

group. Bahl et al. defined DIVA in 2021 as the occurrence of two or more unsuccessful attempts to insert a peripheral intravenous catheter (PIVC) using traditional techniques, the absence of visible or palpable veins, or a documented history of difficult PIVC cannulation [3, 4].

Between 70% and 85% of hospitalized patients require a PIVC, and the failure rate on the initial attempt may reach as much as 30%. Procedural failure is associated with increased pain, anxiety, diminished patient trust, greater workload for healthcare professionals, and a higher incidence of complications, including haematomas, extravasation, or infections, as well as delays in diagnosis and treatment. The economic burden on the healthcare facility must also be explicitly mentioned. The implications for the anaesthesiology team are entirely critical. Securing peripheral venous access in DIVA patients prolongs the time to surgery initiation, increases pressure on the team in critical minutes, and limits its capacity to smoothly perform other invasive procedures. Each delay or repeated attempt reduces working comfort and increases the cumulative strain during the entire surgical programme [5].

The above highlights the need for systematic screening of at-risk patients and the utilization of evidence-based predictive tools. Although none of the existing instruments have achieved widespread adoption, newer approaches, such as the SAFE Rule, aim to provide a simpler and evidence-based method for identifying DIVA patients and reducing the number of unsuccessful invasive cannulation attempts [3, 5].

The aim of this article is to present currently available predictive tools for identifying DIVA patients, analyse their positive and negative aspects, and evaluate their potential benefits for clinical practice within the context of the Czech Republic (CR).

Sample and Method

The study was designed as a two-phase mixed-method analysis combining a narrative-systematic identification of prediction tools for difficult peripheral intravenous access (Phase 1) with a structured expert evaluation of their clinical relevance and implementation feasibility (Phase 2). To ensure transparent reporting of the first phase, the recommendations of the PRISMA-ScR framework were applied.

Phase 1: Selection of Predictive Scales Based on Literature Review

In the first phase of the research, a narrative review was conducted focusing on currently available prediction tools designed to identify DIVA (Difficult Intravenous Access) patients. The review question was: What predictive tools exist for the identification of adult DIVA patients, and what are their design characteristics, validity, reliability, predictive power, and clinical applicability?

The literature search was conducted in two major scientific databases: Web of Science (WoS) and Scopus, limited to the period 2010–2026, and restricted to articles in English focused on the adult population (≥ 18 years). The reviewers focused on original research studies, validation studies of prediction tools, methodological studies describing the development of predictive scales, and systematic reviews and meta-analyses relevant to DIVA.

Combinations of the following keywords (“difficult intravenous access”, “DIVA”, “vascular access”, “predictive scale”, “risk assessment tool”, “peripheral intravenous catheter”) and Boolean operators were used for the search. Literature screening and study selection were carried out by three reviewers (two registered nurses with academic experience and one physician with both clinical and academic background).

In the initial review, 36 and 35 records were found in WoS and Scopus, respectively. Duplicates and records unrelated to the topic were subsequently removed. The final analysis included 11 publications focusing on the prediction of difficult peripheral intravenous access in adult patients, describing the development, validation, or clinical application of predictive scales or screening rules.

For the expert team’s analysis, five scales were selected that had a clearly defined structure and were intended for adult patients. The selected scales were A-DIVA, EA-DIVA, SAFE Rule, A-DICAVE, and DIVA-CP. These five tools formed the foundation for the analytical part of the study.

Phase 2: Expert Panel Review

For the second phase, an expert group was formed, consisting of five specialists with experience in the field of intravenous access, clinical medicine, nursing, and research (an oncologist physician, a radiologist physician, a general nurse specialized in internal medicine fields, a general nurse specialized in intensive care, and a general nurse with experience in health research methodology). Each of the experts had extensive practical experience (10 or more years) in vascular access insertion and caring for DIVA patients.

The expert panel review method was used for evaluation, where experts focused on assessing the content and clinical aspects of the tools, identifying strengths and weaknesses, assessing implementation feasibility, and evaluating the clinical relevance of items. The evaluation followed a structured form according to Kristen’s recommendations:

- independent study by each expert;
- individual assessment of scales according to predefined criteria;
- joint panel meeting (online): discussion on individual items under the guidance of an independent moderator. After the meeting, the moderator prepared the minutes for the panel members to comment on and supplement;
- reaching a mutual consensus for each scale and an overall consensus including proposals for practice and further research [6].

The experts specifically evaluated the clarity of items, degree of subjectivity, practical feasibility, transferability to the CR environment, the need for ultrasound, the level of staff burden, and clinical predictive value. Experts scored the scales on an evaluation sheet, where they also recorded their observations and comments, which were subsequently discussed in the group. The meeting moderator recorded the proceedings. The output of this phase was a qualitative analysis identifying the key benefits and limitations of each scale and its potential for implementation in the CR. Overall, a broad consensus among the participating experts was achieved.