



LEVEL of Neonatal Care : What is it?

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Objective

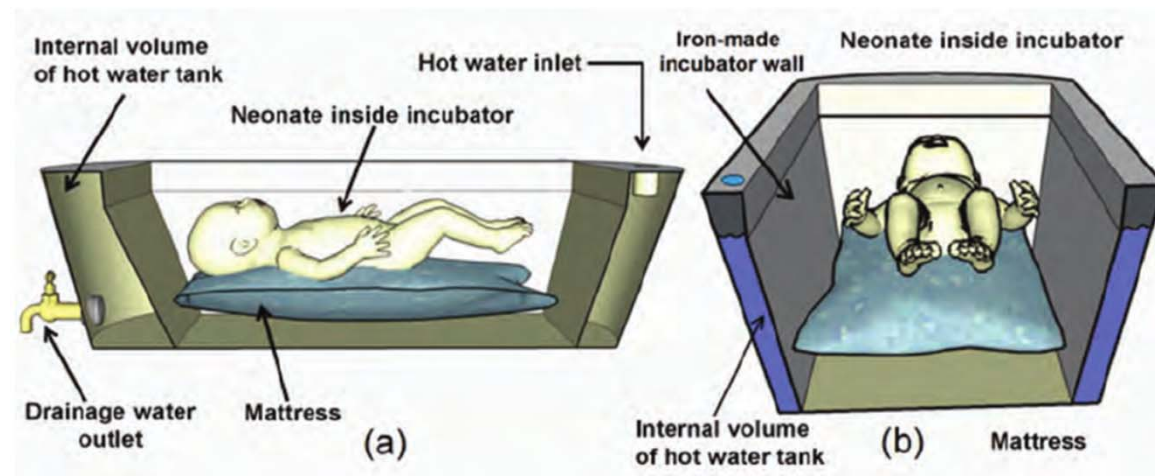
- I. History of neonatal care
- II. What's neonatology? Is neonatologist the same as pediatrician?
- III. What's NICU?
- IV. What are the difference level of neonatal care?
- V. How about NICU of Calmette Hospital?
- VI. Conclusion

I

History of neonatal care

- Before NICU opened, the care of newborn babies, sick or well, remained largely in the hands of mothers and midwives and died within hours at home.
- Physicians rarely did anything to save the premature infants and resigned themselves to see this mortality as a law of nature, not amenable to medical effort.
- Doctors took an increasing role in childbirth from the 18th century onward.

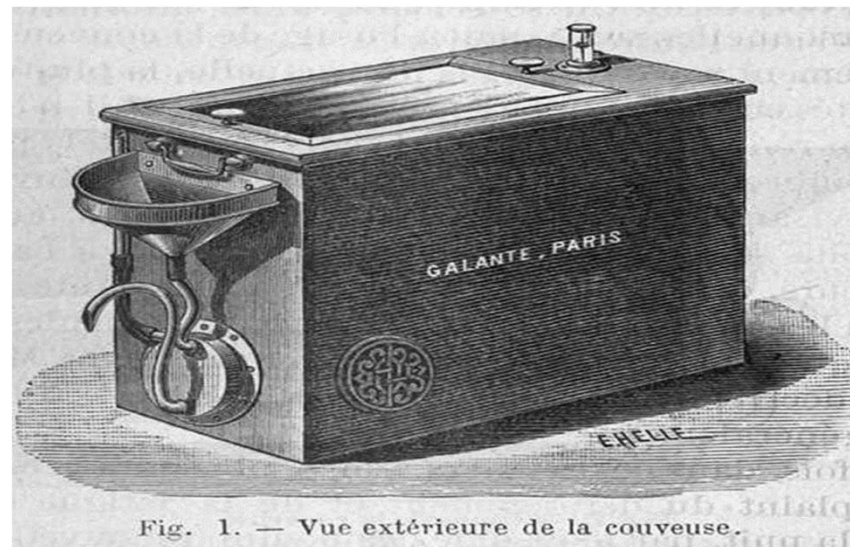
In 1835, First known incubator by **Dr. von Ruehl**, “warming tube”, installed in the Moscow Foundling Hospital in 1850



In 1880, French obstetrician **E.S. Tarnier** introduced 2 simple but effective interventions on the ward of Paris's largest maternity (Port-Royal Maternité):

- The incubator (incubators to hatch chicken eggs)
- The gavage feeding tube

- Tarnier's work contributed to a 28% decrease in infant mortality over three years at the French maternity hospital.



“Father of the incubator”

- ❑ At the turn of the century, many hospitals in both America and Europe did not allow technology such as incubators to be used within their walls.
- ❑ It was not until 1922, however, that hospitals started grouping the newborn infants into one area, now called the neonatal intensive care unit (NICU).

II

What's the neonatology?

- The term “neonatology” was coined by Dr. Alexander Schaffer, American pediatrician, in 1960.
- In 1963, the death of Patrick Bouvier Kennedy, a "pivotal year" for neonatology, an explosion in neonatal research resulting in greater understanding of neonatal respiratory physiology and pathophysiology.
- Official certification for neonatology in 1975.
- subspecialty of pediatrics that consists of the medical of newborn infants, especially the ill or premature newborn.

Is neonatologist the same as pediatrician?

- It is often that we mistake that Neonatology and Pediatrics both are the same sectors but in reality it is not.
- A neonatologist is a **doctor who focuses only on the health and well-being of newborns.**
- **A neonatologist is always a pediatrician,** but a pediatrician is not always a neonatologist.
- A pediatrician needs neonatology fellowship subspecialty training before becoming a Neonatologist.

III

What's the NICU (Neonatal Intensive Care Unit)?

- Neonatal: Neo = new, natal=pertaining to birth or origin
- Neonatal period = first **28 days of life**

- NICU is a hospital intensive care unit that specializes in taking care of newborns who are extremely ill or extremely premature baby.

- At NICU, babies get around-the-clock care from a team of neonatologist expert.

IV

What are the difference level of neonatal care?

- The concept of designations for hospital facilities that care for newborn infants according to the level of complexity of care provided was first proposed in the United State in 1976.
- A meta-analysis of the published literature from 1978 to 2010 clearly demonstrates improved outcomes for VLBW infants and infants <32 weeks' gestational age born in level III centers: born at **non-level III hospitals** had a **62% increase in odds of** neonatal or predischarge **mortality** compared with those born at level III hospitals.

Level of Neonatal Care by AAP

Level	Capabilities	Provider
Level I Well newborn nursery	<ul style="list-style-type: none"> - Provide neonatal resuscitation at every delivery - Evaluate and provide postnatal care to stable term newborns - Stabilize and provide care for infants born 35–37 wk - Stabilize newborn infants who are ill and those born at <35 wk until transfer to a higher level of care 	Pediatricians, family physicians, nurse practitioners
Level II Special care nursery	Level I capabilities plus: <ul style="list-style-type: none"> - Provide care for infants born ≥ 32 wk , BW ≥ 1500 g - Provide care for infants convalescing after intensive care - Provide mechanical ventilation for brief duration (<24 h) or CPAP - Stabilize infants born < 32 wk , BW < 1500 g until transfer to a neonatal intensive care facility 	Level I health care providers plus: Pediatric, neonatologist, and neonatal nurse practitioners.
Level III NICU	Level II capabilities plus: <ul style="list-style-type: none"> - Provide sustained life support - Provide care for infants born <32 wk, BW <1500 g and infants born with critical illness - Provide prompt and readily available access to a full range of pediatric medical subspecialists - Provide a full range of respiratory support that may include conventional and/or high-frequency ventilation and inhaled nitric oxide - Perform advanced imaging including computed tomography, MRI, and echocardiography 	Level II health care providers plus: Pediatric medical subspecialists
Level IV Regional NICU	Level III capabilities plus: <ul style="list-style-type: none"> - Provide surgical repair of complex congenital or acquired - Maintain a full range of pediatric medical subspecialists, pediatric surgical subspecialists, and pediatric anesthesiologists at the site 	Level III health care providers plus: Pediatric surgical subspecialists

Level of Neonatal Care by French

Level	Capabilities	Provider
Level I: Maternity	<ul style="list-style-type: none"> - ≥ 36 weeks, ≥ 2000g - Antibiotherapie < 72 h - Phototherapy 	MD, midwife, family
Level II IIA (Néonatalogie+Kangourou)	<ul style="list-style-type: none"> - ≥ 34 weeks, ≥ 1600g - Antibiotherapy for 7 to 10 days - Gavage - Umbilical vein catheter /peripheral IV 	Nurses and physician must be trained with basic neonatal care and resuscitation
IIB (Soins intensif)	IIA plus: <ul style="list-style-type: none"> - Mechanical ventilation < 24h 	Neonatologist, neonatal nurse
Level III Réanimation néonatale	<ul style="list-style-type: none"> - < 32 weeks, <1200g - central perfusion, TPN, all type ventilator 	Neonatologist, nurse specialized in NICU

Ratio of level of care bed

- If in the hospital have only inborn : per 1000 live births per year born in the hospital, they need at least:
 - Level 2 (SC) : 2-2.5 beds
 - Level 3 (NICU) : 0.5 beds
- If the hospital accepting in-utero transfer and outborn neonates : per 1000 live births per year born in the hospital, they need at least:
 - Level 2 (SC) : 3.5-4 beds
 - Level 3 (NICU) : 1.5-2 beds

VI

How about NICU of Calmette Hospital?

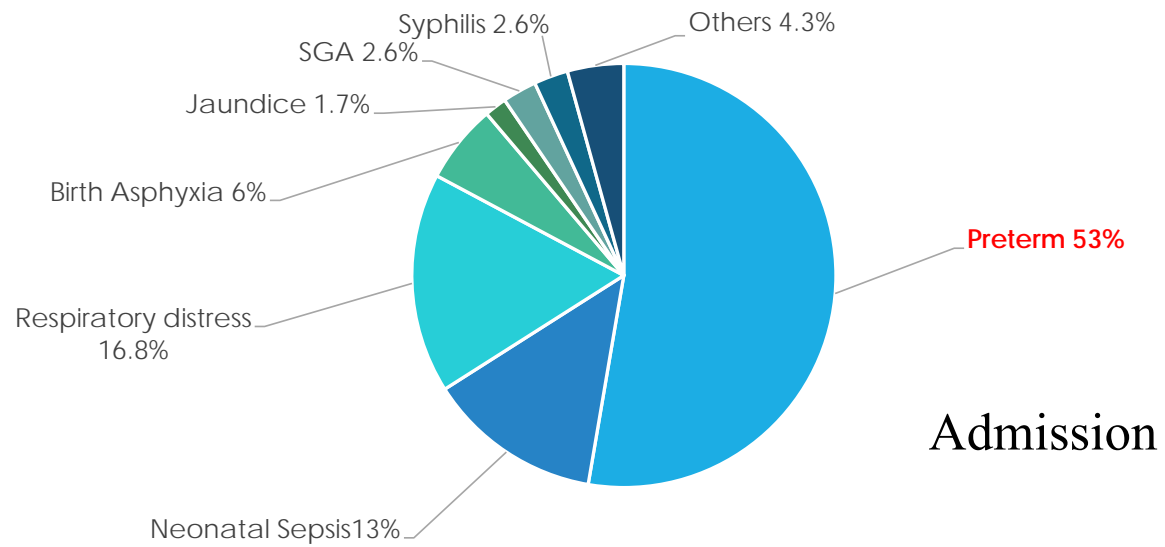
Beds	Human Resources	Activities provided
76 beds : <ul style="list-style-type: none">- Neonatal ICU 15 beds- Special Care 25 beds- Nursery Care 10 bed- Isolation room 6 beds- KMC 10 beds	<ul style="list-style-type: none">- 1 Consultant Professor- 9 Specialized Doctor (Diploma from French and China)- 47 Nurses	<ul style="list-style-type: none">- All types of ventilation (CPAP, SIMV, HFO)- Central catheterization (UVC, PICC)- X-ray- Heart US- Head US- FO- Newborn screening



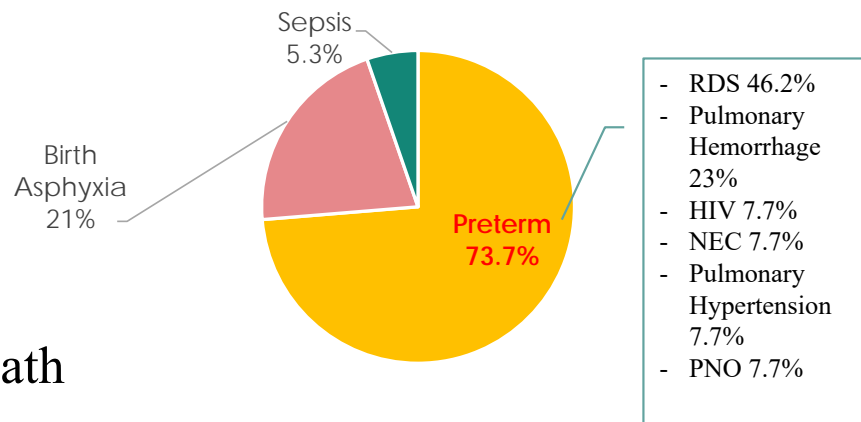
Level III NICU in Cambodia One stop Medical service for newborn



Causes of admission & Causes of death



Death



V

Conclusion

- ❑ Neonatal care: highly cost- effective, saving the life of a newborn baby is associated with survival and productivity of the future adult.
- ❑ About 80-90% of neonates require minimal care, 10-20% of neonates includes in special care and only 3-5% need this care by skilled nurses and neonatal intensive care.
- ❑ The definition of a **Level of Neonatal Care** may vary in different country and according to some classification systems, a level 3 NICU is the highest level of neonatal care,
 - **Uniform definitions** for providing neonatal care, base on functional **capabilities**, availability of appropriate **personnel**, physical **space**, **equipment**, **technology**, and organization.
- ❑ Evidence suggests that:
 - Mortality is lower for babies receiving even short term neonatal intensive care with a doctor trained and experienced in advanced resuscitation skills,
 - Babies who need intensive care do better if they are born in a hospital with a NICU than if they are moved after birth.
- ❑ Alongside this, series of **networks** should be organized => hospitals can work together to ensure that expert care can be delivered when it is needed.

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THANK YOU FOR YOUR ATTENTION