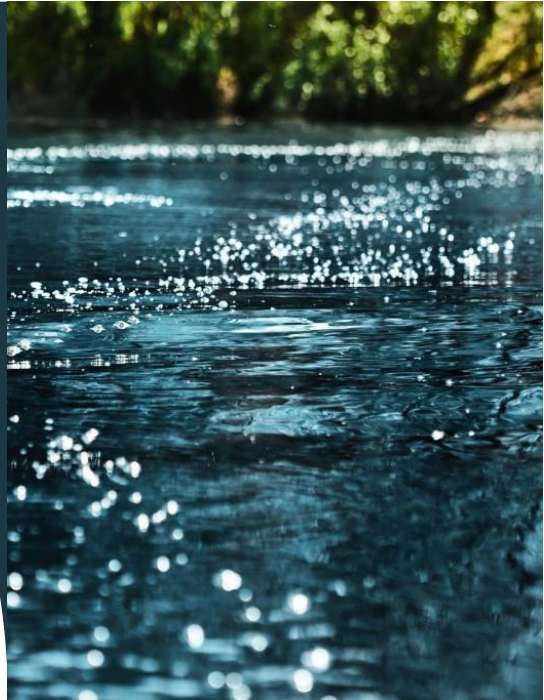


## Antimicrobial Solutions Used for Surgical Irrigation

### What's Important to MD's When selecting an irrigation Solution.

Paul Naylor PhD , MD



### Irrigation Solutions characteristics

- 1- Must have broad spectrum activity against gram positive and gram negative bacteria.
- 2- MBC (minimum bactericidal concentration, log 3 bacterial kill) must be 10 to 100 times higher than irrigation solution concentration so it doesn't lose efficacy due to serum and wound fluid dilution Like betadine does
- 3- Does not stain the skin like Betadine or allergenic like betadine
- 4- Nontoxic to tissues, Irrisept has good safety profile with all tissues
- 5- Concentration of the antimicrobial compound is stable in the solution. Betadine mixed in the OR or the Pharmacy with precipitate out of solution when sitting making is concentration extremely variable during use if not constantly stirred.

## **Irrigation solution Characteristics**

6- Must be easy to use and have pressure capabilities, like Irrisept squeeze bottle, 10-15 psi is ideal based on FLOW study results

7-Irrigation solution must be cost worthy. Pulse lavage system is more expensive than Irrisept

Bactisure can cost 300 to 600 dollars per bottle.

8-Complications post operatively should lower than the competitors, Brandon Lung paper shows Irrisept with less post op complications than betadine.

9- Antimicrobial compound in the solution should adhere to the tissues and have a long kill time. Irrisept kinetic kill time studies show more bacterial death with longer exposure

## **What do I Like Irrisept**

1 – CHG has a broad spectrum of activity against both gram positive and gram negative bacteria.

- 2- 0.05% CHG is well above the MBC's for many bacteria.
- 3- Bacteria have not developed any resistance to CHG
- 4- Research papers show CHG is better than betadine in reducing skin bacteria when used as a skin prep, also data show CHG wipes prior to surgery decrease infections. We scrub our hands with CHG prior to surgery. So why would switch to another chemical for your irrigation.
- 5- Dr. Lung has shown decreased complications with CHG vs Betadine.
- 6- CHG has been proven to be safe to tissues with in vivo studies.
- 7- Irrisept is easy to use and cost effective
- 8- Irrisept has shown some ability to eradicate biofilm in in vitro studies

## Lowest MIC,s with CHG 0.05% and PV -I 0.35%

E.coli Pseudomonas A. Staph A Strepto A

CHG 0.00002% 0.0008% 0.0002% 0.0002%

CHG+

10% serum 0.00001% 0.0008% 0.00001% 0.00001%

PV-I 0.35% 0.175% 0.08% 0.08%

PV-I +

10% serum 0.35% 0.35% 0.35% 0.35%

**Chlorhexidine gluconate lavage during total joint arthroplasty may improve wound healing compared to dilute betadine , Lung et Al. journal experimental Orthopaedics 2022**

- Complications: 410 TJA
- |                        | betadine | irrisept |
|------------------------|----------|----------|
| • Readmission 30 days  | 3.7%     | 0.5%     |
| • Readmission 90 days  | 4.6%     | 1.5%     |
| • PJI within 90 days   | 1.2%     | 0.7%     |
| • PJI within 1 year    | 1.2%     | 0.7%     |
| • Superficial drainage | 7.3%     | 1.5%     |
| • Revision surgery     | 2.4%     | 1.0%     |



- **IRRISEPT 0.05% CHG**
- **KILLS BACTERIA ON CONTACT VIA CELL DISRUPTION**
- **STUDIES REVEAL IRRISEPT DISRUPTS BIOFIM**
- ( SPANGEHL 2019)

## **CHG is cost effective:**

Journal of arthroplasty (2020), Schwarzkopf, et.al  
2386 primary TKA and THA patients rx with PV-I 0.35% vs CHG  
0.05% irrigation. 1 year return for PJI: CHG 9 , PV-I 14

Cost per infection 75k, thus PV -I = 14 PJI X 75K equals 1,050,000  
dollars. CHG =9 PJI X 75k equals 675,000 dollars.  
CHG saved the hospital, 375,000 dollars VS PV -I and both are more  
effective than saline