3rd Meeting of the International Consensus Meeting
8-10 of May, 2025 Istanbul

Has the in-vitro antimicrobial efficacy of antiseptic irrigation solutions translated to a reduction in SSI/PJI in clinical practice?

Kyle H. Cichos, Emanuele Chisari, Matthew J. Dietz, Nicola Logoluso, Adriana Macedo Dell'Aquila, Juliana Arruda de Matos, Carla Renata Arciola, James Stoney

Dr. Kyle H. Cichos, Hughston Clinic, Columbus, GA, USA

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Kyle Cichos, USA

Emanuele Chisari, USA

Matthew Dietz, USA

Nicola Logoluso, Italy

Adriana Macedo Dell'Aquila, Brazil

Juliana Arruda de Matos, Brazil

Carla Renata Arciola, Italy

James Stoney, USA

Why is this topic Important

- *In vitro* assessments of intrawound antiseptics have demonstrated nearly universally promising results

- Currently studied antiseptics include (among others):
  - dilute povidone iodine (PI)
  - chlorhexidine gluconate (CHG)
  - hydrogen peroxide
  - benzalkonium chloride
  - citric acid/sodium citrate/sodium lauryl sulfate solution

- National and international organizations have not yet reached consensus on the use of these solutions for PJI/SSI prevention:
  - The UK National Institute for Health and Care Excellence guideline **recommends against** the use of prophylactic incisional wound irrigation generally
  - US Centers for Disease Control and Prevention (CDC) guidelines state **"*consider*** intraoperative irrigation of deep or subcutaneous tissue with aqueous iodophor solution for prevention of SSI", with a "weak recommendation"/moderate-quality evidence
  - World Health Organization (WHO) suggests ***considering*** performing incisional wound irrigation with PI before closure to prevent SSI, with low quality evidence.
  - 2022 update of SHEA/IDSA/APIC guideline **recommends performing intraoperative antiseptic wound lavage with sterile diluted PI**, based on moderate quality evidence, mostly gathered on abdominal surgery

Literature Review/Process

- Number of articles retrieved: 103
- Screening: 26
- Final number of publications: 25

Findings from Literature

- Majority discussion regarding intrawound antiseptic solutions in orthopaedic surgery revolves around PI– the other antiseptic solutions have little to no clinical comparative data at this time
- **For PJI prevention**:
- Recent meta-analyses with mixed results:
  - Kim et al. (2022): No difference in postoperative infection rates with the use of PI lavage in either primary or aseptic revision total joint arthroplasty (TJA) (OR 0.90, 95% CI 0.27-2.98, P = 0.86)
  - Ebrahimzadeh et al. (2023): decrease in postoperative infection following TJA when comparing PI and normal saline (OR 0.44, CI 95%: 0.34–0.56, P < 0.001), but no difference between PI and other antiseptics or PI and unreported solutions
- RCT (n=4743 TKA) from single institution:
  - sequential use of sodium hydroxide, PI & normal saline vs normal saline alone:
  - **Decreased PJI (0.17% vs 1.26%, p=0.012)**
- Prospective study (n=478) for PJI prevention in Aseptic Revision TJA:
  - 0.35% PI lavage vs Normal Saline lavage:
  - **Decreased PJI (0.4% vs 3.4%, p=0.038)**

Findings from Literature

- **For SSI prevention (Spine)**:
- Torres et al. (2022) Meta-Analysis: Decreased rate of SSI with the use of **PI lavage (RR 0.32, 95% CI 0.20–0.53, P < 0.001)**
- RCTs by Chen et al (2005) & (2006):
  - 3 min 0.35% dilute PI soak vs normal saline lavage:
  - **Decreased SSI (0% vs 4.8%, p=0.029)**, n=244 patients (2006)
  - **Decreased SSI (0% vs 2.9%, p=0.014),** n=414 patients (2005)
- De Luna et al (2017), prospective/randomized
  - Pulsatile PI vs bulb NS= no difference in SSI* (0% vs 12%, p = 0.235), n= 50
- Fei et al (2017), prospective/randomized
  - Pulsed lavage NS vs PI= no difference in SSI (2.5% vs 2.5%), n= 160
- Cohen et al. (2020), prospective/randomized
  - PI vs NS= no difference in SSI– high risk group (5.5% vs 10.5%, p>0.99), n=37 or low-risk group (0% vs 0%, p>0.99), n=116

- **Non-orthopaedic specific literature**:
- Groenen et al (2024): Level I meta-analysis of RCTs for SSI prevention comparing antiseptic vs antibiotic vs NS vs no irrigation:
  - Antiseptic (mostly PI) vs no irrigation:
  - **Decreased PJI (0.4% vs 3.4%, p=0.038)**

Findings from Literature

- Primary Concerns Regarding Orthopaedic Clinical Studies to date:
  - Few RCTs or Level I studies
  - Mostly retrospective change of practice studies
  - Heterogeneity of study protocols and outcomes assessment (including PJI/infection definitions)
  - Inclusion of primary and revision cases often confounding
  - Lack of data granularity
  - The few prospective or RCTs in spine = significant sample size concerns and inconsistent protocols

Question:

- **Has the in-vitro antimicrobial efficacy of antiseptic irrigation solutions translated to a reduction in SSI/PJI in clinical practice?**

Response:

- Unknown. Clinical evidence is promising for the translation of antiseptics, particularly povidone iodine (PI), that claims the lion share of comparative clinical studies. Surgeons may consider antiseptic irrigation with povidone iodine for prevention of PJI after total joint arthroplasty and SSI after spine surgery that is supported by low to moderate level of evidence. However, high-quality randomized control trials (RCTs) are needed to cement this recommendation. No other antiseptic has sufficient clinical data to comment on at this time.

- **Level of Evidence:** Moderate

❖**Vote:**

Agree n=36; 100%

Disagree 0

Abstain 0