

Newborn Intensive Care in Saint Petersburg, Russia

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Historical Perspective

The first 6-bed NICU of Saint Petersburg was opened January 2, 1978, at the Children's Hospital #1, Saint Petersburg, Russia (Lubimenko, 2005, a). The unit was the first specialized department for high risk newborns (surgical and non-surgical) where treatments and care were provided only for severely ill newborns. Earlier all high risk newborns were treated at Pediatric Intensive Care Units (PICUs) if they survived at a maternity house. Later on the unit was expanded to 12 beds. Before 1978, there were only 3 beds for newborns with congenital malformations. This section was opened in 1971 at the Leningrad Pediatric Medical Institute. After opening NICU at CH#1, three other NICUs were soon to follow in Saint Petersburg: Children's Hospital (CH) #17, CH#4, CH#22. With these four units there are a total of 60 beds for high risk newborns at the NICUs of Saint Petersburg, serving 15 maternity houses (Lubimenko, 2005, a).

Perinatal Centers and Neonatal Transports

There are no perinatal centers at St. Petersburg so all of high risk newborns are transferred to the 4 NICUs of the city. This requires transports to these centers. The history of this referral and transport system dates back to the late '60s. In 1969 in Saint Petersburg there was one special team of ambulance (transport service team) that transported surgical newborns to children's hospitals and it was served by 'feldshers', special nurses with advanced educational background, some kind of nurse practitioners

(Lubimenko, 2005, a). In 1976 there were two neonatal transport teams run by physicians already. In 1978 the informational center of consultation and neonatal intensive care has been established (ICCIC) (Lubimenko, 2005, a). This center collected all the information about sick newborns in the city, served as a database center monitoring the severity of conditions of ill newborns, providing consultations to the physicians at maternity houses, and providing transportation to the NICU at CH#1 if there was a need. The ICCIC had all the information about high risk newborns in the city and it helped to control the situation in the city.

NICU at Children's Hospital #1

NICU at CH#1 is the biggest neonatal intensive care unit at the biggest teaching hospital in the 5 millions city of Saint Petersburg: 30 beds, 24 ventilators; it is the biggest NICU in Russia (Lubimenko, 2005, a). NICU of CH #1 serves for all high risk newborns (term and preterm): this is the only unit in St. Petersburg, which provides treatment and care for surgical newborn patients, including babies with cardiac malformations. NICU in CH #17 mostly specialize in the care of preterm babies, referring surgical patients to the NICU at CH#1. Newborn patients admit from the city, Leningrad region, North West of Russia, other regions of Russia.

NICU at CH#1 can be considered as tertiary level NICU. Mortality rate in the unit is the lowest in Russian NICUs (Lubimenko, 2005, a). In 2004 the overall NICU mortality was 6,3%, mortality in babies weighing < 2000 grams - 8,8%, mortality in babies weighing > 2000 g - 4,5%, number of admissions 1073. To compare, in 1987 the mortality rate was 33% and number of admissions was about 300 patients a year (Lubimenko, 2005, b).

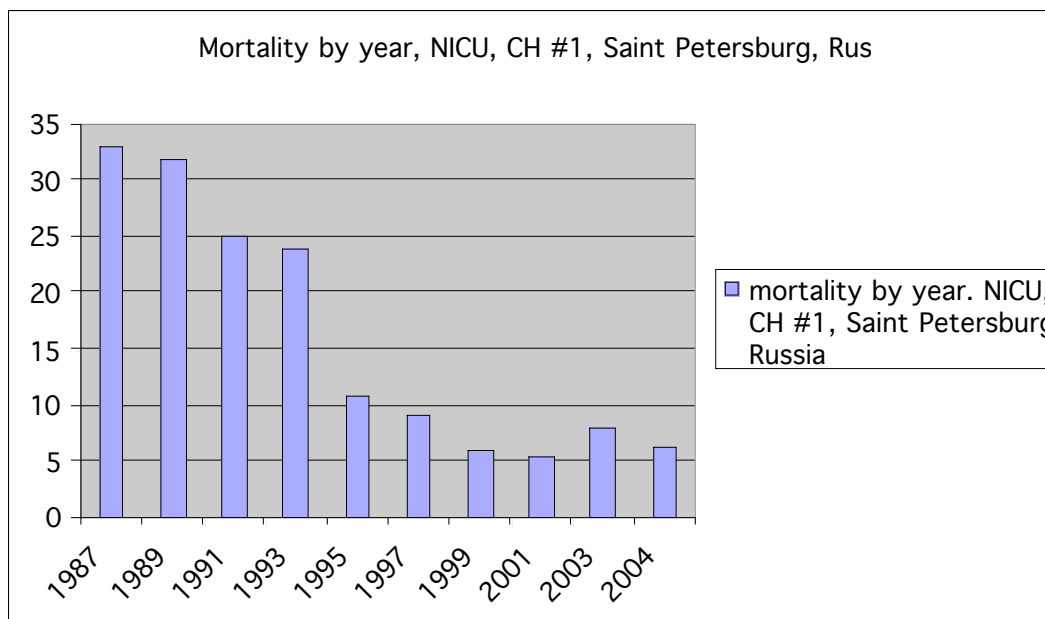
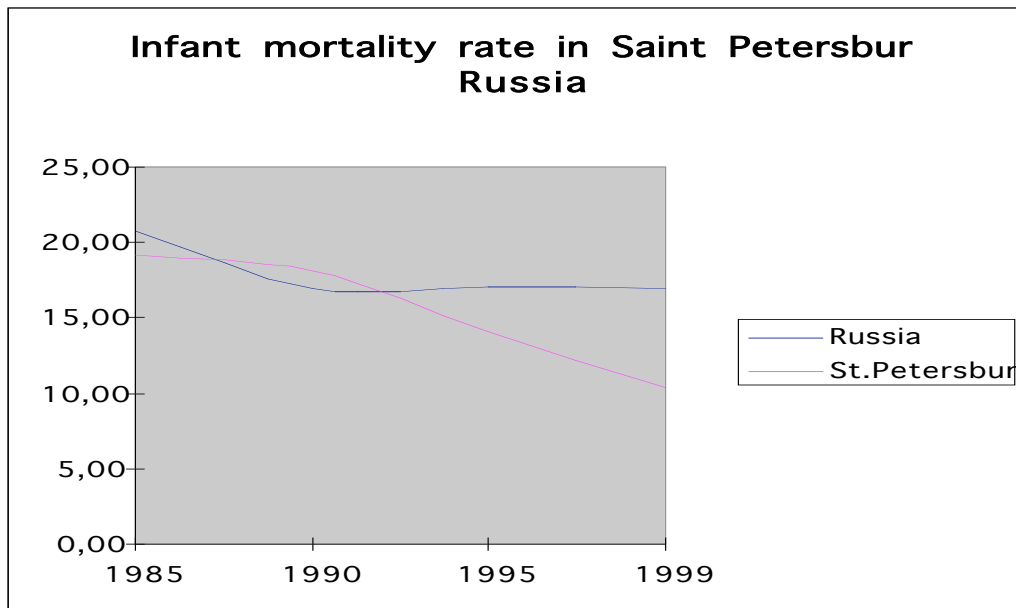
From the beginning there were many changes occurred in the unit, not only in methods of treatment and care but also in the structure of the unit and organization of work. In 1993 (with the support from Health Care Committee of Saint Petersburg and American colleagues from Oakland, CA, USA, the unit was reorganized and rebuilt. The number of bed increased from 12 to 30 beds, the number of nursing personnel vacancies expanded from 24 till 141 to keep the nurse-patient ratio 1:1 in order to improve quality of given care. Previously this ratio was one nurse to 3-4 patients. Centralized air, oxygen and vacuum supply stations, active ventilation system were build as well as the unit was reconstructed on the same floor square capacity.

The personnel of the unit were organized into 6 groups in order to enhance level of given care: 1) staff nurses working with patients providing treatment and care, 2) nurses who do all the equipment cleaning (including domestic cleaning staff into that group), 3) group of technically working nurses who serve for equipment and prepare beds for admission of new patient (some kind of respiratory therapists), 4) local pharmacy nurses, 5) group of procedure nurses (who put in IV lines 24 h, perform wound dressings, assist surgeons during interventions like thoracic drainage, peritoneal drainage etc), 6) group of nurse administrators and educators (managers, educators, infection control nurse).

All the labor division in nursing personnel was done in order to improve given care. The staff nurses provide direct treatments and comfort care for the baby such as infusions, vital signs monitoring, swaddling, bathing etc. They do not do domestic cleaning and washing as it used to be a while ago. The second group of nurses does all the non-disposable equipments and supplies cleaning (incubators, respirators, instruments). The unit has also a group of domestic staff cleaners who do floor cleaning and other things like that. The third group of nurses take technical care of all equipment

(monitoring work: of respiratory equipment, gas and vacuum supply, gas humidification, monitoring equipment, infusion pumps), provides transportation of the baby within the hospital (to the OR or for MRI, for instance); they are mostly male nurses. The goal of making this group was to enhance level of given care, give more time to staff nurses to caring, to diminish incidence of technical problems and equipment damage. The fourth group is nurses working for unit's pharmacy: preparing and mixing IV solutions, antibiotics, bolus infusions, ordering IV solutions (glucose, saline, bicarbonate) at the hospital central pharmacy – it helps to economize medications and money, to enhance direct care given by the group of staff nurses and improve infection situation in the unit. The fifth group of nurses – called procedure nurses – helps to provide IV and arterial access round-the-clock, continuity of wound care: they also assist to a surgical team during surgical procedures within the unit thus minimizing the use of anesthesiology team providing assistance during insertion of drainages or venisection. These nurses provide highly skilled and quality nursing care, serving also as team leaders during the shift within the unit. The last group (nurse managers, nurse educator and infection control nurse) is responsible for quality of work of the personnel, do all the staff scheduling, order supplies and medications in the hospital central supply unit, monitor infections at the unit and work together with hospital epidemiologist, provide education of nurses and control given care, collect statistical data and keep unit's database.

This kind of unit organization and structure has proved its effectiveness: statistics of the unit is the best in Saint Petersburg and all over Russia (Boykova, 2003; Taiz 2004). In last 27 years the number of babies admitted to the unit comes to 15108, annual number of admissions increased four times, mortality rate decreased from 48% in 1979 till 6.3% in 2004. Some Saint Petersburg and NICU, CH #1, statistical data presented below (Lubimenko, 2005, b).



References:

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