

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
Ceroni, D., et al. (2016). Prevention of pin-tract infection to treatment of osteomyelitis during paediatric external fixation. <i>Journal of Child Orthopaedics</i> . 10, 605-612	V	Silver dressings have increase in antibiotic resistant pathogens Use of a silver dressing reduced microbial contamination of wounds from environmental sources These dressings are attractive due to ability to be left in place for up to 7 days
Lagerquist D,Dabrowski M, Dock C, Fox A, Daymond M, Sandau K, Halm M (2012).Care Of External Fixator Pin Sites. <i>American Journal of Clinical Care</i> . 21 (4), 288 - 292	Level 11	Various solutions historically on cleaning, but found that chlorhexidine resulted in less pain / antibiotic use than normal saline No study compared dressing versus no dressing Fewer infections with 1% silver sulphadiazine / 5% chlorhexidine compared with 5% chlorhexidine Daily versus weekly made no difference Dressing type & frequency can change according to clinical condition Recommends multi centre studies to compare outcomes and products in use
Kazmers, N., Fragomen, A., & Rozburch, R. (2016). Preventions of pin site infection in external fixation: a review of the literature. <i>Strategies Trauma Limb Reconstruction</i> . 11(2), 75-85.	V	Conclusion that dressings reduce pin tract infection rather (trauma patients) more so than a gauze dressing
Ogbemudia, A., Bafor, A., Ogbemudia, E., & Edomwonyi, E. (2015). Efficacy of 1 % silver sulphadiazine dressings in preventing infection of external fixation pin-tracks: a randomized study. <i>Strategies Trauma Limb Reconstruction</i> . 10(2), 95-99.	II	Silver is a very highly effective topical antimicrobial used in burns dressings with capacity to decrease bacterial colonization. Dressing results in a slow and sustained release of silver ions, inhibiting growth and multiplication of bacterial cells.

		<p>Penetrates into exudate and necrotic tissue Effective against Staphylococcus aureus, Escherichia coli and Pseudomonas aeruginosa and strains of Proteus, Klebsiella and candida albicans. In the management of burns it has not be associated with systemic complications Study showed that use of silver dressing was efficacious Supports other studies that use of a antimicrobial preparation is of value</p>
<p>Timms A, Pugh H (2012). Pin site care: guidance and key recommendations. Nursing Standard. 27, 1, 50</p>	<p>Level V 11</p>	<p>Prevent cross infection Consensus approach provides guidance in absence of strong evidence Discusses different cleaning solutions as per others eg saline, chlorhexidine, povidine iodine (not recommended) - suggest chlorhexidine Dress with a non-shedding material No chlorhex if allergy, eczema, psoriasis - use saline instead Frequency recommended at 7 day intervals Change dressing earlier if concerned Should have compression applied to reduce risk of haematoma and then tenting, excessive movement of skin around site Showering - agreement that can be done on day of dressings, but keep fixator dry on other days Crusts - leave intact unless infection present, then to be removed Highlights need for further research into the area of pin site care Highlights development of validated tools to assist in</p>

		diagnosis and audit of infection
Timms A, Vincent M, Santy-Tomlinson J, Hertz K (2013). A fresh consensus of pin site care in the UK. International Journal of Orthopaedic and Trauma Nursing. 17, 19 - 28	Level V11	<p>Complete article on Consensus approach</p> <p>In absence of skin sensitivity then pin sites should be cleaned weekly using alc chlorhexidine and non shedding dressing (gauze)</p> <p>Cover with wound dressing that keeps exudate away from the wound</p> <p>Use of compression with a bung, stopper or clip</p> <p>Change if becomes saturated</p> <p>On day of dressing change - pt may bathe or swim (not immerse)</p> <p>Pt to be key member in diagnosis of pinsite infection</p> <p>Lack of high quality randomised controlled trials to demonstrate best</p> <p>Need for large multi centre trials</p> <p>No validated outcome measure for pin site infection</p> <p>Frank discharge of pus, increasing pain at the pin / wire site and decreased movement or weight bearing with increasing redness and increased swelling and discharge are indicators of infection</p> <p>Further work needed in area of dressings to be used</p> <p>Clarification of role of crusts / scabs</p> <p>No real consensus as to when to begin dressings</p>
Walker J (2013). Pin Site Infection in Orthopaedic External Fixation Device. British Journal of Nursing. (21) 3, 148 - 151	Level IV	<p>Compared pin site infection rates of various authors</p> <p>Discussed cleansing with many different solutions</p> <p>Reduction in infection rate with Alcoholic chlorhexidine and reduced pain</p> <p>Mentions reaction to chlorhexidine</p> <p>Discusses the role of crusts and debate as to whether to remove or not</p>

		Use of compression advocated to prevent tenting If dressing uses, then should be a non shedding material eg sponge type dressing, non shedding gauze, soaked in alcoholic chlorhexidine due to its antimicrobial properties
Landsdown, A.,(2006).Pin and needle tract infection: the prophylactic role of silver. Wounds UK. 2, (4), 51 - 62	II	Emphasis on the prophylactic value of release of silver via the use of silver dressings in the presence of a moist wound bed Mentions current research being undertaken in Europe and US Review other studies referring to use of external pins and wire and refers to other studies where silver is used in and on the pin, not only the dressing The bacterial burden is decreased but not completely eliminated which is favourable
Campbell F and Watt E (2019) An Exploration of Nursing Practices Related to Care of Orthopaedic External Fixators (pin/wire sites) in the Australian Context, International Journal of Orthopaedic and Trauma Nursing, 36: 100711.	III-2	Australian study via on-line questionnaire which compares to the UK Consensus guideline Continues conjecture about which cleansing solution to use to clean pin site Compared several authors/ studies in discussion Agreement upon need for light compression at site Contention about role of crusts – to leave or remove
Bhattacharyya, M, Bradley, H, (2006). Antibiotics vs antimicrobial dressing for pin track infection. Wounds UK. 2006. 2 (2), 26 - 33	II	Refers to previous common studies re pin site management Study over 2 year period Groups divided into 2 groups – one group managed with silver dressing, one with oral antimicrobials All patients recovered completely but indicates that patients can be treated adequately without oral medication.

		<p>Dressing becoming more popular in view of increasing resistance to antimicrobials</p> <p>Silver is cost effective and easy for patient to manage - not a complex dressing to perform</p>
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