Evidence Supporting the International Consolidated Wound Infection Guideline (ICWIG) Recommendations

Legend

- Underlined references include cost analysis.
- Wound Infection Control Recommendations are listed in the related ICWIG Recommendation File with Level of Evidence, Content Validity Index (CVI) and Strength of Recommendation (SOR) listed after each recommendation.

Definitions of Abbreviations Used in Evidence Table Below

AFS = Amputation-free survival

AM = Animal Model

BMI = Body mass index

CC = Case Controlled Epidemiology Study

CCT = Convenience Assignment or Non-randomized Controlled Trial

CI = Confidence interval

CIV = Cells studied *in vitro*

CLABSI = central line associated blood stream infections

CO = Cohort study *e.g.* of all consecutive patients admitted to a facility studied prospectively

CS = Case series or descriptive uncontrolled study of performance of one modality

D6 or D8 = Daptomycin-6 or -8 every 24 hours as either 6 mg/kg (D6) or 8 mg/kg (D8)

DFU = Diabetic Foot Ulcer

EO = Expert opinion, Content Validation Study or Consensus Statement

HCD = Hydrocolloid dressing

HCT = Historically Controlled Trial with successive measure on a series of patients

ITT = Intent to treat analysis groups

IV = Intravenous

LOS = Length of stay in the study's specified setting

LR: n = Literature Review including Systematic Reviews: number of studies supporting the modality

MA = Meta-analysis: number of patients with data supporting the modality added if known

MRD = Moisture-retentive dressings, also known as "occlusive" dressings in the literature

MRSA = Methicillin-resistant staphylococcus aureus

NPT = Negative pressure or vacuum therapy applied to wound

OR = Odds ratio

PCT = Within-patient Controlled Trial

PJI = Prosthetic joint infection

POS=Prospective Observational Study: differs from CO because it is a convenience sample, not ALL consecutive patients

$PsqO_2$ = Post-operative subcutaneous oxygen tension

PU = Pressure Ulcer (also known as Decubitus Ulcer or Pressure Injury

RCO = Randomly selected patients from a cohort of patients

RCT = Randomized Controlled Trial: RCT = Human, ARCT = Animal

RET= Retrospective Chart Review

SNM = Sacral nerve modulation

SOC = Standard of care for the institution in the cited reference

SR = Systematic Review

VRE = Vancomycin-resistant enterococci

Reference	Study Groups (# of Subjects)	Study Design	Results (p<.0.05 if not specified)
Adriani MB, Moriber N. Preoperative forced-air warming combined with intraoperative warming versus intraoperative warming alone in the prevention of hypothermia during gynecologic surgery. AANA J. 2013 ;81(6):446-51. PMID: 245970006	Pre-operative gynecologic surgery patient warming with Bair Paws (3M) gown warmer + conventional intra-operative forced-air warming (30) or conventional intra-operative forced-air warming alone (30)	RCT recording body temperature across preoperative, intra-operative, and postoperative time periods. Data were analyzed using descriptive statistics and analysis of variance with repeated-measures. Baseline demographics were similar in both groups with respect to age, body mass index, total intravenous fluids and estimated blood loss	Body temperature differed over time (df = 2, P < .001) for each intervention across all 3 time periods (P =0 .042). Group temperatures did not differ from each other at any time period, or for any ASA status or type of procedure (laparoscopic vs. open surgery). Preoperative warming with the Bair Paws gown offered no significant benefit over conventional therapy in maintaining normothermia.
AHCPR Panel for the Prediction And Prevention Of Pressure Ulcers In Adults. Pressure ulcers in adults: Prediction and prevention. *Clinical Practice Guideline, No. 3.* Rockville, MD: U.S. Department of Health and Human Services. Public Health Service, Agency for Health Care Policy and Research. May, 1992. AHCPR Publication No. 92-0047. PMID: 1302136	Pressure ulcer guideline identified as a reference in the structured literature searches.	Consensus based guideline development featuring best level of evidence supporting pressure ulcer prediction and prevention recommendations	Most PU prevention recommendations were based on expert opinion. There was A Level support for education at all levels to assess and alleviate causative factors. A-level for hydrocolloid dressings preventing infection; B-Level evidence supported repositioning, avoiding massage over sites at risk and using pressure reducing surfaces for at-risk patients.
Alexander JW, Van Sweringen H, Vanoss K, Hooker EA, Edwards MJ. Surveillance of bacterial colonization in operating rooms. Surg Infect (Larchmt). 2013;14(4):345-51. PMID: 23859684	517 samples from 33 operating rooms	Contact culture plate samples were taken randomly from various surfaces in each operating room over a 6-mo period.	Flat decontaminated surfaces (e.g. floors, anesthesia carts, operating tables) grew bacterial colonies less often.as did other surfaces that were decontaminated. Tops of shoes or personal hats, averaged up to

			50-60 CFU/20 cm^2 . Outsides of face masks, contained slightly more organisms than did floors; insides increased nearly 100 times
Alexander, J., Solomkin, J., Edwards, J. Updated recommendations for control of surgical site infections. Annals of Surgery. 2011; 253(6) 1082- 1093 PMID : 21587113	Guideline summary	Review of 1999 CDC recommendations for control of surgical site infection guidelines and current literature to update evidenced based recommendations	The article concluded that adherence to the 1999 recommendations could reduce SSI significantly. The longer a wound is open, the greater the risk of complications such as infection. Microbes in operating room air may increase SSI risk.
Allegranzi B, Gayet-Ageron A, Damani N, Benagly L, McLaws ML, Moro Memish Z, Urroz O, Richet H, Storr J, Donaldson L, Pittet D. Global implementation of WHOS's multimodal strategy for improvement of hand hygiene: a quasi-experimental study. Lancet Infect Dis 2013; 13: 843-51. PMID: 23972825	Six pilot sites: 55 departments in 43 hospitals in 5 different countries from 3 continents.	Quasi experimental study of 24 months duration. All participants received information to implement the WHO's strategy on multimodal hand hygiene program. Four 3-6 month phases were used to implement WHO's strategy and compliance.	21,884 hand hygiene opportunities. Compliance with hand hygiene increased from 51% before the intervention to 67.2% after. Long term sustainability was observed with good hand hygiene compliance.
Alvarez OM, Kalinski C, Nusbaum J, Luz Hernandez L, Pappous E, Kyriannis C, Parker R, Chrzanowski G, Comfort CP, Incorporating wound healing strategies to improve palliation (symptom management) in patients with chronic wounds. J Palliative Medicine, 2007 Oct;10(5) :1161-89. PMID: 17985974	No subjects. This was a panel discussion of consensus opinion.	LR with expert consensus supporting consideration of a mnemonic for palliative care: S-P-E-C-I-A-L palliative wound care: S-stabilizing wound, P-prevent new wounds, E-eliminate odor, C-control pain, I-infection prophylaxis, A-, absorbent wound dressings, L-lessen dressing changes.	Using wound palliation (symptom management) with current wound healing practices can provide appropriate options for palliative care providers. Including infection prevention.
Altindas M, Kilic A. Is Boyd's operation a last solution that may prevent major amputations in diabetic foot patients? J Foot Ankle Surg. 2008 Jul-Aug;47(4):307-12. PMID: 18590894	16 patients in an Istanbul, Turkey hospital clinic with diabetic foot lesions and infections reaching midfoot and hindfoot regions	Boyd's operation (talectomy, excision of articular surfaces of tibia and calcaneus, and tibiocalcaneal arthrodesis) was performed as a 2-staged operation. After the first stage, the defect was left open with local wound care, until the defect was prepared for closure then closed secondarily.	15 of the 16 were able to walk on their own during a mean of 3.2 years.
Andersson RE, Lukas G, Skullman S, Hugander A. Local	Subjects with pilonidal cysts	Prospective double blind RCT. Nursing staff evaluated all	GCS and control groups were comparable at baseline. Infection

administration of antibiotics by gentamicin-collagen sponge does not improve wound healing or reduce recurrence rate after pilonidal excision with primary suture: a prospective randomized controlled trial. World J Surg. 2010 Aug 24. [Epub ahead of print] accessed August 30, 2010. PMID: 20734046	surgically excised primarily closed with a midline suture and no subcutaneous sutures (SOC n=82) or same procedure with gentamicin collagen sponge packed into the surgical excision (GCS n=77). A rolled dressing sutured in place over the surgical site held the wound closed and reduced dead space.	wounds without knowing treatment assignment after 2-4 days when tie-over sutures were removed, after 2 weeks when the wound sutures were removed, after 3 months and at 1 year follow up. Patients were excluded if they had a prior recurrence after pilonidal excision or were pregnant or had been exposed to radiation or immunosuppressive therapy or were allergic to gentamicin or collagen. Primary outcome was improvement in wound healing.	rates peaked 2 weeks post-operatively at 26% for Control wounds or 22% for wounds packed with GCS and were similar at all times. The only outcome that approached statistical significance was 2% of GCS wounds and 10% of Control wounds had exudate at 2-4 days ($p = 0.051$). A slightly higher proportion of GCS (0.77%) wounds compared to Controls (0.66%) healed at 3 months ($p = 0.138$). The GCS group had more re-operations (10%) than controls (4%; $p = 0.21$).
Anglen JO. Comparison of soap and antibiotic solutions for irrigation of lower-limb open fracture wounds. A prospective, randomized study. J Bone Joint Surg Am. 2005;87(7):1415-22. PMID: 15995106	Between 1995 and 2002, 400 adult patients with a total of 458 open fractures of the lower extremity were entered into the study. 171 patients with a total of 199 fractures in group B (bacitracin) and 180 patients with a total of 199 fractures in group C. (castile soap control)	Adult patients were prospectively randomized to wound irrigation with either a bacitracin solution (B) or a non-sterile castile soap solution (C). The patients were assessed clinically for a mean duration of 500 days to monitor development of wound infection, healing of the soft-tissue wound, and union of the fracture. The. There was no difference between groups B and C in terms of gender, Gustilo-Anderson grade of the open fracture, time between injury and irrigation, smoking or alcohol use. Primary outcomes were wound infection, healing and bone healing.	.An infection developed at 35 (18%) of the 199 fracture sites in group B and at 26 (13%) of the 199 fracture sites in group C ($p = 0.2$). Bone-healing was delayed for 49 (25%) of the group-B fractures and 46 (23%) of the group-C fractures ($p = 0.72$). Wound-healing problems complicated 19 group-B fractures (9.5%) and 8 group-C fractures (4%; $p = 0.03$). CONCLUSIONS: Irrigation of open fracture wounds with antibiotic solution offers no advantages over the use of a non-sterile soap solution and it may delay wound-healing.
Apelqvist J, Ragnarson Tennvall G. Cavity foot ulcers in diabetic patients: a comparative study of cadexomer iodine ointment and standard treatment. An economic analysis alongside a clinical trial. *Acta Derm Venereol* 1996;76:231–5. PMID: 8800307	Once daily Cadexomer iodine ointment (changed once daily (I: n=22 with Wagner 1 or 2 diabetic neuropathic foot ulcers) Twice daily gentamicin solution 80 mg/ml (C: 19 similar subjects)	Prospective RCT, comparing only those completing 12 weeks of therapy (17 I and 18 C subjects) are compared using Mann-Whitney U test in % area healed, % completely healed or % requiring surgery at 12 weeks.	There were no significant differences between the two groups on any outcome. Conclusion is that Cadexomer iodine (29% healed at 12 weeks) and control gentamicin (11% healed at 12 weeks) outcomes do not differ. Small n suggests study may be underpowered.
Aragón-Sánchez J, Lázaro-	417 patients with	Retrospective chart review of a	Predictors ($P<0.05$) of revision

Martínez JL, Molinés-Barroso R, García Álvarez Y, Quintana-Marrero Y, Hernández-Herrero MJ. Revision surgery for diabetic foot infections: giving another chance to the patient. Int J Low Extrem Wounds. 2013;12(2):146-51. PMID: 23669195	diabetes and foot infections requiring surgery January 1 2000 to January 1, 2010 in a Spain diabetic foot clinic, of which 167 (40%) required revision surgery following initial surgery to address DFU infection.	cohort of patients with DFU infections requiring surgical revision used logistic regression to predict whether major amputation or further surgical revision would be needed to control the DFU infection. Predictors of major amputation were (P< 0.05) persistent osteomyelitis (OR = 0.08); ischemic heart disease (OR = 3.4), 2 or more reoperations (OR=3.0), gram-negative rods from tissue biopsy (OR = 3.3) and peripheral arterial disease (OR = 6.5).	surgery were erythrocyte sedimentation rate >70 mm/h (odds ratio [OR] = 1.6); leukocytosis (OR = 1.6), peripheral arterial disease (OR = 1.5), and isolation of gram-negative rods from tissue biopsy (OR =2.2). 79 of 167 patients (47.3%) who had revision surgery required a higher level of surgery. Of the 79 undergoing higher level revision surgery, 70.7% achieved limb salvage.
Armstrong DG, Lavery LA, Wu S, Boulton AJ. Evaluation of removable and irremovable cast walkers in the healing of diabetic foot wounds: a randomized controlled trial. Diabetes Care. 2005;28:551–554 PMID: 15735186	Patients with neuropathic insensate diabetic foot ulcers had removable off-loading (25) or "instant" total contact casts (25)	12-week RCT with foot ulcers monitored weekly for 12 weeks for healing. "Instant" total contact casts were the same off-loading devices wrapped in place so they could not be removed.	A higher proportion of diabetic foot ulcers healed and the rate of healing was higher in the group with the non-removable off-loading group.(p< 0.02)
Armstrong DG, Lipsky BA, Polis AB, Abramson MA. Does dermal thermometry predict clinical outcome in diabetic foot infection? Analysis of data from the SIDESTEP* trial. Int Wound J 2006;3:302-7. PMID: 17199766	332 Subjects with a diabetic foot ulcer (DFU)	Correlated increased skin temperature with severity of diabetic foot infection, white blood cell (WBC) count and clinical outcome in the dataset from the SIDESTEP study.	There was no significant correlation between higher skin temperature and poor clinical outcome, but > 10^{O} F difference between limbs was correlated with lower clinical response (P = .0007) compared to those with < 10^{O} F difference. Elevated WBC count was associated with nearly twice the risk of poor outcome. Conclusion: WBC count reflects a systemic response to infection and skin temperature reflects a local response to injury, perfusion and/or infection.
Bahli ZM. Does evidence based medicine support the effectiveness of surgical facemasks in preventing postoperative wound infections in elective surgery? J Ayub Med Coll Abbottabad 2009 Apr-Jun;21(2):166-170 PMID: 20524498	Cochrane review of studies in MEDLINE or EMBASE1966-2007	SR and MA of all available randomized controlled trials (RCT) regarding use of surgical face masks in elective surgeries	NS difference in SSI incidence was observed between the group using masks and groups operated with no masks (OR 1.34, 95% CI, 0.58-3.07). There was no increase in infection rate in 1980 when masks were discarded. SSI incidence decreased (p < 0.05) when masks

			were not used in elective surgery.
Bates-Jensen B, McNees P. The Wound Intelligence System early issues and findings from multi-site tests. Ostomy/Wound Manage. 1996; 41(10A Suppl): 53S-61S PMID: 9397883	Patients with wounds including pressure or venous ulcers with a content validated algorithm guiding care	Prospective cohort of electronic wound care record system including measures of standardized wound length, width, depth and peri-ulcer skin erythema and edema.	Validation of wound care procedure decisions guided by Bates-Jensen Wound Assessment Test. (BWAT)
Belda FJ, Aguilera L, García de la Asunción J, Alberti J, Vicente R, Ferrándiz L, Rodríguez R, Company R, Sessler DI, Aguilar G, Botello SG, Ortí R; Spanish Reduccion de la Tasa de Infeccion Quirurgica Group.. Supplemental perioperative oxygen and the risk of surgical wound infection: a randomized controlled trial. JAMA. 2005 Oct 26;294(16):2035-42. Erratum in: JAMA. 2005 Dec 21;294(23):2973. PMID: 16249417	300 patients aged 18 to 80 years who underwent elective colorectal surgery in 14 Spanish hospitals from March 1, 2003, to October 31, 2004.	A double-blind, RCT. SSI were diagnosed by blinded investigators using Centers for Disease Control and Prevention criteria. Baseline patient characteristics, anesthetic treatment, and potential confounding factors were recorded: Patients were randomly assigned to receive 30% or 80% fraction of inspired oxygen intra-operatively and for 6 hours after surgery. Anesthetic and antibiotic administration were standardized. A total of 143 patients received 30% peri-operative oxygen; 148 received 80% perioperative oxygen.	SSI occurred in 35 patients (24.4%) administered 30% oxygen and in 22 patients (14.9%) administered 80% oxygen (P=.04). The risk of SSI was 39% lower in the 80% group (relative risk [RR], 0.61; 95% confidence interval [CI], 0.38-0.98) vs. the 30% group. Adjusted for important covariates, the RR of infection in those given supplemental oxygen was 0.46 (95% CI, 0.22-0.95; P = .04). None of the secondary outcomes varied significantly between the 2 treatment groups. Patients receiving supplemental inspired oxygen had a significant reduction in the risk of SSI.
Beldon P. Skin changes at life's end: SCALE ulcer or pressure ulcer? Br J Community Nurs. 2011 Oct;16(10):491-4. PMID: 22067466	Literature review (LR)	This LR described SCALE (Skin Changes at Life's End) tool for monitoring and recognizing when unavoidable skin breakdown is occurring in terminal patients.	It is important to recognize and communicate terminal skin changes appropriately to patient's family and loved ones so this is not misdiagnosed and misinterpreted.
Bennett-Guerrero E, Ferguson TB Jr, Lin M, Garg J, Mark DB, Scavo VA Jr, Khoukos N, Richardson JB Jr, Pridgen RL, Corey GR; SWIPE-1 Trial Group. Effect of an implantable gentamicin-collagen sponge on sternal wound infections following cardiac surgery: a randomized trial. JAMA. 2010;304(7):755-62. PMID: 20716738	1502 cardiac surgical patients at high risk for sternal SSI. Group 1 received 2 gentamicin-collagen sponges (260 mg) (n = 753). Group 2 had no intervention (control n = 749). 1006 had diabetes, 1137 were obese.	Single-blind randomized study monitoring 90-day sternal wound infection following cardiac surgery in patients who received 2 gentamicin impregnated collagen sponges implanted before surgical site closure ("Intervention") as compared to none.	Intervention did not reduce the 90-day sternal wound infection rate. There was no significant difference between groups in sternal wound infection (P = .83) or in superficial (P = .77) or deep sternal wound infection (P = .37) analyzed separately or in re-hospitalization for infection (P = 0.87).
Berger RL, Li LT, Hicks SC, Davila JA, Kao LS, Liang MK.	Patients undergoing open ventral hernia	Retrospective CO study compared predictive validity of	The two Ventral Hernia scores were similar in predictive validity

development and validation of a risk-stratification score for surgical site occurrence and surgical site infection after open ventral hernia repair. J Am Coll Surg. 2013;217(6):974-82. PMID: 24051068	repair (n = 888) was conducted at a single institution from 2000 through 2010	NNIS, Ventral Hernia Working Group and Ventral Hernia Risk Score as predictors of SSI on patients undergoing ventral hernia.	and somewhat better than the NNIS. Predictors of SSI included concomitant repair, dissection of skin flaps, American Society of Anesthesiologists class ≥ 3, wound class 4, and body mass index ≥ 40.
Bergstrom N, Bennett MA, Carlson CE, Frantz, RA, Garber SL, Jackson BS. et al. *Treatment of Pressure Ulcers.* Clinical Practice Guideline, No.15. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service, Agency for Health Care Policy and Research. December, 1994. AHCPR Publication No. 95-0652. No PMID available.	Guideline developed by AHCPR	Best level of evidence was summarized for pressure ulcer (PU) treatment recommendations including infection prevention and management. Most recommendations were based on expert opinion.	A Level included: 2 week systemic antibiotics for systemic infections or topical antibiotics for non-healing PU; assess, educate and continue preventive measures to prevent PU recurrence. B-Level included avoiding topical antiseptics, appropriate nutrition; static pressure relief for mobile or dynamic for non-mobile patients, using safe, electrical stimulation, cleansers at 4-15 psi and dressings that keep PU continuously moist.
Bhattacharjee N, Saha SP, Patra KK, Mitra U, Ghoshroy SC. Optimal timing of prophylactic antibiotic for cesarean delivery: A randomized comparative study. J Obstet Gynaecol Res. 2013 Jul 22. [Epub ahead of print] 2013 Dec;39(12):1560-8. PMID:23875818	Antibiotic administered 30-60 min pre-op (n=476) vs. at cord clamp (n=477) patients	Appropriate antibiotic given to women experiencing Caesarian sections . Measures were have post-op hospital stay, SSI symptoms, endometriosis	Those receiving the antibiotic 30-60 minutes before surgery experienced reduced length of post-op hospital stay, SSI symptoms and endometriosis (all p values were < 0.04)
Biancari F, Tiozzo V. Staples versus sutures for closing leg wounds after vein graft harvesting for coronary artery bypass surgery. The Cochrane Database of Systematic Reviews 2010, Issue 5 CD008057.pub2 PMID: 20464762	Review of data of 3 RCT studies that included 148 persons with staples and 175 persons with sutures post vein graft harvesting	The review included 3 prospective, randomized studies that looked at 148 surgical wounds closed with staples and compared that to 175 closed with sutures post vein grafts harvested on lower limbs for persons undergoing CABGs to assess Level A evidence.	The SSI rate for 3 pooled studies demonstrated that patients with staples was 10.8% (16/148) and 8.0% for those with sutures (RR 1.20, 95% CI 0.60 to 2.39). No significant differences in outcomes were reported in these low quality studies with likely bias.
Bill TJ, Ratliff CR, Donovan AM, Knox LK, Morgan RF, Rodeheaver GT. Quantitative swab culture versus tissue biopsy: A comparison in chronic wounds. *Ostomy/Wound Management*	38 patients with chronic wounds including 18 with a PU, 10 DFU, 5 VU, or 5 with an arterial ulcer were studied.	Prospective study of correlation between infection defined as 10^5 organisms in a quantitative 5 mm punch biopsy or harvested right after the biopsy in a 1 cm^2 swab from the ulcer center	28 (74%) of the 38 biopsies indicated infection. 22 or 79% of these also indicated infection on the swab culture. Sensitivity 79%; specificity 60%; + predictive validity = 85%; - predictive

2001;*47:* 34-37. PMID:11889654		cultured aerobically.	validity = 50%. Authors conclude that swab culture is a valuable adjunct to managing chronic wounds.
Biscione FM, Couto RC, Pedrosa TM. Performance, revision, and extension of the National Nosocomial Infections Surveillance system's risk index in Brazilian hospitals. Infect Control Hosp Epidemiol. 2012 Feb;33(2):124-34. PMID: 22227981	Consecutive surgical inpatients January 1993 -May 2006 (genitourinary system [n = 20,723], skin [n = 12,408], musculo-skeletal system [n = 15,714] abdominal hysterectomy 11,847)	Non-randomly assigned tool development and validation samples of patients were compared for NNNIS risk index with and without adaptations for Brazilian hospitals.	Adding locally derived SSI risk factors and cut-off points improved the NNIS prediction of SSI risk in this Brazilian population.
Bjarnsholt T, Kirketerp-Møller K, Kristiansen S, Phipps R, Nielsen AK, Jensen PØ, Høiby N, Givskov M. Silver against Pseudomonas aeruginosa biofilms. APMIS, 2007;115(8):921-8. PMID: 17696948	*In vitro* cell studies (CIV)	Compared silver sensitivity of planktonic Pseudomonas aeruginosa to the same organism after it has formed a biofilm.	Planktonic *Pseudomonas aeruginosa* is more sensitive to ionic silver than in its biofilm form. It requires 10 to 100 times the silver dose to eradicate the biofilm form of *Pseudomonas aeruginosa.*
Bolton L, McNees P, van Rijswijk L, de Leon J, Lyder C, Kobza L, Edman K, Scheurich A, Shannon R, Toth M, and the Wound Outcomes Study Group. Wound-healing outcomes using standardized assessment and care in clinical practice. JWOCN 2004; 31(2): 65-71. PMID: 15209428	767 wounds on 433 patients treated with mainly HCD with exudate absorbing dressings if needed. Gauze was used on <5% of wounds. 373 Stage III-IV PU, 134 Stage II; 124 full-thickness (FT) VU, 30 partial-thickness (PT) VU. Bates-Jensen Wound Assessment Test and % area reduction assessed wounds.	Prospective CO study Mar-Oct 2001, in 12 home care agencies guided by WOCNs trained using telemedicine, 3 long term care facilities, and a University hospital based long term acute care setting, avoiding gauze, using moisture-retentive dressings and compression for VU or pressure redistribution for PU. Content validated Solutions® algorithms informed decisions to use mainly hydrocolloid dressings with alginate or hydrofiber under the hydrocolloid dressing if needed to manage exudate.	77% of 30 partial-thickness (PT) VU and 61% of 134 PT PU healed in 12 weeks; mean healing times: 29 $\pm$ 7 days for PT VU and 31$\pm$ 7 days for PT PU. 44% of 124 full-thickness VU and 36% of 373 FTPU healed in 12 weeks; mean heal time was 57 $\pm$ 7 days for FT VU and 36 $\pm$ 7 days for FT PU. % of ulcers healed varied by setting. Full-thickness VU or PU took about twice as long to heal as PT ulcers of the same etiology ($p<0.05$). Most PT ulcers healed in 12 weeks. Greater depth predicted longer healing time.
Botzenhart K, Rüden H, Tolon M, von K Scharfenberg M. [Clinical uses of ultraviolet light radiation]. Prakt Anaesth. 1976;11(5):320-7. PMID: 981142	Review and POS of ultraviolet radiation technique efficacy	POS of efficacy in reducing organisms on bedding, surfaces and air of operating rooms	Only barrier ultraviolet light irradiation technique was effective in reducing microorganisms in the operating room air.
Boulton AJ Menses P, Ennis WJ. Diabetic foot ulcers: a framework	HCD used at least once (107 ulcers).	Retrospective chart review from January 1998-June 1999	2.5% of hydrocolloid (HCD)-dressed diabetic foot ulcers

for prevention and care. *Wound Rep Regen.* 1999;7:7-16. PMID: 10231501	Gauze only (143 ulcers) 250 ulcers on 121 patients in a UK DFU clinic	recording dressing use and presence of clinical infection. Protocol included appropriate off-loading.	became infected. 6% of those dressed solely with gauze became infected (p< 0.02)
Bouter KP, Visseren FLJ, Van Loenhout RMM, Bartelink AKM, Erkelens DW, Diepersloot RJA. Treatment of diabetic foot infection: an open randomised comparison of imipenem / cilastatin and peracillin/ clindamycin combination therapy. *Int J Antimicrob Agents* 1996;7:143–7. No PMID available	Infected DFU (22 treated IV 10 days with 500 mg daily of imipenem/cilastatin) and (24 similarly treated with peracillin 3000 mg/clindamycin 600 mg)	Open label RCT comparing efficacy and safety of the two antibiotic regimens on infected DFU.	No significant differences in outcomes were reported. P levels were not listed to verify this.
Boutin RD, Brossman J, Sartoris DJ, Reilly D, Resnik D. Update on Imaging of Orthopedic Infections. Orthopedic Clinics of North America. 1998;29(1);41-66. PMID:9405777	Multifaceted review of bone & soft tissue infections including pressure ulcers.	This LR contains expert opinion and case reports. It provides photo documentation of various imaging results.	Condition specific recommendations for most useful imaging techniques; accuracy of imaging with CT, MRI, nuclear imaging explained in detail relative to patient morbidities
Bowler PG, Delargy H, Prince D, Fondberg L. The viral barrier properties of some occlusive dressings and their role in infection control. Wounds 1993;5(1):1-8. No PMID available	4 hydrocolloid dressings: DuoDERM (96), DuoDERM CGF (96), DuoDERM CGF Extra Thin (96), DuoDERM CGF Transparent (96)	Prospective randomized controlled in vitro study of viral barrier properties of dressings from outside dressing penetrating inward or from inside penetrating to external side of dressing.	All four dressings were barriers for up to 6 days to HIV virus or to Hepatitis B virus or to viral antigens smaller than the viruses per se.
Boyce JM, Havill NL, Otter JA, McDonald LC. Impact of hydrogen peroxide vapor (HPV) room decontamination on Clostridium difficile environmental contamination and transmission in a healthcare setting. Infect Control Hosp Epidemiol 2008; 29: 723-9. PMID:18636950	Two periods of time. Period 1 (pre-intervention): June 2004-March 2005. Period 2: June 2005-March 2006.	A prospective before-after intervention study conducted in a hospital affected by an epidemic strain of C. difficile. Sample cultures were collected by sponge from surfaces before or after adding hydrogen peroxide vapor to the room decontamination process	Pre-intervention: 11 (25.6%) of 43 yielded C. difficile, compared with 0 of 37 cultures after hydrogen peroxide decontamination began. Incidence of C. difficile was lower during the intervention period than during the pre-intervention period (1.28 vs. 2.28 cases per 1000 patient days; P= 0.04).This intervention eradicated C. difficile from contaminated surfaces.
Bradley M, Cullum N, Sheldon T. The debridement of chronic wounds: a systematic review. Health Technol Assess 1999; 3: 1–78. PMID:10492854	35 RCTS	A systematic review was conducted to find published and non-published RCTs that compared debridement to no debridement or compared any	No qualifying RCTs were found comparing wound debridement with no debridement so there is insufficient evidence that wound debridement is beneficial in

		debridement interventions with one another.	expediting healing. There was insufficient evidence supporting use of one debriding agent over another except for one report that a hydrogel reduced more necrotic wound area than a dextranomer polysaccharide paste ($p<0.05$).
Braga IA, Pirett CC, Ribas RM, Gontijo Filho PP, Diogo Filho A. Bacterial colonization of pressure ulcers: assessment of risk for bloodstream infection and impact on patient outcomes. J Hosp Infect. 2013;83(4):314-20. PMID:23313027	145 patients with stage II or greater pressure ulcers hospitalized in a tertiary acute care university teaching hospital for >48 h	Prospective CO study exploring colonization of pressure ulcers as likely cause of bacteremia	76.5% had ulcer colonized and/or infected with either S. aureus (20.7%), Gram-negative bacilli (32.5%), or both (46.8%),most (64.8%). were multi-drug resistant. 50.5% had bacteremia , with the ulcers considered the probable source of bacteremia in 53.6% (30/56). Prior broad spectrum antibiotics administration ($P = 0.04$) and infected wound ($P < 0.001$) were independently associated with bloodstream infection and with a higher 30-day mortality rate, for which risk factors ($P<0.05$) were hospitalization in ICU and mechanical ventilation
Brar MS, Brar SS, Dixon E. Perioperative supplemental oxygen in colorectal patients: a meta-analysis. J Surg Res. 2011 Apr;166(2):227-35. PMID:19922947	A meta-analysis of 5 RCTs was performed to test effects of perioperative supplemental oxygen in colorectal surgery on SSI incidence, mortality, ICU admission, and length of stay.	A literature search of MEDLINE, PubMed, EMBASE, the Cochrane Library, and the Cochrane Clinical Trials Registry was performed in duplicate. In addition, bibliographic searches were performed and experts were contacted for unpublished data. RCTs involving colorectal patients that included perioperative supplemental oxygen as a treatment arm and defined SSI as an outcome were included in a meta-analysis using a random-effects model to assess odds ratios (OR) of developing a SSI.	Perioperative supplemental oxygen did not significantly reduce SSI risk (OR = 0.69, 95% CI [0.43, 1.10], P = 0.12). However, a significant mortality benefit was observed (OR = 0.18, 95% CI [0.05, 0.69], P = 0.01). There was no significant difference in the rate of ICU admission or length of stay. Tests of heterogeneity were performed. Heterogeneity was significant only with respect to length of stay. Perioperative supplemental oxygen in colorectal surgery reduced mortality, but did not significantly reduce SSI.
Bratzler DW, Delinger EP, Olsen KM, Perl TM, Auwaerter PG, Bolon MK, Fish DN, Napolitano LM, Sawyer RG, Slain D, Steinberg JP, Weinstein RA; American	Clinical practice guideline	Guideline based on literature review.	Supports timing and type of antibiotic prophylaxis to prevent SSI

Society of Health-System Pharmacists; Infectious Disease Society of America; Surgical Infection Society; Society for Healthcare Epidemiology of America. Clinical practice guidelines for antimicrobial prophylaxis in surgery. Am J Health Syst Pharm. 2013; 70(3):195- 283. PMID:23461695			
Bratzler DW, Hunt DR. The surgical infection prevention and surgical care improvement projects: national initiatives to improve outcomes for patients having surgery. Clin Infect Dis. 2006 Aug 1;43(3):322-30. PMID:16804848	60 References supporting use of the surgical infection prevention (SIP) and surgical care improvement projects (SCIP) initiatives and results of use.	HCT of reduction of hospital acquired SSI implementing the 3 National Quality Measures listed at right, for hospital surgical infection prevention listed at right and LR of surgical infection prevention (SIP) and surgical care improvement projects (SCIP) initiatives and results of use	(1)Proportion of patients who have parenteral antimicrobial prophylaxis initiated within 1 h before incision (within 2 h for vancomycin or fluoroquinolones) (2) Proportion of patients who are given a prophylactic antimicrobial regimen consistent with published guidelines, and (3) the proportion of patients whose prophylactic antimicrobial is discontinued within 24 h after surgery end time.
Briggs M, Nelson EA, Martyn-St James M. Topical agents or dressings for pain in venous leg ulcers. Cochrane Database of Systematic Reviews 2012, Issue 11. Art. No.: CD001177. DOI: 10.1002/14651858.CD001177.pub3. PMID:23152206	Six RCTs (343 participants)	Meta-analysis of between group mean difference in pain measured on a 100 mm scale using Eutectic Mixture of Local Anesthetics (EMLA): lidocaine-prilocaine cream before debriding VU to reduce debridement related pain	EMLA cream significantly ($p< 0.05$) reduced debridement related pain with a between-group mean difference in favor of EMLA of -20.65 mm (95% CI -12.19 to -29.11). There were no significant between-group differences in burning or itching.
Brölmann FE, Eskes AM, Goslings JC, Niessen FB, de Bree R, Vahl AC, Pierik EG, Vermeulen H, Ubbink DT; REMBRANDT study group. Randomized clinical trial of donor-site wound dressings after split-skin grafting. Br J Surg. 2013;100(5):619-27. PMID:23460253	288 patients with a skin graft donor site dressed with one of these dressings: alginate (45), film (49), gauze (50), hydrocolloid (HCD)(49), hydrofiber (47) or silicone (48) dressings	14-center RCT. Outcomes measured over 4 weeks: Primary outcomes were healing time to complete re-epithelialization and Pain measured on a visual analogue scale(VAS). Secondary outcomes were itching (VAS), adverse events during 4 weeks and scarring measured after 12 weeks rated using Patient and Observer Scar Assessment Scale (POSAS).	Healing time using HCD was 7 days shorter than for any other dressing (median 16 versus 23 days; $P < 0{\cdot}001$). Overall pain scores were low, slightly lower with film dressings ($p= 0{\cdot}038$). Infection rate among patients treated with gauze was twice as high as in those receiving other dressings (18 versus 7·6 %; relative risk 2.38, 95% CI: 1.14 to 4·99). Patients using film dressing were least satisfied with scar quality
Brown TR, Ehrlich CE, Stehman FB, Golichowski AM, Madura JA,	737 patients in a US acute care center	RCT comparing incidence of SSI in patients whose surgical sites	6.0 % had a SSI in those with operative site antisepsis with the

Eitzen HE.A clinical evaluation of chlorhexidine gluconate spray as compared with iodophor scrub for preoperative skin preparation. Surg Gynecol Obstet. 1984;158(4):363-6.	had operative site disinfected with 0.5% chlorhexidine gluconate spray or povidone-iodine scrub before surgery	were prepped with the chlorhexidine gluconate spray or the iodophor scrub. Statistical significance was set at $p \leq 0.05$.	spray versus 8.1 % SSI with the scrub. This difference was not statistically significant. The spray saved time and reduced expense.
Bruce J, Russell EM, Mollison J, Kukowski ZH. The quality of measurement of surgical wound infections as the basis for monitoring: A systematic review. J Hosp Infection 2001;49:99-108.	SR of 41 Studies reporting reliability and/or diagnostic validity (sensitivity or specificity) or screening validity (positive or negative predictive validity)	SR of reliability and diagnostic and predictive validity of classification systems for SSI, listing the most common SSI signs and symptoms and those with best evidence supporting reliability and validity	Most reliable and valid signs or symptoms: 1-purulent or nonpurulent wound discharge; 2-redness/erythema; 3-swelling/ edema; 4-tenderness / pain; 5-heat/pyrexia; 6-wound edge separation/dehiscence. Bacterial cultures are unreliable if isolated from healing wounds without clinical infection signs and often not isolated when cultured from early clinical infections.
Bryan CS, Dew CE, Reynolds KL Bacteremia associated with decubitus ulcers. Arch Intern Med. 983;143(11):2093-5. PMID:6357131	104 episodes of bacteremia in 102 US metropolitan hospital in-patients with a PU during 5 years in a US setting.	Prospective Cohort study correlating "probable" origin of bacteremia from the PU or from other infection sites with mortality.	PU was the probable source of bacteremia in 49% of episodes. Other infection sites documented in 86% of patients. Overall mortality was 55% with 51% of deaths attributed to infection.
Bucher P, Mermillod B, Morel P, Soravia C. Does mechanical bowel preparation have a role in preventing postoperative complications in elective colorectal surgery? Swiss Med Wkly. 2004 Feb 7;134(5-6):69-74. PMID:15113054	1144 patients- 565 with mechanical bowel preparation, 579 without it	There was limited evidence in literature searched to support mechanical bowel preparation for elective colorectal surgery. Authors performed a meta-analysis of 5 RCT's evaluating mechanical bowel preparation.	Anastomotic leakage was is significantly more frequent in subjects with mechanical bowel preparation (odds ratio 1.8). Mechanical bowel preparation did not reduce infectious complications in these patients.
Buntinx F, Beckers H, Briers A, Keyser AGD, Flour M, Nissen G, Raskin T, De Vet H. Inter-observer variation in the assessment of skin ulceration. *J Wound Care* 1996; 5(4):166-170. PMID:8826261	3 physicians and 3 nurses rated 27 wounds (21 of them PU) on 20 patients on each of 5 assessment systems	Inter-observer correlations calculated for systems: (1) PU color (2) Shea PU Stage (3) PU size measured as longest length and longest width (4) PU area estimated from a grid divided into 5 mm squares (5) Clinical signs of infection.	Highest inter-observer reliability agreements were for size and area. Next highest for clinical signs of infection, next lower for color. Shea PU Stage was lowest.
Byren I, Rege S, Campanaro E, Yankelev S, Anastasiou D, Kuropatkin G, Evans R. Randomized controlled trial of the safety and efficacy of	Subjects in USA, UK and Russia 6/2007-6/ 2010 with a (PJI) prosthetic joint infection baseline cultures at first	22-center, open-label RCT stratified by hip or knee PJI and degree of renal function (30 to 50 ml/min or >50 ml/min before randomization. Subjects receiving perioperative	Groups were comparable at baseline. CPK was >500 U/liter in 16% of the daptomycin 6-mg/kg group, 22% of those receiving 8-mg/kg and 8% of those receiving SOC. Neither this difference nor

Daptomycin versus standard-of-care therapy for management of patients with osteomyelitis associated with prosthetic devices undergoing two-stage revision arthroplasty. Antimicrob Agents Chemother. 2012;56(11):5626-32. PMID:22908174	surgery positive for *S. aureus*, received SOC (26): IV vancomycin 1 g every 12 h over 60 to 100 min or teicoplanin 6 mg/kg every 24 h over 30 min or a semi-synthetic penicillin (SSP) or a 30-min IV infusion of daptomycin-6 or -8 every 24 hours as either 6 mg/kg (D6; n=25) or 8 mg/kg (D8; n=24)	antibiotics up to 72 h postoperatively and/or beads or cement impregnated with vancomycin, gentamicin, or tobramycin were included as were subjects receiving concomitant antimicrobial agents with no known activity against the PJI organisms to manage unrelated same-subject infections. Outcomes: clinical radiological, microbial resolution of infection at end of therapy or test of cure 2 weeks post 2nd implant. Creatinine phosphokinase (CPK) was tested for safety while on therapy	any difference in adverse events was statistically significant. In the subset of subjects remaining enrolled through test of cure, clinical success was reported in 58.3% of 24 subjects receiving D6, 60.9% of 23 receiving D8, and 38.1% of 21 SOC subjects, paralleling microbiological success rates. No statistically significant difference was reported among ITT D6, D8 or SOC groups. D6 and D8 (n 49 patients appeared to be safe and effective in managing staphylococcal PJI 2-stage revision arthroplasty .
Cainzos, M. Review of the guidelines for complicated skin and soft tissue infections and intra-abdominal infections-are they applicable today? Clinical Microbiology & Infection.2008; 14(6), 9-18. PMID:19040462	Contains prospective study of 2552 patients who had elective or emergency surgery. 19.6% developed post op infections.	Review of literature for difficult to treat infections (skin and tissue) and complicated intra-abdominal infections.	Surgical site infections significantly increase the risk of mortality and morbidity and should be consistently monitored.
Calfee DP, Salgado CD, Classen D, Arias KM, Podgorny K, Anderson DJ, Burstin H, Coffin SE, Dubberke ER, Fraser V, Gerding DN, Griffin FA, Gross P, Kaye KS, Klompas M, Lo E, Marschall J, Mermel LA, Nicolle L, Pegues DA, Perl TM, Saint S, Weinstein RA, Wise R, Yokoe DS. Strategies to prevent transmission of methicillin-resistant Staphylococcus aureus in acute care hospitals. Infection Control and Hospital Epidemiology. 2008;29(Suppl. 1): S62-S80. PMID:18840090	Guideline identified in systematic literature search for evidence	Guideline	Supports educating patients and care givers about infection signs, symptoms and transmission of infecting organisms, as well as using CDC Contact Precautions for patients colonized or infected with known highly transferable pathogens such as MRSA and monitor closely for SSI during at least 10 days after surgery
Canadian Agency for Drugs and Technologies in Health (CADTH). (2010). Pre-Operative Screening for Methicillin-resistant *Staphylococcus aureus* (MRSA) Infection: A Review of the Clinical-Effectiveness and Guidelines. *CADTH Technology*	One HCT one SR nine observational studies, and 8 practice guidelines were identified. No randomized controlled trials were identified.	The objective of the report is to answer the following research questions: • What is the clinical effectiveness of pre-operative MRSA screening? • What are the guidelines for the timing of pre-operative MRSA screening?	Current evidence for screening for MRSA in a hospital setting is inconclusive. In the absence of other preventive measures, hospitals may choose to try screening to control the spread and incidence of MRSA infection in their facilities. A surveillance system should be in place to

Overviews, 2010 *1*(2), e0114. PMID:22977404		• Is there evidence to guide the selection of patients who should be screened pre-operatively for MRSA?	monitor changes in the incidence of MRSA infection before and after the institution of a screening program. Target populations for screening may be based on high-risk groups identified in guidelines or the literature, as well as local characteristics of MRSA infection., The reviewed literature suggests that some practitioners choose to have MRSA-positive patients start decolonization procedures about a week before elective surgery, a process that lasts approximately five days. Further study of the efficacy of MRSA screening and of the efficacy of decolonization procedures is needed.
Centers for Disease Control and Prevention (CDC) Guideline for Prevention of Surgical Site Infection. Infection Control and Hospital Epidemiology 1999; 20: 247–278. No PMID available	Guideline identified in systematic literature search for evidence	Guideline found in the systematic review of literature, assessed after evidence-based recommendations were compiled to assure construct validity, interdisciplinary relevance of ICWIG recommendations	All recommendations in were already represented in the evidence-based ICWIG recommendations without adding new ones from this guideline.
Centers for Disease Control and Prevention. Emergency Wound Care after a Natural Disaster. Aug 23, 2009 http://www.bt.cdc.gov/disasters/woundcare.asp Last accessed September 7, 2013. No PMID available	Guideline identified in systematic literature search for evidence. Direct quotes copied from site are referenced at left.	"How to Care for Minor Wounds -Wash your hands thoroughly with soap and clean water if possible. -Avoid touching the wound with your fingers while treating it (if possible, use disposable, latex gloves).- Remove obstructive jewelry and clothing from the injured body part. -Apply direct pressure to any bleeding wound to control bleeding. -Clean wound after bleeding has stopped. -Examine wounds for dirt and foreign objects. -Gently flood the wound with bottled water or clean running water (if available, saline solution is preferred). -Gently clean around the wound with soap and clean water. -Pat dry and apply an	"Seek medical attention as soon as possible if: -There is a foreign object (soil, wood, metal, or other objects) embedded in the wound; -The wound is at special risk of infection (such as a dog bite or a puncture by a dirty object); -An old wound shows signs of becoming infected (increased pain and soreness, swelling, redness, draining, or you develop a fever). -Puncture wounds can carry bits of clothing and dirt into wounds and result in infection. -Crush injuries are more likely to become infected than wounds from cuts. Take steps to prevent tetanus -Expect a variety of infection

		adhesive bandage or dry clean cloth.-Leave unclean wounds, bites, and punctures open. Wounds that are not cleaned correctly can trap bacteria and result in infection. -Provide pain relievers when possible."	types from wounds exposed to standing water, sea life, and ocean water. -Wounds in contact with soil and sand can become infected."
Centers for Disease Control and Prevention (CDC). Emergency Wound Management for Healthcare Professionals. Guidance for Management of Wound Infections. 2008 http://www.bt.cdc.gov/disasters/emergwoundhcp.asp , Last accessed September 7, 2013	Tetanus a potential health threat for persons who sustain wound injuries. Tetanus is a serious, often fatal, toxic condition, but is virtually 100% preventable with vaccination. Any wound or rash has the potential for becoming infected and should be assessed by a health-care provider as soon as possible.	Guidance for Treatment -Apply direct pressure to any bleeding wound, to control hemorrhage. Tourniquets are rarely indicated since they may reduce tissue viability. -Examine wounds for gross contamination, devitalized tissue, and foreign bodies. -Remove constricting rings or other jewelry from injured body part. -Cleanse the wound periphery with soap and sterile water or available solutions, and provide anesthetics and analgesia whenever possible. -Irrigate wounds with saline solution using a large bore needle and syringe. If unavailable, bottled water is acceptable. -Leave contaminated wounds, bites, and punctures open. Wounds that are sutured in an unsterile environment, or are not cleansed, irrigated, and debrided appropriately, are at high risk for infection due to contamination. Wounds that are not closed primarily because of high risk of infection should be considered for delayed primary closure by experienced medical staff using sterile technique. Remove devitalized tissue and foreign bodies prior to repair as they may increase the incidence of infection. Clip hair close to the wound, if necessary. Shaving of hair is not necessary, and may increase the chance of wound infection. Cover wounds with dry	Most wound infections are due to staphylococci and streptococci. For initial antimicrobial treatment of infected wounds, beta-lactam antibiotics with anti-staphylococcal activity (cephalexin, dicloxacillin, ampicillin, sulbactam etc.) and clindamycin are recommended options. Recently increasing numbers of community-based skin or soft tissue infections harbor methicillin-resistant *Staphylococcus aureus* (MRSA) unresponsive to beta-lactam antibiotics. These infections may respond to oral trimethoprim-sulfamethoxazole, IV vancomycin or clindamycin, but not all isolates are susceptible. Incise and drain any subcutaneous collections of pus (abscesses) when treating wound infections. Contamination of wounds with water (fresh or sea water) can lead to infections caused by waterborne organisms. Though infections with these organisms are uncommon, even after floods, this possibility should be considered in patients who fail to respond to initial therapies described above. Water-borne organisms often implicated in such infections include *Aeromonas* spp., non-cholera *Vibrio* spp. and sometimes *Pseudomonas* or other Gram-negative rods. Trimethoprim / sulfamethoxazole, amoxicillin/ clavulanate or newer

		dressing; deeper wounds may require packing with saline soaked gauze and subsequent coverage with a dry bulky dressing. Source of details at right: *6th Edition Emergency Medicine: A Comprehensive Study Guide*, 2004 34th Edition. The Sanford Guide to Antimicrobial Therapy, 2004	fluoroquinolones (levofloxacin, moxifloxacin, gatifloxacin) treats *Aeromonas.* Fluoroquinolones will also treat *Pseudomonas* and many other Gram-negative pathogens. Consider *Vibrio* as a possible causative organism of wound infections incurred in coastal waters or from contact with shellfish or marine wildlife. *Vibrio vulnificus* wound infections may require extensive debridement , with high risk of mortality. Such infections often manifest with bullous lesions that may be hemorrhagic. Persons with underlying hepatic disease or other immunocompromising illness are at highest risk of *Vibrio vulnificus* infection. When this infection is suspected, the recommendation is that patients be treated with a combination of ceftazidime and doxycycline.
Centers for Disease Control and Prevention. (CDC) Guideline for hand hygiene in health-care settings: recommendations of the Health-care Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. MMWR Recomm Rep 2002;51(RR-16):1-45. PMID:1241862	CPG	Guideline found in the systematic review of literature	Includes age appropriate education for patients and for caregivers for hand washing to prevent transmission of microorganisms., removing jewelry, artificial nails and having properly short nails.
Chaby G, Senet P, Vaneau M, Martel P, Guillaume JC, Meaume S, Téot L, Debure C, Dompmartin A, Bachelet H, Carsin H, Matz V, Richard JL, Rochet JM,Sales-Aussias N, Zagnoli A, Denis C, Guillot B, Chosidow O. Dressings for acute and chronic wounds: a systematic review. Arch Dermatol. 2007;143(10):1297-304. PMID: 17938344	88 RCT; 3 meta analyses, 1 cost-effective study. Total of 93 articles graded	SR of healing, debridement and other dressing performance parameters for acute or chronic wounds.	Hydrocolloids the exception. Chronic wounds healed faster if dressed with hydrocolloid dressings than saline- or paraffin gauze. Weaker evidence supported alginate dressing's debriding necrotic wounds more than other "modern' dressings or Hydrofiber dressings reducing acute wound healing time compared to gauze of silver-coated dressings.

Chang WK, Srinivasa S, MacCormick AD, Hill AG. Gentamicin-collagen implants reduce surgical site infection: systematic review and meta-analysis of randomized trials. Ann Surg. 2013;258(1):59-65. PMID:23486193	15 RCTs on 6979 patients undergoing surgery with versus without gentamicin-collagen implants	Systematic review of major medical databases for RCTs monitoring SSI as outcome. Random effects model was used to calculate odds ratios with 95% confidence interval.	Implants reduced odds of SSI OR = 0.51; 95% CI: 0.33-0.77; P = 0.001; Number needed to treat to prevent 1 SSI = 21 overall and = 30 for clean surgery or 9 for clean contaminated surgery.
Chlebicki MP, Safdar N, O'Horo JC, Maki DG. Preoperative chlorhexidine shower or bath for prevention of surgical site infection: A meta-analysis. Am J Infect Control 2013; 41: 167-73. PMID:22722008	17,932 patients. 83 articles assessed for eligibility, 16 studies included in meta-analysis	Meta-analysis of studies using Chlorhexidine shower or bath preoperatively and reported SSI outcomes..	There was no appreciable benefit of preoperative whole-body chlorhexidine bathing for the prevention of SSI. 6.8% of the patients included in the chlorhexidine group and 7.2% of patients in the comparator groups (soap, placebo or no shower) developed a SSI. (RR= 0.9, 95% CI= 0.77-1.05, P= 0.19)
Chow AW, Galpin JE, Guze LB. Clindamycin for treatment of sepsis caused by decubitus ulcers. J Infect Dis. 1977;135 Suppl:S65-8. PMID:850093	24 patients with sepsis caused solely by a PU. 19 patients received appropriate systemic antibiotic	Prospective CCT measuring persistence of bacteremia in response to treatment with appropriate antibiotics with or without surgical debridement intervention	Antibiotics and surgical debridement : 14% mortality: Antibiotics with no surgical debridement had 67% mortality; Inappropriate antibiotic and no surgical debridement had 75% mortality
Chuang SC, Lee KT, Chang WT, Wang SN, Kuo KK, Chen JS, Sheen, PC. .Risk factors for wound infection after cholecystectomy. J Formos Med Assoc. 2004: 103 (9): 678-84. PMID:15340659	Patients undergoing cholecystectomy for acute sigmoid diverticulitis received oxygen / air mixture with 30% (N - 43) or 80% (N-42) oxygen.	RCT measuring incidence of post-operative SSI between January 2009 and May 2015	Of those receiving 30% oxygen 14 (32.5%) had a SSI. Of those receiving 80% oxygen, 7 (16%) had a SSI (p< 0.05).
Claeys LG, Horsch S. Transcutaneous oxygen pressure as predictive parameter for ulcer healing in endstage vascular patients treated with spinal cord stimulation. Int Angiol. 1996 Dec;15(4):344-9. PMID:9127776	86 Fontaine stage IV patients with ankle systolic pressure < 50 mmHg, severe rest pain despite analgesic medication, and presence of nonhealing foot ulcers or dry gangrene, intra-arterial angiography-proven endstage non-reconstructible peripheral arterial	RCT exploring effects of adding spinal cord stimulation to PGE1 therapy. One week after the start of 21 day intravenous prostaglandin E1 (PGE1) therapy for nonhealing ulcers, patients were randomized to receive spinal cord stimulation plus PGE1 (n = 45), or only PGE1 (n = 41) 41 patients). ABI, TcPO2, pain, claudication, ulcer healing and amputations were recorded at 1, 3, 6 and 12 months after enrollment.	More foot ulcers healed in the spinal cord stimulation group (69 vs. 17%; p < 0.0001) with more patients achieving Fontaine stage II (claudication pain, no rest pain or lesions) (40 vs. 10%, p = 0.0014). Minor and major amputation frequencies were similar, respectively 13 vs. 15% and 16 vs. 20%., as was treated limb mean 12 month ABI. Foot TcPO2 increased for the spinal cord stimulation group (+213 vs. -2%; p < 0.0001). Patients in either group whose TcPO2 was <

	occlusive disease undergoing .		10 mmHg were unlikely to heal on study, but if >26.0 mmHg were able to heal ulcers or toe amputation wounds.
Classen DC, Evans RS, Pestonik SL, Horn SD, Menlove RL, Burke JP. The timing of prophylactic administration of antibiotics and the risk of surgical wound infection. NEJM, 1992; 326:281-86. PMID:1728731	N= 2847 patients; 1.5% developed SSI	Prospective observational study using logistic regression to analyze data collected from patients undergoing clean or clean-contaminated surgery at a teaching hospital examined in the timing of antibiotic prophylaxis administration as a risk factor for SSI. Wilcoxon test was used to test differences between SSI incidences.	44/2847 developed SSI. There were more SSI if antibiotics were given early during surgery or postoperatively compared with preoperatively (OR 4.3, 95%CI 1.8 to 10.4 and OR 5.8, 95% 2.4 to 13.8). Lowest SSI rate occurred in those receiving antibiotic prophylaxis 0-2 hours prior to surgery. SSI rates increased ($\rho <$ 0.05).with each successive hour that antibiotic administration was delayed after surgery began.
Cohen M, Morales R Jr, Fildes J, Barrett J. Staged reconstruction after gunshot wounds to the abdomen. Plast Reconstr Surg. 2001 Jul;108(1):83-92. PMID:11432399	1933 US gunshot wound patients whose immediate closure was not feasible. managed in an urban hospital	Exploratory laparotomy was followed by staged primary closure conducted according to patient condition and needs. The abdomen was initially left open and exposed viscera. A split-thickness graft was placed on the granulation tissue over viscera at an average of 14 days after the last laparotomy. 9 patients underwent closure of a colostomy or repair of fistulas simultaneously with abdominal wall reconstruction.	These planned ventral hernias were definitively treated at an average of 7 months after the skin grafting procedure, primarily using the components separation technique. In 24patients, the fascia was closed primarily without tension, while five patients required the use of synthetic mesh to restore fascial continuity.
ConvaTec. SOLUTIONS wound care algorithm. Princeton (NJ): ConvaTec; NGC 010274 1994 (Revised 2013 SEP). Available at: www.guideline.gov. Accessed October 30, 2013. No PMID available.	Algorithm	Evidence-based algorithm for wound management that was content validated by independent wound care professionals.	Supports moist wound healing, autolytic debridement, managing excess wound fluid and re-assessing wound cause(s) and care plan if wound area does not reduce by 20% during 4 weeks of management.
Coutts P, Sibbald RG The effect of a silver-containing Hydrofiber dressing on superficial wound bed and bacterial balance of chronic wounds. Int Wound J. 2005;2(4):348-56. PMID:16618321	30 participants, 4 with PU, with adequate vascular supply.	Prospective single-center open-label 4-week case series evaluating healing and maceration effects of a silver Hydrofiber® dressing on healing and maceration of superficial wounds that had stalled healing.	Most (70%) of wounds decreased in size, purulence, exudate and resolution of surface slough. Healthy granulation tissue increased and peri-wound maceration decreased. There was no burning or stinging on application.

Crolla RMPH, van der Laan L, Veen EJ, Hendricks Y, van Schendel C, Kluytmans J. Reduction of surgical site infections after implementation of a bundle of care. PLOSOne 2013; 7: e44599. No PMID available.	1537 colorectal procedures included between 2008 and 2012	Prospective quasi experimental cohort study (Netherlands) exploring bundle compliance and resulting SSI. All effects reported were statistically significant at p< 0.05.	Bundle compliance improved significantly from an average of 10% in 2009 to 60% in 2011, with a 36% reduction in SSI. Increased operating room door openings were correlated with more SSI. Logistic regression showed a decrease of SSI that paralled the introduction of the bundle.
Cruz F, Leite F, Cruz G, Cruz S, Reis J, Pierce M, Cruz M. Sutures coated with antiseptic pomade to prevent bacterial colonization: a randomized clinical trial. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 Aug;116(2):e103-9. PMID:22841431	40 healthy volunteers with implanted multifilament sutures uncoated (20) or coated with a pomade of iodophor + calendula (20)	Prospective RCT harvested 2 mm of suture from each subject daily for the first 15 days after implant. CFU per milliliter of suture were counted. Groups were compared using a Mann-Whitney statistic.	Coated sutures grew fewer CFU (p < 0.002). Reviewer's note: infections were not reported.
Cutting KF, Harding KG. Criteria for identifying wound infection. *J Wound Care* 1994; 3(4): 198-201. PMID:27922298	LR to identify wound infection	LR providing basis for proposing chronic wound infection diagnostic criteria.	Proposed adding unexplained delayed healing despite best practices and friable granulation tissue to 5 signs and symptoms.
Darouiche RO, Wall MJ Jr, Itani KM, Otterson MF, Webb AL, Carrick MM, Miller HJ, Awad SS, Crosby CT, Mosier MC, Alsharif A, Berger DH. Chlorhexidine-Alcohol versus Povidone-Iodine for Surgical-Site Antisepsis. N Engl J Med. 2010 Jan 7;362(1):18-26. PMID:20054046	Preoperative patients operative site skin scrub with (409) chlorhexidine-alcohol or (440) povidone-iodine	RCT primary outcome was any Surgical site infection within 30 days after surgery. Secondary outcomes were individual types of surgical site infections	Incidence of SSI was significantly lower in the chlorhexidine-alcohol group than in the povidone-iodine group (9.5% vs. 16.1%) P=0.004; relative risk, 0.59; 95% confidence interval, 0.41 to 0.85). P< 0.01 for both superficial (p<0.008) and deep (p< 0.05) SSI, but not for organ space SSI (4.4-4.5%)
Davies CE, Hill KE, Newcombe RG, Stephens P, Wilson MJ, Harding KG, Thomas DW. A prospective study of the microbiology of chronic venous leg ulcers to reevaluate the clinical predictive value of tissue biopsies and swabs. Wound Repair Regen. 2007;15(1):17-22. PMID:17244315	70 subjects with clinically non-infected VU	Prospective CO study exploring value of microorganisms in clinically non-infected VU swabs as compared to value of biopsies and wound and patient variables in predicting venous ulcer 6 month healing outcomes. This was aimed to identify patients likely to have an unfavorable outcome and to whom resources should be targeted	Initial wound size, gender, height, weight were not significant predictors of 6 months healing outcome (p>0.1). Wound surface area reduced at 4 weeks (p<0.001) and bacterial density of quantitative wound swab (CFU/mL p=0.018) or biopsy (CFU/g tissue p=0.038) independently predicted 6 month non-healing. Biopsies provided no further prognostic value (p=0.27) for patient management. Their use should

			be discouraged in clinically non-infected wounds. Independent predictors of healing: were 4-week wound surface area reduction, microbial diversity and density from swabs, not biopsies.
de La Cal MA, Cerdá E, García-Hierro P, van Saene HK, Gómez-Santos D, Negro E, Lorente JA. Survival benefit in critically ill burned patients receiving selective decontamination of the digestive tract: a randomized, placebo-controlled, double-blind trial. Ann Surg. 2005 Mar;241(3):424-30. PMID:15729064	117 patients were randomized and 107 were analyzed (53 in the selective digestive tract decontamination (SDD) group and 54 in the placebo group)	Single-center double blind, placebo controlled RCT enrolling patients with burns on at least 20% of total body surface and/or with suspected inhalation injury were enrolled and assigned to receive either selective digestive tract decontamination or placebo for the total duration of treatment in the burn intensive care unit (ICU).	The ICU mortality was 27.8% in the placebo group and 9.4% in the SDD group in the burn ICU. Treatment with SDD was associated with a significant reduction in mortality both in the burn ICU (risk ratio 0.25; 95% CI 0.08 to 0.76) and in the hospital (risk ratio 0.28; 95% CI 0.10 to 0.80), following adjustment for predicted mortality. The incidence of pneumonia was significantly higher in the placebo group: 30.8 and 17.0 pneumonias per 1000 ventilation days (P = 0.03) in placebo and SDD group, respectively.
Delis KT, Husmann MJ, Nicolaides AN, Wolfe JH, Cheshire NJ. Enhancing foot skin blood flux in peripheral vascular disease using intermittent pneumatic compression: controlled study on claudicants and grafted arteriopaths. World J Surg. 2002;26(7):861-6. PMID:12096335	Intermittent pneumatic compression applied to the foot (IPCfoot), the calf (IPCcalf), or both (IPCfoot+calf)] on , 20 healthy limbs, 22 claudicating limbs, and 36 l arteriopathic limbs with prior successful autologous grafts: femoropopliteal (18) femorodistal (18)	RCT recording 5-minute laser Doppler from the pulp of the big toe, with subjects seated, at rest, and during random applications of IPCfoot, IPCcalf, and IPCfoot+calf delivered at 120 mmHg for 4 seconds 3 times /minute.	Foot skin blood flux increased using all IPC modes ($p < 0.001$), with IPCfoot and IPCfoot+calf generating higher flux levels than IPCcalf ($p < 0.01$) in all groups of subjects. There was no difference in blood flux between normal healthy subjects and those with prior successful autologous grafts
de Mestral C, Nathens AB Prevention, diagnosis, and management of surgical site infections: relevant considerations for critical care medicine. Crit Care Clin. 2013;29(4):887-94. PMID:24094383	LR noting that SSI complicates 2-5% of all surgical procedures.	Literature review of factors predisposing patients to risk of wound infection in critical care medicine.	Risk factors for the development of a SSI include old age, major comorbidity or emergency surgery. They are present in patients typically requiring post-operative admission to the intensive care unit.
Dellinger EP, Hausmann SM, Bratzler DW, Johnson RM, Daniel	Multiple hospitals using a standardized	HCT reporting SSI before the protocol was implement, using	Participating hospitals reduced their SSI rates by a mean of 27%

DM, Bunt KM, Baumgardner GA, Sugarman JR. Hospitals collaborate to decrease surgical site infections. Am J Surg 2005; 190:9–15. PMID:15972163	protocol, measuring the 3 quality SSI prevention measures	normothermia, supplemental oxygenation, euglycemia and appropriate hair removal	
Dizer B, Hatipoglu S, Kaymakcioglu N, Tufan T, Yava A, Iyigun E, Senses Z. The effect of nurse-performed preoperative skin preparation on postoperative surgical site infections in abdominal surgery. J Clin Nurs. 2009 Dec;18(23):3325-32. PMID:19930089	Procedures developed for nurse application of preoperative skin preparations were tested on a control group (n = 39) and study group (n = 43).	Control group members' skins were mostly prepared by shaving with a razor blade (41%). For the study group members, the researchers used the preoperative skin preparation procedure. Clippers were used to prepare 55.8% of study group members while 44.2% of them were not treated with the clipper because their wounds were clean. As a requirement of the procedure, all members of the study group had a chlorhexidine bath at least twice after being hospitalized and at least once a night before the operation under controlled conditions.	In the group where chlorhexidine bath was not applied, the infection risk was found to be 4.76 times (95%CI = 1.20-18.83) greater even after corrections for age and gender had been made. The difference between control group and study group with respect to SSI was also statistically significant ($p < 0.05$).: Preoperative skin preparation using clipper on the nights before an operation and a 50 ml chlorhexidine bath excluding head area taken twice in the pre-operative period are useful to reduce SSI during the postoperative period.
Duarte H, Santos C, Capelas ML, Fonseca J. Peristomal infection after percutaneous endoscopic gastrostomy: a 7-year surveillance of 297 patients. Arq Gastroenterol. 2012;49(4):255-8. PMID:23329219	297 patients who underwent percutaneous endoscopic gastrostomy between 2004-2010	Retrospective cohort study of medical records from a Portuguese general hospital. Analysis of risk factors for peristomal infection via statistical program SPSS 17.0. During this period, cefazolin was the primary antibiotic used.	Incidence of infections was 4.65% in 2004 rising to 17.9% in 2010, overall: 12.1% .Predominant organisms were MRSA (33%) or P. aeruginosa (30%). Most (55%) were detected days 1-10 post-surgery. Prophylaxis with cefazolin is not adequate to decrease rate of infection due to MRSA and other resistant organisms.
Dumville JC, McFarlane E, Edwards P, Lipp A, Holmes A. Preoperative skin antiseptics for preventing surgical wound infections after clean surgery. Cochrane Database Syst Rev. 2013 Mar 28;3:CD003949. PMID:23543526	Cochrane SR	Systematic review of efficacy of preoperative skin antiseptics for preventing SSI after clean surgery	Insufficient evidence of efficacy of either chlorhexidine or povidone iodine efficacy in reducing SSI within 30 days after surgery.
Edlich RF, Rodeheaver GT, Thacker JG, Lin KY, Drake DB, Mason SS, Wack CA, Chase ME,	LR reviewing traumatic wound management	LR covering 40 years of research on cleansing, suturing and management of traumatic wounds and variables that	Summarized evidence on force of wound irrigation, syringe with 19 gauge tube, 1000 ml of cleanser, fine-pore sponge with surfactant

Tribble C, Long WB 3rd, Vissers RJ. Revolutionary advances in the management of traumatic wounds in the emergency department during the last 40 years: part I. J Emerg Med. 2010;38(1):40-50. PMID:19272735		affect their outcomes.	to minimize trauma to wound. Hibiclens® or Betadine® cleansers "damage tissue defenses and cause tissue irritation and pain", dangers of glove powder contaminating wounds and many other variables.
Embil JM, Rose G, Trepman E, Math MC, Duerksen F, Simonsen JN, Nicolle LE. Oral antimicrobial therapy for diabetic foot osteomyelitis. Foot Ankle Int. 2006 Oct;27(10):771-9. PMID:17054876	Retrospective medical record review of 325 consecutive diabetic patients who were evaluated at a multidisciplinary foot clinic identified 94 (29%) patients with 117 episodes of osteomyelitis with culture guided antibiotics.	CO study evaluating numbers and types of infecting organisms (range 1-4) 93 episodes of osteomyelitis in79 patients treated with a mean of 3 oral antimicrobial agents (with or without an initial short course of intravenous antimicrobial agents) with adequate follow-up to evaluate outcome of treatment; which included bone debridement in 26 (28%) and toe amputation in nine (10%) of the 93 episodes	75 (80.5%) episodes were put into remission. Mean duration of oral antimicrobial therapy was 40 $\pm$ 30 weeks. Mean relapse-free follow-up duration was 50 $\pm$ 50 weeks. In most patients, osteomyelitis was effectively managed with oral antimicrobial therapy with or without limited office debridement. "This regimen may be especially useful in communities where infectious disease specialists and operative resources are limited."
Ennis WJ, Meneses P. Clinical evaluation: outcomes, bench-marking, introspection, and quality improvement. Ostomy Wound Manage. 1996;42(10A Suppl):40S-47S. PMID:9397881	Uninfected leg ulcer patients without antibiotics (101) compared to similar leg ulcers (103) with antibiotics used prophylactically.	Prospective observational CO study (POS) from a facility wound care database, with the two sets of patients comparable at baseline on age, gender, race, payer mix, wound type, location or duration.	Using prophylactic antibiotic on chronic leg ulcers delayed healing. Mean healing time 9 weeks without systemic antibiotics was less than 19 weeks for leg ulcers of patients receiving prophylactic antibiotics ($p < 0.05$).
European Wound Management Association (EWMA), Position Document: Hard-To-Heal Wounds: A holistic approach, London, UK: MEP Ltd., 2008, UK Accessed June 20, 2012 at: http://ewma.org/fileadmin/user_upload/EWMA.org/Position_documents_2002-2008/English_pos_doc_final.pdf	LR	Position Document based on consensus and evidence consisting of three expert papers.	Multi-disciplinary teams improve healing outcomes. Delayed healing is associated with infection. Multiple organisms are associated with delayed healing. Cleanse wounds. Remove devitalized tissue.
European Wound Management Association (EWMA). Position Document: Identifying criteria for wound infection. London: MEP Ltd, 2005, UK. Accessed June 20, 2012 at: http://ewma.org/fileadmin/user_	LR	Position document reviewing criteria for wound infection for acute or chronic wounds.	Increasing erythema, edema, pain, heat, discharge or unexplained tissue breakdown are clinical infection signs.

upload/EWMA.org/Position_documents_2002-2008/English_pos_doc_final.pdf			
Evans E, Gray M. Do topical analgesics reduce pain associated with wound dressing changes or debridement of chronic wounds? J Wound Ostomy Continence Nurs. 2005 Sep-Oct;32(5):287-90. PMID:16234718	6 RCTs on 317 subjects	Applying topical eutectic mixture of local anesthetics(EMLA Cream) (lidocaine and procaine (25 mg/g) mixed with a thickener (Carbopol) and an emulsifier (Arlatone) to sites of painful debridement or dressing changes 20minutes or more before the procedure. Contrary to popular belief, deeper pressure ulcers elicited more pain.	Applying 5% EMLA cream 20 minutes before debridement or painful dressing removal reduced pain 20.6 mm on a 100 mm visual analogue scale. Combined topical and oral analgesics or topical EMLA 60 minutes before the procedure was recommended for more painful procedures or less responsive individuals. Healing was not reported.
Falanga V, Saap LJ, Ozonoff A. Wound bed score and its correlation with healing of chronic wounds. Dermatol Ther. 2006;19(6):383-90. PMID:17199681	Analysis of predictors of healing from bioengineered skin RCT database (177 VU) to develop Wound Bed Score	Wound edges presence of eschar, greatest wound depth/ granulation tissue, amount of exudate amount, edema, peri-wound dermatitis, peri-wound callus/ fibrosis, pink/red bed	Validated predictor of healing is score 0-2 for each parameter: worst score 0 best possible score 16. Wounds that closed had higher Wound Bed Score than those that did not (p=0.0012).
Farage MA, Miller KW, Berardesca E, Maibach HI. Incontinence in the aged: contact dermatitis and other cutaneous consequences. Contact Dermatitis. 2007;57(4):211-7. PMID:17868212	No RCTs or CTs on polypharmacy. One on diapers and skin damage, not clear this was PU damage.	Literature Review of causes of skin damage associated with incontinence	Polypharmacy, infection, decreased cognitive function all were associated with incontinence and resulting skin damage, decreasing integrity of skin and increasing ease of damage.
Fernandez R, Griffiths R. Water for wound cleansing. Cochrane Database Syst Rev. 2012, Issue 2, Art. No. CD003861. PMID:22336796	11 RCTs. 7 compared tap water to saline; 3 compared cleansing to no cleansing and 1 compared procaine spirits to water	Systematic review of all randomised or quasi-randomized clinical controlled trials involving adults and/or children whose wounds were cleaned with water compared to other solutions reporting infection or healing rates. Dissimilar methods of reporting infection prevented combining some trials.	"There is no evidence that using tap water to cleanse acute wounds in adults or children increases or reduces infection. There is not strong evidence that cleansing wounds per se increases healing or reduces infection." In the absence of potable tap water, boiled, cooled water or distilled water can cleanse wounds safely.
Fierheller M , Sibbald RG. A clinical investigation into the relationship between increased periwound skin temperature and local wound infection in patients	Group 1 = leg ulcers without infection (n=20) Group 2 = with infected chronic leg ulcers (n=40)	Cross-sectional design Wound infection was identified using a combination of validated assessment tool and clinical judgment. Bacterial swabs were collected from all wounds.	A statistically significant relationship between increased periwound skin temperature and wound infection was identified (P<.0005). Neither patient nor wound characteristics were

with chronic leg ulcers. Adv Skin Wound Care. 2010;23(8):369-79. PMID:20631603			significantly different between non-infected or infected wounds.
Font-Vizcarra L, Lozano L, Rios J, Forga MT, Soriano A. Preoperative nutritional status and post-operative infection in total knee replacements: a prospective study of 213 patients. Int J Artif Organs 2011;34:876–881. PMID:22094569	213 patients who underwent total knee replacements	POS of preoperative nutritional status as a predictor of post-operative SSI after knee replacement.	Pre-operative malnutrition was a strong predictor of post-operative SSI.
Freeman GJ, Mackie KM, Sare J, Walsh AK, Pherwani AD. A novel approach to the management of the diabetic foot: metatarsal excision in the treatment of osteomyelitis. Eur J Vasc Endovasc Surg. 2007 Feb;33(2):217-9. PMID:17137802	7 patients with diabetic foot ulcer osteomyelitis	All 7 patients were managed with metatarsal excision and given culture guided patient-appropriate antibiotics instead of traditional transmetatarsal amputation.	One patient died of pneumonia. The other 6 all had negative wound cultures after a mean 7.4 (0-20) days of postoperative antibiotics and were discharged from hospital 16.9 (2-48) days after surgery. Two patients developed SSI after discharge. Pre-operative levels of mobility were achieved within a mean of 12.6 days (2-40 days
Fujioka M, Yoshida S, Kitamura R, Matsuoka Y. Iliopsoas muscle abscess secondary to sacral pressure ulcer treated with computed tomography-guided aspiration and continuous irrigation: a case report. Ostomy Wound Manage. 200854(8):44-8. PMID:18716341	1 case of a 78-year-old with iliopsoas abscess secondary to a sacral pressure ulcer and hip replacement.	The infection was treated with immediate surgical debridement and drainage using computed tomography-guided aspiration with continuous irrigation.	Patient healed and received a flap graft 6 weeks after admission. Recovered within 2 months. Author concluded that computed tomography-guided aspiration may be as effective as and less damaging than surgical debridement.
Fullum TM, Ladapo JA, Borah BJ, Gunnarsson CL. Comparison of the clinical and economic outcomes between open and minimally invasive appendectomy and colectomy: evidence from a large commercial payer database. Surg Endosc. 2010;24(4):845-53. PMID:19730950	Large commercial payer database including information on 7,532 appendectomies and 2,745 colectomies.	Retrospective analysis of open versus minimally invasive surgery for appendectomy or colectomy, comparing SSI (chi square tests) and costs (generalized linear model to estimate costs while controlling for patient characteristics) of care	There were fewer SSIs and lower costs in participants who received the minimally invasive surgery compared to traditional open surgery for either surgical procedure. ($p< 0.05$)
Gabriel A, Shores J, Heinrich C, Baqai W, Kalina S, Sogioka N, Gupta S. Negative pressure wound therapy with instillation: a pilot study describing a new	Pilot study of 15 patients with complex infected wounds treated with negative pressure	HCT. Prospective data for 15 patients treated with NPWT with instillation were recorded and analyzed. Primary endpoints were compared to a	All data were normally distributed with comparable variances. Compared with the standard wet-to-moist wound-care control group, patients in

method for treating infected wounds. Int Wound J. 2008 Jun;5(3):399-413. PMID:18593390	wound therapy (NPWT) in addition to intermittent timed delivery of an instilled topical solution to manage their wounds.	retrospective control group of 15 patients treated with institution's standard wet-to-moist wound-care. Culture-specific systemic antibiotics were prescribed as per specific patient need in both groups.. Appropriate parametric and non-parametric analyses were done.	the NPWT-instillation group required fewer days of treatment (36.5 versus 9.9 days, P < 0.001), cleared of clinical infection earlier (25.9 versus 6.0 days, P < 0.001), closed wounds earlier (29.6 versus 13.2 days, P < 0.001) and had shorter -hospital stay (39.2 versus 14.7 days, P < 0.001).
García Morales E, Lázaro-Martínez JL, Aragón-Sánchez FJ, Cecilia-Matilla A, Beneit-Montesinos JV, González Jurado MA. Inter-observer reproducibility of probing to bone in the diagnosis of diabetic foot osteomyelitis. Diabet Med. 2011;28(10):1238. PMID:21395675	75 patients with diabetic foot ulcer and clinical suspicion of osteomyelitis in a Spanish University Hospital diabetic clinic	Cross-sectional cohort registry study of inter-rater reliability of the probe-to-bone test performed by 2 clinicians with 6 to 12 months of experience, also calculating concordance (kappa) values with a third more experienced clinician.	There was a kappa index of 0.593 between observer s 1 and 2, 0.397 between observer s 1 and 3 and 0.53 between observers 2 and 3. The probing-to-bone test demonstrated moderate to fair concordance with an experienced examiner, although concordance was not significant between groups.
Gardner SE, Frantz RA, Doebbling BN. The validity of the clinical signs and symptoms used to identify localized chronic wound infection. *Wound Repair Regen*. 2001;9(3):178-186. PMID: 11472613	36 patients with a: PU, VU or DFU (35 Caucasians) with classic and 2ndary signs of infection defined as having > 10^5 CFU/g of tissue or any level of ß-hemolytic Streptococcus.	Prospective Cohort study: 11 (31%) contained 10,000 or more organisms / g of viable tissue in biopsies (high bioburden).Clinical Signs and Symptoms Checklist was evaluated after a dry gauze dressing was on the ulcer for 1 hour. 4 key parameters of validity were sensitivity, specificity, + predictive value and discriminatory power.	Increasing pain, friable granulation tissue, wound breakdown and foul odor were valid predictors of high biopsy bioburden on all 4 key parameters of validity. 100% of wounds with pain or breakdown had a high biopsy bioburden. Specificity was 1.00 for increasing pain, 0.88 for foul odor, 0.84 for heat.
Gardner SE, Frantz RA, Saltzman CL, Hills S, Park H, Scherubel M. Diagnostic validity of three swab techniques for identifying chronic wound infection. *Wound Rep Reg*. 2006;14:548–557. PMID: 17014666	Chronic wounds (84) including 4 trauma, 4 secondary incision wounds, 5 venous, 6 pressure and 64 diabetic foot ulcers of which 2, 1, 2, 0 and 25 were respectively infected..	Compared validity of Levine swab technique with aspiration and Z-swab sampling techniques for reflecting infection results defined as > 1 x 10^6 CFU organisms observed in quantitative cultures from standardized tissue biopsies.	All 3 swab techniques reflected the biopsy reference CFU counts ($p< 0.05$). The Levine technique had highest accuracy and validity: using 10^6 critical threshold, Levine swab had sensitivity=0.57, specificity = 0.91, positive predictive value = 0.77 and negative predictive value = 0.79.
Gaynes RP, Culver DH, Horan TC, Edwards JR, Richards C, Tolson JS. Surgicalsite infection (SSI) rates in the United States, 1992-1998: the	National Nosocomial Infections Surveillance (NNIS) dataset January	NNIS basic risk index was examined to predict the risk of a surgical site infection (SSI). "The NNIS basic SSI risk index is	For 34 of the 44 NNIS procedure categories, SSI rates increased ($P< .05$) with the number of risk factors present. For 4 operations

National Nosocomial Infections Surveillance System basic SSI risk index. Clin Infect Dis.2001 Sep 1;33 Suppl 2:S69-77. PMID: 11486302	1992-June1998 was analyzed (738,398 NNIS operative procedures, including 19,267 subsequent SSIs, reported from 225 NNIS hospitals.)	composed of the following criteria: American Society of Anesthesiologists score of 3, 4, or 5; wound class; and duration of surgery. The effect when a laparoscope was used was also determined."	of cholecystectomy and colon surgery, the SSI rate was lower when the procedure was done laparoscopically within each risk index category ($p< 0.05$). For appendectomy and gastric surgery, use of a laparoscope affected SSI rates only when no other risk factors were present.
Gilchrist B, Reed C. The bacteriology of chronic venous ulcers treated with occlusive hydrocolloid dressing. British J Dermatol 1989;121:337-344. PMID: 2803959	20 patients with a VU dressed with a hydrocolloid dressing under sustained graduated compression	Prospective observational study monitoring healing and microflora populating venous ulcer surface.	Microflora were generally stable, declining as the venous ulcer healed. 12 ulcers contained anaerobes, which did not appear to impair healing. *Pseudomonas aeruginosa* was inhibited.
Gillespie WJ, Walenkamp GH. Antibiotic prophylaxis for surgery for proximal femoral and other closed long bone fractures. Cochrane Database Syst Rev. 2010 Mar 17;(3):CD000244. PMID: 20238310	Cochrane review of 23 RCTs on 8447 participants receiving 1 dose antibiotic before undergoing surgery for closed fracture fixation	LR measuring deep or shallow SSI post operatively. Economic modeling of cost effectiveness of single dose antibiotic (ceftriaxone) as a cost-effective intervention, includes data on adverse effects.	Single dose antibiotic prophylaxis reduced deep SSI (risk ratio 0.40, 95% CI 0.24 to 0.67), superficial surgical site infections, urinary infections, and respiratory tract infections. Multiple dose prophylaxis similarly affected deep SSI (risk ratio 0.35, 95% CI 0.19 to 0.62). Single dose antibiotic (ceftriaxone) was a cost-effective intervention, but increased adverse events.
Giri S, Kandel BP, Pant S, Lakhey PJ, Singh YP, Vaidya P. Risk factors for surgical site infections in abdominal surgery: a study in Nepal. Surg Infect (Larchmt). 2013 Jun;14(3):313-8. PMID: 23672239	230 patients undergoing abdominal surgery in Khatmandu Hospital January-June, 2011 53 (23%) experienced a SSI	Prospective CO study evaluating risk factors for SSI. Multivariate analysis was conducted to identify independent risk factors for a SSI.	Independent risk factors for a SSI included: Preoperative hemoglobin < 12 g/dL(odds ratio [OR] 2.5; 95% confidence interval [CI] 1.1-6.1); (2) overweight (OR 7.6; 95% CI 2.1-27.0); and (3) surgery performed by residents (OR 3.4; 95% CI 1.4-8.3
Gjødsbøl K, Christensen JJ, Karlsmark T, Jørgensen B, Klein BM, Krogfelt KA. Multiple bacterial species reside in chronic wounds: a longitudinal study. Int Wound J. 2006;3(3):225-31. PMID: 16984578	Cohort of VU patients	CO of venous ulcer (VU) patients followed for 8 weeks. Bacterial species counts colonizing each wound and wound area were monitored for 8 weeks.	Venous ulcers with P. aeruginosa were significantly larger than ulcers without P. aeruginosa ($P < 0.005$) and experienced delayed healing. However they were colonized by many bacterial species.
Goldberg H, Rosenthal S, Nemetz J. Effect of washing closed head and neck wounds on wound	Patients' lacerations or incisions were allowed to be rinsed	Quasi-RCT of surgically operated patients with head or neck wounds evaluated for wound	NS difference between the two groups in SSI incidence: both reported no postoperative

healing and infection. *The American Journal of Surgery* 1981;141:358–9. PMID: 7212184	all over with soap and water after 24 hours (n = 100) or kept dry (n = 100).	infection post-operatively.	infections.
Golinko MS, Clark S, Rennert R, Flattau A, Boulton AJ, Brem H. Wound emergencies: the importance of assessment, documentation, and early treatment using a wound electronic medical record. Ostomy Wound Manage. 2009;55(5):54-61. PMID: 19471049	139 patients experiencing 200 consecutive admissions with web-based electronic medical records documenting diabetic foot ulcers, venous ulcers or PU 56% had non-PU.	Cohort study documenting treatment with initial sharp debridement and deep tissue culture and pathology from the wound base and/or use of systemic antibiotics.	38% had radiology- or pathology-confirmed osteomyelitis on admission with symptoms of increasing wound pain, cellulitis, drainage or presence of significant undermining as indicators of invasive infection. Documenting these symptoms with web-based electronic medical records may alert to infection.
Gottrup F, Melling A, Hollander A. An overview of surgical site infections: aetiology, incidence and risk factors, EWMA Journal 2005;5(2):11-5.No PMID available	LR	Review of SSI etiology, incidence and risk factors.	Alleviate all causes of inflammation or tissue damage possible to avoid SSI. Use the Multidisciplinary Team approach.
Grayson ML, Gibbons GW, Balogh K, Levin E, Karchmer AW. Probing to bone in infected pedal ulcers. A clinical sign of underlying osteomyelitis in diabetic patients.. JAMA. 1995 Mar 1;273(9):721-3. PMID: 7853630	75 patients hospitalized in a tertiary care center in the USA with 76 DFU	Prospective cohort study exploring diagnostic efficacy of probe-to-bone technique in identifying osteomyelitis. In diabetic foot ulcers	Bone detected on probing was visible in only three instances. Palpating bone on probing the ulcer had a sensitivity of 66% for osteomyelitis, a specificity of 85%, a positive predictive value of 89% and a negative predictive value of 56%.
Greif, R. Supplemental perioperative oxygen to reduce the incidence of surgical-wound infection. Outcomes Research Group. *New England Journal of Medicine* 2000; 342; 161-7. PMID: 10736119	Patients with acute traumatic or chronic wounds (N=500)	RCT compared cleansing wounds with saline solution or tap water versus effect of the administration of high concentrations of oxygen during and following surgery on the incidence of SSI.	There was no statistically significant difference between those receiving or not receiving high oxygen concentrations in the incidence of SSI between the two groups (OR 0.43, 95% CI 0.22 to 0.86).
Griffiths RD, Fernandez RS, Ussia CA. Is tap water a safe alternative to normal saline for wound irrigation in the community setting? Journal of Wound Care 2001;10:407–11. PMID: 12964289	35 Patients not on antibiotics with 49 chronic wounds washed with clean tap water (23) or normal saline (26)	Patients were monitored for wound infection using CDC classic clinical signs of infection.	There was no significant difference in infection rates. 3 of 26 in saline group, 0 of 23 in tap water group..
Güenaga KF, Matos D, Wille-Jørgensen P. Mechanical bowel preparation for elective	18 RCTs on 5805 patients undergoing elective colorectal	Cochrane review of literature on mechanical bowel preparation (Group A) versus no preparation	No significant differences were observed in anastomotic leakage or wound infections between

colorectal surgery. Cochrane Database Syst Rev. 2011 Sep 7;(9):CD001544. PMID: 21901677	surgery. 2906 with mechanical bowel preparation group, 2899 without it.	(Group B). Also compared Group A to rectal enema (Group C). Outcomes were anastomotic leakage or wound infections.	Groups A, B or C, indicating no evidence of benefit of either rectal enema or mechanical bowel preparation.
Gulati S, Qureshi A, Srivastava A, Kataria K, Kumar P, Balkrishna Ji A. A prospective randomized study to compare the effectiveness of honey dressing vs. povidone iodine dressing in chronic wound healing. Ind J Surgery, July 2012: 1-7. Last accessed November13, 2012 at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4141059/ PMID: 25177115	Honey + film dressing (23) Povidone iodine + film dressing (22)	One-center 6-week RCT computer-generated random block assignment. Both treatments covered with Tegaderm® film dressing and changed on alternate days. Wound swab cultures, tracing area, pain, comfort measured using Visual Analogue Scale (VAS) every 2 weeks for 6 weeks	Groups were comparable on patient and wound variables at baseline. 22 (95.6%) honey subjects healed completely at 6 weeks compared to 0% in povidone iodine group. There was more ($p< 0.05$) improvement in the honey group compared to controls in wound area reduction, VAS pain intensity at dressing change and overall VAS comfort.
Gupta A, Hote MP, Choudhury M, Kapil A, Bisoi AK. Comparison of 48 h and 72 h of prophylactic antibiotic therapy in adult cardiac surgery: a randomized double blind controlled trial. J Antimicrob Chemother. 2010; May;65(5):1036-41. PMID: 20332194	235 patients undergoing CABG and valve surgery between 2007 and 2008. Patients were randomized to receive either 48h or 72h of prophylactic antibiotic therapy.	Randomized controlled trial. Patients randomized to receive 48h or 72h of prophylactic antibiotic therapy. Outcome measures were SSI, and regression analysis identifying significant ($p\leq 0.05$) risk factors for developing or preventing SSI	20 patients developed SSI, 7 developed other infections. SSI rates were similar for both protocols In modified treatment analysis (7.6% for 48h group or 10.2% in 72h group) or In per protocol analysis (5% in 48h group and 8% in 72h group.) Duration of surgery > 5h was an independent risk factor for SSI. 48h of prophylactic antibiotics using 3rd generation cephalosporin and aminoglycoside was as effective as 72h regimen in preventing SSI.
Gurusamy KS, Koti R, Toon CD, Wilson P, Davidson BR. Antibiotic therapy for the treatment of methicillin-resistant Staphylococcus aureus (MRSA) in non-surgical wounds. Cochrane Database Syst Rev. 2013 Nov 18;(11):CD010427. PMID: 24242704	Cochrane review of 3 RCTs on 47 diabetic foot ulcers, some with ischemia, using systemic antibiotic therapy to address MRSA. 925 subjects had one or more other pathogens.	Qualifying RCTs compared one antibiotic to another or to no antibiotic. Primary outcomes were death and quality of life. Secondary outcomes were length of hospital stay, use of healthcare resources and time to complete wound healing.	The RCTs reported only eradication of MRSA, not the primary or secondary outcomes. 2 RCTs reported serious adverse events related to any organism, not just MRSA. MRSA was eradicated in 31/47 (66%) of those included in the three trials. There were no significant comparison differences in the proportion of people with MRSA eradicated.
Hahler, B.. Surgical wound dehiscence. Medsurg Nursing. 2006;.15(4), 296-300. PMID: 171289000	Despite advances in preoperative care, the rate of surgical wound dehiscence	Review of literature of factors that contribute to wound dehiscence.	; 1%-3% of patients experience wound dehiscence. Prevention of wound infection and mechanical stress on the

	has not decreased in recent years.		incision are needed to prevent dehiscence.
Han H, Lewis VL Jr, Wiedrich TA, Patel PK. The value of Jamshidi core needle bone biopsy in predicting postoperative osteomyelitis in grade IV pressure ulcer patients. Plast Reconstr Surg. 2002;110(1):118-22. PMID: 12087241	108 patients with spinal cord injury who underwent flap reconstruction of deep sinuses and abscesses of grade IV pressure ulcers between 1989 and 1994	Retrospective CO chart review to explore accuracy of blind-evaluated complications following surgery and compare results to those of Jamshidi core needle bone biopsy to diagnose osteomyelitis after pressure ulcer surgery .	On average, those with biopsy-confirmed osteomyelitis stayed for 57 days; those without stayed 21 days ($p < 0.001$). All 14 patients who developed complications because of deep abscess and sinus tract formation had intraoperative Jamshidi core needle bone biopsy abnormality consistent with osteomyelitis (positive Jamshidi core needle bone biopsy results).
Haraway AM, Clemens JQ, He C, Stroup C, Atiemo HO, Cameron AP. Differences in sacral neuromodulation device infection rates based on preoperative antibiotic selection. Int Urogynecol J. 2013;24(12):2081-5. PMID: 23695383	136 patients underwent sacral neuromodulation implantation, and 8 (5.9 %) experienced infections.	A retrospective chart review by one of three surgeons performing the surgery for a cohort of patients.	Preoperative antibiotic selection was a significant factor in preventing subsequent infection. Cefazolin alone was less effective in preventing infection compared with the other antibiotic regimens ($p = 0.03$).
Health Protection Agency (HPA) Protocol for the Surveillance of Surgical Site Infection London: Health Protection Agency. June 2013. Accessed July 27, 2013 at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/633775/surgical_site_infections_protocol_version_6.pdf. PMID not available.	UK Guideline	Guideline for surveillance of SSI	SSI surveillance should extent to at least 30 days after surgery.
Henke PK, Blackburn SA, Wainess RW, Cowan J, Terando A, Proctor M, Wakefield TW, Upchurch GR Jr, Stanley JC, Greenfield LJ. Osteomyelitis of the foot and toe in adults is a surgical disease: conservative management worsens lower extremity salvage. Ann Surg. 2005 Jun;241(6):885-92; discussion 892-4. PMID: 15912038	National independent sample (n = 51,875) and single-center (n=237) 1993-2000 registry analysis using ICD-9CM codes for lower extremity foot and digit osteomyelitis	Registry analysis of lower extremity foot and digital osteomyelitis demographics explored risk factors, treatments and outcomes of a healed wound, limb salvage, or death. Osteomyelitis incidence was 9 per 10,000 patients per year. Mean age 60, 59% male. Median hospital length of stay decreased from 9 to 6 days, but average cost remained constant at US $ 19,000. 23% had digital and 8.5% proximal limb loss	56% healed. 80% had overall limb salvage. Wound healing decreased with peripheral vascular occlusive disease (OR: 0.4; 95% confidence interval [CI], 0.2-0.8, P = 0.006) and preadmission antibiotic use (OR, 0.2; 95% CI, 05-1.1, P=0.07) and increased with surgical debridement (OR, 2.2; 95% CI, 1.2-4.2, P = 0.02). Limb salvage improved with an arterial bypass (OR, 3.9; 95% CI, 1.1-14, P = 0.04). Preadmission solid organ

			transplant (OR, 0.37; 95% CI, 0.14-0.96, P = 0.04), peripheral vascular occlusive disease (OR, 0.25; 95% CI, 0.12-0.5, P = 0.001), or preadmission antibiotic use (OR, 0.34; 95% CI, 0.15-0.77, P = 0.009) were associated with more limb loss.
Hermans MH Clinical benefit of a hydrocolloid dressing in closed surgical wounds. Journal of ET Nursing: Official publication, International Association for Enterostomal Therapy 1993; 20 (2) 68-72. PMID: 8507729	95 Subjects with 102 closed surgical wounds dressed with a thin hydrocolloid dressing (HCD)	Prospective, 18 month duration CS with historic comparison to SSI incidence, subject ratings of comfort and frequency of dressing change	2% SSI in HCD-dressed wounds no increase compared to historic gauze controls. Good comfort ratings in >95% of subjects 1.56 mean HCD dressing changes before suture removal.
Holm C, Hörbrand F, Mayr M, von Donnersmarck GH, Mühlbauer W. Acute hyperglycaemia following thermal injury: friend or foe? Resuscitation. 2004;60(1):71-7. PMID: 14987787	37 severely burned (>25% total body surface area) patients	Prospective, descriptive CS evaluating blood glucose & early hyperglycemia management with clinical outcome,	Usually blood glucose up to 215 mg/dl was accepted as stress response to burn before administering insulin.
Hospenthal D, Murray C, Anderson R, Bell RB, Calhoun JH, Cancio LC, Cho JM, Chung KK, Clasper JC, Colyer MH, Conger NG, Costanzo GP, Crouch HK, Curry TK, D'Avignon LC, Dorlac WC, Dunne JR, Eastridge BJ, Ficke JR, Fleming ME, Forgione MA, Green AD, Hale RG, Hayes DK, Holcomb JB, Hsu JR, Kester KE, Martin GJ, Moores LE, Obremskey WT, Petersen K, Renz EM, Saffle JR, Solomkin JS, Sutter DE, Tribble DR, Wenke JC, Whitman TJ, Wiesen AR, Wortmann GW; Infectious Diseases Society of America; Surgical Infection Society. Guidelines for the Prevention of Infections Associated With Combat-Related Injuries: 2011 Update. J Trauma. 2011;71(Suppl 2): :s210-34. PMID: 21814087	Guideline	Guideline for preventing infections in often complex combat related military injuries.	Stabilize injured personnel before transport. Use CDC clean or sterile procedures as feasible and CDC recommended antibiotics.
Hutchinson JJ, McGuckin M. Occlusive dressings: A microbiologic and clinical review.	Hydrocolloid (HCD) dressings (1351wounds; 35	Systematic review and meta-analysis of published controlled and uncontrolled studies	Infection rates were: 1.3% for HCD, 4.5% for films, 2.4% for foams and 7.1% for wounds

Amer J Infec Control. 1990; 18(4):257-268. PMID: 2206087	studies) Occlusive films (1021; 28 studies); Foams (617; 12 studies);Non-occlusive dressings (1085; 36 studies)	reporting clinically infected wounds from 1962 to 1990 on moisture-retentive dressings (hydrocolloids, foams, films, gel dressings) versus non-occlusive dressings (gauze or alginates with no occlusive cover)	dressed with non-occluded gauze or impregnated gauze (p<0.001 for HCD vs. non-occlusive gauze). This trend was significant for pressure or venous ulcers, donor sites and surgical/other wounds, but not burns.
Hutchinson JJ. A prospective clinical trial of wound dressings to investigate the rate of infection under occlusion. In: Harding K (editor). *Proceedings of the first European Conference on Advances in Wound Management*. London, UK: MacMillan; 1993. P 93-6. No PMID available	HCD (34 patients with burns,37 with donor sites,37 with VU) Impregnated gauze (39 with burns, 46 donor site,41 VU) Sivadene cream + HCD (29 burns;13 donor sites;16 VU)	Multicenter (3 centers each used sterile technique to apply dressings to donor sites, burns or venous ulcers) blind evaluated RCT of microorganisms and infections (defined by the classic clinical signs and symptoms and documented by quantitative wound swabs) in donor sites, venous ulcers and burns.	Significantly fewer clinical infections in subjects dressed with DuoDERM CGF (1.9%) vs. 5.38% in wounds dressed with any form of impregnated gauze. P< 0.05.
Ibrahim MS, Khan MA, Nizam I, Haddad FS. Peri-operative interventions producing better functional outcomes and enhanced recovery following total hip and knee arthroplasty: an evidence-based review. BMC Med. 2013 Feb 13;11:37. PMID: 23406499	LR of studies of factors improving outcomes of total hip and knee arthroplasty	Reviewed studies of nutrition, pre-operative, intra-operative and post-operative procedures on length of stay, quality of life and complications including SSI	2 Studies support pre-operative malnutrition as a SSI predictor. Pre-operative iron nutritional supplements in anemic patients reduce likelihood of transfusions and SSI.
JCHO Quality Check Measure sets for Surgical infection: last accessed June 20, 2011 at: http://www.qualitycheck.org/assets/Hospital_Prof_USER_GUIDE_June%202011.pdf No PMID available.	LR	Review of quality measures to include in surgical bundles to reduce likelihood of an SSI	Quality check measures include asepsis, continuing prescribed beta-blockers appropriate surgical technique and physiological temperatures.
Johnson B, Starks I, Bancroft G, Roberts PJ. The effect of care bundle development on surgical site infection after hemi-arthroplasty: an 8-year review. J Trauma Acute Care Surg. 2012 May;72(5):1375-9. PMID: 22673269	October 2001 through June 2009, 1,830 patients with hemiarthroplasties following proximal tibial fracture in a UK hospital.	HCT comparing SSI and related morbidity and mortality before and after implementing elements of a care bundle to prevent SSI. The most effective elements of the care bundle were assessed by Chi square analysis (p< 0.05)	Most effective care bundle elements were pre-operative double skin prep with alcoholic chlorhexidine, one dose of intravenous co-amoxiclav 1.2 g 240 mg gentamicin at induction and implanting a gentamicin-collagen sponge before closure
Johnson P, Martin R, Burrell L, Grabsch EA, Kirsa SW, O'Keefe J, Mayall BC, Edmonds D, Barr W, Bolger C, Naidoo H, Grayson ML.	Time tabled introduction of alcohol/chlorhexidine hand wash	POS measuring health care worker colonization by MRSA and wound infections caused by MRSA.	In study wards, compliance with hand washing increased from 21% pre-protocol to 42% after implementation. No change was

Efficacy of an alcohol/ Chlorhexidine hand hygiene program in a hospital with high rates of nosocomial methicillin-resistant Staphylococcus aureus (MRSA) infection. Med J Aust 2005; 183:509-514. PMID: 16296963	program.		found in patient MRSA colonization, but intensive care health workers' MRSA 36 months after initiation, total hospital wide MRSA isolates decreased by 40% ($p< 0.01$); patient episodes of MRSA bacteremia decreased by 57%.
Jørgensen B, Price P, Andersen KF, Gottrup F, Bech-Thomsen N, Scanlon E, Kirsner R, Rheinen H, Roed-Petersen J, Romanelli M, Jemec G, Leaper DJ, Neumann MH, Veraart J, Coerper S, Agerslev RH, Bendz SH, Larsen JR, Sibbald RG. The silver-releasing foam dressing, Contreet Foam, promotes faster healing of critically colonized venous leg ulcers: a randomized, controlled trial. Int Wound J. 2005;2(1):64-73. PMID: 16722854	Contreet Foam ® Silver foam dressing (65) Allevyn Hydrocellular Foam Dressing Control (64)	RCT exploring healing and area reduction effects of the two dressings	Significantly greater area reduction but no significant effect on complete healing results.
Jude E, Apelqvist I, Spraul M, Martini J. Prospective randomized controlled study of non-ischaemic diabetic foot ulcers dressed with hydrofiber® containing ionic silver or calcium alginate dressings. Diabet Med. 2007;24, 280–288. PMID: 17305788	AQUACEL Ag Hydrofiber ® (50) Calcium alginate (50)	RCT using either silver impregnated hydrofiber or calcium alginate dressings on plantar or non-plantar diabetic foot ulcers of subjects receiving or not receiving antibiotics on enrollment	Significantly more depth reduction in DFU treated with silver hydrofiber dressing. Pre-planned analysis found a lower % of wounds deteriorating in the hydrofiber-silver group for subjects initially taking antibiotics for a wound infection. ($p = 0.02$)
Jung, B. Multicentre randomized clinical trial of mechanical bowel preparation in elective colonic resection. *British Journal of Surgery*; 2007; 94: 689-95. PMID: 17514668	N= 1343	This randomized clinical trial assessed whether preoperative mechanical bowel preparation is beneficial in elective colonic surgery	Mechanical bowel preparation does not lower the complication rate and can be omitted before elective colonic resection. No statistically significant difference in SSI. OR 0.92, CI 95% (0.68 to 1.23).
Kabon B, Nagele A, Reddy D, Eagon C, Fleshman JW, Sessler DI, Kurz A. Obesity decreases perioperative tissue oxygenation. Anesthesiology. 2004;100(2):274-80. PMID: 14739800	46 patients undergoing major abdominal surgery were randomly assigned to receive intraoperative oxygen adjusted to 150 or 300 mm Hg	RCT: After Intraoperative oxygen with standardized anesthesia and perioperative fluid management., subcutaneous tissue oxygen tension was measured with a polarographic electrode placed in a subcutaneous tonometer in	Intraoperative subcutaneous tissue oxygen tension was less in obese patients at baseline (36 vs. 57 mmHg; $P = 0.002$) and increased with supplemental oxygen (47 vs. 76 mmHg; $P = 0.014$). Immediate postoperative subcutaneous tissue oxygen

	according to their body mass index (BMI): <30 kg/m^2 (non-obese) or > 30 kg/m^2 (obese).	the lateral upper arm during surgery, and near the incision in the recovery room, and on the first postoperative day. Data were compared with unpaired two-tailed t-tests and Wilcoxon rank sum	tension was also less in obese patients' upper arm (43 vs. 54 mmHg; P = 0.011) and near the incision post operatively (42 vs. 62 mmHg; P = 0.012, with no significant group difference on the first postoperative morning.
Kabon B, Rozum R, Marschalek C, Prager G, Fleischmann E, Chiari A, Kurz A. Supplemental postoperative oxygen and tissue oxygen tension in morbidly obese patients. Obes Surg. 2010;20(7):885-94. PMID: 20443153	42 patients undergoing laparoscopic bariatric surgery with postoperative subcutaneous tissue oxygen tension ($PsqO_2$) measured	RCT or patients receiving 80% inspired oxygen via PULMANEX Hi-Ox Mask (Viasys MedSystems, Wheeling, IL) (10 L/min) or 30% oxygen via nasal cannula (2 L/min) after surgery until the first post-op morning. $PsqO_2$ was measured with a temperature-corrected Clark electrode in subcutaneous upper arm tissue and beside the wound.	$PsqO_2$ increased in the Hi-Ox group: 58 (47.7, 74.1) mmHg vs. 43 (38.7, 55.2) mmHg, P =0.002. Wound tissue oxygen tension was improved during supplemental oxygen administration: 75.2 (69.8, 95.5) mmHg vs. 52.4 (46.3, 66.1) mmHg, P < 0.001. Added O_2 improves bariatric patients' $PsqO_2$. Effect on SSI remains to be explored.
Kalmeijer, MD. Surgical site infections in orthopedic surgery: the effect of mupirocin nasal ointment in a double-blind, randomized, placebo controlled study. *Clinical Infectious Diseases* 2002; 35: 353-58. PMID: 12145715	Mupirocin nasal ointment (315 patients undergoing orthopedic surgery, with S aureus colonizing their nares) Placebo (299 similar patients)	Double blind RCT exploring difference in SSI incidence following nasal decontamination with mupirocin or with placebo. Applied twice daily to their nares from the day of admission to the day of surgery.	Groups were comparable at baseline. Overall, there was no significant difference in all SSI or duration of hospital stay between the two groups. More patients had S aureus eradicated with mupirocin (83.5%) than placebo (27.8%) and mupirocin patients had1/5 the odds of developing a S. aureus infection.
Kamaratos AV, Tzirogiannis KN, Iraklianou SA, Panoutsopoulos GI, Kanellos IE, Melidonis AI. Manuka honey-impregnated dressings in the treatment of neuropathic diabetic foot ulcers. Int Wound J. 2014 Jun;11(3):259-63. Epub 2012 Sep 18. last accessed September 30, 2012 at https://www.ncbi.nlm.nih.gov/pubmed PMID: 22985336	Diabetic (Type 2) neuropathic foot ulcers Wagner G 1 or 2 dressed with Medihoney tulle dressing (32) Saline gauze (31)	Double blinded quasi RCT with 1st patient randomized to Medihoney, alternated assignment to groups after that. Debrided Day 1, then as needed. Treated daily, then with decreasing frequency as needed for 16 weeks. Longest L x W estimated area. Swab cultures post debriding, then weekly, evaluated with PEDIS system.	Honey: 31 mean days to heal Saline gauze:43 days (p< 0.05). % Healed by 16 weeks 97% honey; 90% gauze (NS) All swab cultures were initially positive. No patient in honey group needed antibiotics compared to 29% of gauze-dressed wounds. Honey-treated: 78% sterile at week 1; 15.6% more on week 2 and the final 6.25% within 4 weeks; Gauze: 35.5% sterile week 1; 12.9% more week 2; 12.9% more at 6 weeks.
Kamath S, Sinha S, Shaari E, Young D, Campbell AC. Role of topical antibiotics in hip surgery. A prospective randomised study.	n=92 patients undergoing orthopedic surgery following femur neck	RCT Compared effect on the prevention of SSI when applying a topical antimicrobial, chloramphenicol ointment, to	The trial found no statistically significant effect of using chloramphenicol on the incisional site in the

Injury 2005;36:783–7. PMID: 15910834	fracture. N= 640 surgical patients	the surgical wound versus no application. It was applied at the end of the procedure and 3rd day postop. RCT examining mupirocin compared with a placebo in patients carrying *S. aureus* only.	postoperative period. SSI incidence following nasal decontamination with mupirocin and with placebo. (OR 0.97, 95% CI 0.37 to 1.77)
Kantor J, Margolis DJ. Efficacy and prognostic value of simple wound measurements. Arch Dermatol. 1998;134(12):1571–4. PMID: 9875195	260 consecutive VU patients	CO study: measured Length, width, length X width, perimeter, and ellipse area. Best correlations were observed if wound area was < 40 cm^2	Simple longest length x longest perpendicular width correlated most strongly with planimetric area & predicted healing.
Kantor J. Margolis DJ. A multicentre study of percentage change in venous ulcer area as a prognostic index of healing at 24 weeks. Br J Dermatol. 2000;142(5):960-4. PMID: 10809855	104 VU patients from multiple centers in a RCT	CO study measuring PPV and NPV and area under ROC curve for predictive validity of % area change based on computer assisted planimetry	Percentage change in area during the first 2, 3, or 4 weeks of care significantly predicts healing within 24 weeks. Rate of healing or area reduction per week did not predict this.
Kaplan M, Daly D, Stemkowski S. Early intervention of negative pressure wound therapy using Vacuum-Assisted Closure in trauma patients: impact on hospital length of stay and cost. Adv Skin Wound Care. 2009;22(3):128-32. PMID: 19247014	Negative pressure wound therapy using reticulated open cell foam (NPWT/ROCF) for trauma patients treated within 2 days of injury (early n= 518) or after 2 days (late n= 1000 retrospective chart data from hospital records)	Clinical and cost-effective metrics were compared between early and late NPWT/ROCF.	Early-treated patients had fewer hospital inpatient days (10.6 vs. 20.6 days; P < .0001), fewer treatment days (5.1 vs. 6.0 days; P = .0498), shorter intensive care unit (ICU) stays (5.3 vs. 12.4 days; P < .0001), and higher ICU admission rates (51.5 vs. 44.5%; P = .0091) than the late group. Early-group patients had lower total and variable costs per patient discharge ($43,956 vs. $32,175; P < .0001 or $22,891 vs. $15,805; P < .0001, respectively
Karki S, Cheng AC. Impact of non-rinse skin cleansing with chlorhexidine gluconate on prevention of healthcare-associated infections and colonization with multi-resistant organisms: a systematic review. J Hosp Infect. 2012 ;82(2):71-84. PMID: 22889522	SR of RCTs, cross-over trials, cohort studies and before-and-after studies comparing no-rinse chlorhexidine gluconate use to no use on infections.	9 RCTs on central line associated blood stream infections (CLABIs) 5 studies on SSI 4 studies on VRE colonization and SSI 3 studies on MRSA " 3 studies on acinetobacter .	Central line associated blood stream infection incidence rate ratio (IRR) was 0.43 [95% confidence interval (CI): 0.26-0.71].Relative risk of a SSI was 0.29 (95% CI: 0.17-0.49). There was no effect on VRE, MRSA or acinetobacter infections on other wounds, though colonization was reduced.
Khorgami Z, Shoar S, Laghaie B, Aminian A, Hosseini Araghi N, Soroush A. Prophylactic retention	300 high risk patients with at least 2 risk factors for wound	RCT. Intervention group received retention sutures through multiple layers of	Prophylactic retention sutures reduce incidence of wound dehiscence following midline

sutures in midline laparotomy in high-risk patients for wound dehiscence: a randomized controlled trial. J Surg Res. 2013;180(2):238-43. PMID: 22677612	dehiscence who underwent midline laparotomy between 2008-2010 in a Tehran, Iran, hospital	tissue. Control group received nylon sutures through subcutaneous tissue.	laparotomy in patients with multiple risk factors for impaired wound healing compared to those without.
Kinross JM, Markar S, Karthikesalingam A, Chow A, Penney N, Silk D, Darzi A. A meta-analysis of probiotic and synbiotic use in elective surgery: does nutrition modulation of the gut microbiome improve clinical outcome? JPEN J Parenter Enteral Nutr. 2013;37(2):243-53. PMID: 22750803	Thirteen RCTs on 962 patients. 304 patients received synbiotics.. 182 patients received probiotics, such as acidophilus organisms.	Meta-analysis and systematic review of RCTs comparing symbiotic or probiotic perioperative oral nutritional interventions to each other or to standard nutrition control and measuring sepsis as the primary outcome with or wound or urinary tract infection or pneumonia.. Pooled outcomes were analyzed using random effects models.	Incidence of sepsis of any type was reduced in patients receiving probiotics (p = 0.003) or synbiotics (p=0.002). Subgroup analyses failed to support reduced postoperative infection rates for skin wounds, pneumonia or urinary tract infections, Synbiotics did reduce the length of antibiotic use. Further research is merited to optimize and test probiotics.
Klek S, Kulig J, Sierzega M, Szybinski P, Szczepanek K, Kubisz A, Kowalczyk T, Gach T, Pach R, Szczepanik AM. The impact of immune-stimulating nutrition on infectious complications after upper gastrointestinal surgery: a prospective, randomized, clinical trial. Ann Surg. 2008; 248(2):212-20. PMID: 18650630	205 patients Group 1 = standard enteral nutrition Group 2 = immunomodulating enteral nutrition Group 3 = standard parenteral nutrition Group 4 = immunomodulating parenteral nutrition	RCT, 2x2 factorial design monitoring SSI incidence after elective upper gastrointestinal surgery in 250 initially well-nourished patients (150 men, 64 women, mean age 61.2 years)	Study failed to demonstrate any clear advantage of route of postoperative immunonutrition in patients undergoing elective upper gastrointestinal surgery. There was no SSI effect of adding immune-modulating formulas and no difference between enteral and parenteral nutrition routes of administration. Enteral was less expensive.
Kurmann A, Vorburger SA, Candinas D, Beldi G. Operation time and body mass index are significant risk factors for surgical site infection in laparoscopic sigmoid resection: a multicenter study. Surg Endosc. 2011; 25911)3521-4. PMID: 21638185	4,488 patients who underwent laparoscopic colorectal surgery between 1995 and 2008. Of these, 2,571 underwent sigmoid resection for benign disease.	Prospective study of clinical data registry multicenter database of the Swiss Association of Laparoscopic and Thoracoscopic Surgery	3.5% experienced an SSI. Multivariate analysis showed operation time > 240 minutes, organ lesions, BMI>27 kg/m, and male gender were significant risk factors for SSI. SSI group were significantly associated with more reoperations, longer hospital stay, and higher mortality rate.
Kurz A, Sessler DI, Lenhardt R. Perioperative normothermia to reduce the incidence of surgical-wound infection and shorten hospitalization. Study of Wound Infection and Temperature Group. N Engl J Med. 1996 May 9;334(19):1209-15.	Patients undergoing colorectal surgery Hypothermia (96) Normothermia (104)	Double blind RCT with anesthetic care standardized, to normal OR temperature or added warmth + cefamandole and metronidazole. Each wound evaluated daily until discharge from the hospital and in the clinic after two weeks; wounds	Intraoperative core temperature 34.7 ^{o}C in hypothermia group vs. 36.6 ^{o}C with normothermia (P<0.001). SSI observed in 18/96 hypothermia patients (19%); 6/104 normothermia patients (6%) P<0.009). Sutures were removed one day later in

PMID: 8606715		containing culture-positive pus were considered infected.	hypothermia patients than in those assigned to normothermia (P<0.002), Duration of hospital stay was prolonged by 2.6 days (approximately 20 percent) in the hypothermia group (P<0.01).
Lador A, Nasir H, Mansur N, Sharoni E, Biderman P, Leibovici L, Paul M. Antibiotic prophylaxis in cardiac surgery: systematic review and meta-analysis. J Antimicrob Chemother. 2012;67(3):541-50. PMID: 22083832	SR and MA of 59 RCTs on cardiac surgery patients.	SR explored parameters of antibiotic prophylaxis targeting Gram positive or Gram negative bacteria on deep sternal infections and on all SSI	There were similar numbers of SSI and of deep sternal wound infections for both Gram + and – antibiotics; lower incidence of pneumonia with beta Lactam Gram negative (p< 0.05). Less than 24 hours post-operative antibiotic prophylaxis increased likelihood of any type of SSI or endocarditis. Over 48 hours offered no added benefit in reducing SSI.
Langemo DK, Brown G. Skin fails too: acute, chronic, and end-stage skin failure. Adv Skin Wound Care. 2006 May;19(4):206-11. PMID: 16641567	LR of 7 studies	Descriptive review of acute or chronic end-stage skin failure and pressure ulcers in individuals in hospice care or at the end of life. Includes care and dilemmas related to curative or palliative wound management goals.	Skin failure defined as “an event in which the skin and underlying tissue die due to hypoperfusion that occurs concurrent with severe dysfunction or failure of other organ systems” It can be categorized as acute, chronic, or end stage. “Pressure ulcers, a type of skin death, frequently occur in persons with a heavy disease burden, especially those at or near the end of life, despite good care.”
Larson EL, Cimiotti J, Haas J, Parides M, Nesin M, Della-Latta P, Saiman L. Effect of antiseptic handwashing vs. alcohol sanitizer on health care-associated infections in neonatal intensive care units. Arch Pediatr Adolesc Med. 2005;159(4):377-83. PMID: 15809394	2932 neonatal hospital admissions (51 760 patient days) and 119 nurse participants in two Manhattan, NY neonatal intensive care units 3/01-1/03	Cross over design with assignment in random order comparing effects on neonatal infection rates and nurses’ skin of 11 consecutive months of using traditional antiseptic hand washing versus rubbing with an alcohol based sanitizer	Adjusting for study site, birth weight, surgery, and follow-up time, there were no significant differences in mean microbial counts on nurses' hands or neonatal infections rates. Skin condition of participating nurses improved during the alcohol phase (P = .02 and P = .049 for observer and self-assessments, respectively)
Latham R, Lancaster AD, Covington JF, Pirolo JS, Thomas CS Jr. The association of diabetes and glucose control with surgical site infections among	1044 cardiothoracic surgery patients	Prospective cohort study (with parallel case control analysis) of looked at rate of SSI associated with postop hyperglycemia and degree of hyperglycemia	Rate of SSI was independently associated with postoperative hyperglycemia (OR 2.02, 95% CI 1.21 to 3.37), risk of SSI correlated with degree of

cardiothoracic surgery patients. *Inf Control and Hosp Epidemiology;* 2001; 22; 607-12. PMID: 11776345			hyperglycemia during postop period for patients with postop glucose levels of 200-249 mg/dl, 250-299 mg/dl and ≥300 mg/dl, SSI ORs were 2.54, 2.97 and 3.32 respectively.
Lau TW, Leung F, Siu D, Wong G, Luk KD. Geriatric hip fracture clinical pathway: the Hong Kong experience. Osteoporos Int. 2010 Dec;21(Suppl 4):S627-36. PMID: 21058003	964 hip fracture patients in Hong Kong acute care.	Pre-post observational study comparing outcomes before and after implementing a hip fracture pathway in 2007 with shorter pre-operative hospital stay.	Pre-operative and total hospital stay was 5 days shorter using the new pathway , with significantly reduced incidence of SSI , PU and 30-day mortality after 2007.
Lawrence JC, Lilly HA, Kidson A. Wound dressings and the airborne dispersal of bacteria. Lancet 1992; 339:807. PMID: 1347823	DuoDERM® CGF (hydrocolloid dressing Gauze (absorbent wool)	Numbers of bacteria per liter of treatment room air in a burn unit were counted after removing gauze or hydrocolloid dressings from colonized wounds	5 to 30 times as many bacteria were released into treatment room air with gauze, as compared to the hydrocolloid dressing.. Numbers of airborne organisms remained elevated for over 30 minutes after dressing removal.
Lázaro-Martínez JL, Aragón-Sánchez J, García-Morales E. Antibiotics versus conservative surgery for treating diabetic foot osteomyelitis: a randomized comparative trial. Diabetes Care. 2014;37(3):789-95. doit: 10.2337/dc13-1526. Epub 2013 Oct 15. PMID: 24130347	158 patients with a diabetic foot ulcer and osteomyelitis were screened in a Madrid, Spain foot ulcer unit comparing those treated with only 90 days of antibiotics to those managed with surgery plus a short course of post-operative antibiotics.	12-week follow-up RCT excluding those with HbA1c >10, Charcot foot or peripheral arterial disease. Antibiotic regimen was ciprofloxacin 500 mg b.i.d. amoxicillin/clavulanic acid 875/125 mg b.i.d. or trimethoprim 160 mg/ sulfamethoxazole 800 mg b.i.d. modified per results of an antibiogram Outcomes measured were heal time, recurrence or amputation	19 of 25 antibiotic treated and 15 of 27 surgical patients healed in 12 weeks. 2 antibiotic treated and 4 surgically treated ulcers recurred ." antibiotic and surgical treatment had similar outcomes in terms of healing rates, time to healing, and short-term complications for patients with neuropathic forefoot ulcers complicated by osteomyelitis without ischemia, necrosis or soft tissue infections."
Lazarus G, Cooper D, Knighton D, Margolis D, Pecoraro R, Rodeheaver G, Robson M. Definitions and guidelines for assessment of wounds and evaluation of healing. *Arch Dermatol.* 1994; 130:498-493. PMID: 8166487	Wound Healing Society supported operational definitions of concepts in wound assessment and evaluation techniques.	Literature review defining acute and chronic wounds, wound assessment, extent, burden and severity.	"Noninvasive assessment of extent includes perimeter, maximum dimensions of length and width, surface area, volume, amount of undermining, and determination of tissue viability."
LeBlanc K, Baranoski S, Christensen D, Langemo D, Sammon MA, Edwards K, Holloway S, Gloeckner M, Williams A, Sibbald RG, Regan M.	Skin tears consensus panel LR	Consensus document based on LR and modified Delphi Panel consensus on managing skin tears Recommends using low adherent wound dressings	Realign pedicle or skin flap (do not remove flap unless necrotic) & Assess fragility of surrounding skin & Prevent infection & Control pain & Promote healing

International Skin Tear Advisory Panel: a tool kit to aid in the prevention, assessment, and treatment of skin tears using a Simplified Classification System ©. Adv Skin Wound Care. 2013 Oct;26(10):459-76; quiz 477-8. PMID: 24045566		based on case series or opinion strength of evidence. Avoid medications that make patients likely to fall. Steps to promote healing and manage infection are listed at right.	and patient comfort with appropriate dressing selection and Tetanus immunoglobulin, administered depending on institution protocol
Lee JJ, Marvin JA, Heimbach DM. Effectiveness of nalbuphine for relief of burn debridement pain. J Burn Care Rehabil. 1989 May-Jun;10(3):241-6. PMID: 2745500	Patients requiring operating room debridement in a US burn center	RCT comparing effectiveness of pre-surgery 2 mg nalbuphine hydrocolloid compared to 1 mg morphine sulphate in patient-reported pain relief during burn debridement and vital signs.	Safety and pain intensity and relief measured using an adjective scale or a visual analogue scale outcome were similar for the two formulations, with respiratory depression issues in either group.
Lee, J.J., Patel, R., Biermann, J.S., Dougherty, P.J., The musculoskeletal effects of cigarette smoking, Journal of Bone & Joint Surgery Am. 2013;*95*:-A(9) 850-9d. Accessed last November 10, 2013 at http://dx.doi.org/10.2106/JBJS.L.00375 PMID: 23636193	Literature review with 187 references cited.	LR. Of musculoskeletal effects of smoking on a variety of conditions including peri-operative complications, wound healing complications and bone fracture repair.	Smokers are more than twice as likely to develop an infection and 3.7 times as likely to develop osteomyelitis. Brief preoperative cessation of smoking may reduce these risks. Informed-consent discussions should include notification of the higher risk of perioperative complications with cigarette smoking and benefits of temporary cessation.
Leininger B, Rasmussen T, Smith D, Jenkins D, Coppola C.. Experience with wound VAC and delayed primary closure of contaminated soft tissue injuries in Iraq. J Trauma 2006 61(5): 1207-11. PMID: 17099530	77 military high-energy traumatic wound patients with 88 trauma wounds	Retrospective CO study describing new protocol of care using pulsatile lavage followed by negative pressure (VAC) treatment until completely closed.	Earlier, more reliable wound closure was observed using the new protocol on wartime high energy traumatic wounds.
Letizia M, Uebelhor J, Paddack E. Providing palliative care to seriously ill patients with nonhealing wounds. J Wound Ostomy Continence Nurs. 2010 May-Jun;37(3):277-82. PMID: 20463544	27 references cited covering all goals of palliative wound care	Literature review addressing when and how to apply wound care to palliative patients.	Care goals: manage pain; moist wound management to stabilize PU and reduce tissue trauma and pain during dressing change; manage exudate to reduce dressing change frequency; manage odor, prevent new wounds; prevent and manage wound infection; optimize patient mobility and function; ongoing assessment of pain and non-pain symptoms; educate, coordinate with all interdisciplinary team members,

			patient and family
Levin I, Amer-Alshiek J, Avni A, Lessing JB, Satel A, Almog B. Chlorhexidine and alcohol versus povidone-iodine for antisepsis in gynecological surgery. J Womens Health (Larchmt). 2011 Mar;20(3):321-4. PMID: 21323582	256 patients who underwent elective gynecological laparotomies in the years of 2007 and 2009. 2007 was the Povidone-iodine group and from January 2009 to August 2009 was the Chlorhexidine and alcohol group.	Retrospective study of SSI's. Povidone-iodine solution was used preoperatively in 2007 and Chlorhexidine and alcohol solution was used preoperatively for part of the year 2009 in a tertiary medical center in Tel Aviv, Israel. SSI rates were retrospectively analyzed.	Lower infection rate in the group that received Chlorhexidine and alcohol. Article states: "there was a significant difference between the rates of SSIs in the two groups of patients. Patients treated with the older protocol of 10% scrub solution followed by 10% povidone-iodine in 65% alcohol had an infection rate of 14.6% vs. 4.5% (p=0.011) in the 2% chlorhexidine solution and 70% alcohol groups"
Lewis VL Jr, Bailey MH, Pulawski G, Kind G, Bashioum RW, Hendrix RW. The diagnosis of osteomyelitis in patients with pressure sores. Plast Reconstr Surg. 1988;81(2):229-32. PMID: 3336654	Osteomyelitis diagnostic tests (61 PU)	Prospective blind cohort study to assess usefulness of White cell count, plain pelvic x-ray, erythrocyte sedimentation rate,technetium-99m bone scan, computerized tomography, and Jamshidi needle bone biopsy	Jamshidi needle bone biopsy was best: sensitivity 73%, specificity 96%.Not indicated: technetium-99m bone scan, computerized tomography. Best non-invasive tests: any 1 of plain pelvic x-ray, white cell count, and erythrocyte sedimentation rate 89% sensitive, 88% specific.
Li JZ, Willkie RJ, Rittenhouse BE, Ryback MJ. Effect of Linozelid versus vancomycin on length of hospital stay in patients with complicated skin and soft tissue infections caused by known or suspected methicillin-resistant staphylococci: A randomized clinical trial. Sure Infect (Larchmt). 2003 spring; 4(1): 57-70. PMID: 12744768	Intent-to-treat (n =230 patients with complicated skin and soft tissue infections caused by suspected methicillin-resistant staphylococci). Two subsamples of the clinically evaluable (n=144) and surgical site infection(n=114) patients were also analyzed.	RCT treating patients for up to 4 weeks of linezolid (Intravenous followed by optional oral) or vancomycin (Intravenous only), followed by up to four weeks of observation. Unadjusted length of stay (LOS) was estimated using Kaplan-Meier survival functions. A log-logistic survival analysis model estimated multivariate-adjusted LOS controlling for patient demographics and clinical variables.	The unadjusted Kaplan-Meier median LOS was five days shorter for the linezolid group than the vancomycin group in the intent-to-treat sample (9 vs. 14 days, p=0.052). It was eight days shorter (8 vs.16 days, p=0.0025) in the clinically evaluable sample, but the difference in the SSI sample was not significant (10 vs.14 days, p=0.29).
Lipsky BA, Berendt AR, Cornia PB, Pile JC, Peters EJ, Armstrong DG, Deery HG, Embil JM, Joseph WS, Karchmer AW, Pinzur MS, Senneville E. 2012 Infectious Diseases Society of America clinical practice guideline for the diagnosis and treatment of diabetic foot infections. J Am Podiatr Med Assoc.	Guideline	Infectious Diseases Society of America clinical practice guideline	Diagnosis and treatment of diabetic foot infections.

2013;103(1):2-7. PMID: 23328846			
Lipsky BA, Holroyd KJ, Zasloff M. Topical versus systemic antimicrobial therapy for treating mildly infected diabetic foot ulcers: a randomized, controlled, double-blinded, multicenter trial of pexiganan cream. Clin Infect Dis. 2008 Dec 15;47(12):1537-45. PMID: 18990064	835 patients I with recalcitrant DFU in 2 RCTs were randomized to receive topical pexiganan or oral ofloxacin or placebo.	Subjects in both groups were similar. Combined study analysis had adequate N for testing equivalence of the two active agents.	Worsening cellulitis occurred in 2-4% and amputation occurred in 2-3% . Eradication of microbial burden occurred in 42-47% . Clinical improvement occurred in 85-90% There was statistical equivalence of the two treatments' clinical outcomes.
Lipsky BA, Kuss M, Edmonds M, Reyzelman A, Sigal F. Topical application of a gentamicin-collagen sponge combined with systemic antibiotic therapy for the treatment of diabetic foot infections of moderate severity: a randomized, controlled, multicenter clinical trial. J Am Podiatr Med Assoc. 2012;102(3):223-32. PMID: 22659765	Daily standard diabetic foot ulcer care (SOC) with (n=38) or without (n=18) once daily topical gentamicin-collagen sponge (GCS) 5 x 5 cm or 10 x 10 cm, SOC included daily oral or IV systemic 750 mg of levofloxacin plus surgical debridement at each visit if appropriate and off-loading as needed.	An open-label multicenter RCT assigned subjects with a moderately infected diabetic foot ulcer with at least two signs of inflammation and muscle, tendon, joint or bone involvement to receive 7 – 28 days of SOC or GCS. Non-adherent, moisture-permeable primary dressings were changed daily. Lipsky wound severity score, including area and infection parameters evaluated non-blinded to treatment and blind-evaluated microbiology outcomes were measured days 3,7,10, 14, 21,28 42 days after first treatment.	Baseline wound severity was greater in GCS +SOC group ($p = 0.011$). This difference was maintained through day 7, when 3 control subjects and no GCS subjects achieved a clinical cure (primary outcome: $p = 0.017$). This result was reversed at Test of Cure 2 weeks after the last treatment: when all 22 evaluable (100%) GCS+SOC subjects were clinically cured compared to 7 of 10 (70%) SOC subjects ($p = 0.024$). Microbial success preceded clinical success and favored the GCS+SOC group from day 3 of treatment onward ($p < 0.038$). No significant differences were reported in adverse events.
Lipsky BA, Polis AB, Lantz KC, Norquist JM, Abramson MA. The value of a wound score for diabetic foot infections in predicting treatment outcome: a prospective analysis from the SIDESTEP trial. Wound Repair Regen. 2009;17(5):671-7. PMID: 19671126	Cohort of 371 patients with a DFU from a prospective diabetic foot infection antibiotic trial (SIDESTEP) RCT	Prospective cohort evaluation of Lipsky Diabetic Foot Infection (DFI) score accuracy in predicting clinical outcome. DFI Score analyzed erythema, induration, warmth, pain, tenderness, purulent and nonpurulent discharge, wound area in cm^2 , depth and undermining components. Study tested DFI Score for consistency, construct, and validity. Outcomes predicted were rate of favorable clinical response (infection improved or cured) at discontinuance of IV (DCIV) or at follow-up (FU).	Wound scores correlated with the clinical response ($p<0.05$). Scores were favorable at the follow-up assessment in 94.8% with a baseline score 12 (95% sensitivity) compared with 77.0% with a score >19 (23% specificity), with good internal consistency (Cronbach's alpha 0.70 to 0.95). Patients with more severe wounds had higher scores, supporting construct validity. Excluding scores for purulent and nonpurulent wound discharge made an eight-item score, with better measurement statistics. DFI Scores progressively decreased with higher baseline wound scores.

Lo SF, Chang CJ, Hu WY, Hayter M, Chang YT. The effectiveness of silver-releasing dressings in the management of non-healing chronic wounds: a meta-analysis. J Clin Nurs. 2009;18(5):716–728. PMID: 19239539	8 RCTs reporting silver dressing effects on chronic wounds (1399 subjects)	SR and MA of 8 RCTs on chronic non-healing wounds found in CINAHL, MEDLINE, Cochrane British Nursing Index, EBSCO, OCLC, and Proquest reference databases searched from 1950 to 2007.	Significant evidence supported silver ion releasing dressing as improving chronic wound healing, odor, pain and exudate, (all at $P < 0.001$), prolonged dressing wear ($P = 0.028$) and better quality of life ($P = 0.013$) without adverse events
Mangram AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. *Infection Control and Hospital Epidemiology* 1999;20:250–78. PMID: 11936376	LR, Guideline based on expert opinion	Guideline—Risk factors for SSI include diabetes, remote site infection or colonization, cigarette smoking, systemic steroid use, obesity (>20% above ideal body weight), extremes of age, poor nutritional status and peri-operative use of non-autologous blood products.	Educate patients or caregivers on signs of infection. Confirm infection using deep tissue culture and sensitivity testing if signs and symptoms of infection are present such as odor, pain, edema, erythema, purulent exudate. Protect incision with sterile dressing.
Margolis D, Berlin J, Strom B. Which venous leg ulcers will heal with limb compression bandages? American J Medicine. 2000; 109(1): 15-9.PMID: 10936473	British database	CO study of predictors of VU healing with compression during 20 weeks	Over 6 months duration adds 1 point to nonhealing score + 1 point if > 5 cm^2 Add points for total score. Slough or non-vital tissue is also a risk factor.
Markel TA, Lou DC, Pfefferkorn M, Scherer LR 3rd, West K, Rouse T, Engum S, Ladd A, Rescorla FJ, Billmire DF. Steroids and poor nutrition are associated with infectious wound complications in children undergoing first stage procedures for ulcerative colitis. Surgery. 2008 Oct;144(4):540-5; discussion 545-7.PMID: 18847637	51 children below 18 years of age undergoing first surgery for ulcerative colitis at Indianapolis University children's hospital through 2008	10 Year retrospective review of risk factors for SSI, 19 underwent colectomy with ileo-anal-pouch anastomosis and 32 underwent total abdominal colectomy with Hartmann's pouch.	20 SSI were identified in 18 children. Greatest risk factors for postoperative SSI were: preoperative steroid use; preoperative hemoglobin < 10 g/dL ($P < .05$) and albumin < 3 g/dL ($P = 0.1$). Preoperative BMI and other immunosuppressive agents did not influence postoperative SSI
Martinez-Zapata MJ, Martí-Carvajal AJ, Solà I, Expósito JA, Bolíbar I, Rodríguez L, Garcia J. Autologous platelet-rich plasma for treating chronic wounds. Cochrane Database Syst Rev. 2012 Oct 17;10:CD006899.pub2. PMID: 27223580	Cochrane Review of 13 RCTs using platelet rich plasma to treat chronic wounds,	Three 3 trials measured and reported infection or necrosis or adverse events	There were no statistically significant difference between groups in infections or necrosis or adverse events between platelet rich plasma or control treatments in the meta-analysis
Masden D, Goldstein J, Endara M0, Xu K, Steinberg J, Attinger C.. Negative pressure wound therapy for at-risk surgical closures in patients with multiple	81 patients were included for analysis. 37 received dry dressings, and 44 received NPWT. 74	Patients presenting to a high-volume wound center were randomized to receive either a V.A.C. (KCI, San Antonio, TX) or a standard dry dressing over	There was no statistical difference in dehiscence between NPWT and dry dressing group (36.4% vs. 29.7%; $P = 0.54$) or mean time to dehiscence

comorbidities: a prospective randomized controlled study. *Ann Surg*. 2012;255(6):1043-7. PMID: 22549748	of these underwent lower extremity wound closure. Average follow-up was 113 days	their incision at the conclusion of surgery. These were primarily high-risk patients with multiple comorbidities. The 2 groups were compared, and all incisions were evaluated for infection and dehiscence postoperatively. RCT	between the 2 groups (P = 0.45). Overall, 35% of the dry dressing group and 40% of the NPWT group had a wound infection, dehiscence, or both. There was no difference in the incidence of infection or dehiscence between the NPWT and dry dressing group.
Matsuda K, Hotta T, Takifuji K, Yokoyama S, Higashiguchi T, Tominaga T, Oku Y, Nasu T, Tamura K, Yamaue H. Long-term comorbidity of diabetes mellitus is a risk factor for perineal wound complications after an abdominoperineal resection. Langenbecks Arch Surg. 2009;394(1):65-70. PMID: 18607625	80 patients who underwent an abdomino-perineal resection were reviewed from April 1996 to March 2006	Retrospective cohort study of medical records from a Japanese hospital using a multivariate analysis to explore risk factors underlying the higher incidence of perineal wound complications in persons with Diabetes mellitus.	The rate of perineal wound complications was higher in those with diabetes mellitus (67%) than without it (18%, p = 0.005). Diabetes mellitus and operation time $\geq$ 420 minutes were risk factors for perineal wound complications (p = 0.040, p = 0.027, respectively). Infectious perineal wound complications were associated with diabetes (p < 0.001) but not with the operation time (p = 0.097). Longer comorbid duration of diabetes (> 10 years) predicted perineal wound complications (p = 0.008).
McCoy CE, Chakravarthy B, Lotfipour S. Guidelines for Field Triage of Injured Patients: In conjunction with the Morbidity and Mortality Weekly Report published by the Center for Disease Control and Prevention. Western Journal of Emergency Medicine. 2013;14(1):69-76. PMID: 23447758	LR citing references 25-28 as supporting these threshold definitions for severe injury.	CPG: severe injuries include crushed, degloved, mangled, or pulseless extremity wounds, penetrating injuries of head, neck, trunk, torso and extremities to elbow or knee; amputation proximal to wrist or ankle or chest wall instability or deformity such as “flail chest”	Defines severe injury as Glasgow coma Scale < 13 or SBP <90 or respiratory rate <10 or >29. These are significant predictors of severe injury and the need for a high level of trauma care.
McDonald A, Lesage P. J Palliative management of pressure ulcers and malignant wounds in patients with advanced illness Palliative Medicine, 2006, Apr;9(2):285-95. PMID: 16629558	Review of literature in the palliative care setting.	LR with expert opinion cited supporting interventions to manage pressure ulcers or malignant wounds in palliative care settings.	Prevention, management, and efforts to heal wounds if possible are fundamental tasks in palliative care. Includes manage pain, infection, bleeding, odor, pruritis, drainage, and psychosocial distress.
McGuckin M, Goldman R, Bolton L, Salcido R. The clinical relevance of microbiology in acute and chronic wounds. *Adv. Skin Wound*	LR	LR of validated techniques for classifying, diagnosing and managing acute or chronic wound infections	Classify infections into superficial, deep and organ space as well as Clean, clean contaminated, contaminated,

Care 2003; 16(1):12-23. PMID: 12582302			dirty, i.e. the CDC classification of risk for SSI.
Mehta Al, Babu R, Sharma R, Karikari IO, Grunch BH, Owens TR, Agarwal VJ, Sampson JH, Lad SP, Friedman AH, Kuchibhatla M, Bagley CA, Gottfried ON. Thickness of subcutaneous fat as a risk factor for infection in cervical spine fusion surgery. J Bone Joint Surg Am. 2013;20; 95(4): 323-8. PMID: 23426766	213 patients who underwent posterior cervical spine fusion during 2006-2008 at Duke University Medical Center.	Retrospective review of data from a consecutive cohort study analyzing risk factors for and predictors of SSI during up to 30 days after surgery.	Obesity as measured by BMI was not a significant risk factor for a SSI. Subcutaneous fat thickness and its ratio to total skin thickness were independent risk factors for developing postoperative SSI after spinal fusion surgery. Subcutaneous fat was 27.0 ± 2.5 mm thick in patients who developed a SSI compared with 21.4 ± 0.88 mm in those without a SSI (p = 0.042). The ratio of subcutaneous fat to total skin thickness (to the lamina) also predicted SSI (p = 0.02)
Melling AC, Ali B, Scott EM, Leaper DJ. Effects of preoperative warming on the incidence of wound infection after clean surgery: a randomized controlled trial. Lancet 2001;358:876-880. Erratum in: Lancet 2002 Mar 9;359(9309):896. PMID: 11567703	421 patients having clean breast, varicose vein or hernia) surgery non-warmed (139) or one of two warmed groups (local and systemic: 277)	RCT with intent-to-treat analysis of healing rates and SSI resulting from the surgery. Patients were warmed for at least 30 min before surgery in the warmed groups. Patients were followed up with masked outcome assessments at 2 and 6 weeks.	Significantly reduced likelihood of developing a SSI in patients warmed locally or systemically: 14% SSI in non-warmed patients and 5% SSI in those warmed locally or systemically (p= 0.001). Wound scores were also better (p=0.007) in warmed subjects.
Mertz, P., Marshall, D.A., Eaglstein, W.H. Occlusive wound dressings to prevent bacterial invasion and wound infection. *J Amer Acad Dermatol.* 1985;12(4):662-668. PMID: 3921574	Hydrocolloid dressing (DuoDERM) (16) Gel dressing Vigilon® (16) Film dressing: Op-Site® (16)	Animal model (AM): Prospective randomized study challenging the barrier properties of the three dressings on partial-thickness swine wounds with external or internal inocula of pathogens.	*S. aureus* and *P. aeruginosa* did not penetrate the hydrocolloid in either direction, but did penetrate half the film dressings and half the gel dressings.
Meuleneire F. Using a soft silicone-coated net dressing to manage skin tears. J Wound Care, 2002; 11(10):365-369. PMID: 12494827	59 Belgian elderly patients with 88 skin tears of Payne categories I and II (scant tissue loss only)	After putting the epidermal flap in its initial position 76% of all qualifying for study inclusion were followed up sufficiently to allow healing evaluation at 8 days post-operatively.	Infection was associated with over 6 hour delay between skin tear and dressing application. During this delay there was a high risk of contamination and drying of the epidermal flap, killing tissue.
Milburn ML, Holton LH, Chung TL, Li EN, Bochicchio GV, Goldberg NH, Silverman RP. Acellular dermal matrix compared with synthetic implant material for	Anima study Group 1 (n=62) = Acellular dermal matrix graft	Crossover Design using rabbit hernia model to measure CFU, adhesions and abscesses following use of acellular dermal matrix or synthetic	Acellular dermal matrix grafts resisted surgical site infection caused by 10^4 S. aureus inoculum in a rabbit incision model without compromising ventral hernia

repair of ventral hernia in the setting of peri-operative Staphylococcus aureus implant contamination: a rabbit model. Surg Infect (Larchmt). 2008 Aug;9(4):433-42. PMID: 18759680	Group 2 (n=57) = synthetic polytetrafluorethylene mesh graft	polytetrafluorethylene grafting for repair of ventral hernia	repair. Acellular dermal matrix grafted incisions had lower CFU (p=.006), fewer adhesions (p = .005), and fewer abscesses (p=.008) compared to polytetrafluorethylene grafts.
Mills E, Eyawo O, Lockhart I, Kelly S, Wu P, Ebbert JO. Smoking cessation reduces postoperative complications: a systematic review and meta-analysis. *Am J Med.* 2011 Feb;*124*(2):144-154.e8. PMID: 21295194	Studies analyzed: 21 CO or RCTs	SR & MA of studies of effects of smoking on postoperative complications.	There were reduced complications in surgical wound healing among nonsmokers compared to smokers (p = 0.0006). Smoking cessation for <4 weeks compared with >4weeks resulted in 20% reduction in the relative risk of total complications (p=0.02). Each additional week of smoking cessation reduced postoperative complication (p<0.05).
Miranda ML, van Rijen M, Bonten RP, Wenzel JA, Kluytmans JW. Intranasal mupirocin for reduction of *Staphylococcus aureus* infections in surgical patients with nasal carriage: a systematic review, *J Antimicrobial Chemotherapy*, 2008; 61(2): 254-261 Accessed July 20 2010 at https://doi.org/10.1093/jac/dkm480 PMID: 18174201	Meta-analysis of 4 RCTs on 686 surgical patients with nasal or intranasal *S. aureus* preoperatively monitored for S. aureus SSI postoperatively	CENTRAL, EMBASE and MEDLINE were searched for keywords *mupirocin*, *pseudo-monic acid* or bactroban combined with nasal or intranasal. Only RCTs investigating surgical patients were included. *S. aureus* infection data in nasal carriers with and without mupirocin treatment were pooled in the meta-analysis.	The literature search resulted in 211 hits, of which 4 articles met the inclusion criteria. Among the 686 mupirocin-treated surgical patients with *S. aureus* nasal carriage, there were 25 S. aureus infections (3.6%), compared with 46 (6.7%) in the controls (RR 0.55, 95% CI 0.34–0.89; *P* = 0.02).
Mohammed S, Pisimisis GT, Daram SP, Bechara CF, Barshes NR, Lin PH, Kougias P. Impact of intraoperative administration of local vancomycin on inguinal wound complications. *J Vasc Surg.* 2013;57(4):1079-83.. PMID: 23313181	454 patients in study who underwent aortofemeral or infra inguinal vascular procedures monitored for surgical infection over a 30 day period.	Retrospective analysis was performed on 454 patients who underwent open aortofemoral or infra inguinal vascular procedures between 2006 and 2011. Patients received preoperative systemic antibiotics either alone (group A) or in conjunction with intraoperative wound application of vancomycin powder and irrigation (group B). Inguinal wound infection and dehiscence over a 30-day period were recorded. Fisher exact test and multivariate regression analyses were performed	There was a small but statistically significant decrease in the 30-day incidence of overall wound infections (25.1% vs. 17.2%; P = .049) for group B patients. This was primarily due to a decreased rate in superficial infections (18.9% vs. 11.5%; P = .033). No significant difference in the incidence of deep wound infections (6.1% vs. 5.7%; P= .692) or overall dehiscence rates (22.2% vs. 17.7%; P = .239) was detected. On multivariate analysis, history of chronic obstructive pulmonary disease and increased body mass index

			significantly increased risk of both infection and dehiscence. Addition of intraoperative local vancomycin did not improve the rates of inguinal wound dehiscence or deep infections but had a positive impact on superficial wound infections.
Moore ZE, Cowman S. Wound cleansing for pressure ulcers. Cochrane Database Syst Rev. 2013 Mar 28;(3):CD004983. PMID: 23543538	Systematic review Cochrane databases and bibliographies of relevant publications were searched. 3 RCTs on 169 participants.	RCTs on pressure ulcers comparing wound cleansing with no wound cleansing, or different wound cleansing solutions, or different cleansing techniques, were eligible for inclusion. Outcomes were measures of pressure ulcer healing	More improvement in Pressure Sore Status Tool scores was reported cleansing with saline spray containing Aloe vera, silver chloride and decyl glucoside (Vulnopur) as compared with isotonic saline ($p = 0.025$). No effect of water vs. saline. Pulsatile lavage reduced ulcer volume more at 3 weeks than sham ($p < 0.05$).
Morales Lozano R, Montesinos JVB, Fernandez MLG, Jimenez SG, Hernandez DM, Jurado MAG. Validating the probe-to-bone test and other tests for diagnosing chronic osteomyelitis in the diabetic foot. Diabetes Care, 2010;33:2140–5. PMID: 20622159	132 patients with type 1 or 2 diabetes and one full-thickness neuropathic or neuroischemic diabetic foot ulcer clinically suspected to be infected or have underlying osteomyelitis	Osteomyelitis was diagnosed using clinical signs, plain radiography, soft tissue ulcer biopsy and a probe-to-bone (PTB) test. The diagnostic test validating true osteomyelitis was a standardized sterile bone biopsy with histological inflammatory cell infiltrate near spongy, cortical or necrotic bone or reactive bone formation or periosteal cell proliferation.	PTB was the most reliable ($p = 0.001$) test with the highest percentage of patients correctly diagnosed as with or without osteomyelitis (93.9%). This exceeded efficiency of clinical signs and symptoms of infection (59.1%), plain radiograph (75.8%) or ulcer specimen culture (72.0%) in diagnosing and/or predicting biopsy-confirmed osteomyelitis. Accuracy of diagnosis using the PTB test was 98% for neuropathic ulcers and 88% for neuroischemic ulcers.
Moro ML, Sommella L, Gialli M, Tavanti L, Ciolli L, Masetti R, Capaccioli L,Torrioli R, Tresalti E. Surgical infections surveillance: results of a six-month incidence study in two Italian hospitals. Eur J Epidemiol. 1991 Nov;7(6):641-8. PMID: 1783058	1019 patients in 2 Italian hospitals undergoing general and 433 patients undergoing orthopedic surgery in a WHO study conducted in 1989	Prospective observational study (POS) using a World Health Organization SSI Surveillance protocol, analyzing data from the DANOP DATA system to identify SSI risk factors.	The risk of infection increased with age (RR = 2.06; 95% CI = 1.20-3.53), wound class (RR = 3.38; 95% CI = 1.97-5.8), length of pre-operative stay (RR = 2.71; 95% CI = 1.54-4.74), and operation duration (RR = 2.59; 95% CI = 1.48-4.54).
Moscati RM, Mayrose J, Reardon RF, Janicke DM, Jehle DV. A multicentre comparison of tap water versus sterile saline for wound irrigation. *Academic*	Patients with an uncomplicated skin laceration irrigated with saline (300) or tap water (334) then	RCT allocated by computer based randomization. Wound infection assessed blinded to treatment, as wound requiring a significant change in treatment	12 infections in tap water group; 11 in normal saline group. There was no significant difference in the incidence of uncomplicated skin laceration infections

Emergency Medicine. 2007;14:404–10. PMID: 17456554	closed with staples or sutures.	e.g. debridement, antibiotics.	irrigated with saline as compared to tap water..
Mueller MJ, Diamond JE, Sinacore DR, Delitto A, Blair VP 3rd, Drury DA, Rose SJ. Total contact casting in treatment of diabetic plantar ulcers. Controlled clinical trial. Diabetes Care. 1989;12(6):384-8. PMID: 2659299	Subjects with a non-infected plantar diabetic foot ulcer (DFU) Total contact cast (TCC 21) or Traditional dressing treatment (TDT 19) with offloading footwear	RCT with subject similar on DFU size, duration and sensation at baseline. Non-healing reported if DFU did not decrease in size by 6 weeks or if infection required hospitalization	In TCC group, 19 of 21 DFU healed in 42 +/- 29 days; in TDT group, 6 of 19 ulcers healed in 65 +/- 29 days. More ulcers healed (chi ^{2} = 12.4, P < .05) and fewer infections developed (chi ^{2} = 4.1, P <0 .05) in the TCC group.
Murphy RC, Robson MC, Heggers JP, Kadowaki M. The effect of microbial contamination on musculocutaneous and random flaps. J Surg Res 1986; 41: 75–80. PMID: 3747500	Animal study	random or musculocutaneous flaps grafted onto granulating wound beds containing 10^4, 10^5, or 10^6 bacteria per gram of tissue	In wounds with minimal bacteria, both flaps took and wounds healed. In 10^5 group only wounds with musculo-cutaneous flaps healed; In 10^6 group: neither took. Concluded that in moderately contaminated wound musculocutaneous flaps can decrease bacterial counts and support successful closure when random flaps cannot.
Mutluoglu M, Uzun G, Sildiroglu O, Turhan V, Mutlu H, Yildiz S. Performance of the probe-to-bone test in a population suspected of having osteomyelitis of the foot in diabetes. J Am Podiatr Med Assoc. 2012;102(5):369-73. PMID: 23001730	65 inpatients (n=49) or outpatients (n=16) in Turkey with an infected diabetic foot ulcer (DFU) and possible osteomyelitis	Prospective observational study testing validity of probe-to-bone (PTB) test and monitoring WBC counts and C-reactive protein of subjects who develop or do not develop osteomyelitis confirmed by bone biopsy.	Osteomyelitis was diagnosed in 39 patients. PTB test had a positive predictive value of 87%, negative predictive value: 62%; sensitivity: 66%, specificity 84%. Mean WBC and C-reactive protein did not discriminate between those with or without osteomyelitis.
Nakagami G, Sanada H, Iizaka S, Kadono T, Higashino T, Koyanagi H, Haga N. Predicting delayed pressure ulcer healing using thermography: a prospective cohort study. J Wound Care. 2010 Nov;19(11):465-6, 468, 470 passim. PMID: 21135794	35 patients with stage II-IV torso pressure ulcers who underwent thermographic assessment on discovery of their pressure ulcer	Prospective observational study (CO). Thermography was performed immediately after dressing removal. The patients were followed up for at least 3 weeks. PU were classified into two groups: (1) wound site temperature was lower or (2) higher than the periwound skin. Normal healing was defined as PU area reduced by >30% within 3 weeks. A generalized estimation equation estimated relative risk of delayed PU healing, comparing	21 PU had 'low temperature' and 14'high temperature' wounds at baseline. Two “high temperature” patients with documented infection were excluded from further analysis. 22 PU healed 'normally' 16 did not heal. Baseline DESIGN score (a measure of gross wound status) did not differ in any subscales between the high and low temperature groups. Relative risk for delayed healing in high temperature cases was 2.25 (95% confidence intervals; 1.13-4.47,

		wounds with high temperatures and low temperatures	p=0.021). Sensitivity: 0.56 and specificity: 0.82, + predictive value 0.75, - predictive value: 0.67.
National Institute for Clinical Excellence (N.I.C.E.). *Guidance on the use of debriding agents and specialist wound care clinics for difficult to heal surgical wounds*. Technology Appraisal Guidance No. 24, April 2001. No PMID Available.	LR with 2 RCTs	International guidance document	Gauze is substandard practice for debriding wounds due to pain and tissue injury on removal. All other forms of debridement are listed as acceptable.
National Institute for Clinical Excellence (N.I.C.E.). *Surgical Site Infections: Prevention and Treatment.* Clinical Guideline 74, October 2008. Last accessed October 15, 2013 at nice.org.uk/guidance/cg74 No PMID available.	Guideline for SSI prevention and treatment.	SR of methods to prevent and/or treat SSI.	Accepted methods for surgical wound debridement include surgery, larva , sharp debridement, hydrocolloid dressings and hydrogels.
NCC-WCH National Collaborating Centre for Women's and Children's Health, Surgical site infection prevention and treatment of surgical site infection, RCOG Press, Royal College of Obstetricians and Gynaecologists, 27 Sussex Place, Regent's Park, London NW1 4RG, 2008. No PMID available.	Guidelines for preventing SSI	LR with meta-analyses testing hypotheses that SSI would be reduced by pre-operative patient bathing with chlorhexidine wash compared to soap or detergent wash	No difference between bar soap or detergent as compared to washing with chlorhexidine solution
Nelson EA, O'Meara S, Craig D, Iglesias C, Golder S, Dalton J, Bell-Syer SEM, Jude E, Dowson C, Gadsby R, O'Hare P, Powell J. A series of systematic reviews to inform a decision analysis for sampling and treating infected diabetic foot ulcers. *Health Technol Assess* 2006;10(12). PMID: 16595081	Cochrane review found very few RCTs supporting decisions in treating infected wounds. Results may be biased by limited spectrum of the wound population represented in study sample, lack of or inconsistent use of reference standards.	Literature review supporting decision making for infected wounds by normalizing blood glucose and/or circulation, removing dead tissue, and/or by surgical drainage of pus from wounds. Culture by wound swab, curettage, tissue biopsy or fine-needle aspiration can help determine causative species and antibiotic sensitivity. Threshold standards were arbitrary.	The relationship between bacterial colonization and healing in chronic wounds is currently unclear. Some studies found higher bacterial counts associated with failure to heal; others do not. Some associate delayed healing with presence of $\geq$ 4 organism groups in the wound. Others associate risk with colonization by ß-hemolytic streptococci and *Staphylococcus aureus*.
Neuburger M, Reisig F, Zimmermann L, Büttner J. [Infection control in continuous	In a prospective study 1,134 continuous	In group 1 (473 catheters) a cotton swab was soaked with the alcoholic solution and	In group 1, 19% of the catheters were tunneled subcutaneously, whereas in group 2 this occurred

peripheral regional anesthesia. Clinical study on disinfection time and subcutaneous tunneling in interscalene plexus anesthesia]. Anaesthesist. 2009;58(8):795-9. PMID: 19669706	interscalene plexus anesthesias were included in continuous peripheral regional anesthesia in the patient's neck	swabbed 3 times at the puncture site in the classical manner. In group 2 (661 catheters) disinfection was carried out by spray and swab application with a disinfection time of at least 10 min.	in 89%. In group 1 inflammation occurred in 25 cases (5.3%) and an infection in 32 cases (6.8%). In group 2 there were 37 cases of inflammation (5.5%) and 13 infections (2.0%; (p<0.002 for infections). Practicability of 10 minute disinfection time in the clinical routine was excellent. A 10 min disinfection time with a 70% alcoholic solution combined with subcutaneous tunneling reduced infection rate (p<0.002).
Neues C, Haas P. Modification of postoperative wound healing by showering [Beeinflussung der postoperativen wundheilung durch duschen]. Der Chirurg 2000;71(2): 234–6. PMID: 10734596	817 patients having varicose vein surgery Showered on day 2 with water only (274) or water + shower gel (268). Wounds kept dry for 8 to 10 days (not cleansed) (302)	Quasi RCT allocated by month to interventions. Primary outcome was infections clinically reported (no definition provided) Lost to follow up: 130 in water only group; 40 in shower + gel group; 94 in group with wounds kept dry.	1 infection reported in all 3 groups—in the tap water showered group. No significant differences in this very low infection rate observed.
Neumayer L, Hosokawa P, Itani, K, El-Tamer M, Henderson WG, Khuri SF. Multivariable predictors of postoperative surgical site infection after general and vascular surgery: results from the patient safety in surgery study. *J Am Coll Surg* 2007; 204: 1178-87. PMID: 17544076	16,364 patients in study who underwent general or vascular surgery, 7035 developed SSI within 30 days	Prospective observational study using logistic regression to analyze data collected from 142 medical centers identified age as an independent risk factor for SSI.	Patients over age 40 had statistically significantly increased risk of developing SSI when compared to those under 40. (OR 1.24, 95% CI 1.07 to 1.44)
Noorani, A., Rabey, N., Walsh, S.R.& Davies, R.J. Systematic review and meta-analysis of preoperative antisepsis with chlorhexidine versus povidone–iodine in clean-contaminated surgery. British Journal of Surgery 2010; 97: 1614–1620. PMID: 20878942	SR and MA exploring whether povidone–iodine or chlorhexidine should be preferred agent for cleansing skin before clean-contaminated surgery. MA of 22,435 patients in 6. studies (5 RCT & 1 POS design	The SR and MA were conducted in accordance with the PRISMA guidelines. MEDLINE and Embase databases were searched in January 2010 on the search terms 'povidone–iodine', 'chlorhexidine' and 'iodine'. A supplementary search was undertaken in February 2010 using the terms 'surgical wound infection' and 'disinfection'.	SSI occurred in 145 (5·7 per cent) of 2529 patients who had chlorhexidine and 198 (7·9 per cent) of 2502 who had povidone–iodine antisepsis. This yielded a pooled OR of 0·68 (0·50 to 0·94; P = 0·019). SSI occurred in 93 (6·1 per cent) of 1535 patients treated with chlorhexidine compared with149 (9·8 per cent) of 1515 who had povidone–iodine.
O'Meara S, Kurdi D, Ologun Y, Ovington LG. Antibiotics and antiseptics for venous leg ulcers. *Cochrane Database of Systematic*	SR (25 RCTs) on venous leg ulcer patients:5 systemic antibiotics; 10	Outcomes compared using Forest plots and appropriate odds ratios for complete healing, % area reduction and	Cadexomer iodine-dressed wounds had higher healing rates than gauze standard of care, but not compared to hydrocolloid

Reviews 2010, Issue 1. Art. No.: CD003557. DOI: 10.1002/14651858. PMID: 20091548	cadexomer iodine 5 povidone iodine 3 peroxide-based 1 each ethacridine lactate, mupirocin or chlorhexidine	rate of healing as % area reduction per week.	dressings. Most RCTs were small and many had methodological flaws or poor baseline comparability. No evidence supports use of systemic antibiotics.
Opletalová K, Blaizot X, Mourgeon B, Chêne Y, Creveuil C, Combemale P, Laplaud AL, Sohyer-Lebreuilly I, Dompmartin A. Maggot therapy for wound debridement: a randomized multicenter trial. Arch Dermatol. 2012 Apr;148(4):432-8. PMID: 22184720	119 patients in 2 French hospitals , each patient with a nonhealing, sloughy wound 40 cm2 or smaller, < 2 cm deep, and an ankle brachial index of at least 0.8	During a 2-week hospital stay, patients received either maggot debridement therapy or conventional gauze. % of wound surface covered with slough was measured at 7,15 and 30days. At discharge, conventional dressings were applied	Maggots removed more slough at day 8 (54.5%)than was removed in the control group (66.5%) (P = .04). At day 15 slough results were similar: 55.4% in the maggot group And 53.8% in the control group (P =.78). Healing results were similar.
Ovington LG. Hanging wet-to-dry dressings out to dry. Adv Skin Wound Care. 2002.March/Apr: 15(2), 79-84. PMID: 11982183	LR	Literature review of evidence of effects of gauze wound dressings on clinical and patient-centered outcomes	Gauze dressings increase pain and infection rates and delay healing of chronic and acute wounds. Over 4 RCTs supported this statement.
Parienti JJ, Thibon P, Heller R, Le Roux Y, von Theobald P, Bensadoun H, Bouvet A, Lemarchand F, Le Coutour X. Antisepsie Chirurgicale des mains Study Group. Hand-rubbing with an aqueous alcoholic solution vs. traditional surgical hand-scrubbing and 30-day surgical site infection rates: a randomized equivalence study. JAMA. 2002 Aug 14;288(6):722-7. Erratum in: JAMA 2002 Dec 4;288(21):2689. PMID: 12169076	4387 French patients undergoing clean or clean contaminated surgery 1/00-5/01 : Staff either scrubbed hands with aqueous 4% chlorhexidine or 4% povidone iodine. Each alternate months with hand rubbing with 75% aqueous propanol-1,-2 macetronium etilsulfate	Primary outcome was 30-day incidence of SSI. Secondary outcomes were staff tolerance and compliance with hand antisepsis. Both protocols for staff hand antisepsis with povidone iodine-alcohol and chlorhexidine- alcohol were accompanied by a hand wash before each surgeon's first procedure of the day and before any procedure if the hands were soiled.	Both groups of patients were comparable at baseline on SSI risk factors. There were 2.44 % SSI with rubbing (alcohol) or scrubbing (2.48%) with either chlorhexidine or povidone iodine. Tolerance and compliance with the rubbing protocol was higher with the hand rubbing protocol (44% vs. 28%). Rubbing with the alcohol solution was as effective as using antiseptic scrubs between patients, and better tolerated.
Patzakis MJ, Bains RS, Lee J, Shepherd L, Singer G, Ressler R, Harvey F, Holtom P. Prospective, randomized, double-blind study comparing single-agent antibiotic therapy, ciprofloxacin, to combination antibiotic therapy in open fracture wounds. J Orthop Trauma. 2000 Nov;14(8):529-33. PMID: 11149497	163 patients with 171 open all types of open fracture wounds completed the study receiving 1 antibiotic ciprofloxacin or double antibiotic cefamandole and gentamicin	Double blind RCT comparing efficacy of systemic antibiotics received within 3 hours or as early as possible after wounding.	Provide appropriate intravenous antimicrobials per CDC Guidelines after wounding for serious open trauma. No significant differences between groups for Type I or II fracture wounds. Type III fracture wounds were 5.33 times more likely to become infected with systemic ciprofloxacin than if they received cefamandole and gentamicin

Passaretti CL, Otter JA, Reich NG, Myers J, Sheperd J, Ross T, Carroll KC, Lipsett P, Perl TM. An evaluation of environmental decontamination with hydrogen peroxide vapor for reducing the risk of patient acquisition of multidrug-resistant organisms. Clin Infect Dis 2013; 56: 27-35. PMID: 23042972	6 high-risk units in a 994-bed tertiary care hospital.	30-month prospective cohort intervention. Hydrogen peroxide vapor was used on 3 units to decontaminate rooms of patients known to be infected or colonized with multi-drug resistant microorganisms (MDROs), following discharge. Monthly environmental samples of MDROs were collected for pre and post-intervention. Control rooms were disinfected using standard methods.	Prior room occupant was infected with an MDRO in 22%. Patients admitted to rooms decontaminated using HPV were 64% less likely to acquire any MDRO ($P < 0.001$) and 80% less likely to acquire vancomycin resistant Enterococci ($P < 0.001$.) The percent of rooms contaminated with MDROs was reduced on the HPV units, but not on non-HPV units, P= 0.03.
Perl TM, Cullen JJ, Wenzel RP, Zimmerman MB, Pfaller MA, Sheppard D, Twombley J, French PP, Herwaldt LA; Mupirocin And The Risk Of Staphylococcus Aureus Study Team. Intranasal mupirocin to prevent postoperative Staphylococcus aureus infections. N Engl J Med. 2002 Jun 13;346(24):1871-7. PMID: 12063371	Of the 3864 intent-to-treat general, cardio-thoracic, neurologic or gynecologic or surgery patients completing the study 891 (23.1%) had S. aureus in their anterior nares. Of these, 444 received mupirocin and 447 received placebo.	Double blind, RCT examined whether there was any difference in SSI incidence following prophylactic nasal decontamination with mupirocin or with placebo for patients whose anterior nares carried S. aureus.	Overall, groups were homogeneous and similar in SSI outcomes (OR 0.97, 95% CI, 0.77 to 1.21). Among nasal carriers of S. aureus, 4.0% of those who received mupirocin had nosocomial S. aureus infections, as compared with 7.7 percent of those who received placebo (OR for SSI, 0.49; 95 % confidence interval, 0.25 to 0.92; P=0.02).
Phillips TJ, Machado F, Trout R, Porter J, Olin J, Falanga V, and The Venous Ulcer Study Group. Prognostic indicators of venous ulcers. J Am Acad Dermatol. 2000;43:627–630. PMID: 10564563	Standard of care: sustained graduated compression wrap changed weekly + oral placebo (82) or ifetroban (83)	Prospective RCT comparing % healed during 12 weeks of venous ulcers of mean 27 months duration and mean area > 15.9 cm^2 .	55% of both groups healed at 12 weeks with NS difference between groups. Lower baseline ulcer area and duration and at least 40% area reduction after 3 weeks predicted ulcer healing in 12 weeks.
Pittet D, Dharan S, Touveneau S, Sauvan V, Perneger TV. Bacterial contamination of the hands of hospital staff during routine patient care. Arch Intern Med 1999;159:821–6. PMID: 10219927	417 episodes of hospital patient care.	POS with each episode beginning with hand washing and ending as healthcare worker proceeded to clean hands after care, when bacterial culture of 5 finger tips of dominant hand was taken and colony forming units (CFU) were counted.	Bacterial contamination rose (mean 16 CFU/minute) linearly with patient care time on ungloved hands (95% C.I. 11-21 CFU/ minute). “Patient care activities independently ($P<.05$ for all) associated with higher contamination levels were direct patient contact, respiratory care, handling of body fluid secretions, and rupture in the sequence of patient care.” Contamination levels were higher in medical rehabilitation ward (49 CFUs;

			P=.03) Simple hand washing before patient care, without hand antisepsis, was associated with higher colony counts (52 CFUs; P=.03)
Prompers L, Schaper N, Apelqvist J, Edmonds M, Jude E, Mauricio D, Uccioli L, Urbancic V, Bakker K, Holstein P, Jirkovska A, Piaggesi A, Ragnarson-Tennvall G, Reike H, Spraul M, Van Acker K, Van Baal J, Van Merode F, Ferreira I, Huijberts M. Prediction of outcome in individuals with diabetic foot ulcers: focus on the differences between individuals with and without peripheral artery disease. The EURODIALE Study. Diabetologia 2008; 51:747-55 PMID: 18297261	1,088 patients with a diabetic foot ulcer in Europe	Prospective Cohort study analyzing baseline predictors of non-healing of the DFU	After 1 year of follow-up, 23% of the patients had not healed. Independent baseline predictors of non-healing in the whole study population were older age, male sex, heart failure, the inability to stand or walk without help, end-stage renal disease, larger ulcer size, peripheral neuropathy and PAD. When analyses were performed according to PAD status, infection emerged as a specific predictor of non-healing in PAD patients only.
Ramundo J, Gray M. Enzymatic wound debridement. J Wound Ostomy Continence Nurs. 2008 May-Jun;35(3):273-80. PMID: 18496083	SR of 9 RCTs on over 320 patients with leg or pressure ulcers or partial-thickness burns over up to 25% body surface area.	5 RCTs compared time to remove necrotic tissue from all 3 types of wounds for collagenase ointment vs. placebo ointment. A CO study compared enzyme to surgical debridement on burns.1RCT reported faster burn healing using collagenase debridement compared to topical silver sulfadiazine1 %cream—not clearly an enzyme effect.	Collagenase ointment removed necrotic tissue from leg ulcers or PU or partial-thickness burns faster than petrolatum ointment. Debridement was faster with urea-papain enzyme formulation than collagenase, with similar healing outcomes. Combined with surgical debridement collagenase may reduce needs for surgical excision in pediatric partial-thickness burns
Ratliff C, Rodeheaver G. Correlation of semiquantitative swab cultures to quantitative swab cultures from chronic wounds. *Wounds* 2002;14:329–33. No PMID available	Cohort of 124 outpatients (74 males) with not grossly infected chronic > month duration: VU (27), PU (44), neuropathic or diabetic (29) or lower extremity arterial ulcers or other wounds (16) at a US university-based wound clinic	Prospective cohort study comparing quantitative to semi-quantitative alginate swabs taken from cleansed wound surface then plated serial dilutions increasing in quadrants I, II, III, IV successively, cultured aerobically then visually inspected at 24 h.	Semi- quantitative swab Quadrants III and IV predicted quantitative swab results with sensitivity 79%, specificity 90%, + predictive value 86%, - predictive value 85%, + likelihood ratio 8.04 and – likelihood ratio 0.23 respectively.
Redelings MD, Lee NE, Sorvillo F.	114,380 persons	Descriptive study with matched	PU was reported as cause of

Pressure ulcers: more lethal than we thought? Adv Skin Wound Care. 2005;18(7):367-72. PMID: 16160463	with PU reported as cause of death in US national multiple cause coded database 1990-2001.	odds ratio comparisons of PU-associated deaths with deaths due to other conditions	death in 3.79 per 100,000 of the population and was associated with fatal septicemia in 37.9% of PU associated deaths. Mortality rates in blacks were higher than other racial/ethnic groups.
Rennert R, Golinko M, Yan A, Flattau A, Tomic-Canic M, Brem, H. Developing and Evaluation Outcomes of an Evidence-based Protocol for the Treatment of Osteomyelitis in Stage IV Pressure Ulcers. Ostomy Wound Management. 2009;55(3):42-53. PMID: 19359709	Retrospective chart review of 177 hospitalized patients with at least 1 Stage IV PU. Review of patients treated during years 2004-2007 at an inpatient/outpatient wound care center.	LR of more than 300 articles on osteomyelitis associated with a PU. A separate retrospective study of 177 patients using a wound electronic record review was used to develop an evidence-based protocol for PU osteomyelitis and to evaluate outcomes including: consider all stage IV PU suspect, clinical & lab assess for local or systemic signs of infection on initial presentation, MRI/bone scan radiographic, surgical debride all nonviable or scarred/infected tissue & bone; culture directed systemic antibiotic; reconstruct after resolution of infection.	33% of patients with PU were diagnosed with osteomyelitis; 41 of the 50 patients underwent 87 bone debridements, 8 patients developed complications of osteomyelitis treatment, such as C-Difficile infection, post-op hypotension/ anemia/ bleeding, below knee amputation. Conclusions; Stage IV PU associated with increased risk of osteomyelitis, education of patients/ families/ clinicians is critical to minimizing morbidity & mortality.
Ridderstolpe, L, Gill H, Granfeldt, H, Ahlfeldt H, Rutberg H Superficial and deep sternal wound complications: Incidence, risk factors, and mortality. Eur J of CardThor Surg 2001; 20; 1168-75. PMID: 11717023	N=3008 cardiac surgery patients	Retrospective observational study of cardiac surgery using logistic regression techniques. Investigated RF for SSI.	Smokers developed statistically significantly more sternal SSIs (OR 1.39, 95% CI 1.05 to 1.86) and deep sternal SSIs (OR 2.41, 95% CI 1.42 to 4.10) than non-smokers and more than peripheral vascular disease. Smoking was also an independent risk factor for development of deep SSI (OR 2.11, 95% CI 1.09 to 4.09)
Ridgeway S, Wilson J, Charlet A, Kafatos G, Pearson A, Coello R. Infection of the surgical site after arthroplasty of the hip. J Bone Joint Surg Br. 2005 Jun;87(6):844-50. PMID: 15911671	5769 patients undergoing hemiarthroplasty and 16291 total hip replacement patients in 102 UK hospitals	POS of incidence of SSI for each type of surgery and risk factors associated with SSI.	SSI incidence was 2.23% tor total hip replacements (3.68% for 2550 revisions) and 4.97 for hemiarthroplasty (7.6% for 198 revisions). Female gender, American Society of Anesthesiologists (ASA) score, body mass index, trauma, duration of operation and pre-operative stay were associated with the risk of SSI ($p < 0.05$). For hemiarthroplasty, the ASA score and age were significant factors.

Riederer S, Inderbitz R. Does a shower put postoperative healing at risk? *Chirug* 1997; 68: 715–17. PMID: 9340238	N=121post surgery for inguinal hernia	Quasi-RCT-alternate assignment of 49 patients who showered on day 1; 52 patients kept wounds dry for 14 days	No wound infections in either group. There was a feeling of well-being in the patients who showered
Ristić S, Miljković B, Vezmar S, Stanojević D. Are local clinical guidelines useful in promoting rational use of antibiotic prophylaxis in caesarean delivery? Pharm World Sci. 2010;32(2):139-45. PMID: 20039207	Patients undergoing caesarean section prior to Jan-Jun 2005 (261) or after Jan-Jun 2006 (281) implementing evidence-based guidelines in Belgrade, Serbia university hospitals	HCT measuring drug utilization cost presented as the number of Drug Delivery Days /100 bed days/Euro, the average duration of hospital stay and the number of wound infections. Pre- versus post-guideline implementation incidence of SSI were compared.	Use of ceftriaxone, amikacin and metronidazole decreased (57.47% vs. 11.74%;9.19% vs. 4.27%; 61.69% vs. 46.26%, respectively). Use of "older" antibiotics such as gentamicin, cefuroxime, cefazolin, ampicillin increased (14.56% vs. 29.18%; 9.2% vs. 17.44%; 9.58% vs. 45.2% and 0% vs. 3.9%, Cost of prophylactic antibiotics reduced 47% without change in % of SSI or length of hospital stay.
Rodeheaver GT, Ratliff CR. Wound cleansing, wound irrigation, wound disinfection. In: *Chronic Wound Care: A clinical Source Book for Healthcare Professionals.* 4th ed. Malvern PA: HMP Communications; 2007 pp 331-342. No PMID available.	Literature review of wound cleansing, disinfection and wound irrigation	Literature review with 1 CCT on pressure ulcers (PU). Dickman used a dental irrigation device set for 6 psi to irrigate PU on 8 patients twice / day for 2 weeks. 8 other patients with similar PU received standard care. Measure was % decrease in PU area	No significant difference in decrease in PU area. Study was underpowered to show significant difference with 51% reduction PU area of irrigated PU and 13% area reduction of controls. A larger study may show this clinically important difference statistically significant.
Rodeheaver GT, Smith SL, Thacker JG, Edgerton MT, Edlich RF. Mechanical cleansing of contaminated wounds with a surfactant. Am J Surg 1975;129:241–5. PMID: 1119685	In vivo study of rats contaminated surgical incisions cleansed with saline with or without Pluronic F-68 surfactant	Surgical incisions with standardized amounts of foreign matter (kaolin) added, inoculated with pathogens then cleansed at 4-15 psi force.	Adding Pluronic F-68 surfactant reduced the amount of force needed to remove foreign matter from the wound in order to reduce infection rates observed after the procedure.
Rosenfeldt FL, Negri J, Holdaway D, Davis BB, Mack J, Grigg MJ, Miles C, Esmore DS. Occlusive wrap dressing reduces infection rate in saphenous vein harvest site. Ann Thoracic Surg. 2003; 75(1):101-5; discussion 105 PMID: 12537200	152 consecutive patients were randomly assigned to receive either standard dressings or a simple moisture retentive wrap dressing.	Prospective RCT, with SSI data collected in the hospital and then 4 to 6 weeks postoperatively.	The infection rate in the moisture retentive wrap group was 14% compared to 35% for the standard group (P =0.006). Multivariate analysis showed that moisture retentive wrap dressing was the only significant predictor of reduced odds of infection (odds ratio, 0.19; p=0.001), reducing the rate of infection by 50%.
Rutala WA, Weber DJ. Centers for Disease Control and Prevention	Practice guideline	Addresses sterilization and disinfection of clinical and	Despite being almost 10 years old, this guideline remains one of

(CDC), Healthcare Infection Control Practices Advisory Committee. Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008. Last accessed Oct 20, 2013 at: http://www.cdc.gov/hicpac/pdf/guidelines/Disinfection_Nov_2008.pdf No PMID available		surgical staff hands, surfaces and devices.	the most important documents used to inform sterilization and disinfection practices.
Sanabria A, Dominguez LC, Valdivieso E, Gomez G. Antibiotic prophylaxis for patients undergoing elective laparoscopic cholecystectomy. Cochrane Database Syst Rev. 2010 Dec 8;(12):CD005265. PMID: 21154360	1664 participants from 11 different randomised clinical trials.	Review of 11 different randomised clinical trials comparing antibiotic prophylaxis to placebo or no prophylaxis in patients undergoing elective laparoscopic cholecystectomy.	Authors found no statistically significant differences between antibiotic prophylaxis and no prophylaxis in the proportion of surgical site infections.
Sato J, Goto H, Harahashi A, Murata T, Hata H, Yamazaki Y, Satoh A, Notani K, Kitagawa Y. Oral Health Care reduces the risk of postoperative surgical site infection in in patients with oral squamous cell carcinoma. Support Care Cancer, 2011; 19 (3): 409-16. PMID: 20232086	66 consecutive in-patients undergoing surgery to remove oral squamous cell carcinoma divided into groups that did or did not receive oral health care.	Prospective CO study using univariate statistical analysis to identify predictors of SSI following removal of the carcinoma.	3 (9%) of the 33 in the oral care group or 11 (33%) of the 33 control subjects developed a SSI ($p = 0.025$) .Other significant predictors of SSI were cancer stage, tracheotomy wearing dentures, tissue transplantation, neck dissection preoperative radiation, blood transfusion, operative time and blood loss.
Schneider SM, Veyres P, Pivot X, Soummer AM, Jambou P, Filippi J, van Obberghen E, Hebuterne X. Malnutrition is an independent factor associated with nosocomial infections. Br J Nutr. 2004;92:105–111. PMID: 15230993	29-31 May, 2001 a prevalence survey of nosocomial infections was conducted on 1637 patients in a French University hospital	Actual and usual body weights were recorded in all in-patients. Serum albumin levels were measured on all blood samples taken during the week before the study. Nutritional status was evaluated by using the nutritional risk index (NRI) on 630 patients. Albumin values were obtained in 1084 patients. Complete weight was recorded in 911.	Malnutrition was an independent factor associated with SSI and other nosocomial infections. 427 (67.8 %) were malnourished. Nosocomial infection prevalence was 8.7 %: 4.4 % in non-malnourished patients, 7.6 % in moderately malnourished patients or 14.6 % in those severely malnourished. In univariate analysis, odds ratios for nosocomial infection were 1.46 (95 % CI 1.2, 2.1) in moderately malnourished patients and 4.98 (95 % CI 4.6, 6.4) in severely malnourished patients. In multivariate analysis, age, immunodeficiency and NRI class influenced nosocomial infection risk. Vascular or urinary

			catheters, or surgical intervention, were extrinsic factors associated with nosocomial infection (odds ratios ranging from 2.0 (95 % CI 1.8, 2.6) for vascular catheters to 10.8 (95 % CI 8.8, 12.6) for association of the three factors.
Segers P, de Jong AP, Spanjaard L, Ubbink DT, de Mol BA. Randomized clinical trial comparing two options for postoperative incisional care to prevent post-sternotomy surgical site infections. Wound Repair Regen. 2007;15(2):192-6. PMID: 17352750	Patients with sternotomy wounds dressed with OPSITE covering a dry gauze pad left on site 48 h (615) or absorbent water- and air-permeable dressing changed daily (570)	Prospective RCT comparing SSI % in the 2 groups. Mar 2003-Jan 2005 Other patient-centered outcomes like pain were not measured. Wounds were not redressed if no fluid @ 72 h	No difference in SSI. Significant risk factors for sternotomy SSI were: COPD, Diabetes, Left ventricle dysfunction, increased surgical procedure time and EUROScore (http://www.euroscore.org/calc.html) accessed Mar 25, 2013
Segers P, Speekenbrink RG, Ubbink DT, van Ogtrop ML, de Mol BA. Prevention of nosocomial infection in cardiac surgery by decontamination of the nasopharynx and oropharynx with chlorhexidine gluconate: a randomized controlled trial. JAMA. 2006;22;296(20):2460-6. PMID: 17119142	Onze Lieve Vrouwe Gasthuis, Amsterdam, the Netherlands, between August 1, 2003, and September 1, 2005. Of 991 patients older than 18 years undergoing elective cardiothoracic surgery during the study interval, 954 were eligible for analysis.	Double blind, placebo controlled RCT with patients given an oropharyngeal rinse and a nasal application of ointment containing either chlorhexidine gluconate or placebo. Clinical outcomes were incidence of nosocomial infection, rate of Staphylococcus aureus nasal carriage and duration of hospital stay.	Incidence of nosocomial infections in the chlorhexidine gluconate group and placebo group was 19.8% and 26.2%, respectively (absolute risk reduction [ARR] 6.4%; P = .002). Lower respiratory tract infections and deep SSI were less common in the chlorhexidine gluconate group (ARR, 6.5%; 95% P = .002; and 3.2%; P = .002, respectively). To prevent 1 nosocomial infection, 16 patients needed to be treated with chlorhexidine gluconate. A reduction of 57.5% in S aureus nasal carriage was found in the chlorhexidine gluconate group compared with 18.1% in the placebo group (P<.001). Total hospital stay for patients treated with chlorhexidine gluconate was 9.5 days compared with 10.3 days in the placebo group (ARR, 0.8 days; 95% CI, 0.24-1.88; P = .04).

Seguin P, Laviolle B, Chanavaz C, Donnio PY, Gautier-Lerestif AL, Campion JP, Mallédant Y. Factors associated with multidrug-resistant bacteria in secondary peritonitis: impact on antibiotic therapy. Clin Microbiol Infect. 2006;12(10):980-5. PMID: 16961634	93 consecutive patients with secondary peritonitis during an 11-month period in 2005 in a French hospital	POS study monitoring peritonitis and multidrug resistant bacterial causes and risk factors for predicting multidrug-resistant (MDR)bacteria as a cause of post-operative peritonitis	5-days shorter pre-operative and total length of hospital stay had the best specificity (58%) and sensitivity (93%) for predicting MDR bacteria presence. In multivariate analysis, only a composite variable of pre-operative hospital length of stay and previous antimicrobial therapy was a significant independent risk-factor for infection with MDR bacteria.
Sheehan P, Jones P, Caselli A, Giurini J, Veves A. Percent change in wound area of diabetic foot ulcers over a 4-week period is a robust predictor of complete healing in a 12-week prospective trial. Diabetes Care. 2003;26(6):1879–1882. PMID: 12766127	203 DFU patients half treated with collagen / oxidized regenerated cellulose; half with saline gauze.	RCT, assessing area and 12 week % healed using the cut-off parameter for predicting 12-week healing as the median % area reduction from baseline at 4 weeks, which was 53%.	58% of those with a DFU area reduction > 53% at 4-weeks healed at 12-weeks compared to 9% of those with % area reduction less than the median of 53% ($p < 0.01$). % change in DFU area at 4 weeks in those who healed was a robust predictor of DFU healing.
Sibbald RG, Krasner DL, Lutz J. SCALE: Skin Changes at Life's End: Final Consensus Statement: October 1, 2009. Adv Skin Wound Care. 2010 May;23(5):225-36. PMID: 20407297	Literature review (LR)	LR and consensus statement describing differential diagnosis of end of life skin changes, malignant lesions and wound infections.	It is vital to diagnose end-of-life skin changes correctly to plan appropriate care and communicate appropriately to all wound team members, setting staff and to patients and their loved ones as life ends.
Siddique K, Mirza S, Housden P. Effectiveness of hydrocolloid dressing in postoperative hip and knee surgery: literature review and our experience. Journal of Perioperative Practice, 2011; 21(8): 275-278. PMID: 22029208	Patients with closed incisions following knee and hip surgery in the Surgical Department of a United Kingdom University Hospital	LR summarized evidence regarding hydrocolloid dressing use for the post-operative knee and hip surgery and a case series of patients reporting peri-operative SSI and blister formation of patients undergoing lower limb orthopedic surgery.	Lower limb orthopedic surgery sites dressed post-operatively with a hydrocolloid dressing (Duoderm) had fewer superficial SSI and a lower incidence of post-operative blister formation than those dressed with traditional dressings
Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. JAMA. 2005 Jan 12;293(2):217-28. PMID: 15644549	LR of DFU studies from 1980 to 2005	Mainly RCT and Cohort evidence supports using Semmes-Weinstein monofilament to assess peripheral neuropathy in order to prevent development of DFU	DFU are likely to develop wound infections and other complications, so prevention, beginning with screening for loss of protective sensation, is especially important.
Smith E, Ryall N. Residual limb osteomyelitis: a case series from a national prosthetic centre.	7 transfemoral and 3 transtibial amputees were evaluated for	Delayed amputation site healing or residual limb pain prompted radiological, hematological and	Average time from amputation to diagnosis was 187 days. One patient died before treatment

Disabil Rehabil. 2009;31(21):1785-9. PMID: 19479562	osteomyelitis at their amputation sites	microbiological investigations.	commenced. Earlier diagnosis reduced hospital stay and rehabilitation time and costs.
Sopata M, Luczak J, Ciupinska M. Effect of bacteriological status on pressure ulcer healing in patients with advanced cancer. J Wound Care. 2002;11(3):107-10. PMID: 11933727	Lyofoam® (17 advanced cancer patients with Stage II or III pressure ulcers) Aquagel® Hydrogel Dressing (17 similar patients)	Prospective RCT measuring effects of the two dressing groups on Infection, healing and treatment time as well as qualitative, quantitative microbiology. Study was under-powered for significant results.	There were no infections observed and no significant differences in any of the outcomes studied, qualitative or quantitative numbers or types of the 92 species of bacteria Identified
Sorensen LT. Wound healing and infection in surgery: the clinical impact of smoking and smoking cessation: a systematic review and meta-analysis. Arch Surg. 2012;147(4):373-83 . PMID: 22508785	Studies analyzed: 140; Patients evaluated: 479,150	SR & MA comparing the incidence of surgical wound complications in smokers to that of individuals abstaining from cigarettes for at least 4 weeks prior to surgery , defined for the purposes of this study as ex-smokers or non-smokers	There was a higher incidence of surgical wound complications in smokers than nonsmokers, including higher incidence of necrosis, wound dehiscence, and SSI. Smoking abstinence for at least 4 weeks significantly reduced SSI and improved wound healing.
Spear, M. Wet-to-dry Dressings: evaluating the evidence. Plastic Surgical Nursing. 2008; 28(2): 92-95. PMID: 18562900	Use of wet-to-dry dressings for wound care surprisingly remains common clinical practice though not a good standard of care.	Literature review summarizing evidence using wet-dry gauze compared to moisture retentive film, hydrocolloid, foam or hydrogel dressings with a brief history of wound care	Wound care with moisture retentive dressings preserves normal wound temperatures and moisture, reducing wound pain, infection rates, healing time and airborne dispersal of organisms at dressing removal.
Stannard JP, Volgas DA, McGwin G 3rd, Stewart RL, Obremskey W, Moore T, Anglen JO. Incisional negative pressure wound therapy after high-risk lower extremity fractures. J Orthop Trauma. 2012 Jan;26(1):37-42. PMID: 21804414	NPWT (141 fractures subjects with blunt trauma, high risk lower extremity fractures managed surgically in 4 Level I trauma centers) Usual care (122 fractures in similar subjects)	Prospective RCT of high risk lower extremity fractures managed with surgical incision and closure followed by NPWT compared with standard gauze dressings. Analysis comparing the incidence of infections is based on 249 subjects completing the study, not the 263 intent-to-treat subjects.	23 infections were reported in the Usual Care group and 14 in the NPWT group (p=0.049). Relative risk of infection 1.9 times as high in control compared to NPWT group.
Steed D, Donohue D, Webster MW, Lindsay L. Effect of extensive debridement and rhPDGF-BB (Becaplermin) on the healing of diabetic foot ulcers. J Am Coll Surg 1996; 183: 61–64. PMID: 8673309	118 patients with a diabetic foot ulcer (DFU) from a RCT of topical rhPDGF vs. placebo (vehicle) treated to healing or 20 weeks. Listed as high level support for wound debridement in some guidelines,	Post-hoc analysis of a study that did not randomly assign any debridement variable. All patients had aggressive sharp debridement of DFU pre-randomization and repeat debridement of callus and necrotic tissue as needed. Effect of debridement was evaluated by reviewing records of office	48% of patients treated with rhPDGF healed or 25 % who received placebo (p = 0.01). Mean % of office visits where debridement was performed was comparable for the two treatment groups: 46.8 % rhPDGF and 48.0 % placebo. In general, a lower rate of healing was observed in centers that

	but is a post-hoc analysis of PDGF effects not a RCT of debriding efficacy.	visits where debridement was performed..	performed less frequent debridement independent of the treatment group. Case series level of evidence, depending on how selected,
Stengel D, Bauwens K, Sehoul J, Ekkernkamp A, Porzsolt F.. Systematic review and meta-analysis of antibiotic therapy for bone and joint infections. Lancet Infect Dis 2001; 1: 175–88. PMID: 11871494	22 RCT of antibiotic therapy on 927 patients with bone and joint infections. Does not support muscle flap and antibiotics for debrided confirmed osteomyelitis.	Meta-analysis included RCT or quasi-random CT studying effects of systemic antibiotic therapy or local antimicrobials on bone or joint infections: osteomyelitis and septic arthritis. No infection after 1 year of follow-up was the primary outcome.	Trend to longer lasting efficacy with rifampicin-ciprofloxacin combination versus ciprofloxacin monotherapy. NS differences between fluoroquinolones (oral) vs. intravenous beta-lactam drugs. ITT analysis suggested therapeutic advantage of systemic over local therapy, this trend diminished in the per-protocol analysis.
Stiefel U, Cadnum JL, Eckstein BC, Guerrero DM, Tima MA, Donskey CJ.. Contamination of hands with methicillin-resistant Staphylococcus aureus after contact with environmental surfaces and after contact with the skin of colonized patients. Infect Control Hosp Epidemiol 2011; 32:185–7. PMID: 21460476	40 documented carriers of MRSA.	Hand contamination was evaluated after contact with examined skin sites and commonly touched environmental surfaces in patient rooms. During the study period, sodium hypochlorite was used for disinfection of rooms after discharge of MRSA patients, but “high-touch” surfaces were not cleaned on daily basis unless they were visibly soiled.	High levels of contamination found support importance of contaminated environmental surfaces as a source of healthcare workers hand contamination with MRSA.
Storm-Versloot MN, Vos CG, Ubbink DT, Vermeulen H. Topical silver for preventing wound infection. Cochrane Database Syst Rev. 2010;3:CD006478. PMID: 20238345	SR.	Cochrane Review SR/MA of RCTs using topical silver for preventing wound infection.	Insufficient evidence that any form of topical silver prevents wound infection though there are reported effects of improvement on secondary wound outcomes.
Stotts NA, Barbour S, Griggs K, Bouvier B, Buhlman L, Wipke-Tevis D, Williams DF. Sterile versus clean technique in postoperative wound care of patients with open surgical wounds: a pilot study. Journal of Wound, Ostomy and Continence Nursing 1997; 24: 10–18. PMID: 9204846	n=30 compared 13 dressing changes done with clean technique versus 17 with aseptic dressing changes on postop elective GI wounds healing by secondary intention.	RCT. Healing was defined as wound volume reduction. The follow-up was only 4 days. This was too short for consistent wound volume reduction changes larger than the error of measurement and the pilot study was intentionally underpowered for statistical significance.	The trial found no statistically significant difference between the two groups (weighted mean difference −3.80 cm^3, 95% CI −9.96 to 2.36).

Strobel K, Stumpe KD. PET/CT in Musculoskeletal Infection. Seminars in Musculoskeletal Radiology. 2007;11(4);353-364 PMID: 18324599	76 articles inclusive of multifaceted musculoskeletal infections which may or may not directly include PU etiology were referenced by the authors	EO on imaging techniques used to identify, diagnose or screen for musculo-skeletal infection. The authors have co-authored several literature reviews on this subject.	Computerized tomography (CT) and Magnetic resonance imaging, used to evaluate musculoskeletal infection may be nonspecific for active infection vs. post-op repair & are limited by metallic implant. PET (Fluorodeoxy-glucose-positron emission) tomography or PET/CT are sensitive & specific imaging techniques for early diagnosis of acute or chronic osteomyelitis. Prospective studies are needed to compare advantages and cost effectiveness.
Suriadi, Sanada H, Sugama J, Kitagawa A, Thigpen B, Kinosita S, Murayama S. Risk factors in the development of pressure ulcers in an intensive care unit in Pontianak, Indonesia. Int Wound J. 2007;4(3):208-15. PMID: 17924877	105 adult patients in an ICU of an Indonesia hospital. 35 developed a PU	Prospective cohort study with 35 patients of 105 developing a PU. Multivariate analysis identified significant risk factors for developing a PU	Final multivariate analysis identified interface pressure between skin and surface, skin moisture, patient smoking and body temperature elevation as significant risk factors for developing a PU
Tanner J, Norrie P, Melen K. Preoperative hair removal to reduce surgical site infection. Cochrane Database Syst Rev. 2011; 9;(11):CD004122. PMID: 22071812	14 RCTs, with 17 comparisons. 3 RCTs: No hair removal vs. shaving, clipping or depilatory (B: 3 RCTs 1343) shaving vs. clipping. (C:7RCTs 1213) shaving vs. depilatory (D: 1RCT low n) day of surgery vs. day before	Searched Cochrane, OVID, MEDLINE, EMBASE, CINAHL databases for evidence for preoperative hair removal in the prevention of SSI. RCTs were included where adult patients were undergoing any surgery in a designated OR. Methods of hair removal included shaving using razors, clipping or depilatory cream.	Significantly more SSIs were associated with shaving than with clipping (RR 2.09, 95% CI 1.15 to 3.80). No statistically significant difference occurred in SSI incidence between shaving using razors and no hair removal or between shaving and hair removal with depilatory cream or related to hair removal the day of or day before surgery.
Thai TP, Keast DH, Campbell KE, Woodbury MG, Houghton PE. Effect of ultraviolet light C on bacterial colonization in chronic wounds. Ostomy Wound Manage. 2005;51(10):32-45. PMID: 16230765	Patients receiving treatment in several in-and outpatient facilities and nursing homes. All had chronic ulcers exhibiting at least two signs of infection and critically colonized with bacteria (n = 22).	A prospective, one-group, pre-post treatment study compared semi-quantitative wound bed swabs taken immediately before and after each patient received a single 180-second treatment with an ultraviolet (UV) light C lamp (wavelength = 254 nm) placed 1 inch from the wound bed. Significance was set at P <0.05.	One dose of UV C light reduced wound surface bacteria (P <0.0001). The greatest reduction in semi-quantitative swab scores following ultraviolet light C treatment were observed for wounds harboring *Pseudomonas aeruginosa* or colonized with one species of bacteria. Reduced wound surface bacteria also were seen in 12 ulcers colonized by methicillin-resistant *S. aureus*.
Thomas DR, Goode PS, LaMaster	34 elderly (mean age	1.5 million skin tears occur	Subjects were comparable on

K, Tennyson T, Parnell LK.A comparison of an opaque foam dressing versus a transparent film dressing in the management of skin tears in institutionalized subjects. Ostomy Wound Manage. 1999 Jun;45(6):22-4, 27-8. PMID: 10655859	85) institutionalized patients with modified Payne-Martin Category II (25%-75% epidermal loss) or Category III (100% epidermal loss) skin tear.	annually in institutionalized adults. RCT comparing healing of fresh (< 48 hour pre-enrollment) skin tears during 21 days dressed with a foam dressing (n=17) or a transparent film dressing (n = 17). Subjects were evaluated weekly.	enrollment on diabetes, age and other risk factors for delayed healing. Complete healing occurred in 94% (16/17) of foam-dressed subjects or 65% (11/17) of film-dressed subjects (P <0.05). Only dressing and age predicted healing.
Thomson, P.D. and Smith, D.J., Jr., What is infection? *The American Journal of Surgery,* 167 No. 1A (Suppl) 7S, 1994. PMID: 8109689	Literature review defining infection and predictors of infection. More than 1 A-level study is summarized supporting each finding stated at right.	LR with 2 CO studies using quantitative microbiology to diagnose or predict infection. Many chronic or acute wounds containing $>10^5$ CFU/g of tissue heal without infection. Biopsies are linearly related to clean semi-quantitative swabs in determining wound CFU.	Quantifying bacteria in a wound does not determine whether the wound is infected or not. Nor does it predict the risk of sepsis. Circulating cytokines do not differentiate injury from sepsis. "At this time there is no single, perfect predictor of wound infection or systemic sepsis."
Tijerina J, Velasco-Rodríguez R, Vásquez C, Melnikov V, Rodriguez S. Effectiveness of a systemic antibiotic followed by topical ionized solution as surgical site infection prophylaxis. J Int Med Res. 2010;38(4):1287-93. PMID: 20926001	529 subjects monitored for 30 days after topical surgical site treatment with: ionized solution or saline solution	RCT, double-blind monitoring SSI in 30 days as primary outcome after treating the surgical site topically post operatively with either ionized solution or saline solution .	There was a slight trend for topical ionized solution prophylaxis to reduce SSI frequency in patients undergoing appendectomy for non-perforated appendicitis, but the result was not statistically significant.
Towfigh S, Cheadle WG, Lowry SF, Malangoni MA, Wilson SE. Significant reduction in incidence of wound contamination by skin flora through use of microbial sealant. Arch Surg. 2008;143(9):885-91; discussion 891. PMID: 18794427	Group 1 = skin prep with 10% povidone-iodine (standard) Group 2 = skin prep with cyanoacrylate-based liquid microbial sealant	RCT of 177 adult patients undergoing open inguinal hernia repair treated preoperatively with either povidone iodine or cyanoacrylate tissue sealant. Post operative wound burden was monitored.	Patients treated with sealant were more likely to have no bacterial in the wound than control patients (47% vs. 31%; p = .04). Povidone iodine (p = 0.001) or sealant (p=0.02) each significantly reduced wound contamination
Towfigh S, Clarke T, Yacoub W, Poolt AH, MasonRJ, Kathouda N, Berne TV. Significant reduction of wound infections with daily probing of contaminated wounds: a prospective randomized clinical trial. *Arch Surg*. 2011;146(4):448–452. PMID: 21502454	Open appendectomy incisions closed with staples 2 cm apart with Standard Of Care (SOC) povidone iodine (38) or SOC + wound probe (38) with sterile cotton-tipped applicator	RCT Wound probe only once daily as long as incision drainage continued. Quantitative swabs taken post op days 1,3,5, Primary outcome: SSI = ASEPSIS score >20 or purulent drainage met CDC definition of nosocomial infection in which case wounds were reopened to heal by 2nd intention	WP subjects had shorter hospital stay (p= 0.049) and lower infection likelihood of SSI (3% for wound probe group vs. 19% for SOC group; p= 0.03), achieving ASEPSIS score = 0 earlier with the wound probe group (0- days) than SOC (0-20 days)
Toy LW, Macera L. Evidence-based review of silver dressing use on chronic wounds. J Am	Systematic review (SR)	SR and MA of RCTs applying silver dressings topically to chronic wounds	Insufficient evidence of healing or time to heal efficacy of silver dressings, but evidence suggests

Acad Nurse Pract. 2011;23(4):183-192.PMID: 21489012			improvement in secondary outcomes such as reduced patient-reported wound pain.
Valente JH, Forti RJ, Freundlich LF, Zandieh SO, Crain EF. Wound irrigation in children: saline solution or tap water?. *Annals of Emergency Medicine. 2*003;41:609–16.PMID: 12712026	Children with lacerations cleansed with normal saline (251) or tap water (239)	Quasi-RCT, assigned by alternation. Wound was cleansed with 30-60 ml syringe and 18 gauge angiocatheter with splash guard or under tap water for 10 seconds.	Flow rates were measured before study. Seven wounds developed an infection in each group—no significant difference.
van Hilten JA, van de Watering LM, van Bockel JH, van de Velde CJ, Kievit J, Brand R, van den Hout WB, Geelkerken RH, Roumen RM, Wesselink RM, Koopman-van Gemert AW, Koning J, Brand A. Effects of transfusion with red cells filtered to remove leucocytes: randomised controlled trial in patients undergoing major surgery. BMJ. 2004;29;328(7451):1281. PMID: 15142885	Half of 1051patients in 19 hospitals were randomly assigned to receive transfusions with leukocytes removed (filtered) or non-filtered (79 with ruptured aneurysm, 412 elective surgery for aneurysm, 560 undergoing GI surgery)	RCT- double blinded- to compare postop complications in patients undergoing major surgery who received non-filtered or filtered (leukocytes removed) RBC transfusions.	No significant difference was reported between the two groups in mortality, length of ICU stay, or incidence of SSI. The filtered group had 2.4 days shorter hospital stay (p=0.050) and 30% lower incidence of multi-organ failure (p=0.050).
van Kasteren ME, Manniën J, Ott A, Kullberg BJ, de Boer AS, Gyssens IC. Antibiotic prophylaxis and the risk of surgical site infections following total hip arthroplasty: timely administration is the most important factor. Clin Infect Dis. 2007;44(7):921.PMID: 17342642	1992 patients undergoing total hip arthroplasty in 11 hospitals participating in the Dutch intervention project on Surgical Prophylaxis and Surveillance.	Multivariate logistic regression analysis explored odds ratios for SSI . Significance criterion was set at 95% confidence level for odds ratios.	Highest odds of SSI were for prophylaxis after incision (P=.07), or if patient had an American Society of Anesthesiology score >2 (P=.09), and experienced a longer duration of surgery (>75th percentile (2.5; 95% CI, 1.1-5.8; P=.04). Prolonged prophylaxis after surgery and use of antibiotic-impregnated cement did not cause fewer SSIs in this study.
van Rijswijk, L. The Multi-center Leg Ulcer Study Group. Full thickness leg ulcers: patient demographics and predictors of healing. J Family Practice 1993;36(6): 625-32. PMID: 8505605	61patients with 72 full-thickness leg ulcers receiving standardized care plus one of 2 forms of DuoDERM brand hydrocolloid dressing	Retrospective analysis of ConvaTec registry of data on 72 full-thickness leg ulcers of venous, diabetic, arterial or mixed etiology. Those with full-thickness leg ulcers were more likely to be overweight or have restricted mobility (P<0.016).	54% healed in a mean of 56 days. Risk factors for non-healing were male gender (p< 0.02) or diabetes (p< 0.003). At least 30% area reduction after 2 weeks of treatment predicted healing outcome (P = 0.016) and time (p=0.004).Baseline odor (p=0.005) and age increasing over 60 years (p=0.017) predicted healing time.
van Rijswijk L, Polansky M.	48 patients (56 Stage	Retrospective analysis of	Patients with good baseline

Predictors of time to heal deep pressure ulcers. Ostomy Wound Manage. 1994, Oct; 40(8):40-2, 44, 46-8 passim. PMID: 7546099	III or IV PU) managed using standard care with autolytic debridement with a hydrocolloid dressing, cleansing and pressure redistribution.	ConvaTec PU study data registry for factors present at patient baseline and after 2 weeks of treatment predicting wound healing. At 2 weeks, nutrition, age and % reduction in area predicted (P < 0.02) healing during 12 weeks.	nutritional status healed in a median (mean) of 53(51) days. Those with poor nutritional status healed in 90 (73) days (p = 0.01). After 2 weeks' treatment, good nutritional status, age <60 years and >39% area reduction predicted healing time (p< 0.05).
Velmahos G, Vassiliu P, Demetriades D, Chan LS, Murray J, Salim A, Sava J, Katkhouda N, Berne TV. .. Wound management after colon injury : Open or closed? A prospective randomized trial. American Surgeon.2002 68(9): 795-801. PMID: 12356153	48 patients admitted to a level I academic trauma center after colon injury, randomized to have their skin primarily closed (24) or left open (24) to heal by second intention.	RCT comparing outcomes after open or closed surgery also compared prospectively to non-RCT contemporary patients from the same facility that surgeons chose to assign to open or closed management. Univariate and multivariate analyses to identified independent risk factors of wound infection, wound dehiscence, and necrotizing soft tissue infection, with significance criteria set at 95% confidence level. Because of the complexity of evaluating the real clinical significance of superficial wound infection larger studies on trauma patients are required. Significance was set at alpha error = 0.05.	SSI developed in 65% of Closed-RCT and 36 % of Open-RCT patients (P = 0.04). Wounds dehisced in 31 % and 14 % respectively (P = 0.18). No remarkable differences were noted in length of hospital stay or any other outcome. SSI developed in 29 % of CLOSED-nonRCT and 15 per cent of OPEN-nonRCT patients (P = 0.46). Independent risk factors for SSI were primary wound closure [odds ratio (OR) = 5.5], colectomy (OR = 3.4), and intra-abdominal infection (OR = 5.3). Significant independent risk factors for wound dehiscence and/or necrotizing soft tissue infection were SSI (OR = 20.9) and intra-abdominal infection (OR = 19.3). Primary wound closure increased SSI rate compared with leaving the wound open in operations for colon injuries. Primary wound closure is a risk factor for SSI and SSI is a risk factor for wound dehiscence or necrotizing soft tissue infection.
VA/DOD Clinical Practice Guidelines: Rehabilitation of lower limb amputation. Department of Veterans Affairs, Department of Defense 2007; 163 p	Clinical practice guideline	Addresses clinical practice for rehabilitating patients with an amputated lower limb	Includes SSI prevention and treatment measures and staged primary closure secondary healing
Viciano V, Castera JE, Medrano J, Aguiló J, Torro J, Botella MG, Toldrá N. Effect of hydrocolloid dressings on healing by second intention after excision of	Gauze (15 subjects with chronic pilonidal cysts surgically excised healing by 2nd	RCT monitoring SSI, healing and patient-reported pain for up to 168 days post-operatively, recurrence followed for 74 months.	There was no difference in recurrence or healing time (median heal time = 68 days (control) 65 days for the 2 HCD groups.1/3 of control group grew

pilonidal sinus. Eur J Surg. 2000;166(3):229-32. PMID: 10755338	intention) Varihesive (11 similar subjects) , Comfeel (12 similar subjects) Last 2 groups had hydrocolloid dressings (HCD)		pathogens compared to 1 of the 23 HCD subjects (P < 0.03). HCD dressed subjects reported less pain weeks 1-4 (p<0.05)
Vogel TR, Dombrovskiy VY, Carson JL, Haser PB, Lowry SF, Graham AM. Infectious complications after elective vascular surgical procedures. J Vasc Surg. 2010;51(1):122-9; discussion 129-30.PMID: 19954920	A total of 870,778 elective vascular surgical procedures were estimated and evaluated for post-operative infection.	Nationwide Inpatient Sample (2002-2006) was used to identify major vascular procedures by International Classification of Diseases, 9th clinical Modification (ICD-9-CM) codes. Infectious complications identified included pneumonia, urinary tract infections (UTI), postoperative sepsis, and surgical site infections (SSI). Case-mix-adjusted rates were calculated using a multivariate logistic regression model for infectious complication or death as an outcome and indirect standardization.	An overall postoperative infection rate of 3.70% was determined. Pneumonia was the most common infectious complication after open aortic surgery (6.63%). UTI was the most common after TEVAR (2.86%) and EVAR (1.31%). Infectious complications were greater in octogenarians (P < .0002), women (P < .0001), and blacks (P < .0001 vs. whites and Hispanics). Nosocomial infections after elective vascular surgery increased hospital length of stay (13.8 vs. 3.5 days; P < .001) and reported total hospital cost ($37,834 vs. $11,851; P <.001).
Voorhees E, Rosenthal D, Hirata RM, Weber CJ. Early postoperative showering. Mil Med 1982; 147: 967–8. PMID: 6817188	N=82 patients after surgery with or without drains.	Quasi-RCT- Group A showered on 2nd postop day. Group B no shower. Infection: Group A =2/39, Group B=4/43;	There was no statistically significant difference between showering and not showering to prevent SSI.
Vowden P, Apelqvist J, Moffat C. Wound complexity and healing. European Wound Management Association (EWMA), Position Document: Hard-To-Heal Wounds: A wholistic approach, London, UK: MEP Ltd., 2008, UK: Pp 2-9. No PMID available	LR	Evidence-based summary of wholistic actions to take to avoid healing delay or wound infection when managing hard-to-heal wounds.	The longer a wound is open the greater the risk of infection. Necrotic tissue is a risk for delayed wound healing and a locus for infection.
Vowden KR, Vowden P. The prevalence, management, equipment provision and outcome for patients with pressure ulceration identified in a wound care survey within one English health care district. J Tissue Viability. 2009;18(1):20-6. PMID: 19097794	Bradford UK audit data of pressure ulcer prevalence in 2008 in all settings	Epidemiologic audit of all reporting prevalence of each stage of pressure ulcer and pressure ulcer infections.	Prevalence was 0.74 per 1000 population 195 (53.7%) were grade 2 pressure ulcers; 80 grade 3; and 40 grade 4. Grade3 or 4 were larger of longer duration, with more slough and less granulation tissue and more likely to have powered pressure redistribution. 37.5% of grade 4

			ulcers were infected
Wall IB, Davies CE, Hill KE, Wilson MJ, Stephens P, Harding KG, Thomas DW. Potential role of anaerobic cocci in impaired human wound healing. Wound Repair Regen. 2002;10(6):346-53. PMID: 12453137	LR and animal studies	LR of cohort studies studying association of microorganisms and delayed healing in chronic and acute wounds, including experimental studies *in vivo.*	80% of infected and 70% of noninfected leg ulcers (i.e. false positives) have been shown to harbor anaerobic organisms. Gram+ anaerobic cocci may play a role in chronic wound inflammation.
Weber EW, Slappendel R, Hémon Y, Mähler S, Dalén T, Rouwet E, van Os J, Vosmaer A, van der Ark P. Effects of epoetin alfa on blood transfusions and postoperative recovery in orthopaedic surgery: the European Epoetin Alfa Surgery Trial (EEST). Eur J Anaesthesiol. 2005 Apr;22(4):249-57. PMID: 15892401	Epoetin n = 460; control n = 235	Open multicentre RCT in patients undergoing orthopedic surgery, the effects of preoperative administration of epoetin alfa vs. routine care were compared in six countries. Hemoglobin (Hb) values, transfusions, time to ambulation, time to discharge, infections and safety were evaluated in patients with preoperative Hb concentrations 10-13g dL(-1) from study entry until 4-6 weeks after surgery. Outcome was also compared in patients with and without transfusion.	Epoetin-treated patients had higher Hb values from the day of surgery until discharge ($P < 0.001$) and lower transfusion rates (12% vs. 46%; $P < 0.001$). Epoetin treatment had no significant effect on postoperative time to ambulation, time to discharge and infection rate. However, the time to ambulation (3.8+/-4.0 vs. 3.1+/-2.2days; $P < 0.001$) and the time to discharge (12.9+/-6.4 vs. 10.2+/-5.0 days; $P < 0.001$) was longer in the transfused than in the non-transfused patients. Both groups' side-effects were similar.
Webster J, Alghamdi A. Use of plastic adhesive drapes during surgery for preventing surgical site infection. Cochrane Database Syst Rev. 2013 Jan 31;1:CD006353. PMID: 23440806	SR 7 RCT on 4195 patients undergoing surgery. 5 RCTs (3082 subjects) compared adhesive drape to no drape. 2 RCTs (1113 subjects) compared iodophor impregnated adhesive surgical drapes to no drape.	Meta-analysis of effects of use of surgical incise drapes with or without added antimicrobials on SSI incidence. Surgery performed included general or abdominal surgery, caesarean sections and hip surgery. Iodophor drape RCTs were on cardiac or abdominal surgery. Primary outcome was SSI even if the definition criteria varied among the studies.	A significantly higher % of patients in the adhesive drape group developed a SSI as compared with no drapes (risk ratio (RR) 1.23, 95% confidence interval (CI) 1.02 to 1.48, $P = 0.03$). Iodine-impregnated adhesive drapes had no effect on SSI rate (RR 1.03, 95% CI 0.06 to 1.66, $P = 0.89$). Length of hospital stay was similar with or without an adhesive drape.
Webster, J, Osborne, S. Preoperative bathing or showering with skin antiseptics to prevent surgical site infection. *Cochrane Database of Systematic Reviews*, 2007; (2): CD004985 PMID: 17443562	SR, 6 RCT, n=10,007 participants)	SR of RCTs that examined the evidence for preoperative bathing or showering with antiseptics for the prevention of SSI . Patients were undergoing orthopedic, vascular, biliary tract, inguinal hernia, breast, vasectomy and other general surgical procedures.	Insufficient evidence that chlorhexidine was better at preventing SSI when compared with normal soap or no presurgical washing.

		Chlorhexidine was the only antiseptic used.	
Weiner RD, Hlad LM, McKenna DR. Recurrence of diabetic pedal ulcerations following tendo-achilles lengthening. Diabet Foot Ankle. 2011;2.(ePub May 11, 2011). PMID: 22396818	Risk factors: foot deformity leads to increased foot pressures and DFU. Treatment often is to increase length of Achilles tendon	LR—If Achilles tendon lengthening does not work, DU patients have higher risk of infection. Probe-to-bone has 60% sensitivity 91% specificity for osteomyelitis and MRI is most accurate sensitivity .90, specificity .70.	Surgeons must address areas such as infection, vascular and nutritional status, glucose control, off-loading, biomechanics, when considering diabetic patients for surgery due to decreased ability to fight infection and delayed healing.
White RJ , Cutting K , Kingsley A. Topical antimicrobials in the control of wound bioburden. Ostomy/Wound Management. 2006, 52(8):26-58] PMID: 16896238	LR citing 3 RCTs on acute or chronic wounds.	Literature cited supported the statement, "broad-spectrum antimicrobial agents such as iodine (as PVP-I and cadexomer iodine dressings), silver, and honey, have been widely used on acute and chronic wounds."	Results cited support heavily colonized wound depth and area reduction and abolishment of wound surface organisms using topical dressings containing silver, cadexomer iodine or honey.
Whitney J, Phillips L, Aslam R, Barbul A, Gottrup F, Gould Ll, Robson M, Rodeheaver G, Thomas D, Stotts N. Guidelines for the treatment of pressure ulcers. *Wound Repair Regeneration*, 2006;14:663-79. PMID: 17199832	Wound Healing Society Pressure ulcer treatment guideline not on the National Guideline Clearinghouse as of June, 2012.	Guideline. Support for systemic infection management and for debriding wounds.	Only AM and LR support was cited for managing systemic infection. Best support cited for any form of debridement was Bradley: 1 RCT hydrogel > gauze.
Wiechula R. The use of moist wound-healing dressings in the management of split-thickness skin graft donor sites: a systematic review. Int J Nurs Pract. 2003; 9:S9-S17. PMID: 12694482	Skin graft donor site studies: Moist dressings were mainly HCD or films. Non-moist dressings were mainly impregnated gauze	SR of Cochrane, MEDLINE and other major databases and Dissertation Abstracts for studies objectively reporting healing, infection or pain. Analyses compared moist to non-moist dressings and if data were adequate moist to moist dressings.	HCD were significantly more effective than non-moist dressings in improving healing rates, infection and pain and decreased days to healing compared to other moist dressings.
Wiesbauer F, Schlager O, Domanovits H, Wildner B, Maurer G, Muellner M, Blessberger H, Schillinger M. Perioperative beta-blockers for preventing surgery-related mortality and morbidity: a systematic review and meta-analysis. Anesth Analg. 2007;104(1):27-41. PMID: 17179240	69 RCTs comparing perioperative beta-blockers use with either placebo or the standard-of-care	MA of RCTs comparing perioperative beta blocker use to non-use on surgery-related mortality or morbidity, including tachycardia or other arrhythmia or length of hospital stay.	"Beta-blockers reduced perioperative arrhythmias and myocardial ischemia, but they had no effect on myocardial infarction, mortality, or length of hospitalization."
Wijesinghe M, Weatherall M,	8 RCT, on 624	MA comparing effects of topical	Meta-analyses showed

Perrin K, Beasley R. Honey in the treatment of burns: a systematic review and meta-analysis of its efficacy. N Z Med J. 2009;122(1295):47-60. PMID: 19648986	subjects with partial-thickness burns, each RCT with a JADAD Score = 1 qualified for inclusion in the MA	honey intervention (usually honey impregnated gauze) to other recognized burn primary dressings. Main outcome was % healed completely at 15 days.	significantly faster healing with honey, significantly more sterile swabs at 7 days, and significantly less hypergranulation tissue and contractures.
Wild T, Stremitzer S, Budzanowski A, Hoelzenbein T, Ludwig C, Ohrenberger Definition of efficiency in vacuum therapy--a randomised controlled trial comparing with V.A.C. Therapy. Int Wound J. 2008;5(5):641-7 PMID: 19134065	10 subjects with a PU 5 in each group	RCT comparing V.A.C. NPWT to Redon drain bottle effects on absolute amount and % of wound that was granulation tissue, fibrin and necrosis, number of dressing changes and time invested in each system.	Granulation tissue increased more and fibrin decreased more in NPWT group. No significant difference in necrosis. More time and effort taken with Redon drain bottle. Study was terminated after post hoc analysis showed better results using V.A.C.
Wilson D, Nix D. Evaluation of a once-daily moisturizer used to treat xerosis in long-term care patients. Ostomy Wound Manage. 2005;51(11):52-60. PMID: 16319447	16 patients (mean age 76 yeas) with end-stage renal disease and dry, itching, erythematous , cracked skin (xerosis) in long term care	Prospective observational study of four once daily topical skin treatments with a 24-hour skin moisturizing lotion. Evaluated on 0 (absence of symptoms) to 3 (severe symptoms) rating scale on day 1 and day 5 after entry into the study. One patient was discharged before day 5, so N=15	Paired t-test showed significant reduction in dry, scaly skin, erythema, and pruritus ($P < 0.001$, $P < 0.001$ and $P = 0.016$, respectively). From pre-treatment on Day 1 to Day 5.
Wilson PD, Burroughs D, Dunn LJ. Methicillin-Resistant Staphylococcus Aureus and hydrocolloid dressings. *The Pharmaceutical Journal* , Dec 17, 1988;243(6513):787-8. No PMID available	DuoDERM (6) patients with venous or other leg ulcers populated with MRSA Conventional gauze and isolation (historic control)	Prospective open-label exploration of dispersion of Methicillin-resistant *S. aureus* (MRSA) from leg ulcers during an outbreak when all isolation rooms were occupied in a UK hospital setting.	Within 2 weeks of beginning DuoDERM dressings, 5 of the 6 patients were free of MRSA which they all had at study initiation. The dressing effectively isolated the wounds, preventing MRSA transmission.
Wong J, Lam DP, Abrishami A, Chan MT, Chung F. Short-term preoperative smoking cessation and postoperative complications: a systematic review and meta-analysis. Can J Anesth. 2012;59(3):268-79. PMID: 22187226	Studies analyzed: 25 clinical trials that explored effects of smoking on postoperative complications.	SR & MA of smoking cessation trials that measured postoperative healing complications.	Risk of developing surgical wound healing complications was 2 times higher in smokers than nonsmokers ($p<0.00001$); Risk of surgical wound healing complications was lower in smokers who stopped smoking for more than 4 weeks compared to smokers.
Woo KY, Coutts PM, Sibbald RG. A randomized controlled trial to evaluate an antimicrobial dressing with silver alginate	34 subjects with chronic wounds that exhibited signs of critical colonization,	Non-blind evaluated open label RCT of 4-week duration measuring healing as % area reduction and signs of critical	Silver alginate treated wounds reduced from 3.3 to 1.3 infection score in 4 weeks ($p<0.01$); controls 2.2 to 2.3 (NS). % area

powder for the management of chronic wounds exhibiting signs of critical colonization. Adv Skin Wound Care. 2012;25(11):503-8. PMID: 23080237	half assigned to receive silver alginate topical powder, + normal dressings, half without the silver alginate.	colonization using a checklist.	reduction between the 2 groups was greater for silver alginate treated wounds (p<0.001)
Woo KY, Sibbald RG. A cross-sectional validation study of using NERDS and STONEES to assess bacterial burden. Ostomy Wound Manage. 2009;55(8):40-8. PMID: 19717855	112 patients with a leg (44) including 28 VU, 6 lymphedema, 2 arterial, 5 mixed VU-AU, and 3 miscellaneous etiology or foot ulcer (68) including 46 DFU of these 39.7% neuropathic and 25% neuro-ischemic. They were all in home care or visiting local ambulatory wound care clinics	Cohort study to test validity of NERDS and STONEES. Wound was evaluated once by trained professional for NERDS signs of critical colonization or STONEES signs of deep wound infection and serial dilutions were made of Levine technique quantitative wound swab. Odds ratios (OR) were calculated to determine likelihood of bacterial growth in wounds with 1, 2, 3 or 4 signs in predicting scant, light moderate or heavy growth.	Predictors of deep infection: OR Sensitivity. Specific. ↑Size: 5 50 83 ↑Temp. 8.05 76 71 Probe To Bone 2.76 40 81 New breakdown 5.37 37 89 Edema/erythema 4.88 87 44 Exudate 4.13 70 64 Smell 3.59 37 86 Any 2 above: 95 50 Any 3 above: 90 69.4 Any 4 above: 53 91.6
World Health Organization (WHO) guidelines on hand hygiene in healthcare, Geneva. World Health Organization Press, 2009. No PMID available.	Derivative references used.	Guideline with all recommendations related to preventing or treating wound infections included in the ICWIG Guideline.	Supports hand hygiene
Wu LW, He XS, Tai Q, Ju WQ, Wang DP, Zhu XF, Ma Y, Wang GD, Hu AB, Huang JF. Application of steroids minimization immunosuppressive regimen in liver transplantation. Zhonghua Wai Ke Za Zhi. 2010 ;48(7):492-5. PMID: 20646656	116 patients between 2005-2008 divided into 3 groups according to day of withdrawal of steroids Group 1: 3 months Group 2: 7 day Group 3: 24 hour	CO study exploring outcomes of organ rejection, wound healing, recurrence of HVB, new on-set of diabetes, hyperlipidemia and hypertension as a function of the time of steroid withdrawal post-operatively.	Incidence of infection and new on-set diabetes in 24 hour withdrawal group and 7 day withdrawal group was significantly lower than in 3 months withdrawal group (P<.05). Conclusion: discontinue steroidal immunosuppression within first week after liver transplant.
Young VL, Watson ME. Prevention of perioperative hypothermia in plastic surgery. Aesthet Surg J. 2006;26(5):551-71. PMID: 19338943	Review of physiology of thermoregulation/ describes how both general and regional anesthesia alter thermoregulation mechanisms	Summarizes risk factors for SSI associated with hypothermia; discusses effective current methods for avoiding hypothermia typically defined as a core body temperature of <36 ^{o} C (< 96.8 ^{o} F), though patient reported outcomes are better when a temperature of > 36.5 degrees C is maintained.	Unless preventive measures are instituted, inadvertent hypothermia occurs in 50%-90% of surgical patients, even those undergoing procedures of 1-1.5 hours. Pre- and intra-operative warming to keep a patient's body temperature at or above 36.5 ^{o} C prevents surgical infections, reduces length of hospital stay

		This requires intra- and peri-operative monitoring of core temperature and measures to keep patient warm.	and reduces cardiac complications
Zangaro GA, Hull MM. Diabetic neuropathy: Pathophysiology and prevention of foot ulcers. *Clinical Nurse Specialist,* 1999;13(2), 57-65. PMID: 10382400	Literature Review (LR) with 2 RCTs.	LR and description of pathophysiology of diabetic neuropathic foot ulcers in those with loss of protective sensation.	Supports off-loading of insensate diabetic foot ulcers.
Zempsky WT, Parrotti D, Grem C, Nichols J. Randomized controlled comparison of cosmetic outcomes of simple facial lacerations closed with Steri Strip Skin Closures or Dermabond tissue adhesive. Pediatr Emerg Care. 2004 Aug;20(8):519-24. PMID: 15295247	Children age 1-18 with facial simple low-tension lacerations treated in pediatric emergency department with Steri Strip® Skin Closures (48) or Dermabond.(49)	Prospective RCT measuring patient reported pain and blinded plastic surgeon scar ratings, both measured on 100 mm visual analogue scales, and adverse events at 1 week, 2 months of different skin tear closure devices.	There were no significant differences between groups in pain, scarring or adverse events at any time point. Author conclusion: “Steri-Strip Skin Closure may represent a low-cost alternative for closure of simple facial lacerations.”