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Involving the patient's perspective and preferences concerning coronary angiography and percutaneous coronary intervention

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The interventional cardiology community is currently increasing its efforts to involve the patient's perspective, which includes the process of the informed consent and the medical treatment itself, the implementation of novel therapies, and the assessment of the consequences of treatment[1]. Moreover, recent international guidelines recommend sharing decision making by involving the patient's preferences if alternative therapies are similarly suitable[2,3]. Shared decision making is a process in which a physician offers information to the patient, elicits the patient's preferences, and then comes to a decision in true partnership and congruence with the patient[4]. This implies that suitable information on indication, risks, and long-term consequences of various treatment options have been provided. Sharing decision making between patient and physicians is integral to contemporary medical practice[5]. The majority of patients do welcome being (partly) in control of the next diagnostic and therapeutic steps that will be taken, while for some patients the process may be emotionally demanding, laborious, or not appreciated[5-7]. Nevertheless, in the field of interventional cardiology, many clinical decisions could – or should – involve elements of shared decision making.

The choice of vascular access for coronary angiography or percutaneous coronary intervention (PCI) is well suited to shared decision making, which is appreciated by most patients[7]. Previous research has shown that vascular access via the radial artery reduced the risk of major bleedings and all-cause mortality as compared to transfemoral access. Therefore, current guidelines recommend using the radial access as the standard approach for all PCI procedures, unless there are overriding procedural considerations[3]. Various aspects may be relevant for discussing the choice of vascular access with the patient, such as the individual bleeding risk, the presence of obstructive peripheral arterial disease, the history of coronary artery bypass grafting (CABG) or peripheral vascular interventions, the accessibility of certain puncture sites, the operator's personal experience, the patient's capability to lie flat on his/her back for hours, the patient's experience with previous coronary procedures (e.g., including pain, spasm, and

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mobilisation) and, last but not least, the patient's job, hobbies, and handedness. In a recent patient preference study[7], patients appreciated lower bleeding risk and early ambulation, inherent to radial access. Moreover, patients who had previous experience with both vascular access routes generally preferred the radial access. In addition, previous experience with a single vascular access route had a major impact on patients' preference[7], which should be considered when discussing this issue with patients.

The discussion on whether to proceed with PCI for a stable coronary syndrome is particularly well suited to shared decision making[4]. Current guidelines not only suggest involving the patient's preferences for anti-ischaemic pharmacological treatment[2] but also recommend that Heart Teams develop individualised treatment concepts with respect for the well-informed patients' preferences in the presence of stable angina and obstructive coronary artery disease[3]. Nevertheless, in communications between cardiologists and patients about coronary angiography and PCI, there is a risk that explicit or implicit overstatement of benefits and understatement of risks may contribute to a misperception of potential benefits[8]. Moreover, individual communication styles may hinder patient understanding and participation in decision making[8], and informed decision making is often incomplete[9]. Although cardiologists generally have a realistic view about the benefits expected from PCI, many patients with stable angina erroneously believe that PCI will prevent future (fatal) myocardial infarctions[10]. Moreover, after a standard informed consent the patients' retention of information is low[11].

Audiovisual tools and decision aids may help to avoid many of these problems, and they can structure conversations between patients and physicians during outpatient consultations[12]. The use of such tools allows standardising the informed consent process and is likely to suit many patients; however, some patients might require tailor-made conversations, such as those with language barriers, problems understanding the content being presented, hearing difficulties, an increased timidity, or a compelling need to obtain more extensive information. In the PREPARED study, an internet-based decision aid was shown to be associated with improved patient knowledge and greater interest in shared decision making but did not lead to an overall change in patient preferences[13]. This cluster-randomised study demonstrated the feasibility of integrating patient preference information into clinical care; however, providing preferences to clinicians did not improve concordance between patients' preference and actual treatment[13]. PCI Choice, another randomised study, revealed that a decision aid that was designed to discuss the choice between treatment with PCI versus optimal medical therapy increased the patients' knowledge but had no impact on decisional quality and the patients' engagement in shared decision making[14]. This could be partly related to both the physicians' reluctance to modify established practice patterns and their misconception that the decision aid serves primarily as a patient education tool[15].

Another field of decision making that should involve patients' perspectives is when Heart Teams discuss revascularisation strategies in patients with severe obstructive multivessel coronary artery disease[3]. During recent years, the differences in clinical outcomes between PCI and CABG have been reduced[3]. Moreover, to some patients the avoidance of a phase of major morbidity and the preservation or recovery of quality of life may be of greater importance than the life-prolonging effect of the treatment. This may apply particularly to patients who fear complications due to severe comorbidities, frailty, or advanced age, as well as to patients whose life expectancy is relatively low and unlikely to be markedly changed by the revascularisation procedure. Some patients may refuse to undergo CABG for other reasons, as has been shown in a prospective study that evaluated patient-centred decision making on revascularisation strategy in patients with multivessel or unprotected left main coronary artery disease[16]. Although this study used a standardised protocol that favoured CABG, only 38% of all patients were consented for CABG, and the majority of the patients preferred PCI. Reasons for declining CABG included a straightforward refusal of open heart surgery (68%), mild presentation of anginal symptoms (28%), and low self-confidence to expect long-term survival (26%)[16].

Several studies have shown that many patients are not worried about a somewhat increased risk of repeat PCI[17]. On the other hand, the significantly longer hospitalisation and recovery period after CABG and the patients' morbidity during this stage may be the most important reasons why a proportion of all candidates for CABG refuses the surgical revascularisation. This was suggested by a study in patients with a history of both CABG and at least two PCI procedures (10% even had two CABG procedures), who were faced with a hypothetical coronary revascularisation decision[18]. The majority of these "expert patients" preferred staged PCI over CABG, although the period without anginal symptoms had been significantly longer after CABG than after PCI[18]. To examine the perspectives on adverse cardiovascular events of patients who undergo PCI or CABG, the PREVAS study used a stated preference elicitation method (i.e., best-worst scaling) and found that the patients considered a hypothetical need for CABG during one-year follow-up much more serious than a repeat PCI[17]. In the OPINION study, patients with stable coronary disease completed a case vignette questionnaire on a hypothetical significant left main stenosis amenable to PCI or CABG. When given the choice, most (89%) study participants preferred PCI over CABG[19]. Considering these findings, it is fair to state that a substantial proportion of suitable candidates for CABG may (tend to) refuse surgery, primarily as these patients believe that this type of surgical intervention and the recovery thereafter might put too heavy a strain on them.

Results from a survey among patients undergoing non-emergent coronary angiography with possible PCI showed that many patients consider avoiding the drawbacks of dual antiplatelet therapy (DAPT) as important as avoiding a repeat PCI[20]. Nevertheless, the use of an individualised shared decision-making tool for stent selection was shown to have no impact on stent selection or the concordance between patients' stent preference and the stent

received[21]. This led to the conclusion that physician-level barriers to shared decision making may exist[21]. While this might be true, one cannot exclude that the interventional cardiologists may have considered the accruing insights from randomised stent trials which, in the current guidelines, led to a strong recommendation of drug-eluting stents (DES) over bare metal stents for any PCI[3]. Still, in patients with a high bleeding risk or a strong preference for short DAPT, operators may favour new-generation DES with proven safety after a short period of DAPT or polymer-free DES.

During the last decade, there has been a shift from overnight stay to same-day discharge after PCI, if performed in an elective setting. A randomised controlled trial has found similar patient-reported and clinical outcomes after same-day and next-day discharge[22]. In addition, 80% and 68% of the patients randomised to same-day and next-day discharge, respectively, stated that they would prefer same-day discharge after a potential future PCI. At 30-day follow-up, only 9% of patients in the same-day discharge group indicated a preference for overnight stay, if they had another PCI[22]. The results confirmed the findings of a previous observational study which reported that 89% of all patients who were treated with transradial PCI and discharged on the same day were satisfied with same-day discharge[23]. Hence, after uncomplicated elective PCI, the vast majority of patients prefer same-day discharge. Nevertheless, identifying the few patients who do not feel ready for same-day discharge and offering them an overnight stay is likely to increase the overall patient satisfaction, prevent unnecessary traumatisation, and facilitate potential future interventions in this particular patient group.

It has been advocated that patients should be more involved in research projects and outcomes, and that patient-reported outcome metrics should be defined and validated in the cardiovascular field[1,24]. A study that aimed to identify outcomes that patients perceive as important following PCI identified feeling and function outcomes and the ability to perform usual activities as particularly important[25]. This highlights that the patients' perspective on desirable outcomes of treatment may differ significantly from the physicians' perspective. Many clinical trials in the field of interventional cardiology assess a composite clinical endpoint, which means that reaching any of the constituent endpoints qualifies for reaching the composite endpoint. An example may be "target lesion failure", a composite endpoint of safety and efficacy, consisting of repeat revascularisation of an initially treated target lesion, experiencing a target vessel myocardial infarction, or death from cardiac (or unknown) causes. The PRECORE study assessed the perspective regarding such composite endpoints of patients who underwent PCI or CABG[17]. Patients attributed different weight to the individual constituent endpoints and considered the need for repeat PCI within one year as least severe, while a major stroke causing permanent disability was considered even worse than a fatal outcome. This suggests that many patients fear a loss of mobility and independence above death[17]. Other research also revealed that patients do not consider constituent endpoints of composite clinical endpoints equal[26]. Hence, there is sufficient evidence that the current practice of most clinical trials does not reflect patients' preference. Consequently, we feel that the time has come to stimulate and encourage a shift in thinking that may lead to the use of importance weight-adjusted composite endpoints in future clinical trials[27].

In conclusion, most patients appreciate their active involvement in the process of clinical decision making. Under appropriate circumstances, shared decision making can be applied when discussing various issues related to coronary angiography or PCI. For that purpose, patients need to be motivated and well informed. During the informed consent, there is a risk of misperception that can be reduced by the use of audiovisual tools and decision aids. However, this requires physicians to be willing to modify established practice patterns and embrace the true potential of decision aids. The duration of hospitalisation and recovery and the strain related to certain interventions are relevant to many patients. From the patients' perspective, these factors may affect preference for treatment even more than favourable results of clinical studies. It is desirable that physicians consider the treatment preference of the informed patient and find in true partnership with the patient the most suitable therapeutic approach. Finally, as most clinical trial results do not reflect the patients' perspective, there is a need for a shift towards trials with importance weight-adjusted composite clinical endpoints. Such trials will provide findings from the patients' perspective, and the study results will be truly relevant to them.

Thus, involving patients' preferences in the field of interventional cardiology has the potential to improve treatment significantly. This process has just begun and will not be easy, but is worth the endeavour.

Conflict of interest statement

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