

8. Opioid-induced ventilatory impairment emerging care bundle

8.1. Background

Opioids continue to be the main way of managing moderate to severe acute pain; however, concerns remain about their potential adverse effects on ventilation.²² Opioid-induced ventilatory impairment (OIVI) is considered to be a more appropriate term than respiratory depression to describe the effects of opioids on patient ventilation. OIVI encompasses not only respiratory depression and elevated partial pressure of carbon dioxide in arterial blood, but also the depressed consciousness and subsequent upper airway obstruction resulting from excessive opioid use.²³

8.1.1. Care bundle elements

The elements in this care bundle seek to reduce OIVI in patients who are prescribed and administered opioids (Table 8.1.1).

Table 8.1.1: Care bundle elements for OIVI

Element	OIVI care bundle element – description
One See 8.2	Provide patients/consumers and families/whānau with information about opioid use and risk of OIVI, in formats appropriate to their needs.
Two See 8.3	Identify patients with an increased risk of OIVI, using standardised risk assessment tools and methods.

²² PE Macintyre, JA Loadman, DA Scott. 2011. Opioids, ventilation and acute pain management. *Anaesthesia and Intensive Care* 39(4): 548–58.

²³ SA Schug, GM Palmer, DA Scott, et al. 2015. *Acute Pain Management: Scientific Evidence, Fourth Edition 2015*. Melbourne: Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine.

Three See 8.4	When prescribing and administering opioids, consider opioid-sparing analgesics and techniques.
Four See 8.5	Monitor and document sedation level and respiratory rate, and response to therapeutic interventions, using evidence-based guidelines and methods.
Five See 8.6	Manage OIVI episodes using standard protocols (for example, rational use of naloxone).
Six See 8.7	Regularly educate staff about opioid use and OIVI, and risk reduction strategies. Education includes assessment of knowledge and skills, educational intervention/s and reassessment.

8.1.2. Outcome measure for OIVI

Table 8.1.2 describes the outcome measure for use with the care bundle designed to reduce OIVI.

Table 8.1.2: OIVI care bundle outcome measure

Measure	Formula	Operational definitions	Exclusions	Population
Measure 1: Number of days between two consecutive episodes of OIVI in patients where an opioid was administered	Measure 1: Days = Day x – Day y Measure 2: Number of episodes compiled on a prospective basis	Opioid-induced ventilatory impairment: respiratory rate 8–10 and sedation score ≥ 2 (using the sedation scale in the how-to guide) Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids	Nil	Age 12 years and over admitted to a hospital inpatient area

Measure 2:

Count of episodes of OIVI in patients where an opioid was administered

Administered: When a medicine has been given to a patient; this includes self-administration by the patient

Episode: An incident of OIVI in a patient

8.2. Element One

Provide patients/consumers and families/whānau with information about opioid use and risk of OIVI, in formats appropriate to their needs.

8.2.1. Background

Patients/consumers and families/whānau should be provided with information about assessment of pain, risks and adverse effects of treatment. Patient participation is required if each patient is to get the best treatment.²⁴

8.2.2. Provide information to patients/consumers and families/whānau about opioid use and risk of OIVI

DHBs identified this element as an important one to include in the emerging care bundle. Although no DHBs explicitly tested this element, the safe use of opioids national collaborative Delphi Panels and expert faculty have endorsed its inclusion.

Information needs to be tailored to the patient to optimise their understanding. Information should be provided to patients in a format that suits their level of literacy and preference, such as patient leaflet, one-on-one discussion or video.

²⁴ SA Schug, GM Palmer, DA Scott, et al. 2015. *Acute Pain Management: Scientific Evidence, Fourth Edition 2015*. Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine.

Although not explicitly testing the change idea in relation to OIVI, DHBs tested similar change ideas for other harm areas. Table 8.2.2 summarises their experience to provide some guidance and information to other DHBs when developing resources on opioid use and the risk of OIVI.

Table 8.2.2: Purpose, change ideas and lessons learned in relation to providing information about opioid harm areas

What	How	Lessons learned
Provide patient-centric education using standardised information for consistent messaging	<ul style="list-style-type: none"> Provide information in a simple, visually appealing, easy-to-read format. <p> Consider equity and cultural appropriateness.</p>	<ul style="list-style-type: none"> Following co-design principles when developing resources (where patients/consumer advocates partnered with clinical staff – interdisciplinary team) resulted in more useful resources. Challenges were to: <ul style="list-style-type: none"> present sometimes technically complex language in a simple-to-understand format distribute the completed resource make staff conversations part of routine care measure improvement in patient experience.

8.2.3. Measurement to support Element One

Table 8.2.3 describes the process measure for use with Element One in the OIVI care bundle.

Table 8.2.3: Process measure for Element One in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of patients/consumers and families/whānau provided with information	<p>Numerator: Total number of patients/consumers and families/whānau who received information</p> <p>Denominator: Total number of patients who were administered an opioid</p>	<p>Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids</p> <p>Family/whānau: Includes any family member, friend or caregiver who is supporting the patient during their inpatient stay; the information is provided so the support person can help the patient to: 1) identify/report any opioid-related harms; and 2) self-manage those harms if they occur</p> <p>Information: Explanation about what opioids are, the different types of opioids, and side effects</p> <p>About opioid use and risk of OIVI: Balanced information that describes the importance of opioids for treating pain, but also the potential for harm in relation to OIVI; the information should include the warning signs and symptoms that</p>	The patient is not in a state to receive or understand the information and the family/whanau is unavailable	Age 12 years and over admitted to a hospital inpatient area, or their support person



*When providing patients with information, document in the clinical record: **what was given, who got it, who gave it and when.***

Measure	Formula	Operational definition	Exclusion	Population
		<p>families/whānau should be aware of and report to ward staff if they occur</p> <p>In formats appropriate to their needs: Information needs to be tailored to the patient to optimise their understanding. Information should be provided to patients in a format that suits their level of literacy and preference, such as patient leaflet, one-on-one discussion or video</p> <p> Consider equity and cultural appropriateness.</p>		

8.2.4. Template

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.2.5. Tips

- ✓ Provide patient-centric education using standardised information for consistent messaging.
- ✓ When developing patient information, please refer to the Ministry of Health’s guide to developing health information resources, www.health.govt.nz/publication/rauemi-atawhai-guide-developing-health-education-resources-new-zealand.

8.3. Element Two

Identify patients with an increased risk of OIVI, using standardised risk assessment tools and methods.

8.3.1. Background

Risk assessment tools can effectively identify high-risk patients, which enables interventions aimed at reducing patient harm, decreasing hospital costs and improving postsurgical experiences for the intended subsets of high-risk patients.²⁵

8.3.2. Identify patients with an increased risk of OIVI

In an effort to reduce the risk of OIVI and improve patient experience, teams involved in the safe use of opioids national collaborative focused on identifying patients at risk of OIVI (Table 8.3.2.).

²⁵ H Minkowitz, R Scranton, S Gruschkus, et al. 2014. Development and validation of a risk score to identify patients at high risk for opioid-related adverse drug events. *Journal of Managed Care & Specialty Pharmacy* 20(9): 948–58.

Table 8.3.2: Purpose, change ideas and lessons learned in relation to identifying patients at risk of OIVI

What	How	Lessons learned
Screen patients for risk of OIVI	<ul style="list-style-type: none"> Screen new patients that attend surgical pre-assessment clinic. Use an appropriate evidence-based assessment tool as part of the formal assessment process for patients attending clinic. 	<ul style="list-style-type: none"> One DHB team included STOPBANG²⁶ as part of the formal assessment process. Integrating the assessment tool into the pre-operative assessment process improved the reliability of the intervention. A different process for screening should be used for patients who have not attended a pre-assessment clinic. One of the higher-risk groups of patients (found to have more frequent events) was not a group routinely assessed in pre-assessment clinic.
Refer high-risk patients	<ul style="list-style-type: none"> After referral, a pharmacist takes an accurate medication history. Involve the pain team early and on an ongoing basis. 	<ul style="list-style-type: none"> The prescriber does not always review medication history. Many opioid prescriptions were based on prescriber preference. Staff varied in their level of understanding of patient harm.
Track cumulative opioid doses	<ul style="list-style-type: none"> Use cumulative dose stickers to highlight the cumulative opioid doses patients are given. 	<ul style="list-style-type: none"> Documenting this information and discussing it at staff handover gave staff critical information to use as part of their assessment of patient needs. The National Medication Chart was the most reliable place to capture this information. This change idea has prompted a modified protocol for sending patients from the Post-Anaesthetic Care Unit to the ward. Patients

Patient has received... Circle all that apply		ORCA Risk (YES/NO)					
GA	LA	Sedation	Regional/Block	Epidural	PCA	Wound/nerve infusion	
Intrathecal Morphine		Dose: _____ mg/kg/hrs at _____ hrs / _____ / _____		mg/kg/hrs at _____ hrs / _____ / _____			
		PRE-OP			INTRA-OP		PACU
Medication	FENTANYL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medication	MORPHINE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medication	PETHIDINE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medication	TRAMADOL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medication	PARECOXIB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plan / Comments:		Risk, dose and time					

²⁶ www.stopbang.ca

What	How	Lessons learned
		<p>who either recently received opioids or received higher doses of opioids have longer monitoring times.</p> <ul style="list-style-type: none"> Challenges were: <ul style="list-style-type: none"> ensuring staff discussed this information at staff handover the level of staff awareness of risks for patients who have received high doses of opioids inconsistencies in whether staff completed the sticker.

8.3.3. Measurement to support Element Two

Table 8.3.3 describes the process measure for use with Element Two in the OIVI care bundle.

Table 8.3.3: Process measure for Element Two in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of patients that are identified using locally agreed risk assessment tools and methods	<p>Numerator: Total number of patients that were assessed, using a risk assessment tool consistent with hospital guideline, before they are prescribed an opioid</p> <p>Denominator: Total number of patients who have had an opioid prescribed</p>	<p>Identify: Assess and evaluate patients using locally agreed risk assessment tools and methods before prescribing an opioid</p> <p>Standardised risk assessment tools and methods: Approaches to determine the quantitative or qualitative estimate of the following risks related to OIVI: 1) risk factors for sleep-disordered breathing; and 2) risk factors for post-operative pulmonary complications</p>	Where risk assessment is not feasible or prudent because of, for example, acuity or level of consciousness	Age 12 years and over admitted to a hospital inpatient area

Patients with an increased risk: Patients who have one or more co-morbidities or risk factors that increase the risk of them suffering OIVI compared with patients with no co-morbidities or risk factors

Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids

8.3.4. Template

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.3.5. Tip

✓ Patients requiring opioids will not all be assessed at pre-assessment clinic.

8.4. Element Three

When prescribing and administering opioids, consider opioid-sparing analgesics and techniques.

8.4.1. Background

The reason for using non-opioid analgesics and techniques combined with opioids is to minimise the adverse effects of opioid analgesic medication. Termed 'balanced' analgesia, this approach involves using smaller doses of opioids in combination with non-opioid analgesic drugs (for example, paracetamol, nonsteroidal anti-inflammatory drugs – NSAIDs) and adjuvant analgesics (for example, local anaesthetics, anticonvulsants).

8.4.2. Consider opioid-sparing analgesics and techniques

DHBs identified this element as an important one to include in the emerging care bundle. Though no DHBs explicitly tested this element, the safe use of opioids national collaborative Delphi Panels and expert faculty have endorsed its inclusion.

8.4.3. Measurement to support Element Three

Table 8.4.3 describes the process measure for use with Element Three in the OIVI care bundle.

Table 8.4.3: Process measure for Element Three in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of patients with a management plan that has considered opioid-sparing options	<p>Numerator: Total number of patients with a completed pain management plan that contains opioid-sparing options</p> <p>Denominator: Total number of patients with a painful condition</p>	<p>Opioids: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids</p> <p>Prescribing: In practice, authorising an order to supply or administer a substance used or capable of being used to prevent, treat or palliate a disease, or the symptoms or effects of a disease for the purpose of clinical treatment of a patient under the authorising person's care</p> <p>Administering: Giving a medicine to a patient; this includes self-administration by the patient</p> <p>Consider: Actively consider alternatives to opioids in the treatment of patients for pain;</p>	Patients receiving palliative care, patients with a terminal condition where death is considered imminent or likely to occur within the next 30 days	Age 12 years and over admitted to a hospital inpatient area

Measure	Formula	Operational definition	Exclusion	Population
		<p>this process and any outcomes should be documented in a formal pain management plan</p> <p>Opioid-sparing analgesics and techniques: Non-opioid and opioid-reducing alternatives and techniques</p>		

8.4.4. Template

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.5. Element Four

Monitor and document sedation level and respiratory rate, and response to therapeutic interventions, using evidence-based guidelines and methods.

8.5.1. Background

All patients must be monitored appropriately for OIVI so that it can be detected at an early stage and appropriate interventions triggered. The risk of OIVI can be reduced by undertaking appropriate and regular monitoring. If OIVI related to opioid administration is detected and treated at an early stage, it will increase the chance of avoiding significant and permanent harm to the patient.²⁷

²⁷ P MacIntyre, J Loadsman, D Scott. 2011. Opioids, ventilation and acute pain management. *Anaesthesia and Intensive Care* 39: 545–58.

8.5.2. Monitor and document sedation level and respiratory rate

In an effort to reduce the risk of OIVI and improve patient experience, teams involved in the safe use of opioids national collaborative focused on improving patient monitoring (Table 8.5.2).

Table 8.5.2: Purpose, change ideas and lessons learned in relation to improving patient monitoring

What	How	Lessons learned
<p>Improve sedation score monitoring</p>	<ul style="list-style-type: none"> • Reformat the adult observation chart to include sedation score and pain score on the same page as the rest of the observations. • Develop a guideline on when to monitor patients on opioids according to route, with summary table on adult observation chart. • Provide guidelines in one place for all routes of administration of opioids, which staff can refer to. • Introduce sedation scoring using scale of zero to three. Levels are: 0 (awake), 1 (mild sedation, easy to rouse), 1s (asleep, easy to rouse), 2 (moderate sedation, easy to rouse, unable to remain awake), 3 (difficult to rouse). Position sedation score next to respiratory rate score on the adult observation chart. 	<ul style="list-style-type: none"> • Documentation of these parameters increased as the observations required became more visible to nurses; observations on the back of documentation forms get missed. • Even though the place for recording the scores was visible, some nurses still left these parameters blank despite filling in the other observations because they did not recognise the importance of monitoring or did not know the reason for it. • Many health professionals do not understand the need to monitor sedation in relation to opioids. • It was great to have, for easy reference, the summary table (for monitoring according to route) on the adult observation chart. • Nurses gave positive feedback on the addition of the ‘when to monitor’ table to the adult observation chart. • Sensitive sedation score helped to identify patients starting to decline, particularly when combined with more frequent monitoring. • Running small-group education sessions when a change is made would increase staff knowledge.

What	How	Lessons learned
	Resource developed during the collaborative: MercyAscot early warning score	

8.5.3. Measurement to support Element Four

Table 8.5.3 describes the process measure for use with Element Four in the OIVI care bundle.

Table 8.5.3: Process measure for Element Four in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of patients whose sedation levels and respiratory rates are monitored and documented following local guidelines	<p>Numerator: Total number of patients with documented sedation level and respiratory rate consistent with local guidelines</p> <p>Denominator: Total number of patients who were administered an opioid</p>	<p>Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids</p> <p>Monitor sedation level and respiratory rate: Assess/measure sedation level and respiratory rate; the type and frequency of measurement should be based on local guidelines that are evidence-based where possible</p> <p>Document sedation level and respiratory rate: Record sedation level and respiratory rate in adult observation chart, clinical documentation or another approved inpatient record, in either paper or electronic form</p> <p>Monitor and document response to therapeutic interventions: Monitor and document relevant clinical signs and symptoms that measure the impact of any interventions</p>	Nil	Age 12 years and over admitted to a hospital inpatient area

Measure	Formula	Operational definition	Exclusion	Population
		<p>used to manage sedation levels and respiratory rates that exceed normal limits (eg, to measure the effectiveness of naloxone administered to treat OIVI, monitor and document changes in respiratory rate and sedation levels, following local guidelines)</p> <p>Evidence-based guidelines and methods: A guideline or method (therapeutic intervention) that is supported by evidence; these could be based on local expert opinion (lower-grade evidence) or, ideally, published literature (higher-grade evidence)</p> <p>Administered: When a medicine has been given to a patient; this includes self-administration by the patient</p>		

8.5.4. *Template*

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.5.5. *Tip*

- ✓ Monitor sedation level and respiratory rate to detect OIVI in a timely way.

8.6. Element Five

Manage OIVI episodes using standard protocols (for example, rational use of naloxone).

8.6.1. Background

Opioid analgesic overdose is a life-threatening condition. The unpredictable clinical course of intoxication demands empirical management of this potentially lethal condition.²⁸

8.6.2. Use standard protocols for managing OIVI

DHBs identified this element as an important one to include in the emerging care bundle. Though no DHBs explicitly tested this element, the safe use of opioids national collaborative Delphi Panels and expert faculty have endorsed its inclusion (Table 8.6.2).

Table 8.6.2: Purpose and change ideas in relation to using standard protocols to manage OIVI

What	How	Lessons learned
Use standard protocol for managing OIVI	<ul style="list-style-type: none">• Ensure DHB OIVI Management Protocol is appropriate for the DHB.• It is recommended that an OIVI Management Protocol contains, at a minimum, the following information:<ul style="list-style-type: none">○ naloxone available on all wards where opioids are used○ flowchart detailing respiration rate and sedation score and then necessary response○ when to call rapid response team○ dose of naloxone and how to administer	<i>Change idea not tested during collaborative so no lessons learned</i>

²⁸ W Boyer. 2012. Management of opioid analgesic overdose. *New England Journal of Medicine* 367: 146–55.

What	How	Lessons learned
	<ul style="list-style-type: none"> ○ ongoing monitoring requirements ○ second and additional doses to be given, as needed, tailored to the patient’s clinical needs ○ ongoing monitoring and IV infusion dosing ○ documentation of naloxone use for OIVI in clinical record. <p>Resource produced during the collaborative:</p> <p><u>MercyAscot OIVI Management Protocol</u></p>	

8.6.3. Measurement to support Element Five

Table 8.6.3 describes the process measure for use with Element Five in the OIVI care bundle.

Table 8.6.3: Process measure for Element Five in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of patients who have an episode of OIVI and receive treatment or other related intervention, consistent with standard protocols	<p>Numerator: Total number of patients who have an OIVI episode and receive active management consistent with standard protocols</p> <p>Denominator: Total number of patients who have an OIVI episode</p>	<p>Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids</p> <p>Manage OIVI episodes: Actively manage (using targeted and timely interventions) patients with OIVI</p>	<p>Intubated and mechanically ventilated patient</p> <p>Patients for whom standard protocols do not apply, as agreed on an individualised basis by the patient’s care team, and documented as such in the patient’s medical record</p>	Age 12 years and over admitted to a hospital inpatient area

Measure	Formula	Operational definition	Exclusion	Population
		<p>Standard protocols: Any locally approved policy, guideline or protocol. This may include: safe, accurate and appropriate administration of naloxone, transfer to high dependency unit, escalation of care, increased level of clinical monitoring, or equivalent</p> <p>Episode: An incident of OIVI in a patient</p>		

8.6.4. *Template*

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.7. **Element Six**

Regularly educate staff about opioid use and OIVI, and risk reduction strategies. Education includes assessment of knowledge and skills, educational intervention/s and reassessment.

8.7.1. *Background*

Opioid analgesia remains the primary pharmacological intervention for managing pain in hospitalised patients. OIVI is a serious opioid-related adverse event. Multiple factors, including opioid dosage, route of administration, duration of therapy, patient-specific factors and desired goals

of therapy, can influence the occurrence of these adverse events.²⁹ Appropriate education of medical and nursing staff is essential to managing analgesia safely and effectively.³⁰

8.7.2. Educate staff about opioid use, OIVI and risk reduction strategies

In an effort to reduce the risk of OIVI and improve patient experience, teams involved in the safe use of opioids national collaborative focused on increasing nurses' and prescribers' knowledge of opioid use (Table 8.7.2).

Table 8.7.2: Purpose, change ideas and lessons learned in relation to increasing staff knowledge of opioid use

What	How	Lessons learned
Increase staff knowledge and awareness	<ul style="list-style-type: none"> • Run a poster-based educational campaign outlining: <ul style="list-style-type: none"> ○ naloxone use across the hospital ○ balance pain and sedation ○ sedation scores ○ new guideline about oral opioid monitoring ○ patient pain expectations ○ equivalent opioid doses. • Conduct small-group teaching and organisation-wide teaching that includes: <ul style="list-style-type: none"> ○ opioid education at the annual update organisation day 	<ul style="list-style-type: none"> • Staff in general gave positive feedback on the posters (with reservations noted below). <ul style="list-style-type: none"> ○ Ward staff were having conversations about opioid use, particularly with the pain team. ○ There were too many posters. ○ Whether staff read the posters was uncertain. • It was hard to educate about complex issues via posters.

²⁹ D Jarzyna, C Jungquist, C Pasero, et al. 2011. American Society for Pain Management Nursing guidelines on monitoring for opioid-induced sedation and respiratory depression. *Pain Management Nursing* 12: 118–45.

³⁰ SA Schug, GM Palmer, DA Scott, et al. 2015. *Acute Pain Management: Scientific Evidence, Fourth Edition 2015*. Melbourne: Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine.

What	How	Lessons learned
	<ul style="list-style-type: none"> ○ a pain study day. ● Written education includes: <ul style="list-style-type: none"> ○ addition to the adult observation chart of summary table on frequency of observations according to opioid prescribed ○ new policy on opioid clinical management ○ policy guidelines on management of sedation ○ communications through internal staff newsletter. ● Prescriber education includes: <ul style="list-style-type: none"> ○ written guidance, in the internal anaesthetic specialist newsletter, from a pain specialist on safe and appropriate prescribing of opioids. <p>Resources produced during the collaborative:</p> <p><u>MercyAscot Example of Written Communication to Nursing Staff</u></p> <p><u>MercyAscot Introduction to Campaign Poster</u></p> <p><u>MercyAscot Education Poster on Equivalent Opioid Doses</u></p> <p><u>MercyAscot Education Poster Balance Pain Management – Sedation</u></p> <p><u>MercyAscot Education Poster New Guideline Oral Opioids</u></p> <p><u>MercyAscot Education Poster Patient Expectations – Pain Goals</u></p>	<ul style="list-style-type: none"> ● Small-group teaching proved effective. Participants improved from pre- to post-education quizzes. ● Not all staff received training. ● Changes to adult observation chart increased monitoring. ● Education increased awareness among staff. ● Methadone prescribing on the ward reduced. ● Prescribers began to write better parameters and guidance.

What	How	Lessons learned
<p>Raise awareness</p>	<p>MercyAscot Education Poster Sedation – Escalation Guide</p> <ul style="list-style-type: none"> Identify patients who had received naloxone through duty manager reports and send forms to the resus committee. Audit these patients to establish the events that led to naloxone administration and identify any trends. Develop a poster campaign in staff areas to raise awareness of high-risk patients. Conduct an anaesthetic review of cases of naloxone use and notify anaesthetic advisory group (or similar body). <p>Resource produced during the collaborative:</p> <p>MercyAscot Elderly High Risk Poster</p>	<ul style="list-style-type: none"> This change idea provided insight into events and a focus for education poster campaign. Health professionals differ in their approach to auditing and in the level of importance they assign to harms. There were too many posters. Whether staff read the posters was uncertain. It was hard to educate about complex issues via posters. Audit with multi-professional review may have identified more trends. Staff had varying levels of understanding of patient harm.

8.7.3. Measurement to support Element Six

Table 8.7.3 describes the process measure for use with Element Six in the OIVI care bundle.

Table 8.7.3: Process measure for Element Six in the OIVI care bundle

Measure	Formula	Operational definition	Exclusion	Population
Percentage of staff who had assessment and education completed annually	<p>Numerator: Total number of staff on a ward/hospital assessed, provided with an educational intervention, and reassessed for opioid and related OIVI knowledge and management of OIVI (annually)</p> <p>Denominator: Total number of permanent staff, and non-permanent staff employed more than 30 days on a ward/hospital</p>	<p>Opioid: All opioids (strong and weak, including but not limited to: morphine, oxycodone, fentanyl, pethidine, methadone, tramadol, dihydrocodeine, codeine); includes regular and/or PRN opioids</p> <p>Regularly: Annually at a minimum</p> <p>Staff: All prescribers, nurses, pharmacists and other allied health professionals involved in prescribing, dispensing and administering opioids</p> <p>Knowledge and skills: Includes knowledge of risk of OIVI from opioid use, risk reduction strategies (including use of naloxone), and monitoring requirements to detect OIVI</p> <p>Educational intervention/s: Electronic, paper-based or other teaching method</p> <p>Assessment/reassessment: Electronic or paper-based appraisal of knowledge</p>	Non-permanent staff employed 30 days or less	Permanent staff, and non-permanent staff employed more than 30 days

8.7.4. Template

Refer to Appendix 2 for the measurement template to use with this care bundle.

8.7.5. Tip

✓ Annual update days provide an opportunity to refresh knowledge.

8.8. Balancing measure

The suggested balancing measure for this bundle is uncontrolled pain.