

*Evaluation of clinical outcomes and cost consequences
of delayed discharge from intensive care: A
multicentre prospective observational study*

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Background

- Admission to intensive care is indicated when patients are critically ill.
- Timely ICU discharge may have both outcome and cost implications.
- Frequently patients experience delayed discharge from ICU due to reasons such as bed block / exit block.

- One of the quality Key Performance Indicators (KPI) for critical care services
- The Australian Council on Health Care Standards (ACHS) revealed that on an average,
 - 18% of patient discharges are delayed by at least 12 hours.
 - As high as 28% in some ICUs

- The effects of delayed discharge from intensive care unit have not been studied.
- ACHS data provides the proportion of patients where the discharge is delayed for more than 12 hours.

- It is not uncommon for some patients to stay in ICU for more than 2 days after ICU discharge decision.
- This delay may impact on the outcomes of
 - Patients awaiting discharge
 - Patients requiring ICU admission (elective & Emergency)

Impact of delay on patients awaiting ICU discharge

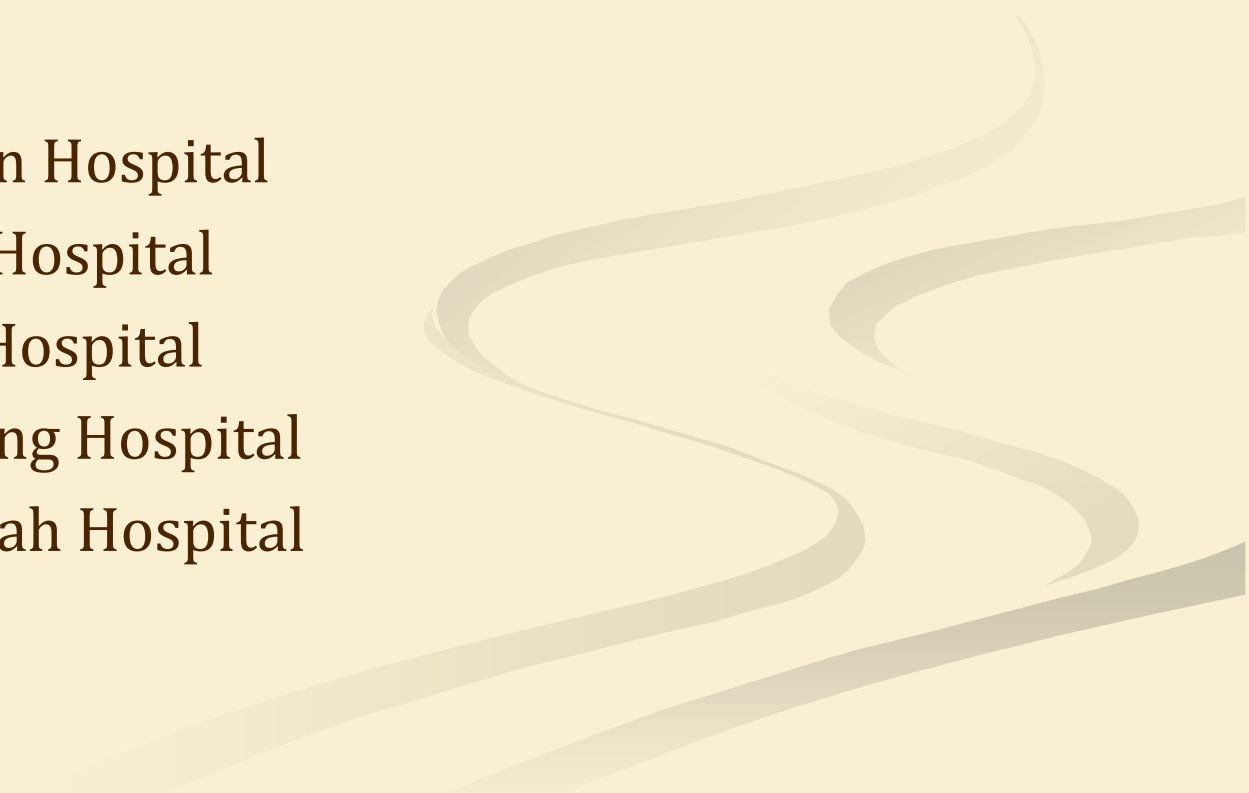
- Delayed discharge from intensive care may be associated with
 - disturbances in sleep
 - increased incidence of delirium
 - increased risk of acquiring multi-resistant bacterial infections
 - delayed or irregular reviews by the admitting team.
 - referral, review, and acceptance by the rehabilitation services

Impact of delay on patients requiring ICU admission

- This will also delay or reduce the availability of intensive care when indicated (Both emergency and elective admissions).
- Timely admission to ICU was shown to be associated with improved survival
- All these issues associated with a delay in ICU discharge may adversely affect patient outcomes and critical care resources.

- It is important to assess the incidence, duration and the impact of delayed discharge both clinically and economically.
- This may improve both clinical outcomes and the efficient use of critical care resources.

Methods

- 3-month prospective observational study involving five ICUs in Victoria
 - Frankston Hospital
 - Bendigo Hospital
 - Box Hill Hospital
 - Dandenong Hospital
 - Maroondah Hospital
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- We aim to
 - Determine the incidence and the duration of delayed discharge from ICU
 - Identify the reasons for delayed discharge.
 - Evaluate the differences in clinical outcomes and cost implications between patients who do and do not experience delays in discharge from ICU

- Patients planned for discharge from ICU will be categorised into two groups:
 - Group 1 patients are discharged within 12 hours from the planned discharge time
 - Group 2 are patients who remain in ICU for at least 12 hours from the planned discharge time.

Outcome measures

■ *Primary:*

- Duration of hospital stay *from the time the decision* was made to discharge from the ICU.

■ *Secondary:*

- Number of patient's admission to ICU delayed or cancelled
- Discharge from ICU during after hours (6PM to 8 AM)
- Incidence of delirium from the ICU discharge decision time to the first 48 hours of admission to a hospital ward.
- Survival to hospital discharge.
- The incidence of infections acquired in intensive care due to delayed discharge
- Unplanned readmissions to ICU within 72 hours
- Cost implication of delayed discharge.

- The incidence of delirium will be assessed by the Confusion Assessment Method for the ICU (CAM-ICU) by an independent person who is not an investigator of this study.
- Delirium will be assessed daily from the intended discharge time until 48 hours in the hospital ward.
- Any episodes of delirium that occurs in between the daily assessment will also be recorded and included in the analysis.

- Samples will be taken for microbiological culture if clinically indicated during the study period to identify ICU acquired infections.
- For the purpose of this study ICU acquired infection is defined as a new infection occurring after 48 of the discharge decision time but within 48 hours of the actual ICU discharge.

- Data will be collected by a designated data collector on a data collection sheet.
- The data collector will be trained in using CAM ICU.

- The details of the costs incurred from the time of discharge decision from intensive care until the hospital discharge will be retrieved from the hospital's finance department for all participating ICUs.

- Cost coding units will be used to assess the costs related to a patient's
 - consumption of drugs,
 - medical/surgical services,
 - operating theatre and recovery use,
 - allied health,
 - pathology, imaging, ICU and general ward costs during the study period.
 - Cost of medical, nursing and paramedical personnel during the study period will also be included in the analysis.

■ **Inclusion Criteria**

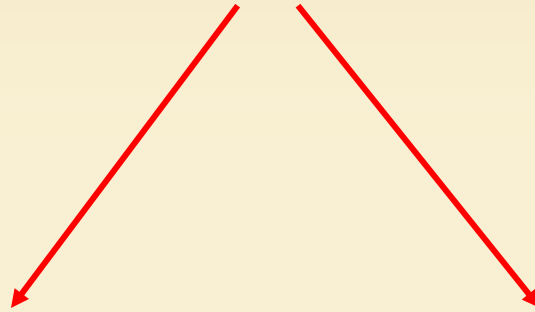
- All patients who are suitable for discharge as assessed by the intensivist in charge of the intensive care unit.

■ **Exclusion Criteria**

- There will be no general exclusion of patients. However the following patients will be excluded from assessment of delirium using the Confusion Assessment Method for the ICU (CAM ICU)
 - Patients with acute psychosis and/or severe dementia who cannot communicate.
 - Patients with inability to communicate due to severe hearing loss or brain injury.
 - Patients who were discharged for comfort / palliative care.

Organisation of the study

Patients planned for discharge from ICU



Discharged within 12 hours

Discharged at least after 12 hours

Duration of hospital stay. Admissions to ICU delayed or cancelled, unplanned readmissions to ICU within 72 hours, incidence of delirium, after hours discharge, incidence of ICU acquired infections, survival to hospital discharge and costs

Research timeline

- HREC submissions will begin at lead centres in June/July 2011
- Obtain HREC approval to commence study at all the participating centres by November 2011.
- The study procedures and processes will be refined in November 2011
- Start-up meeting in December 2011

Research timeline

- Recruitment into the study to start in February 2012 and will run for 3 months
- Completion of clinical and economic data collection by the end of June 2012
- Data analysis should be complete by August 2012
- Presentation of results should be possible by the September 2012