

Safety checklist implementation in invasive cardiology: a single center experience

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Introduction: The avoidable risk of adverse events in invasive cardiac procedures remains too high. The causes are often multifactorial, reflecting the complex interaction between the operator, patient, team, and procedure. In the most developed centers, despite the use of modern protocols and equipment, 10 to 12% of patients are exposed to some kind of adverse event, of which more than half could have been prevented. Repeated analyses indicate that errors are rarely a failure of technical ability but occur due to the breakdown of teamwork and communication.^{1,2}

Patients and Methods: By reviewing the existing Cath Lab checklists and available literature, we have produced a modified checklist for the main invasive procedures, primarily diagnostic angiography, coronary and heart/structural intervention, pacing, and invasive electrophysiology. This safety checklist consists of three parts: a) pre-procedural preparation that takes place at the ward; b) the periprocedural part, which takes place in the invasive laboratory, and c) the postprocedural part, which includes monitoring the patient after the invasive procedure again in the ward. After the initial training, the checklist was put into use in December 2022, and its implementation was systematically monitored for the next two months, until February 2023.

Results: During the 2-month period, 486 consecutive patients undergoing invasive cardiac procedures were enrolled (age 69 (61-76); 324 males, 162 female). In the monitored group of patients, the following percentage of checklist fulfillment was recorded: a) pre-procedural 75.9% (43 mandatory variables); b) periprocedural 73.4% (28 variables), and c) postprocedural 79.2% (4 variables). The lowest fulfillment rate was noted when measuring respirations and saturation (27.0%) and the exact time of puncture site management (28.4%) in the invasive laboratory. 14 adverse events (2.9%) were monitored, of which 10 groin hematomas, and in 4 patients the occurrence of cardiac arrhythmia.

Conclusion: The obtained results clearly show the need for further education of the nursing staff involved in patient care. In the very process of implementation, more importantly, checklists modify team behavior, bringing a focus to patient safety and staff communication.

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LITERATURE

1. Fudickar A, Hörle K, Wiltfang J, Bein B. The effect of the WHO Surgical Safety Checklist on complication rate and communication. *Dtsch Arztebl Int.* 2012 Oct;109(42):695-701. <https://doi.org/10.3238/arztebl.2012.0695>
2. Lindsay AC, Bishop J, Harron K, Davies S, Haxby E. Use of a safe procedure checklist in the cardiac catheterisation laboratory. *BMJ Open Qual.* 2018 Jul 13;7(3):e000074. <https://doi.org/10.1136/bmjopen-2017-000074>