

# The Care Cloud

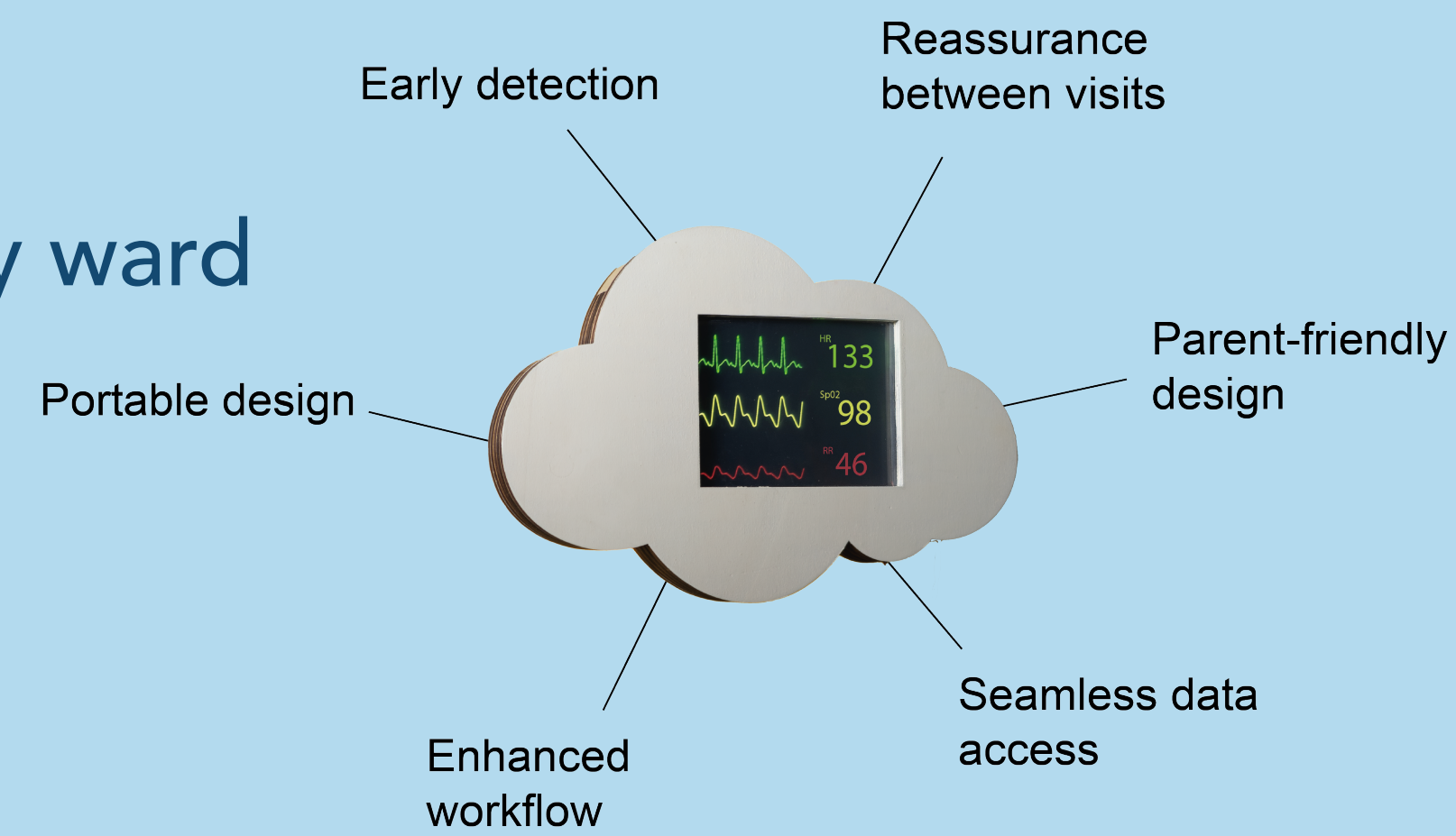
A solution for continuously monitoring neonates at the maternity ward

## The problem

Some neonates are at a higher risk of developing infections, known as early-onset neonatal infection. This occurs in 0.5-8.0 out of every 1,000 births (Tesini, 2022) and refers to bacterial infections that develop within the first 72 hours after birth. Early-onset neonatal infections could be life-threatening and must be recognized quickly. However, identifying infections early is challenging, necessitating close monitoring at the maternity ward. Currently, neonates are monitored manually through intermittent visits by care professionals. Unfortunately, gaps between monitoring visits may lead to unrecognized deterioration, delaying recognition and treatment.

## The solution

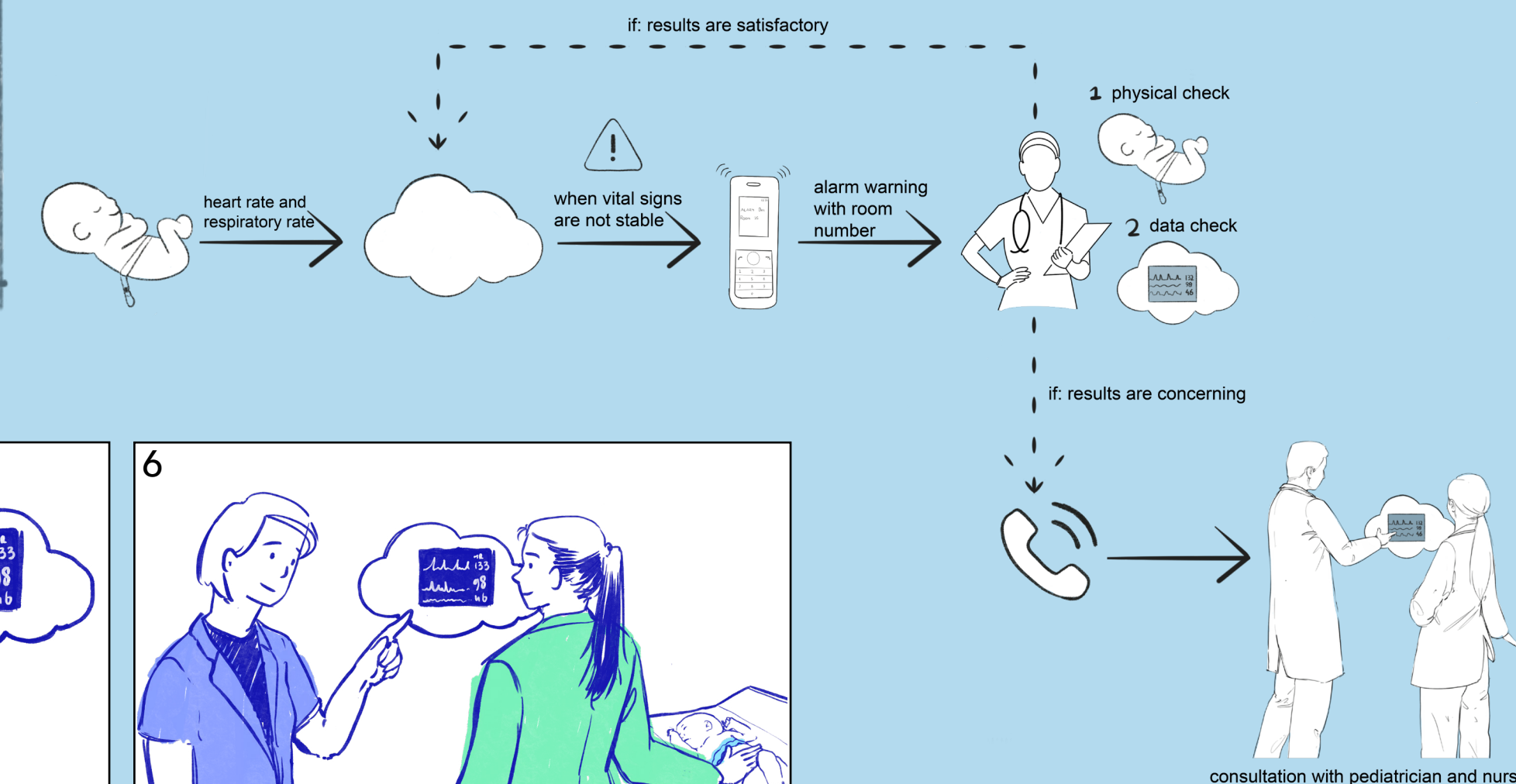
To improve the observation period and solve the problems with the current way of monitoring, the Care Cloud is designed. The Care Cloud is a nurse- and parent-friendly way of continuous monitoring neonates at the maternity ward. There is a patient monitor and Bambi Interface inside, connected with the Bambi Belt (worn by the neonate) to wirelessly monitor the vital signs. The vital signs are transferred to the monitor and can alarm the nurse if needed. The Care Cloud has two modes, the 'rest mode' where the cloud is white and the monitor is not visible (to assure the rest of the parents) and the 'active mode' where care professionals can unlock the cloud and the monitor becomes visible. It integrates both technical and social aspects to address the needs of the stakeholders in the maternity ward.



## Values for focus areas

- Medical aspects:**
  - Quicker identification, can be integrated with predictive algorithms, enables timely start of treatment if necessary.
  - Avoids unrecognized deterioration of the neonate's condition.
- Nurses:**
  - Reduced worries between the intermittent visits.
  - The data can support explaining their gut feeling to pediatricians.
  - Quick access to patient data with the ability to review historical records.
- Parents:**
  - Reassuring feeling knowing their child is continuously monitored.
  - Prevents parents from fixating on the screens with data.
  - A parent-friendly looking design that includes a nightlight.

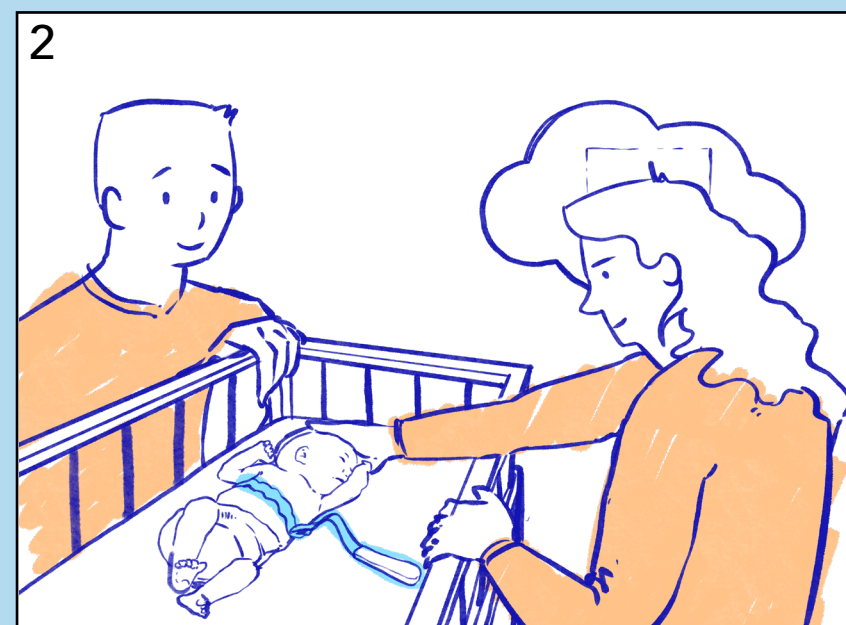
## Functioning of the system



## Scenario of use of the Care Cloud at the maternity ward



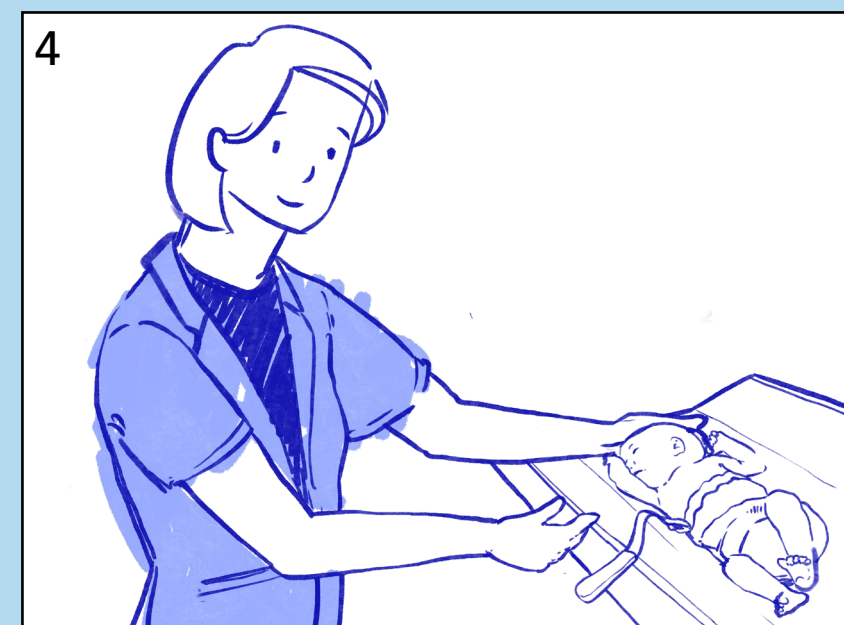
1 The Care Cloud is being mounted to the wall. A Bambi Belt has been placed on the neonate at risk of infection, which wirelessly sends heart activity and respiration values to the Care Cloud.



2 Between routine checks, the neonate is continuously monitored, able to move and sleep freely. Parents can also rest in the room without being disturbed, and they can care for their child.



3 When an irregular value, or trend, is measured, the Care Cloud sends an alarm to the nurse's phone, displaying the room number, prompting her to check on the neonate.



4 The nurse's initial step is to physically assess the neonate using her clinical expertise.



5 If needed, the nurse can unlock the Care Cloud with her ID to access real-time and historical monitoring data, helping her evaluate trends. Because she remains uncertain about the clinical signs and values, she contacts the pediatrician.



6 The pediatrician arrives and starts with a physical examination of the neonate. The nurse can explain her concerns, support them with data, or analyze past trends together. Based on this, the pediatrician makes a decision.

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The Care Cloud: A solution for continuously  
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Strategic Product Design

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