergia. 2016. Evaluation report. Auckland: Synergia.

Measurement

Each participating team identified their measures, developed a data collection plan and manually collected data on a weekly basis in their pilot areas for their identified outcome, process and balancing measures.

Data was analysed using three methods: two-sample test of proportions, statistical process control (SPC) charts and relative percentage change from baseline.

DHB monthly reports were shared with the Commission and national dashboards were created.



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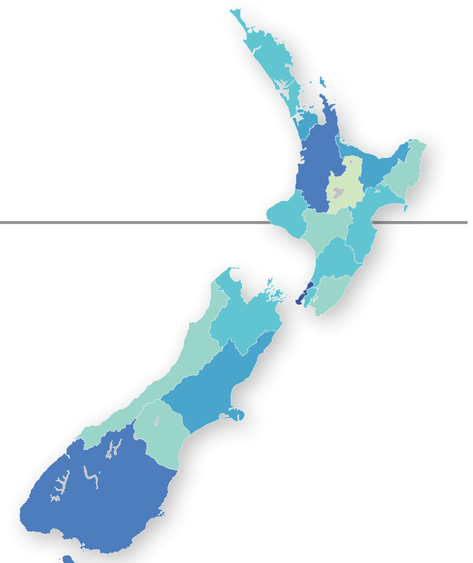


Results

Harm reduction

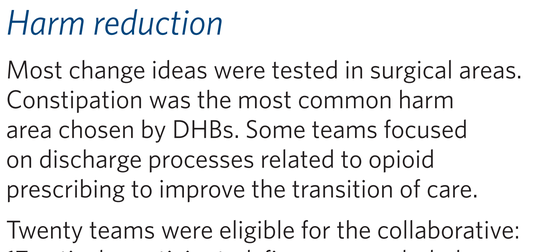
Most change ideas were tested in surgical areas. Constipation was the most common harm area chosen by DHBs. Some teams focused on discharge processes related to opioid prescribing to improve the transition of care.

Twenty teams were eligible for the collaborative: 17 actively participated; five were excluded from the analysis because a baseline was not established.

Of the remaining teams:

- 7/12 hospitals (58 percent) showed greater than 25 percent relative reduction in opioid-related harm, with 6/12 (50 percent) exhibiting a special cause in SPC chart
- two hospitals showed a 0–25 percent relative reduction (one with special cause)
- three hospitals showed a relative increase in harm (no special cause).

SPC chart of % of patients on opioids with constipation – Lakes DHB



Example of an SPC chart – Lakes DHB focused on staff education and the use of dietary measures to reduce opioid-induced constipation.

Care bundles

Interventions for each care bundle were identified by DHB teams then reviewed by national and international expert panels using a modified-Delphi technique.

Inclusion of interventions in the care bundles was based on published evidence, local quality improvement data and expert opinion.

Four care bundles were developed, including three care bundles for individual harm areas (opioid-induced constipation, opioid-induced ventilatory impairment and uncontrolled pain) and a composite care bundle (covering all of the harms as well as opioid-induced nausea and vomiting), supported by a comprehensive 'how-to-guide' to support further opioid safety work.

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Safe use of opioids national formative collaborative

Emerging composite care bundle to reduce opioid-related harm

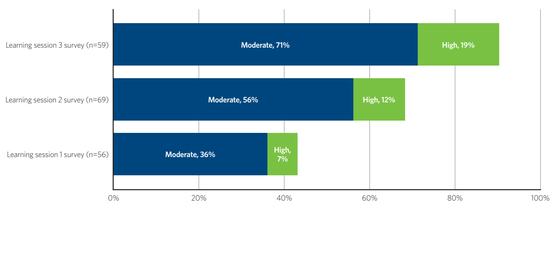
Number	Emerging composite care bundle element
1	Provide patients/consumers and family/ whānau with information about opioid use for pain management and the associated risk of harms, This includes, at a minimum, opioid-induced constipation (OIC), opioid-induced ventilatory impairment (OIVI) and opioid-induced nausea and vomiting (OINV), in formats appropriate to their needs.
2	Identify patients with an increased risk of opioid-related harm using standardised risk assessment tools and methods.
3	When prescribing and administering opioids, anticipate, prevent and manage harm using pharmacological and non-pharmacological approaches. This should include: opioid-sparing analgesics and techniques, dietary measures, fluid and co-prescribed laxatives for OIC, rational use of naloxone for OIVI, and anti-emetics for OINV.
4	Monitor and document to identify harm (sedation level and respiratory rate, bowel movements, nausea and vomiting, pain behaviours/indicators) and effectiveness of any related interventions, using evidence-based guidelines and methods.
5	Regularly educate staff about pain management and opioid use, opioid-related harms and risk reduction strategies. Education includes assessment of knowledge and skills, educational intervention/s, and reassessment.

Example of a patient information resource from Waitemata DHB who focused on patient empowerment to help reduce uncontrolled pain for those prescribed opioids.

Capability building

Longitudinal surveys showed an increase in team quality improvement capability.

Learning session attendees' knowledge of improvement science methodologies



A national network of inter-professional teams focused on opioid safety has been established.

Sustainability

Teams are currently focused on embedding their improvement to date, and using the care bundles created by the collaborative, with ongoing support from the Commission.

Lessons learned

1. **Co-design, partnership and relationships –** key elements for success at a national level.
2. **'Formative' nature –** teams were asked to develop interventions while learning improvement science; many struggled with the notion of 'building the plane, while flying it'.
3. **Modified-Delphi technique –** a popular and effective mechanism for consensus-making.
4. **Team work –** successful teams had an inter-professional structure with strong project sponsor support.
5. **Measurement –** teams needed explicit direction regarding baseline data requirements.
6. **Aggregation –** challenges were encountered with data aggregation because different operational definitions were used across the teams.
7. **Methodology –** teams needed help with the practical use of PDSA in their clinical settings, especially small- versus large-scale testing.
8. **Bundle creation –** not easy!
9. **Shared learning –** national learning sessions were effective for bringing the teams together to share and learn from each other.

Acknowledgments

The Commission acknowledges the 20 DHBs and MercyAscot Hospital (Auckland) for participating in the safe use of opioids national collaborative, and the staff from IHI, especially Dr John Krueger for his advice and guidance.