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## Original research article

# The importance of nursing standards: Elements to create a standard for sheath decannulation according to EBP

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## ABSTRACT

Diagnostic coronarography and coronary interventions have become widely accepted procedures in patients with ischaemic heart disease, in the acute, chronic, as well as diagnostic stages. The interventions on coronary arteries are closely connected with diagnostic catheterization and deal with stenoses of coronary arteries. The diagnostic and interventional catheters used for the procedure are inserted through the femoral or radial artery. Decannulation of the sheath following the femoral and radial access is an important part of the procedure. This review article analyses the available literary sources, with the aim of determining the possibilities of standardization of the specialized nursing care provided for patients requiring decannulation of the sheath from the *arteria radialis*, or *femoralis*, following left-side coronary catheterization. The presented paper has been drawn up on the basis of a review of expert articles presented in freely accessible databases in the period between 2000 and 2012. The nursing standards for decannulation of the sheath obtained from the links to foreign literature often arise from the conclusions of nursing research (EBP). Standards concentrate on the means and length of compression of the *arteria femoralis* and *arteria radialis*; furthermore, they specify the compression device for the respective blood drainage area and maintaining the safety and comfort of the patient. Correctly set standards eliminate the rate of complications (haematoma, bleeding), in relation for example to the type of compression applied on the artery, or to nursing staff trained in compression techniques. The nursing standard is an important part of the procedure, contributing to a reduction in complications and an improvement in the patient's comfort, and has an important platform, especially abroad. Significant elements for the creation of standards and defining the correct criteria according to the EBP standard were analyzed from the available sources.

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## Introduction

Specialized nursing care (sheath decannulation) following a coronary intervention is mostly performed outside the catheterization lab, and the means of decannulation in various centres differ in accordance with the custom practice of the department, and depending on the implemented management of sheath decannulation, or whether the department uses a standard for the procedure. Variations may be observed, mainly in the person performing the sheath decannulation (physician or nurse), the technique used, and whether compression devices are used. The rate of catheterization and intervention procedures performed via the radial access has increased in recent years, which has resulted in a significant decrease in serious bleeding complications at the puncture site, namely in relation to the arterial access [1,2]. The advancement of techniques and the vascular access used for cardiac catheterization is very important for improvement in the patients' comfort and safety, with a positive effect on the operational efficacy [2]. These facts must be also reflected in the development of special nursing standards concerning sheath decannulation and nursing care following cardiac catheterization. The aim of a nursing standard is to provide a concordance of nursing care during arterial sheath decannulation in patients following cardiac catheterization and the introduction of specific procedures and preferences from the point of view of the nursing personnel, so that the approaches utilized may be unified according to this standard [3]. This means, that the outcome of introducing a standard for sheath decannulation unifies the nursing practice.

The aim of the presented review work was to map the importance of the nursing standard for sheath decannulation, with the selection and definition of elements important for the conception of the standard according to the available literature.

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## Materials and methods

The authors performed a review of expert articles pertaining to the subject matter of the research; the data selected for analysis were obtained from accessible electronic databases: PubMed, Medline, Cochrane, Medscape Nurses, Google Scholar, Blackwell, and ProQuest.

### Selection criteria

The reviewed expert literature was published between 2000 and 2012; the search was performed in the Czech, Slovak and English languages, using the Boolean operator "or/and", with the entry of the keywords (nursing, radial, femoral, compression, standard). The authors were able to locate eleven works (7 full texts, 4 abstracts). Based upon these eleven literary sources, an analysis of the factors important for the creation of a standard was performed (Table 1). Other sources were selected according to the requirements of our focus, e.g. those which are generally related to the creation, use and significance of a standard, with a special focus on the post-procedural approach in cases of left-side cardiac catheterization. The narrowed

specification was defined as follows: radial, femoral, compression devices, time of compression, personnel training and complications.

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## Results

Decannulation of sheaths from arteries is a significant element which may influence the final outcome of cardiac catheterization. The analysis of literary sources provides the basis for stratification of significant elements important for the monitoring of patients following sheath decannulation, and for subsequent incorporation of the elements into the standard. The nursing standard thus becomes an important phenomenon for defining the correct decannulation procedure in terms of safety, comfort and elimination of complications in the patient. The standard is very important not only in departments where the nurses do not possess a full competency for this specialized procedure and work under the supervision of a physician, but especially in departments where the nurse is fully responsible for the procedure.

The presented review maps the importance of nursing standards for highly specialized nursing procedure of decannulation (removal) of the sheath (guide wire) from an artery. The analyzed publications use two different terms for specifying the nursing procedure: "protocol describing the correct nursing procedure" and "standard". In this text, we will use the term "standard", as both these terms convey the same meaning, depending on the focus of the source texts. Based upon the review of selected expert articles pertaining to the problems of arterial sheath decannulation following a left-side catheterization, we divided the analyzed texts into two basic groups – for femoral and radial approaches. Furthermore, we analyzed the selected works according to the specified aims and frequency of aims (patient safety, complications, compression device, time of compression, staff expertise, monitoring of vital functions, audit). These aims do not occur in isolation, but in combination with others.

### Femoral approach

*Aim: patient safety, complications, compression device, time of compression (Table 1)*

The prospective study was performed on a group of one thousand patients following a diagnostic coronarography (via *arteria femoralis*) and monitored the safety and efficacy of a 90-min standard with the aim of shortening the bed-rest period and improving patient comfort. The newly introduced protocol for prospective monitoring set a bed-rest period of 90 min, the earlier procedure required a 120-min bed-rest. Commercially available compression devices were used. One case of minor bleeding was observed in the group of one thousand patients, and a pseudoaneurysm was diagnosed in two patients (one of whom required a blood transfusion); no haemodynamic instability was reported. From the conclusion it becomes apparent that an early mobilization of patients after 90 min performed in accordance with the defined standard is feasible in clinical practice and presents a safe procedure for patients following a diagnostic coronarography via the right femoral artery [3]. Tagney and Lackie and their colleagues concentrated

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