When is a flight nurse fit to fly alone? Process of evolution from novice to expert based on Patricia Benner's theory.

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Flight nursing and the provision of on-board care, as well as the "knowledge" inherent to the flight nurse, have been gaining ground due to the increasing demand and differentiation of air transport of critically ill patients. According to Reimer, Clochesy and Moore (2013) nurses are the main care providers on board aircraft in approximately 90% of these flights. All of this increasing demand has caused a demand for education and training programs that has supported the need to obtain specialization in flight nursing. But when will a flight nurse be able to fly as the primary caregiver for the critically ill patient autonomously? In this post, in light of Patricia Benner's "From Novice to Expert" theory, I have tried to conceptualize my knowledge and skills as a flight nurse ("know how") based on my competence, proficiency and ability to appreciate situations, as a requisite in the evolution to reach the expert level, considered the ultimate goal.

Throughout this post the acronym FN (Flight Nurse) will be used several times in an inclusive manner in the international arena whenever referring to the flight nurse, as this is a globally recognized acronym.
Unequivocally, acute illness or traumatic injury may require the provision of specialized services in a short period of time, as for example in the situation of major trauma, emergent catheterization or cardiac surgery, neurosurgical intervention among others, which require urgent transport to a specialized treatment center. The use of air for the rapid drainage of the critically ill patient has been shown to save lives and reduce costs by providing speed and flexibility on the way to the definitive differentiated care site (MedEvac Foundation international, 2006).

According to Reimer, Clochesy and Moore, in 2013 a patient was transported by rotary wing (helicopter) in the United States every 90 seconds, a number that, given the advance of health technologies, centralization of care, and differentiated techniques, is growing rapidly over the past few years. However, there are many limitations imposed by this transport environment, which implies a constant adaptation of care practice by the FN on board, demanding in itself, but to which is associated the difference of the air means used. It is simple to understand that the resources on board are limited, whether in terms of materials / medicines, or in terms of auxiliary diagnostic tests and especially the team of health professionals present is limited, often being the FN alone, which makes this activity complex and extremely demanding. The constant noise and vibration, the poor lighting combined with the unstable environment and the generally lower temperature, result in a level of fatigue above the expected for the FN, which is added to the close maintenance of a meticulous situational awareness of the patient's condition (Reimer, Clochesy, & Moore, 2013).

All the safety acquired by the experience in the practice of assessment that a nurse in a hospital environment does is compromised in the context of flight, excessive noise limits communication with the patient and remaining crew, as well as reduces the ability to

hear breathing sounds, for example, the limitation of space that sometimes restricts access to the patient, the barometric pressure (Boyle-Mariotte Law) is altered as well as the partial decrease of oxygen pressure, and the FN has to master the knowledge of these changes and anticipate new “abnormal” values, which makes monitoring difficult. The flight profile that each aircraft performs should also be taken into account to minimize negative effects on the patient and on the FN itself, combined with fatigue, g-forces and decrease in humidity. The administration of the prescribed medication itself should be carefully managed anticipating negative side effects, such as reduced mean arterial pressure that may become more difficult to correct in this environment (Schweitzer et al, 2011; Reimer, Clochesy, & Moore, 2013).

A concept widely identified in the literature is the FN’s use of intuition as described by Patricia Benner (2001). Despite being a vague characteristic, most commonly worked on from the cognitive psychology perspective, it is recognized by several authors as an important attribute in the nursing professional’s experience. However, due to the vague explanation that prevails to this day to define intuition, it has been replaced by concepts such as “long-term working memory” and “pattern recognition” and later collapsed with the presentation of the Theory of Flight Nursing Experience (Walter & Avant, 1983).

Experience, training, psychomotor skill, early signal recognition, pattern recognition, flight nursing theoretical knowledge, flight environment, decision making and action were the 9 base concepts that made up the first middle-range theory of flight nursing expertise (Reimer & Moore, Flight nursing expertise: towards a middle-range theory, 2010). Experience, training, pattern recognition... make us quickly relate to the object of study of the theorist Patricia Benner and her theory “From Novice to Expert” first published in 1984, where the theorist conceptualized nursing knowledge and skills (“knowing how”) as a prerequisite for reaching the expert level, which is considered the ultimate goal. She listed five levels, which, in increasing order of competence, proficiency and ability to appreciate situations, she called beginner, advanced beginner, competent, proficient and expert (Benner, 2001).

In summary, throughout the five levels, nurses evolve in their way of caring, managing to distance themselves from abstract rules and rigid principles that are more functionally associated with the knowledge acquired through experience. From the understanding of isolated parts to the perception of the whole, using the holistic view of the situation he faces, anticipating actions and procedures.

More experience is needed coupled with theoretical knowledge, in addition to personal characteristics of empathy, humility, respect for others, and strong character (Gonçalves,

2018) to continue on this path towards the expert that one day I will be. Until then, I will continue to fly, giving my best in each flight, but above all to each patient.

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