

# How to optimize patient intra hospital transport?

## Read the answers from the experts

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### OUR EXPERTS



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### Questions to Prof. Mona Ringdal

**Q: In the film about „Time out“ a checklist was mentioned. What are the elements of this checklist?**

The staff and the patient are presented in the timeout and the team leader is clearly identified. It is important to have a standard procedure with all the equipment and medicine that will follow the patient during transport.

**For example:**

*About Equipment:* battery, safe mounting on the bed, safely connected to the patient, like infusion devices, ET tube and other devices.

*About Medicine:* all syringes and other medication are enough, in order and well filled. Medicine and devices for emergency care are in the emergency bag that goes with the patient. A Phone to call for help.

*About Information:* the department that the IHT will depart to is informed about the arrival of the patient.

Moreover, it is our recommendation to implement and use standardized communication tools (e.g., situation, background, assessment, recommendation; loop communication) within the transport team and between different teams involved in patient care<sup>1</sup>.

**Q: Who should be the team leaders in the Intra Hospital Transport?**

In my opinion, the team leader for the IHT should be the Critical care nurse (CCN) who is responsible for the patient. This nurse organizes the IHT from the beginning and have good knowledge of the patient. Not always can the physician have the total control of all the devices, the equipment, medicine pumps, patients' conditions and monitoring like the nurse have who is responsible for the care of the patient. The CCN has prepared the transport during the pre-transport phase with all the preparation tasks done on the patient and he/she has the full control of the transport. However, the physician is very valuable for the team especially when the patient condition is instable. It is important that a minimum of two experienced staff is going for transport, for example two CCNs or one CCN and one physician. Following our study<sup>1</sup> many IHTs are done in Sweden without physicians and very few (1%) adverse events were detected. The physician is not always at the bedside in the ICU. Regarding IHT the CCN is well trained and have a good situation awareness in case of hazards during IHT.

**Q: Critical care nurses must execute a lot of difficult tasks. Why is patient transport extraordinary stressful?**

The stress that the CCN felt in our study<sup>2</sup> can be related to different sources. First, even if the CCN has a good situation awareness of the transport, she/he knows that the IHT may have an impact on patient safety. Second, the CCN also knows that during the IHT the nurse to patient ratio increases. With one patient handed over, the patient to nurse ratio changed from 2:1 to 3:1 for the CCNs staying in the ICU. Nurse to patient ratios are well recognized to influence patient safety.

**Q: In the study you introduced there were a lot of hazards related to tools and technology? What is the reason?**

According to our study<sup>1</sup> there were unreliable functions of transport equipment, a poor usability of transport equipment, equipment errors and a limited surveillance. ET Tubes and cords were too short or not flexible as well as a poor attachment of transport equipment.

**Q: Why the rate of adverse events is so low?**

One possible explanation might be that the staff intervene before hazards occur and cause patient harm. But it is important to know that our study<sup>1</sup> was not initially designed to investigate patient outcome.

**Questions to Prof. Erwan L'HER**

**Q: While subjects know that they are recorded during your evaluations, what about the Hawthorne effect?**

The Hawthorne effect has been discovered in the early 20<sup>th</sup> century. It relates to the fact that people who know that they are observed will perform much better; this effect has also a "negative" impact: when observers leave the field, the Hawthorne effect disappears and the impact on productivity will be erased.

The question, during all these ergonomics evaluations, is that all clinicians who are performing the different tasks may perform much better during the test than in the real life. So, this may be considered as a bias which may overestimate a positive evaluation.

**Q: Can you explain how Human Factors improve productiveness?**

"The right button at the right place!"

If a biomedical device depicts a good ergonomic, its use may be much simpler than it would be without taking these factors into account. Thus, error rate might be lower, and all tasks can be performed more quickly.

**Q: You studied the error-rates with naïve subjects. Why?**

In our evaluation model about ergonomic, we aim to evaluate 4 different dimensions which are all important determinants of effectiveness.

The best device should be the device which is the easiest to use, meaning that it could be used by naïve subjects. Including experienced clinicians in an evaluation will introduce some biases, depending on individual performances and experience.

We may never forget that actions done in the ICU are also performed with some stress. Stress decreases ability of experienced clinicians to respond adequately. Thus, the simplest device to use is also the best in such condition.

**Q: Do you think that many biomedical devices have been designed taking into account human factors engineering and usability?**

Yes, for some devices, certainly not for others!

Some devices provide magnificent and fanciful options, with beautiful screens, but they are very difficult to use by naïve subjects – in all care units, we know that we have in our team some „naïve“ subjects considering the rotation of the nursing team. Thus, human factors engineering may always aim to produce simple, reliable, robust devices that could be used in a safe way by all types of healthcare providers.

## Questions to Prof. Thorsten Steinfeldt

### Q: How did you implement continuous monitoring in daily practice and taking into consideration the mobility of monitoring devices?

Following our study<sup>3</sup> we equipped each anesthesia working area with mobile pulse oximeters. Moreover, we provided more mobile oxygen bottles which are smaller and more convenient for transport to operating theatre. For advanced procedures like neurosurgery, cardiac surgery or visceral surgery, we are used to use complete mobile monitors with ECG, Blood Pressure, pulse oximetry, respiratory monitoring and/or invasive BP. We will start next month with a new and integrated mobile monitoring solution. Thereby each patient will receive one mobile monitor with parameters, from the beginning of the induction until the end of the recovery. We expect a lot of benefits with respect to staff satisfaction, time saving, convenience and – most important – not one second of patient monitoring lost!

### Q: Did something change with respect to patient safety?

Following our study and as done in my former department, we decreased oxygen saturation adverse events from OR to the recovery room to nearly zero percent. This has also changed our mindset using the results. First, continuous pulse oximetry became a standard, second, even for short transport phases, oxygen administration became mandatory because of oxygen saturation measurement. As a result, we changed our processes and patient outcome.

### Q: What is the most convincing advantage of continuous monitoring?

Patient safety about oxygenation and hemodynamic stability. Furthermore, the staff feels more confident and more comfortable having patient data. Future technical improvements could be attributed to provide a monitoring solution which can be connected once during induction and which can be disconnected at the end of the recovery.

### Q: How are processes affected by continuous monitoring solutions?

At first glance, processes are getting more complex when connecting additional mobile devices for transport in the operating theatre. Secondly, it might lead to time saving by the avoidance of adverse events like respiratory and/or hemodynamic failures.

### Q: Is a physician needed on every patient transport?

In the operating theatre and during transport a physician is not absolutely mandatory because of short transport distances and the permanent availability of physicians around. For transports done inside the hospital, the transport team could be in trouble in difficult circumstances like in the elevator or during diagnostic procedures. By forensic reasons, a physician should always be close to the patient during transports inside the hospital if patients are critically ill (respiratory and/or hemodynamic instability).

## Want to learn more



> [Watch the full replay here](#)



## References

- <sup>1</sup> Bergman, Petterson, Chaboyer, Carlström & Ringdal. Safety hazards during intrahospital transports a prospective observational study *Crit Care Med* 2017 DOI: 10.1097/CCM.0000000000002653
- <sup>2</sup> Ringdal, Chaboyer, Warrén Stomberg Intrahospital transports of critically ill patients: critical care nurses' perceptions. *Nurs Crit Care* 2015
- <sup>3</sup> Aust H, Kranke P, Eberhart LH, Afshari A, Weber F, Brieskorn M, Heine J, Arndt C, Rüscher D. Impact of medical training and clinical experience on the assessment of oxygenation and hypoxaemia after general anaesthesia: an observational study. *J Clin Monit Comput.* 2015 Jun;29(3):415-26.

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