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
- Landspitali 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 Landspitali 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 Landspitali University Hospital (94%) - 7.6% of all infants born at the hospital (2016)
- 15 premature infants 34-36\(\frac{6}{7}\) 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\(\frac{6}{7}\)) constitute around 70% of all preterm infants that are admitted
- 10 to 15 infants with birth weight < 1000g and/or born 23 to 26\(\frac{6}{7}\) weeks
- Around 35 with birth weight 1000 to 1500g and/or born 27 to 31\(\frac{6}{7}\) 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 deceases
Neonatal clinical nurse specialists (NCNS) at the NICU in Landspitali 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 coffein 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