A Critical Appraisal of Exit Site Care Methods

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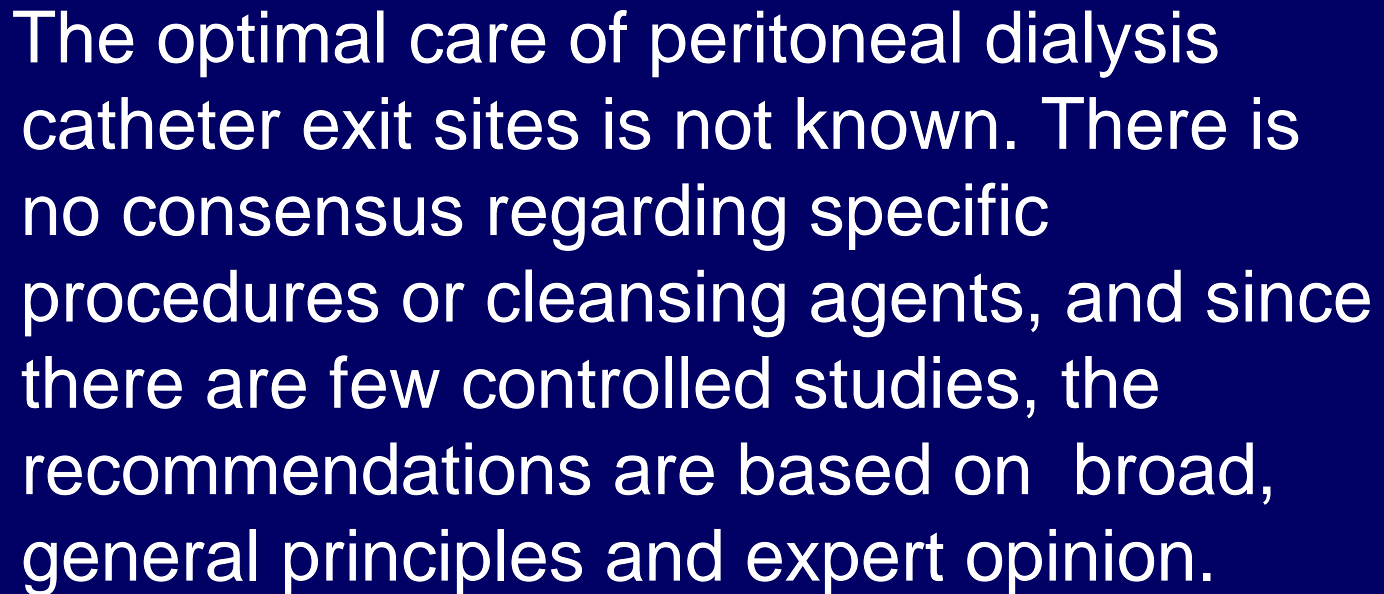
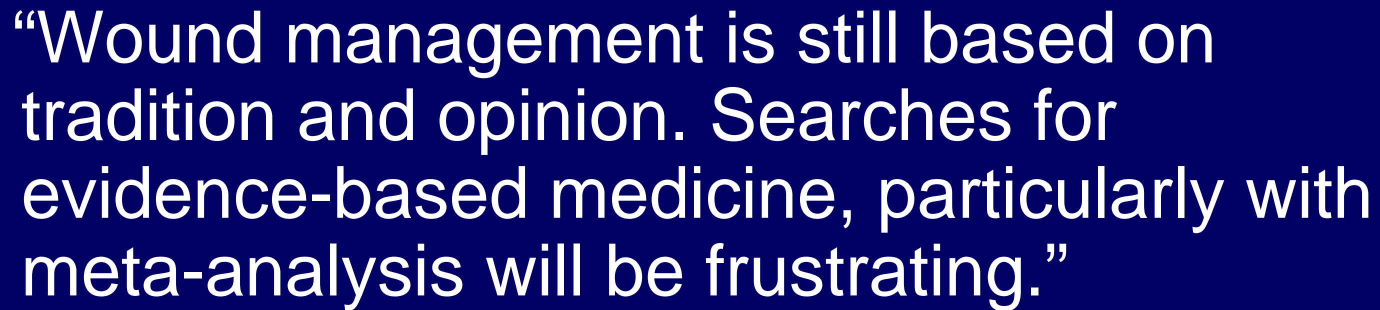
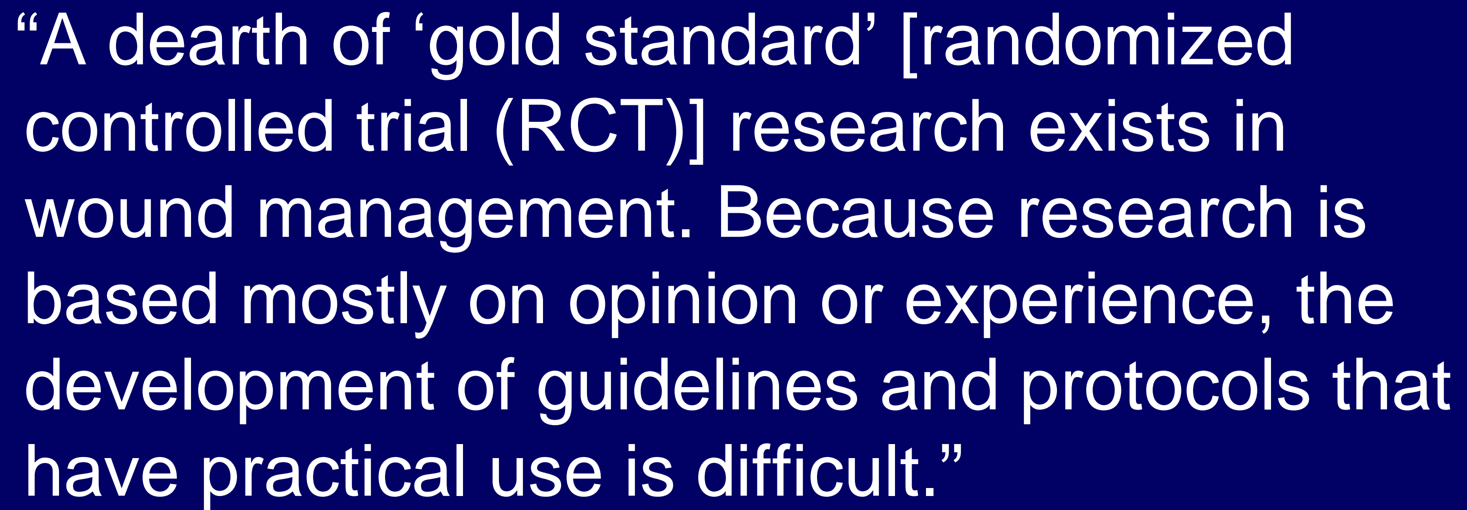
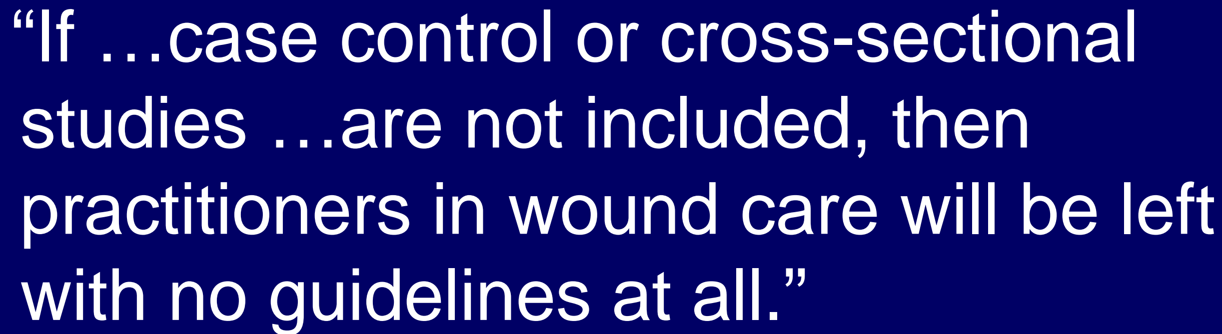

The optimal care of peritoneal dialysis catheter exit sites is not known. There is no consensus regarding specific procedures or cleansing agents, and since there are few controlled studies, the recommendations are based on broad, general principles and expert opinion.
- Prowant and Twardowski



- Nursing Standard 18(24):73-74, 77, 2004.


“A dearth of ‘gold standard’ [randomized controlled trial (RCT)] research exists in wound management. Because research is based mostly on opinion or experience, the development of guidelines and protocols that have practical use is difficult.”
- Nursing Standard 18(24):73-74, 77, 2004.



- Nursing Standard 18(24):73-74, 77, 2004.

- Traumatic wounds
- Sutured surgical wounds
- Chronic/difficult to heal wounds
- Pressure ulcers
- Leg and foot ulcers

- The catheter is a foreign body
- The foreign body is transcutaneous
- The peritoneal cavity is sterile

- CKD patients have risk factors for poor or slow healing
  - Uremia
  - Immunosuppression
  - Malnutrition
  - Diabetes mellitus
  - Obesity

Levels of Evidence

- Level A or I
  - Meta-analysis of randomized controlled trials
  - At least one randomized controlled trial
- Level B or II
  - At least one controlled study
- Level C or III
  - Non-experimental, case controlled studies
- Level IV
  - Expert opinion

- CARI: Australia
- CSN: Canada
- EBPG: Europe
- ISPD: International
- KDOQI: North America & Europe

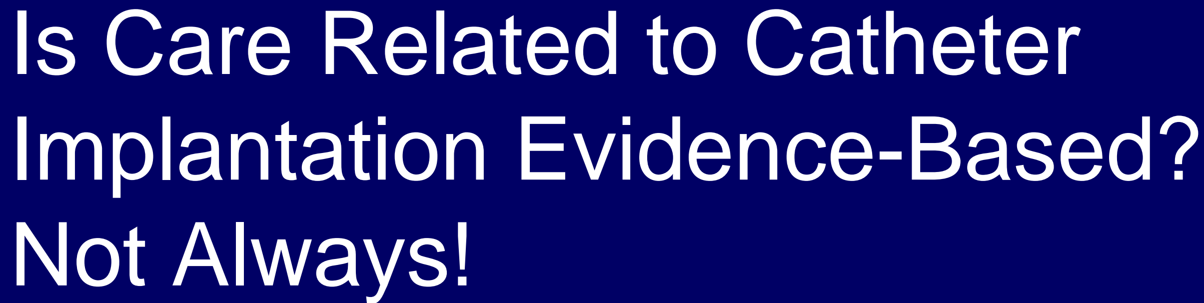
- Dedicated team for implantation & care
  - EBPG – Level A
- Insert catheter 2 weeks prior to use
  - CARI – Level III or IV
  - EBPG – Level C

Evidence-Based Elements Related to Catheter Implantation

- Systemic antibiotics preoperatively
  - EBPG – Level A
  - ISPD - Evidence
- A first generation cephalosporin should be used
  - CARI – Level II
- Vancomycin is also effective, but routine use is not recommended
  - CARI – Level II

Evidence-Based Elements Related to Catheter Implantation

- Early dialysis should use small exchange volumes and patient should be supine
  - EBPG – Level C
- Exit site should be kept dry
  - EBPG - Level C
- Occlusive dressings should not be used
  - EBPG - Level C



- Only 64% of units routinely give prophylactic antibiotics prior to catheter insertion; this has not increased since 1991
- 85% of units use a 1st generation cephalosporin
- 17% of units use vancomycin routinely for preoperative prophylaxis
- Occlusive dressings are routinely used by 6% of units

Evidence-based Elements of Post-Implantation ES Care

- Aseptic technique should be used
  - EBPG – Level C
- Dressing should immobilize catheter
  - EBPG – Level C
- Dressing should not be changed more than once/week during first 2 weeks, except for bleeding or infection
  - EBPG – Level C

Is Post Implantation Care Evidence-Based? Not Always!

- Only 60% of units use aseptic technique
- Only 60% of units change dressings weekly
- 100% of units immobilize the catheter

Evidence-based Elements of Chronic ES Care

- Teaching methods influence the risk of PD infections
  - ISPD – Evidence
- Exit should be kept dry
  - EBPG – Level C
- If dressings are used, they should be changed daily
  - EBPG – Level C

Evidence-based Elements of Chronic ES Care

- Antibiotic protocols against *S. aureus* reduce the risk of *S. aureus* infections
  - ISPD - Evidence
- Prophylactic topical mupirocin to the exit site, esp. for *S. aureus* carriers reduce exit/tunnel infections and peritonitis
  - CARI - Level II
- Mupirocin either intranasal or at the exit site reduces exit site infections, especially for *S. aureus* carriers
  - EGBP – Level A
- Daily use of mupirocin does not lead to significant resistance in the short term, but may over the long term
  - CARI – Level III or IV

- Tap water should not be used if unpotable
- Other water may be used
  - Boiled water (Joanna Briggs –Level 2)
  - Bottled water
  - Bleach-treated water
- Normal saline solution (Joanna Briggs – Level 1 or 2)
- Hypertonic vinegar solution

Is Chronic Exit Site Care Evidence-Based? Not Always!

- 90% of units report daily care
- Only 25% of units routinely provide systemic antibiotic prophylaxis to *S. aureus* carriers
- Only 43% of units routinely use a topical antibiotic at the exit site

Evidence-based Elements Related to Exit Site Infection

- Intensify exit cleaning using antiseptics
  - ISPD – Opinion
- Local care and topical antibiotic may be sufficient in equivocal infections (absence of purulent drainage, tenderness and edema)
  - EBDP – Level C
  - ISPD – Opinion

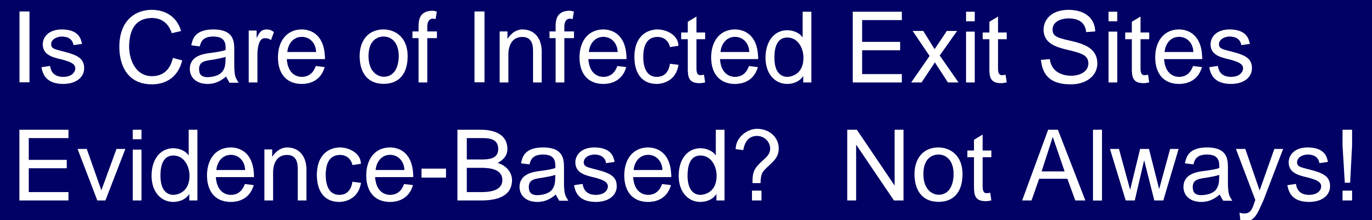
Evidence-based Elements Related to Exit Site Infection

- Treat according to the ISPD Guidelines
  - EBPG – Level C
- Hypertonic saline dressings BID with systemic antibiotics for severe ES infection
  - ISPD – Opinion

Evidence-based Elements Related to Exit Site Infection

Remove catheter if

- Peritonitis episode with same organism
  - EBPG – Level C
- If antibiotic treatment is unsuccessful
  - CARI – Level III or IV
  - EBPG – Level C
- If infection recurs with same organism
  - EBPG – Level C
- Spontaneous cuff extrusion
  - CARI – Level III or IV



- 75% of units intensify exit site care
- 88% use an antiseptic or antibacterial soap
- Only 14% use hypertonic saline dressings

Addendums to the Guidelines and Expert Opinions

- An agent with antibacterial or antiseptic properties should be used for chronic care
- Use of soaks may resolve early symptoms and prevent overt infections
- Topical gentamicin is effective for prophylaxis
- Immobilization is required for chronic care, because trauma is a risk factor for ES infection
- Cauterization of exuberant granulation tissue is effective
- Use of soaks may reduce the time required to treat some infections

- 90% use antiseptic or antibacterial soap
- 91% require catheter immobilization
- 78% cauterize exuberant granulation tissue
- 41% use soaks for infected exit sites

CQI Related to Exit Site Care

Calculate and monitor infection rates

- ISPD – Yearly
- EBPG – catheter survival > 80% at 1 year
- K/DOQI - Level B
  - ✓Exit site infection rates
  - ✓Peritonitis rates
  - ✓Catheter survival rates
  - ✓Technique survival rates

Flanigan & Gokal – PDI 2005

What We Know – Highest Level of Evidence

- Systemic antibiotics pre-operatively reduce catheter-related infections
- Mupirocin, either intranasal or at the exit site, reduces exit site infections, especially in *S. aureus* carriers

What We Don’t Know about Post Implantation Care

- Ideal frequency of care
- Optimal cleansing agent
- Optimal rinsing agent
- Ideal dressing
- Optimal method of catheter fixation
- How long to continue post implantation care

- Optimal frequency of care
- Ideal cleansing agent
- If use of clean towel or gauze for drying is as safe as using sterile gauze
- Long-term effects of topical antibiotics
- If use of dressings reduces infections
- Risks associated with swimming or submerging the exit site
- Effective precautions for swimming or submerging the exit site

- Optimal frequency of care
- Optimal cleansing agent
- If sterile solution should be used for rinse
- Most effective agents for soaks
- If use of dressings improves outcomes

Conclusions

- There are far more elements of care that are based on tradition or opinion than that are evidence-based
- Medical treatment, i.e. use of antibiotics, is evidence-based; nursing care is not
- Not all dialysis units are following the evidence-based guidelines
- We have opportunities to improve outcomes by increasing use of evidence-based elements of care
- We have ample opportunities for nursing research