

State-of-the-art care in St Petersburg

The NICU at Children's Hospital #1 opened in 1978 and was the first specialised unit for newborn intensive care in St Petersburg, Russia, which has a population of five million.

This NICU is the largest, located at the 600-bed teaching paediatric hospital in St Petersburg and has 30 beds with 24 ventilators. With the other three NICUs there are a total of 60 beds for high risk newborns in St Petersburg, serving 15 maternity hospitals. Newborns are admitted from the city maternity hospitals, clinics in north west Russia and other regions. There are no perinatal centres in St. Petersburg so all high risk newborns are transferred to the four NICUs at the paediatric hospitals, and there is a special ambulance team for this purpose.

The NICU at CH#1 takes the most complicated cases and can be considered as a tertiary level NICU. Admitting surgical and non-surgical patients, the unit provides conventional respiratory support

Procedure nurse Marina Sergeeva dresses a baby after changing a wound dressing.



as well as high frequency oscillatory ventilation, surfactant therapy and total parenteral nutrition. Nitric oxide is used for patients with severe persistent pulmonary hypertension, however no ECMO is provided. Most patients are admitted to the NICU in the first hours of life, and many congenital surgical anomalies are treated in the first hours and days of life (congenital diaphragmatic hernia, intestinal perforations, cardiac malformations, etc). Two thirds of patients admitted to the unit are premature – the smallest surviving baby treated on the unit was 650 grams birth weight.

The importance of human touch is not forgotten – the unit tries to implement developmental care and kangaroo care when possible, provide adequate pain management and let mothers stay in the hospital 24 hours. Patients are not discharged from the NICU to home – there are two intermediate units for infants in the hospital with 150 beds, and patients are transferred to these units for rehabilitation and later discharge to home. The average stay in the NICU is 11 days, and about 40 days in the hospital overall,



The distinctive Church of the Savior on the Spilled Blood in St Petersburg marks the spot where Alexander II was fatally wounded in an assassination attempt on March 1, 1881.

depending on birth weight and disease.

Many changes have occurred in the unit since 1978, not only in methods of treatment and care but also in the structure of the unit and organisation of the workload.

In 1990, a collaboration with neonatal specialists from the Children's Hospital Oakland in California, USA, began. During two-week visits of the American team, technological advances were combined with educational sessions, seminars and lectures, daily clinical rounds, discussions and skills training. Both nurses and doctors were involved in the project, building an effective and innovative team.

In 1993, with support from the Health Care Committee of St Petersburg and American colleagues from Oakland, the NICU was reorganised and rebuilt. The number of cots increased from 12 to 30 and the number of nursing personnel grew as well – the nurse to patient ratio was increased from 1:3 to 1:1 or 1:2.

The use of double-walled incubators, ventilators with different modes of respiratory support, nasal continuous

positive pressure, better monitoring and diagnostics, early surfactant administration and non-surgical closure of patent ductus arteriosus, total repair of tracheal oesophageal fistula and ventricular shunting for babies with hydrocephalus are some examples of the advancements in treatment.

As a result of this work, the mortality rate has decreased tremendously – in 1987 the mortality rate was 33% and the number of admissions around 300 patients a year¹. In 2007 the overall mortality on the unit was 5.4% of 999 admissions.

Over the last decade the nursing personnel have been organised into groups in order to enhance care:

- staff nurses work with patients providing direct treatment, care and comfort measures, vital signs monitoring, swaddling, bathing, etc
- technical nurses look after respiratory equipment, gas and vacuum supply, gas humidification, monitoring equipment, infusion pumps and all technical equipment, prepare beds for admissions and transportation within the hospital
- local pharmacy nurses prepare IV solutions, antibiotics, bolus infusions, order IV solutions at the hospital pharmacy – helping to economise on medications, enhance the direct care given by the staff nurses and improve the infection situation on the unit
- procedure nurses provide 24-hour venous and arterial access, perform wound dressings, assist surgeons during interventions on the unit and act as team leaders during the shift
- nurse administrators and educators (manager, educator, infection control nurse) are responsible for working standards, staff scheduling, ordering supplies, monitoring nosocomial infections, providing continuing education and controlling given care, and collecting statistical data and keeping the unit's database.

This organisation structure has proved its effectiveness: statistically the unit is the best in St Petersburg, and across Russia when compared with units of the same level¹.

Candidates holding a diploma in nursing are usually recruited as staff nurses, taking on a more specific role after training has been given on the unit. As the neonatal nurse specialty is not officially recognised in Russia, the unit tries to fill



Staff nurse Irina Farhutdinova provides inhalation therapy for a premature baby boy with chronic lung disease.

Staff nurse Olga Dorohova assists procedure nurse Assol Beach putting in a percutaneous silastic line.



the gap by providing in-service and continuous education. International collaboration has influenced staff interest in continuing education – five NICU nurses have higher education diplomas (approximately equivalent to a Bachelor's

degree) while another holds a Master's degree from the University of Chester, UK.

Nurses can rotate within the unit if they choose to. Usually the most experienced nurses become procedure nurses and the technical roles tend to be taken up by men. Procedure nurses and therapists are often invited to share their highly valued skills with other units in the hospital. Now the NICU shares its knowledge and experience throughout St Petersburg and across the country, while many nurses and doctors from other neonatal units in Russia come to visit and learn.

In 2006, the first All Russian Neonatal Nursing Conference was organised by NICU nurses and held at Children's Hospital #1. More than 130 neonatal nurses from across Russia joined guest speakers from Sweden, the UK and

America to exchange practice experience and knowledge, and to discuss the idea of establishing a Russian Neonatal Nurses Association to improve care.

Technical, medical and knowledge advancements, combined with the change in the nurse role giving more autonomy and responsibility, as well as continuous international professional collaboration, are the key factors that have led to success and better care.

Reference

1. **Lubimenko VA.** Annual Chief Neonatologist Report, presented at the Health Care Committee of Saint Petersburg, February, 2007. Saint Petersburg, Russia (unpublished).

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