Characteristics of rural obstetric patients' admission to intensive care unit within a tertiary centre over 5-year period

Authors: Dr Tithi Kulkarni[1], Dr Gargeswari Sunanda[2]

Affiliations: Fiona Stanley Hospital, Obstetrics and Gynaecology Department, Perth, Australia; **Correspondence**: tithi.kulkarni@health.wa.gov.au

Background

Rural antenatal patients have increased complexity and risks regarding their care, which may require transfer to tertiary centres to manage obstetric emergencies.[1]

Western Australia has a population of over 2.6 million, with approximately 21% living in rural and remote areas (546,000) – accounting for approximately 4500 regional births annually.[2]

Due to the unique and complex maternal physiology, high risk patients often require transfer to intensive care or high dependency care units (HDU).

Objectives

The ***aim*** of this study was to ***assess the indications*** for transfer and characteristics of high-risk rural obstetric patients that ***required ICU admission***. The overarching objective remains to assess suitability for women to be cared for in high dependency units and to ensure effective resource allocation. This analysis was completed with a view to optimise cost effectiveness of our service in a tertiary, multispecialty hospital.

Methods

All patients from rural regions of WA, requiring transfer to tertiary hospital over a 5-year period (2017-2021) were analysed with demographics, indication for admission, complications and comorbidities, length of stay (LOS) being collated.

Suitability of ICU/HDU was assessed with criteria for ICU involving:

- development of organ failure (including eclampsia)
- requiring ventilatory support
- requiring vasopressor support
- complex cardiac monitoring

HDU admissions were classified as all other indications for transfer – often requiring higher levels of management than what is feasible in a ward-based environment.

Results

Over the five years, there were 24 rural obstetric patients transferred requiring ICU admission.

Mean age of patients was 30 years (IQR=9.8), and mean LOS in ICU was 36 hours (IQR=18.3).

25% of patients identified as Aboriginal or Torres Strait Islanders.

ICU patients

46% of admissions (n=11) met ICU criteria.

Mode of delivery – 36% SVD, 36% NELUSCS, 19% ELUSCS and 9% FDIU.

Majority required transfer for complex cardiac monitoring that was not feasible to be conducted in any other environment. (Figure 1)

Reasons for requirement of admission to ICU were multifactorial - primarily involving vasopressors or developing end organ failure. (Figure 2)

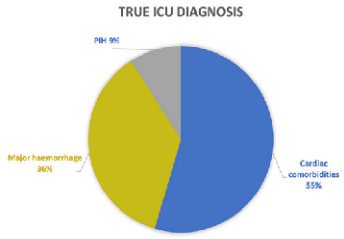

Figure 1: True ICU Diagnoses

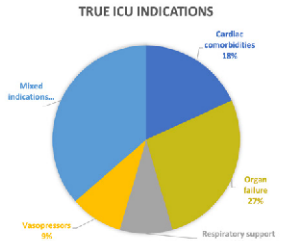

Figure 2: True ICU Indications

HDU patients

54% of patients (n = 13) required HDU monitoring only (Figure 3) – majority requiring magnesium sulfate administration for pregnancy induced hypertension, followed by monitoring post PPH requiring insertion of Bakri balloon.

Mode of delivery – 15% SVD, 85% NELUSCS.

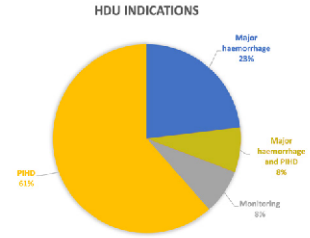

Figure 3: HDU Indications

Discussion

Most women requiring transfer to tertiary ICU – did not require ICU interventions and were better suited to be managed in HDU setting. The transfer of rural patients is associated with both psychological costs for the patient/family and monetary costs to our healthcare system[3, 4, 5]. HDUs will facilitate mother baby bonding (by nursing together), reduce length of admission, and increase ICU efficiency.

Conclusion

There is scope to consider development of obstetric HDUs within our tertiary centre, along with obstetric HDUs within regional hospitals in Western Australia to ensure holistic and efficient care.

REFERENCES

1 - Rigby AK, Richards JN, Greenhill J. Emergency rural obstetric transfers in South Australia: a review of the clinical and precipitating factors. Rural and Remote Health 2019; 19: 4634. https://doi.org/10.22605/RRH4634

2 - Wazir, M., Roxburgh, C. and Moore, S. (2022), General practitioner obstetricians' models of care in rural Western Australia. Aust N Z J Obstet Gynaecol, 62: 401-406. https://doi.org/10.1111/ajo.13483

3 - Gonzalez-Chica, D., Gillam, M., Williams, S. et al. Pregnancy-related aeromedical retrievals in rural and remote Australia: national evidence from the Royal Flying Doctor Service. BMC Health Serv Res 21, 390 (2021). https://doi.org/10.1186/s12913-021-06404-5

4 - Hicks P, Huckson S, Fenney EJ Leggett , Fisher B , Litton E. The financial cost of intensive care in Australia: a multicentre registry study. Medical Journal of Australia. 2019;211(7):324-325.

5 - Zeeman GG, Wendel GD Jr, Cunningham FG. A blueprint for obstetric critical care. Am J Obstet Gynecol. 2003 Feb;188(2):532-6. doi: 10.1067/mob.2003.95. PMID: 12592267.

RANZCOG Regional SYMPOSIUM 2023 Hobart

FIONA STANLEY hospital

RANZCOG Excellence in Women's Health