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MSF FIELD SIMULATION Pulka, Nigeria: System-focused in situ simulation to help improve the system and processes for basic neonatal resuscitation in the neonatal unit

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BACKGROUND AND AIMS

Improving the quality, safety and efficiency of healthcare requires a commitment **to fix processes and the system.**

Simulation is a powerful tool in training healthcare professionals, but it also **plays an important role** in quality and safety when used beyond training **to identify gaps in systems and processes, and to test and improve them**.

The Pulka hospital neonatal unit team was interested in improving basic neonatal resuscitation. MSF Field Simulation used educational simulation to increase staff competencies in basic neonatal resuscitation. Subsequently, we also implemented a **system-focused in situ simulation to analyze and improve the system and processes** when teams were handling basic resuscitation of a newborn in the neonatal unit.

METHODS

The method involved the following steps :

1 A **"fishbone diagram"** (cause-and-effect diagram), to identify possible causes of a problem by the neonatal unit and maternity team.

2 Educational simulation on basic neonatal resuscitation was implemented for 5 neonatal nurses, 7 physicians and 12 midwifes using the helping-babies-breathe algorithm.

3 A **systems-focused in situ simulation** with a **debriefing session,** including **video analysis, was** conducted. Managers, supervisors, and nurses were present. The debriefing discussion focused on space/location, system and processes flow, personnel, signage and safety.

Figure 1. : Simulation in the workplace (In situ simulation)

Figure 2. : Debriefing session

RESULTS

The simulation was used to increase staff competencies, but also to analyze how the organization of the system affects staff performance and the quality of patient care, as well as to find solutions adapted to the context. During the debriefing of the simulation and video analysis, the team identified latent security threats as a key consequences of a weak system and process. The observed security threats were grouped into sub-themes (Figure 4), and for each-sub theme the team identified the number of times the threat was observed and the delay in the provision of care that occurred as a result of the following deficiencies:"

- **Processes :** No emergency code established. Preparation of the Oxygen concentrator
- **Accessibility, availability and labelling** the necessary material and equipment
- **Resuscitation space** design
- **Human resources** availability
- **IPC-**Infection control and prevention

Figure 3. : In situ simulation

THEME	SUBTHEME	OBSERVED EVENTS	LATENT SAFETY THREAT DESCRIPTION	TIME DESCRIPTION	ADDITIONAL CONTEXT
EQUIPMENT and SUPPLIES	Equipment not accessible	8 times	Patient emergency care delayed as all material needed is not quickly accessible	0:55" Initial steps of the algorithm 1':35" Ventilation	The initial steps of the algorithm started late, after 0:55" had elapsed.
PERSONNEL	Insufficient human resources to carry out clinical care	8 times	Patient emergency care delayed and not properly performed, as there is no other human resources available as a support.		A nurse in the unit is dealing this emergency and stressful clinical situation alone. If the nurse needs help will not be able to have it easily.

Figure 4. : Example of video analysis of some sub-themes

The deficiencies identified through the simulation were not identified at the time of the "fishbone diagram".

The **team** discussed, **defined and agreed on improvement plans** and distributed tasks and responsibilities between them.

The improvements started to be implemented within 24 hours after the simulation as follows : ordering material; equipping the resuscitation space , ensuring the accessibility of materials; establishing a checklist system; coordinating with logistics to install power outlets to ensure the use of equipment such as an oxygen-concentrator; and reviewing processes and collaboration between teams.

Figure 3: A real newborn in resuscitation area equipped with all material, electricity and processes fixed

CONCLUSION

System-focused in situ simulation supplements problem analysis, **facilitates the identification of safety threats**, **inefficiencies** and **quality improvement opportunities** at all levels of the system, without putting patients at risk.

Applying simulation to quality improvement **enhances and encourages team reflection in a safe space .** It allows analysis of the problem, the identification of real workplace causes, challenges, and allows solutions to be identified along with specific actions that lead to improvement.

MSF Field Simulation supports quality and patient safety initiatives. This use of simulation guides teams through experiential safe learning beyond training. **Simulation principles help to identify patient safety threats, whilst reinforcing participatory analysis processes around patient care quality in the workplace.**

MSF FIELD SIMULATION

Ethics: Cleared for submission by the MSF OCBA Medical Director

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