**CLINICAL QUESTION:**
In emergency department patients with known or suspected difficult intravenous (IV) access does warming, intraosseous, ultrasound-guided, subcutaneous rehydration therapy or infrared methods compared to traditional techniques improve IV access with fewer attempts, less pain, and/or improved patient satisfaction while in the emergency department (ED)?

**PROBLEM:**
Bacteremia is a significant cause of morbidity and mortality and accurate and timely identification of the causative organism is imperative for patient survival. However, the value of blood cultures is limited by contamination. Blood culture contamination decreasing the efficiency and safety and increases resource utilization. Patients with contaminated blood cultures often receive unnecessary antibiotics and additional diagnostic studies leading to increased hospital length of stay and exposure to potential harm. This CPG evaluates the scientific evidence for the prevention of blood culture contamination in the pre-analytic phase.

### Description of Decision Options / Interventions and the Level of Recommendation:

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<th>Description of Decision Options / Interventions</th>
<th>Level of Recommendation</th>
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| **Warming**
  - Application of heat improves IV success rate and decreases time required to gain access | B |
  - Dry heat may be more effective than moist heat | C |
  - For pediatric patients, heat may counteract the vasoconstriction associated with EMLA Cream™ | C |
  - The practice of using forced air warmers without a blanket known as “hosing” is not recommended | NR |
| **Intraosseous (IO)**
  - Intraosseous access is significantly more expeditious than standard IV access and should be considered early when known or suspected difficult venous access exists | A |
  - In alert patients, pain with intraosseous access insertions is rated as minor | A |
  - Intraosseous lidocaine administration prior to fluid / medication infusion reduces the pain felt by alert patients | C |
| **Ultrasound Guided**
  - Ultrasound-guided access should be considered for adult and pediatric patients with difficult access that have had unsuccessful PIV attempts using traditional methods. | A |
  - Ultrasound-guided access is a technique that can effectively be performed by physicians, nurses, and ED technicians | A |
  - Ultrasound-guided techniques may result in improved patient satisfaction | C |
  - When the external jugular access is not visible, ultrasound-guided peripheral access is significantly more successful than external jugular access | C |
| **Subcutaneous**
  - Subcutaneous rehydration therapy is an alternative to peripheral IV insertion for the mildly to moderately dehydrated pediatric and elderly patients in the emergency department when oral rehydration efforts have been unsuccessful. | B |
| **Alternative**
  - There is insufficient evidence to support the use of alternative devices such as near infrared light and transillumination to facilitate peripheral IV insertion. | I/E |

**A** Level A (High) Based on consistent and good quality of evidence; has relevance and applicability to emergency nursing practice.

**B** Level B (Moderate): There are some minor inconsistencies in quality evidence; has relevance and applicability to emergency nursing practice.

**C** Level C (Weak): There is limited or low-quality patient-oriented evidence; has relevance and applicability to emergency nursing practice.

**NR** Not Recommended Based upon current evidence.

**I/E** Insufficient Evidence Insufficient evidence upon which to make a recommendation.

**N/E** No Evidence No evidence upon which to make a recommendation.

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