

Analysis of the subjective assessment of the "Periprocedural safety checklist for patients referred to the hemodynamic and electrotherapy laboratories" by employees of the cardiology department and the hemodynamic laboratory of the Silesian Center for Heart Diseases



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Abstract

Background: Checklists are used in various fields of science; in medicine, their use in surgery is recommended by the WHO. There are no studies on the use of checklists in interventional cardiology.

The aim of the study was to analyze the subjective assessment of the periprocedural safety checklist by the employees of the departments of cardiology and hemodynamics.

Material and methods: Members of the medical staff directly involved in fulfilling the checklist items were included in a diagnostic survey and asked to evaluate the periprocedural safety checklist by means of a questionnaire. A total of 31 doctors, 46 nurses, and 8 medical technicians participated in the study.

Results: In the opinion of the medical staff, the procedural checklist improved internal communication and enhanced workflow in the cardiology and hemodynamics departments; it also prevents medical errors and reduces the incidence of periprocedural complications. A significant portion of the staff believes that the introduction of the checklist facilitates providing periprocedural care to the patient and improves the quality of medical care and nursing. The periprocedural safety checklist specifies the tasks to be completed and defines staff responsibilities. In the opinion of the medical staff, the introduction of the checklist is justified.

Conclusions: The introduction of the periprocedural safety checklist was the correct step, serving to improve the qual-

Streszczenie

Wstęp: Listy kontrolne działają w różnych dziedzinach nauki, w medycynie Światowa Organizacja Zdrowia zaleca ich stosowanie w chirurgii. Nie ma wyników badań dotyczących stosowania list kontrolnych w kardiologii inwazyjnej.

Cel pracy: Analiza subiektywnej oceny karty bezpieczeństwa okołozabiegowego przez pracowników oddziału kardiologii i hemodynamiki.

Materiał i metody: Przeprowadzenie sondażu diagnostycznego wśród personelu medycznego dotyczącego oceny karty bezpieczeństwa okołozabiegowego przez pracowników bezpośrednio zaangażowanych w jej wypełnianie. W badaniu wzięło udział 85 osób, w tym: 31 lekarzy, 46 pielęgniarek oraz 8 techników medycznych.

Wyniki: W opinii personelu medycznego karta zabiegowa poprawiła komunikację wewnętrzną, poprawiła organizację pracy na oddziałach kardiologii oraz hemodynamiki, zapobiega występowaniu błędów medycznych, redukuje występowanie powikłań okołozabiegowych, znacząca część personelu uważa, że wprowadzenie karty ułatwia sprawowanie opieki nad chorym w okresie okołozabiegowym, poprawia również jakość opieki lekarskiej i pielęgniarskiej. Karta bezpieczeństwa okołozabiegowego precyzuje zadania personelu oraz określa zakres odpowiedzialności. W opinii personelu medycznego wprowadzenie karty bezpieczeństwa okołozabiegowego jest zasadne.

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ity of care for patients undergoing invasive diagnostic and therapeutic procedures in the departments of cardiology and electrotherapy. It is a simple tool for reducing periprocedural complications, aiding the medical staff in providing proper patient care. The introduction of the cardiac checklist was well founded and well understood by the treatment team.

Key words: analysis, checklist, quality of care.

Introduction

Introducing checklists serves the purpose of improving service, workflow, and team communication, as well as preventing unintended errors. The first checklists were constructed in the first half of the 20th century for aviation purposes. In the 20th century, nurses prepared their own checklists, i.e. sheets with all the vital parameters of a patient measured in fixed time intervals. This simple method greatly facilitated the documenting of the patient's condition. The first checklists for doctors were constructed in 2001 for ICU purposes; subsequently, checklists were introduced to hospitals in Michigan, USA. The result of this was the improvement of the quality of care and significant cost reduction [1]. Today, the WHO recommends the use of checklists in surgery through the "Safe Surgery Saves Lives" campaign [2]. In August 2012, a communiqué of the Polish Ministry of Health recommended using checklists in medical practice in order to minimize the incidence of adverse surgical events. However, no studies on the use of checklists in invasive cardiology have been conducted, and there are no guidelines from the Ministry of Health or the National Consultant for Cardiology concerning their implementation. In March 2012, the American Society for Cardiovascular Angiography and Interventions decided that such checklists should also be employed in invasive cardiology. In 2011, the Silesian Center for Heart Diseases in Zabrze introduced a periprocedural safety checklist as a pilot program for patients diagnosed and treated in the hemodynamic and electrotherapy laboratories. Since January 2012, it has become a constant and indispensable element of the center's everyday practice.

Aim of the study

The aim of the study was to analyze the subjective evaluation of the periprocedural safety checklist provided by the personnel of the cardiology and hemodynamic departments.

Material and methods

The study encompassed all medical employees who worked in the Department of Cardiology and the Hemodynamic Laboratory both before and after the implementation of periprocedural safety checklists into everyday practice. All respondents consented to participation in the study. The periprocedural safety checklist is used in patients who undergo diagnostic evaluation and treatment as part of

Wnioski: Wprowadzenie karty bezpieczeństwa okołozabiegowego było słusznym krokiem w poprawie jakości opieki medycznej u chorych poddawanych diagnostyce i leczeniu inwazyjnemu z zakresu kardiologii i elektroterapii. Jest prostym narzędziem służącym redukcji powikłań okołozabiegowych, pomagającym personelowi medycznemu we właściwym sprawowaniu opieki nad chorym. Wprowadzenie kardiologicznej listy kontrolnej jest zasadne i dobrze rozumiane przez zespół terapeutyczny.

Słowa kluczowe: analiza, lista kontrolna, jakość opieki.

invasive cardiology and electrotherapy; it enables the correct preparation of the patients for the diagnostic-therapeutic procedure, taking into account their precise health condition. The study included doctors, nurses, and medical technicians. It excluded persons who were employed after the introduction of the cardiology checklist to everyday practice and respondents whose answers were incomplete or imprecise. The method employed in this study was the diagnostic poll method; data were collected by means of a survey given to the participants, which contained a set of close-ended questions. The study encompassed 85 persons: 31 doctors, 46 nurses, and 8 medical technicians. All respondents were asked the same questions, concerning the periprocedural safety checklist and its influence on work organization, communication, and the quality of care.

Results

One of the primary goals of employing checklists is to improve interpersonal communication among the treatment team [1]. In the conducted survey, the respondents stated that the introduction of the periprocedural safety checklist improved communication not only between the nurses and the doctors, but also between the departments of cardiology and hemodynamics. This was the opinion of the majority of respondents (Tables I, II).

All the involved professional groups noticed an improvement in communication, regardless of position or profession. Improving team communication results in many benefits. One of them is improving work organization. The respondents stated that the safety checklist has a positive effect on the improvement of work organization in the departments of cardiology and hemodynamics. It is noteworthy that the opinions of the staff in this matter are in agreement. (Tables III, IV).

The study also demonstrated that, in the opinion of medical personnel, the introduction of the safety checklist exerts a strong positive effect on preventing patient management errors and reducing the number of perioperative complications (Tables V, VI).

Improving the quality of medical care may be based on the simplest solutions, which often turn out to be the best [3]. Safety checklists appear to be one of them. In the opinion of the majority of studied employees, the quality of medical care provided by both doctors and nurses improved after the introduction of safety checklists. (Tables VII, VIII).

Tab. I. The influence of the checklist on nurse-physician communication

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 26 | 3 | 2 |
| Nurses (<i>n</i> = 46) | 38 | 4 | 4 |
| Medical technicians (<i>n</i> = 8) | 4 | 2 | 2 |

Tab. III. Workflow improvement in the department of cardiology after the introduction of the periprocedural safety checklist

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 27 | 0 | 4 |
| Nurses (<i>n</i> = 46) | 35 | 3 | 3 |
| Medical technicians (<i>n</i> = 8) | 5 | 2 | 1 |

Tab. V. The influence of the safety checklist on preventing errors in the course of the patient's therapy

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 28 | 0 | 3 |
| Nurses (<i>n</i> = 46) | 38 | 1 | 7 |
| Medical technicians (<i>n</i> = 8) | 5 | 2 | 1 |

Tab. VII. Positive influence of the checklist on nursing care quality

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 24 | 0 | 7 |
| Nurses (<i>n</i> = 46) | 32 | 0 | 14 |
| Medical technicians (<i>n</i> = 8) | 5 | 0 | 3 |

Tab. IX. Periprocedural safety checklist as an element helping in providing periprocedural care to the patient

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 29 | 1 | 1 |
| Nurses (<i>n</i> = 46) | 39 | 0 | 7 |
| Medical technicians (<i>n</i> = 8) | 5 | 1 | 2 |

The study also examined the influence of introducing the cardiology checklist on periprocedural care. Most respondents believe that the periprocedural safety checklist facilitates providing proper care to the patient. The results of the conducted survey are presented in Table IX.

Respondents were also asked whether introducing the periprocedural safety checklist was justified (Table X).

The employees were also asked whether the division of responsibility for particular treatment stages among the staff was clear after the introduction of the checklist. The respondents believe that the introduction of the periprocedural safety checklist clearly defines the division of responsibility for individual elements of the therapy (Table XI).

Discussion

In invasive cardiology, qualifying and preparing the patients for surgery, performing the operation, and provid-

Tab. II. The improvement of communication between the department of cardiology and the hemodynamic laboratory after the introduction of the checklist

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 27 | 0 | 4 |
| Nurses (<i>n</i> = 46) | 40 | 3 | 3 |
| Medical technicians (<i>n</i> = 8) | 5 | 2 | 1 |

Tab. IV. Workflow improvement in the hemodynamic laboratory after the introduction of the cardiology checklist

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 22 | 0 | 9 |
| Nurses (<i>n</i> = 46) | 33 | 2 | 11 |
| Medical technicians (<i>n</i> = 8) | 5 | 2 | 1 |

Tab. VI. The influence of the safety checklist on reducing the incidence of periprocedural complications

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 21 | 2 | 8 |
| Nurses (<i>n</i> = 46) | 31 | 4 | 11 |
| Medical technicians (<i>n</i> = 8) | 5 | 1 | 2 |

Tab. VIII. Positive influence of the checklist on medical care quality

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 22 | 1 | 8 |
| Nurses (<i>n</i> = 46) | 25 | 3 | 18 |
| Medical technicians (<i>n</i> = 8) | 3 | 2 | 3 |

Tab. X. The validity of introducing the periprocedural checklist according to the respondents

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 27 | 2 | 2 |
| Nurses (<i>n</i> = 46) | 39 | 0 | 7 |
| Medical technicians (<i>n</i> = 8) | 6 | 0 | 2 |

Tab. XI. Clear division of responsibilities by means of the periprocedural safety checklist

| | Yes | No | No influence |
|-------------------------------------|-----|----|--------------|
| Physicians (<i>n</i> = 31) | 28 | 2 | 1 |
| Nurses (<i>n</i> = 46) | 38 | 2 | 6 |
| Medical technicians (<i>n</i> = 8) | 5 | 0 | 3 |

ing postoperative care require the practical and theoretical expertise of the medical personnel and the exchange of information between individual members of the treatment team. The managing physician needs to collect information about the patient by taking the medical history, conducting a physical examination, and obtaining results of laboratory and imaging examinations. Proper pharmacological prep-

aration of the patient, and obtaining consent to surgery are also required. Another equally important element is the physical preparation for the procedure, which includes preparing the operating field, placing venous access devices, preparing the patient's digestive tract and helping the patient to mentally prepare for the procedure, as well as preparing the medical documentation. Nurses are the ones responsible for this stage of the proceedings. A patient prepared in this manner is transferred to the hemodynamic laboratory for the procedure. Both the operating physician and the nurse should get acquainted with all essential information which could influence the course of the procedure and its results. In order to ensure the safety of the procedure, the patient should be properly prepared, and all significant patient-related information should be communicated to the procedural team. The procedural team then checks all the patient- and procedure-related information. After the procedure, the procedural team should pass on all significant information to the personnel responsible for postprocedural care. Poor communication between the members of the treatment team, especially in cases where the patient is transferred between departments, may result in procedural errors or shortcomings [3]. In order to improve the safety of the patients undergoing surgical procedures, the WHO recommended the implementation of perioperative checklists after adjusting them to individual needs [4]. The checklist introduced by the WHO serves its purpose well in surgery departments; its use significantly reduced the number of complications. It is a cost-effective and efficacious tool for preventing mistakes and human error [5]. Cardiology departments required the creation of a checklist that took into account the specificity of their field of expertise. The study conducted among the medical personnel appears to confirm the validity of introducing the periprocedural safety checklist to everyday practice.

The checklist ensures that factors affecting the course of the treatment, improving communication among the treatment team, defining the range of tasks, and establishing responsibility for decision making will not be omitted [1]. The diagnostic survey concerning the perioperative safety checklist confirms that the checklist introduced in the cardiology department, in the opinion of the medical personnel, improves communication and work organization, clearly divides the tasks to be completed at the particular treatment stages, and assigns responsibility for the realization of the individual elements of treatment proceedings. The periprocedural safety checklist, introduced in November 2011, is, in the opinion of the medical staff, an effective tool improving the safety of the patients referred to the hemodynamic laboratory and serving the purpose of improving medical care. The validity of introducing the cardiology checklist has been further confirmed

by the consensus statement of the Society for Cardiovascular Angiography and Interventions, which recommends the use of checklists in cardiology [6]. The authors stress the fact that the standardization of procedures and procedural control at multiple stages are essential for obtaining satisfactory progress in terms of patient care. Using the checklists enables the avoidance of many unintentional mistakes and provides a sense of safety both to the patient and the medical personnel. The checklist prepared by these distinguished specialists contains elements which were included in the SCHD checklist. Both checklists contain essential information required to correctly conduct invasive cardiac surgery.

The goal of the present study was to obtain information concerning the subjective assessment of the surgical safety checklist by the employees of the cardiology department and the hemodynamic laboratory. The respondents were asked questions concerning the validity of the introduction of the perioperative safety checklist, its effect on improving communication and work organization, and its influence on the reduction of periprocedural complications and on consequent medical care improvement.

Conclusions

The conducted analysis demonstrated that doctors, nurses, and medical technicians assess the introduction of periprocedural safety checklists into everyday practice as positive. The analysis showed that introducing the checklist improves work organization and communication, and prevents the occurrence of periprocedural complications, thus ensuring the improvement of the quality of care provided by doctors and nurses. Significantly, the medical personnel expressed the belief that patient safety was improved. The conducted study indicates that introducing periprocedural safety checklists is well founded.

References

1. Gawande A. Potęga checklisty. Znak, Kraków 2012.
2. Kucewicz-Czech E, Karolak W. Potęga checklisty. *Kardiochir Torakochirurgia Pol* 2012; 3: 339-395.
3. Opolski K, Waśniewski K. Zarządzanie ryzykiem i jakością w usługach zdrowotnych. CeDeWu, Warszawa 2012.
4. Kutaj-Wąsikowska H, Kutryba B; WHO CC Krakow at Centrum Monitorowania Jakości w Ochronie Zdrowia, Adaptacja na podstawie Implementation Manual Surgical Safety Checklist (First Edition) by World Alliance for Patient Safety. Kraków 2009.
5. Pauniahio SL, Lepojarvi M, Peltomaa K, Saario I, Isojarvi A, Malmivaara A, Ikonen TI. A surgical checklist increases patient safety. *Suomen Lääkärilehti* 2009; 49: 4249-4254b.
6. Naidu SS, Rao SV, Blankenship J, Cavendish JJ, Farah T, Moussa I, Rihal CS, Srinivas VS, Yakubov SJ; Society for Cardiovascular Angiography and Interventions. Clinical expert consensus statement on best practices in the cardiac catheterization laboratory: Society for Cardiovascular Angiography and Interventions. *Catheter Cardiovasc Interv* 2012; 80: 456-464.