AUSTRALIAN COMMISSION
ON SAFETY AND QUALITY IN HEALTH CARE

Selected best practices and suggestions for improvement for clinicians

Hospital-Acquired Complication **10**

MEDICATION COMPLICATIONS

	HOSPITAL-ACQUIRED COMPLICATION	RATE[a]
1	Pressure injury	10
2	Falls resulting in fracture or intracranial injury	4
3	Healthcare-associated infections	135
4	Surgical complications requiring unplanned return to theatre	20
5	Unplanned intensive care unit admission	na[b]
6	Respiratory complications	24
7	Venous thromboembolism	8
8	Renal Failure	2
9	Gastrointestinal bleeding	14
10	Medication complications	30
11	Delirium	51
12	Persistent incontinence	8
13	Malnutrition	12
14	Cardiac complications	69
15	Third and fourth degree perineal laceration during delivery (per 10,000 vaginal births)	358
16	Neonatal birth trauma (per 10,000 births)	49

a per 10,000 hospitalisations except where indicated
b na = national data not available

Many hospital-acquired complications (HACs) can arise as a consequence of medication use in hospital. This hospital-acquired complication focuses on the following three main diagnostic groups:

- Medication-related respiratory complications/respiratory depression
- Haemorrhagic disorder due to circulating anticoagulants
- Hypoglycaemia.*

Respiratory depression and complications from inappropriate dosing and management of sedatives or narcotic medications are a serious health concern. Drowsiness, confusion, myoclonic jerking, and hallucinations may precede the onset of respiratory depression, and hypoxic brain injury and death may result from inappropriate dosing of these medications.

Haemorrhagic disorder due to inappropriate dosing of anticoagulants can lead to excessive bruising or catastrophic bleeding in the form of localised haemorrhage, haematemesis, haemoptysis, malaena, and epistaxis, and may lead to circulatory collapse, shock, and even death.

The high prevalence of diabetes in our communities and hospitals, changes to oral intake during hospitalisation and the narrow therapeutic index of some hypoglycaemic agents predispose patients to hypoglycaemia. Hypoglycaemia causes symptoms such as anxiety, dizziness, nausea or vomiting, seizures and coma.

Why focus on medication complications?

Around 13,500 hospital-acquired episodes of medication complications occur each year in Australian hospitals#

Hospital-acquired medication complications increase the **length of stay and the cost of admission**§

81.7 Highest rate of this HAC at Principal Referral Hospitals†

35 Aggregate rate of this HAC at Principal Referral Hospitals

Per 10,000 hospitalisations

If all hospitals reduced their rate of this HAC to less than 35 per 10,000 hospitalisations, it would prevent at least **2,067 medication complications**

All facilities should be working to reduce their rates of medication complications.

* The specifications for the hospital-acquired complications list providing the codes, inclusions and exclusions required to calculate rates is available on the Commission's website: www.safetyandquality.gov.au/our-work/indicators/hospital-acquired-complications/

\# The data used in this sheet are for hospital-acquired complications in Australian public hospitals in 2015–16. Sourced from: Independent Hospital Pricing Authority (AU). Activity Based Funding Admitted Patient Care 2015–16.

§ Independent Hospital Pricing Authority (AU): Pricing and funding for safety and quality: risk adjustment model for hospital-acquired complications, version 3, 2018.

† Hospitals were classified in the Principal Referral Hospitals peer group for these purposes according to the Australian Institute of Health and Welfare's former definition of major city hospitals with more than 20,000 acute weighted separations and regional hospitals with more than 16,000 acute weighted separations.

Top tips for prevention and management of medication-related respiratory depression

The following provides key points for clinicians to consider to avoid this hospital-acquired complication.

Conduct risk assessment

Conduct a comprehensive risk assessment

Identify key risk factors such as:

- Impaired renal or hepatic function
- Age over 55 years
- History of COPD with CO2 retention
- Polypharmacy with agents that compromise renal or hepatic function
- Severely compromised status of health
- Smoker (>20 pack years)
- History of daytime somnolence or snoring
- Prolonged surgery (>2 hours)
- Thoracic or other large incision interfering with adequate ventilation.

For a patient at risk, develop a prevention plan as part of a comprehensive care plan

Develop prevention plan

Clinicians, patients and carers develop an individualised, comprehensive prevention plan to prevent medication-related respiratory depression that identifies:

- Goals of treatment consistent with the patient's values
- Any specific nursing requirements
- Any allied health interventions required
- Observations or physical signs to monitor and determine frequency of monitoring
- Laboratory results to monitor and determine frequency of monitoring
- If specialist assistance is required.

Deliver prevention plan

- Clinicians, patients and carers work in partnership to deliver analgesia and sedation where clinically indicated
- If medication-related respiratory depression occurs, manage patients who have opioid or sedative toxicity according to best-practice guidelines.

Monitor

- Monitor the effectiveness of strategies to prevent opioid and sedative toxicity
- Review and update the pain management plan if it is not effective or is causing adverse effects
- Engage in reviewing clinical outcomes, identifying gaps and opportunities for improvement.

Top tips for prevention and management of haemorrhagic disorder due to circulating anticoagulants

The following provides key points for clinicians to consider to avoid this hospital-acquired complication.

Conduct risk assessment

Conduct a comprehensive risk assessment

- Identify risk factors such as:
  - Impaired renal or hepatic function
  - Coagulopathies or bleeding history (patient or family)
  - Recent bleeding (within 48 hours) or active bleeding
  - Comorbidities including history of hypertension or stroke
  - Active peptic ulcer or ulcerative gastrointestinal disease
  - Polypharmacy with interactions and incompatibilities
  - Concurrent use of other medicines known to increase the risk of bleeding (such as aspirin, non-steroidal antiinflammatory drugs, clopidogrel, dipyridamole, enoxaparin, warfarin, dabigatran, rivaroxaban, apixaban) or to alter the metabolism of anticoagulants
  - History of heparin-induced thrombocytopaenia
  - Surgical procedure with high bleeding risk, such as intracranial surgery, head and neck surgery.

For a patient at risk, develop a prevention plan as part of a comprehensive care plan

Develop prevention plan

Clinicians, patients and carers develop an individualised, comprehensive prevention plan to prevent haemorrhagic disorder due to circulating anticoagulants that identifies:

- Goals of treatment consistent with the patient's values
- Any specific nursing requirements
- Any allied health interventions required
- Observations or physical signs to monitor and determine frequency of monitoring
- Laboratory results to monitor and determine frequency of monitoring
- If specialist assistance is required.

Deliver prevention plan

- Clinicians, patients and carers work in partnership to deliver anticoagulation and VTE prophylaxis where clinically indicated
- Patients who experience a bleed are managed according to best-practice guidelines.

Monitor

- Monitor the effectiveness of strategies to prevent excessive anticoagulation
- Review and update the anticoagulation plan if it is not effective or is causing adverse effects
- Engage in reviewing clinical outcomes, identifying gaps and opportunities for improvement
- Ensure appropriate follow-up has been attended.

Top tips for prevention and management of hypoglycaemia

The following provides key points for clinicians to consider to avoid this hospital-acquired complication.

Conduct risk assessment

Conduct a comprehensive risk assessment.

Identify key risk factors such as:

- Illness that impacts on glycaemic activity and metabolism
- Comorbidities or treatment plans that impact on oral intake
  - pre-procedure / investigation fasting
  - emetigenic medications
  - emetigenic treatments (such as radiation)
- Polypharmacy with interactions and incompatibilities.

For a patient at risk, develop a prevention plan as part of a comprehensive care plan

Develop prevention plan

Clinicians, patients and carers develop an individualised, comprehensive prevention plan to prevent hypoglycaemia that identifies:

- Goals of treatment consistent with the patient's values
- Any specific nursing requirements
- Any allied health interventions required
- Observations or physical signs to monitor and determine frequency of monitoring
- Laboratory results to monitor and determine frequency of monitoring
- If specialist assistance is required.

Deliver prevention plan

- Clinicians, patients and carers work in partnership to deliver a comprehensive care plan to deliver optimal blood glucose management
- Manage patients who experience hypoglycaemia according to best-practice guidelines.

Monitor

- Monitor the effectiveness of strategies to maintain optimal blood glucose control
- Review and update the diabetes management plan if it is not effective or is causing adverse effects
- Engage in reviewing clinical outcomes, identifying gaps and opportunities for improvement
- Ensure the patient is referred for appropriate support services.

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