

## Towards Effective Capacity Planning in a Perinatal Network Centre

**Start date:** October 2007

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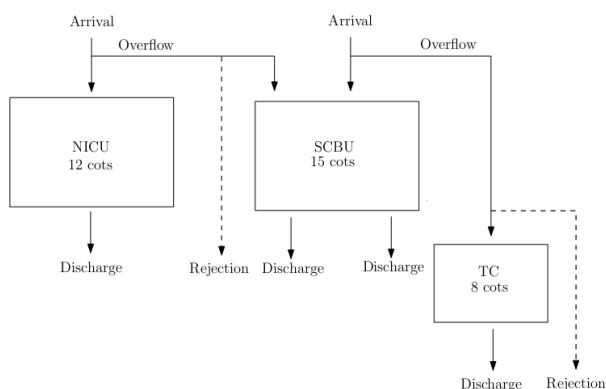
**Partners:** University College London NHS Trust and North Central London Perinatal Network

### Brief

Every year over 80 000 (approximately 10%) neonates are born premature, very sick, or very small, and require some form of specialist support in the UK. Neonatal services aim to offer high quality care for these vulnerable babies. However, due to capacity shortages, neonatal units in the UK are rejecting a huge number of neonates. Therefore, capacity planning is a major concern for all neonatal units in the UK.

### Our approach

Neonatal care is provided in specialist units that are graded into three levels set by the British Association of Perinatal Medicine (from the least intensive and most common care unit to the most intensive). first, the arrival pattern and length of stay (LoS) in the care units (i.e. neonatal intensive care/high dependency unit (NICU/HDU) and special care baby unit (SCBU)) were studied. Then, the impact of capacity shortage in a perinatal network centre was estimated and analytical models for improving capacity planning were provided. Finally, a simulation model was developed to evaluate the performance of the perinatal network.

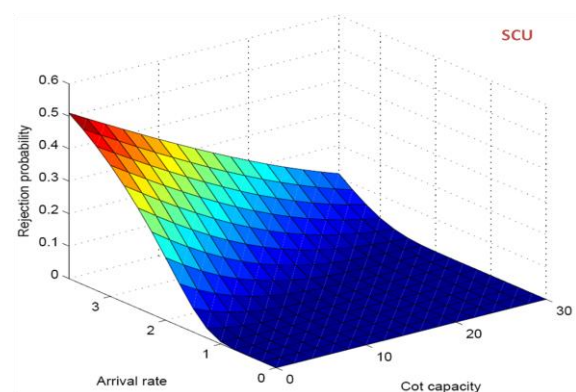
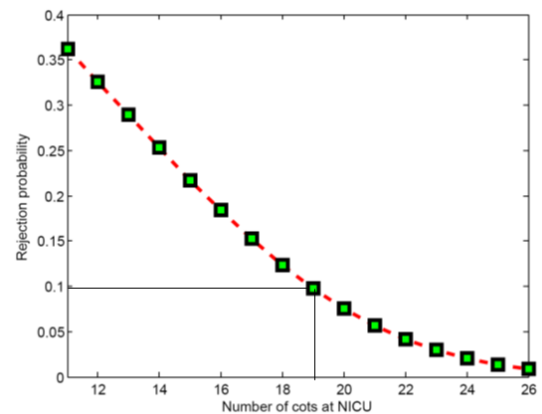


A model for UCLH neonatal unit

The data used in this study have been collected through the South England Neonatal Database (SEND) and the North Central London Perinatal Network Transfer Audit between 1 January and 31 December 2006 for neonates admitted and refused from the neonatal unit at University College London Hospital (UCLH).

### Benefits

Based on this study we determined that the arrival, length of stay and discharge of neonates having gestational ages of <27 weeks were the key determinants of capacity. The models can be used to determine the cot capacity required for specific levels of admission acceptance probabilities for each level of care at each neonatal unit of the network and specific levels of overflow to temporary care.



Rejection probability against number of cots

A new project is carried out in collaboration with Colchester Hospital to forecast high dependency cot demand in order to better predict nurse staffing.

### Contact

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