

Neonatal clinic

Outpatient part of the NICU

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Iceland

- Population of Iceland 343.960
- Capital area 219.900 - Reykjavik and surrounding towns (64%)
- 4034 children were born 2016
 - 1,7 children per woman – never been this low since 1853
 - Compared to other European countries Iceland has the highest rate of children born out of marriage
 - Neonatal mortality rate 1,5/1000 in 2015 - the lowest in Europe
 - Landspítali University Hospital is both the largest birth facility and the main referral hospital for high risk pregnancies and childbirths in Iceland
 - 75% of children are born at the Landspítali University Hospital
 - Next highest is Akureyri with 9,4%
 - 1,8% home birth rate
 - Caesarean section rate in Iceland is 16,3%
 - UK=26,2%. Netherlands=17%, USA=32,5%, Turkey=50,6%, Germany=31,3%



75% of Icelandic population

NICU

- Only NICU in Iceland – level III to IV according to AAP
 - Care for preterm infants from week 23
 - Surgical and medical
 - Stabilize and set up for ECMO but not ECMO care team
 - No open heart surgeries – Sweden/Lund
- 22 beds
 - 10 ICU beds
 - 12 high risk beds (level II)
 - 3 (+) rooming in beds – for the last days before going home or terminal care
 - Open for the whole family (family is what the parents decide) – siblings from 4 years
 - Parents can stay 24/7 – but can't get a bed
 - Parents can stay during rounds
 - Other guests the family chooses are welcome 2 hours a day – preferred one at a time



NICU

- The team

- 1 head nurse
- 1 assistant head nurse
- 2 Neonatal clinical nurse specialists
- 30 nursing positions – 50 nurses working approx. 70%
- 1.2 assistant nurses positions – 2 persons
- 1 secretary
- Neonatologists 5 positions – 7 persons
- 1 physician in training
- 1 social worker 100% position
- 1 psychologist 20% position

- Nutritionist, physiotherapists

- Nurses work shifts 8 or 12 hours

- 8 nurses are also midwives
- 7 have a neonatal nursing diploma
- 5 have a MS in nursing



Patients at the NICU

- 252 premature (<37 weeks) infants were born in Iceland 2016
- 237 at Landspítali University Hospital (94%) - 7,6% of all infants born at the hospital (2016)
- 15 premature infants 34-36^{6/7} weeks were born in Akureyri (2016)



- Admitted to the NICU – approx. 400 neonates per year
 - 40% preterm
 - 60% full-term
- Of premature infants late preterm (34-36^{6/7}) constitute around 70% of all preterm infants that are admitted
- 10 to 15 infants with birth weight < 1000g and/or born 23 to 26^{6/7} weeks
- Around 35 with birth weight 1000 to 1500g and/or born 27 to 31^{6/7} weeks
- Sick full-term neonates
 - Respiratory problems – wet lungs, pneumonia, IRDS, meconium aspiration...
 - Infections / sepsis
 - Asphyxia
 - Birth defects – congenital heart problems, diaphragm hernia, gastroschisis ...
 - Metabolic diseases



Neonatal clinical nurse specialists (NCNS) at the NICU in Landspítali University Hospital

To the unit – Elín

- Nursing care of the sickest babies
 - Trains nurses
 - protocols and leads implementation of new equipments and nursing care (respirators, arterial lines, suction sistem...)
- Leads the transport team
- Protocols/implementation/training – lowering the admission rate to the unit (i.e. observation babies, babies with low blood sugar) – communication to the delivery unit
- Assesses the need and plans for education of the nursing staff

From the unit - Rakel

- Family centered care
 - Feeding, closeness/separation of the family,
- Enteral nutrition - Breastmilk/feeding
 - protocols and leads implementation
 - Assesses the need and plans for education of the nursing staff
 - Counseling to mothers before, during and after NICU stay
- Discharge of neonates
 - Infants with complex problems
 - To other units, hospitals, home
 - Trains nurses
 - Protocols and implementation
- Outpatient NICU clinic

Outpatient NICU clinic – role of the NCNS

Follow up of premature related problems and support to parents

- <1000g and/or < 27 weeks
- Follow up at 7 points during the first 2 years – to detect developmental problems related to prematurity
- The team - NCNS, neonatologist, physiotherapists, nutritionist, psychologist, speech and language pathologist, social worker
- Follow the growth and development of the child and the parent/child interaction
- Approx. 30% have feeding problems – most demanding group
 - Problems with weight and/or feeding, Parents need more support, Breastfeeding issues, Issues related to lung problems – BPD, Aversion, vomiting and growth faltering
 - Role of the NCNS – support to parents and set up the care plan for the child with support from the neonatologist – communication/meeting the family at the clinic



Outpatient NICU clinic – the role of the NCNS

- Premature infants discharged from the NICU with a feeding tube (FT)
 - Infants not matured enough to breastfeed exclusively – dependent on FT
 - Lead by and organized by the NCNS who sets up the care plan with the parents – infant is “discharged” to be followed up by a neonatologist or the premature infant follow up clinic when the FT is out
 - The team is NCNS and a NICU nurse (from sept 17)
 - The on call neonatologist is a support if needed
- Full term infants discharged from the NICU with a FT
 - Congenital problems i.e. heart problems, lung problems
 - CNS problems
 - Follow up is a team work with the physician (neonatologist, pediatrician) because of often more complex medical problems
 - Transferal to other teams at the outpatient clinic of the Children’s hospital



Preterm infants discharged with FT

- The program started in 2014
- Discharge criteria changed
 - Not a certain weight criteria
 - FT is not a hindrance for discharge
 - Infant must be at least 35 weeks
 - No apnea for 7 days (no coffee for 7 days)
 - Parents must speak Icelandic or English
 - Live in the south west corner (not the same criteria during winter)
- Work/care at the NICU – coordinated (the same nurse is responsible for preparing for discharge at the unit)
 - Teamwork – staff and parents
 - Parents take care of the infant 24 hours a day earlier
 - Teaching to parents and preparing for home
 - CPR, care of the FT, how to read the infants signs
- Follow up at the outpatient clinic
 - Parents bring infant to the clinic 2x a week to meet the NCNS
 - Parents can phone any time (NCNS or the NICU)
 - Physician meets the infant and parents 2-7 days after the FT is out

The goal of the FT discharge

- Closeness of families
- Breastfeeding
- More nurses for the sickest infants



- 2014
 - 155 preterm infants were admitted to the NICU – 7 were discharged home with a FT
- 2015
 - 155 preterm infants were admitted to the NICU 34 (22%) were discharged with a FT
- 2016
 - 146 preterm infants were admitted to the NICU 67 (46%) were discharged with a FT
- On average each infants stays for 3 to 10 days shorter at the NICU
- Infants come 2-4 times to the clinic (2 to 7 times)
- In 2016 1 to 10 preterm infants with FT were cared for at the clinic each week

