Maternal admissions to a Scottish intensive care unit

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Background
NHS Grampian is one of the fourteen territorial health boards of Scotland. It serves a population of over 525,000 people spread over an area of over 8,500 km² in the North East of Scotland. Many secondary and all tertiary services for the North of Scotland are provided in the city of Aberdeen at hospitals on the Foresterhill site, including Aberdeen Royal Infirmary (ARI), Royal Aberdeen Children’s Hospital (RACH) and Aberdeen Maternity Hospital (AMH). The Intensive Care Unit (ICU) at Aberdeen Royal Infirmary is a sixteen-bed unit providing level 3 critical care services to the health board areas of Grampian, Orkney and Shetland. It is also the neurosurgical centre for the North of Scotland and the only Scottish centre providing adult extra-corporeal membrane oxygenation. A separate six-bed Cardiac ICU provides tertiary cardiothoracic services.

AMH opened in 1937. It currently has no dedicated High Dependency Unit (HDU), although level 2 patients can be monitored in a close observation area since 2016. In 2014, the deteriorating structure of the building and its isolation from the main hospital site (figure 1) led to the decision by the Health Board to construct a new hospital in closer proximity to ARI, the “Baird Family Hospital” (figure 4). A review of historic and current ICU provision was thought to be useful in order to maternal critical care services.

Methods
Patient demographic and clinical data from September 1999 to September 2018 was extracted from computerised ICU record, WardWatcher (Scottish Intensive Care Society Audit Group). The primary reason for admission was classified according to the categories in MBRRACE-UK reports.

Results
In the 20-year period there were 148 admissions, with a mode of six admissions per year. During this time there were four deaths, one direct due to ante-partum haemorrhage and three indirect due to influenza, malignancy and subarachnoid haemorrhage. A pictographic summary of key data is shown in figure 2 and summarised charts in figure 3.

Discussion
The maternal admission rate to ICU appears higher than in the recent NMPA report. This seems to reflect historic transfer of less critically unwell patients due to a lack of HDU capacity in AMH, reflected in low APACHE-II scores and short duration of admission. The decrease in admissions for haemorrhage, over the last five years, appears to correlate with the opening of the close observation unit in AMH. The increase in admissions for sepsis comes from a increase in influenza and genital-tract sepsis.

It would seem prudent that a dedicated obstetric HDU should be established in the new maternity hospital. Appropriate training of the multidisciplinary team should commence prior to the unit opening as this may reduce ICU admissions further. To this end, a joint training programme for midwifery and critical care nursing staff is being developed and it is hoped to expand this to medical staff in obstetrics, anaesthesia and intensive care.

References