

Supplementary Figure 2

	Benefits	Practice strategies	NNT
Surgery			
Clean			
Total joint arthroplasty	Surgical site infections	A single preoperative dose is enough; Postoperative or 24-hour continued perioperative use is unnecessary	24
Closed fracture surgery	Deep surgical site infections (single dose and multiple dose), Superficial surgical site infections(single dose and multiple dose)	Single dose intravenous prophylaxis is not inferior to multiple dose regimens; Appears to be cost-effective	114, 36, 66, 23
Breast cancer surgery	Surgical site infections	Single dose of preoperative prophylactic antibiotics is enough	29
Tube thoracostomy for traumatic chest injuries	Empyema, Overall infectious complications	Especially beneficial for penetrating injuries	22
Craniotomy surgery	Meningitis	Cefazolin is optimum; Clindamycin and vancomycin are alternative agents when β -lactam allergy occurs	61
Breast reduction surgery	Surgical site infections	Single dose of preoperative use is effective; Postoperative use is unnecessary	11
Hernioplasty surgery	Postoperative wound infection	Showed benefit in high infection risk environment	47
Shunt surgery in children with hydrocephalus	Infections	Preoperative administration is recommended	20
Plastic and reconstructive surgery (Clean)	Surgical site infections	Short-term antibiotic prophylaxes are preferred to longer-course regimen	10
Herniorrhaphy surgery	-	Insufficient evidence to support	-
Mohs Surgery	-	Oral administration is not recommended, while intra-incisional prophylaxis may be effective	-
Simple hand surgery	-	Insufficient evidence to support	-
Thyroid surgery	-	Preoperative patient preparation and the observance of the rules of asepsis are preferred, rather than routine administration of antibiotic prophylaxis	-
Hepatectomy	-	Insufficient evidence to support	-
Clean-contaminated			
Cesarean section	Wound infection, endometritis, febrile morbidity, serious infectious morbidity	Intravenously administered either at the start of the operative procedure or at or after clamping of the cord	18, 10, 6, 58
Percutaneous nephrolithotomy	Postoperative sepsis	Preoperative administration is necessary, especially for suspected infectious stones	7
Percutaneous endoscopic gastrostomy	Peristomal site infection	Preoperative broad-spectrum antibiotics; Especially when using "pull" method for tube insertion	7
Elective laparoscopic cholecystectomy	Surgical site infections	2-3 doses of preoperative antibiotic prophylaxis is optimum in low-risk patients	62
Dental implants surgery	Early implant failure	A single antibiotic prophylaxis dose in healthy patients	32
Elective vaginal hysterectomy	Urinary tract infections, Postoperative fever, Pelvic infection, Post operative infections	A single dose of antibiotics intravenously within two hours of the surgical incision is the most common practice	19, 8, 10, 2
Elective abdominal hysterectomy	Urinary tract infections, Abdominal wound infection, Postoperative fever, Pelvic infection	A single dose of antibiotics intravenously within two hours of the surgical incision is the most common practice	13,31, 8, 10
Transurethral resection of the prostate	Postoperative bacteriuria, Septicemia	Short course antibiotics may be more effective than single dose regimens. And quinolones, cephalosporins and co-trimoxazole are preferred options	6, 30
Renal transplant recipients	Bacteriuria, Bacteremia	No benefit for graft survival or mortality; Limited data and poor quality of evidence	3, 9
Tooth extraction	Postsurgical infectious complications	Antibiotics given just before or just after surgery (or both)	18
Surgery for incomplete abortion	Genital tract infection	More effective for women in high-income countries	52
Plastic and reconstructive surgery (Clean-contaminated)	Surgical site infections	Short-term antibiotic prophylaxes are preferred to longer-course regimen	22
Ureteroscopic lithotripsy	Bacteriuria, Postoperative pyuria	Single dose of oral preoperative antibiotic prophylaxis	9, 3
Rhinoplasty	-	Insufficient evidence to support	-
Stented distal hypospadias repair	-	Insufficient evidence to support	-
Post-midurethral sling placement	-	Postoperative use is unnecessary; The benefit of postoperative use is still unknown	-
Endoscopic sinus surgery	-	Insufficient evidence to support	-
Kidney transplant recipients with asymptomatic bacteriuria	-	Insufficient evidence to support	-
Transurethral resection of bladder tumors	-	Insufficient evidence to support	-
Contaminated			
Endoscopic resection for colorectal lesions	Postoperative adverse events	Especially for patients with hypertension, large size (>2 cm) and nonpolypoid configuration of the lesion	6
Colorectal surgery	Surgical wound infection	Broad-spectrum antibiotics covering both aerobic and anaerobic bacteria	4
Transrectal prostate biopsy	Pooled infectious complications	A full 1-day administration of fluoroquinolones, cephalosporins, aminoglycosides or fosfomycin as alternatives after critically assessment	19
Dirty or infected			
Incision and drainage of anorectal abscesses	-	Antibiotic prophylaxis following operative drainage for co-morbid, immunosuppressed patients is acceptable	-
Undefined			
Any surgical procedures	-	Postoperative continuation of antibiotic prophylaxis is not recommended	-
Non-surgical invasive procedures			
Postoperative urinary catheterization	Urinary tract infections	Especially for patients with advanced age or long-term catheterization	14
Mechanical ventilation	Ventilator-associated pneumonia	Short-term prophylactic antibiotics is effective	6
Adults undergoing cystoscopy	Symptomatic UTIs	Not benefit for systemic UTIs; Moderate and low quality of evidence	33
Urodynamic studies	Symptomatic UTIs	Antibiotics need to be selected according to the regional and local resistance data; ciprofloxacin, levofloxacin, and amoxicillin-clavulanic acid are effective	12
Shock wave lithotripsy in patients with sterile urine	-	Insufficient evidence to support	-
External ventricular drain (EVD) placement	-	Antimicrobial-coated EVD catheters may be effective, while systemic antibiotics are not recommended	-
Elective endoscopic retrograde cholangiopancreatography (ERCP)	-	Insufficient evidence to support	-
Transarterial therapy of hepatocellular carcinoma	-	A judicious use of antibiotics is recommended especially for those with concurrent biliary tract disease or a history of biliary reconstruction surgery	-
Hematopoietic stem cell transplantation (HSCT)	-	Increased adverse events; No benefit for mortality	-
Totally implantable venous access device (TIVAD) placement	-	Insufficient evidence to support	-
Hysteroscopy	-	Very low infection rate highlighted after hysteroscopic procedures; The clinical benefit of antibiotic prophylaxis is very limited	-
Non-procedural scenarios			
Cancer patients received anti-EGFR inhibitors	All grade skin rash, Grade 2-4 skin rash	Minocycline should theoretically be preferred over doxycycline; Less toxic doxycycline is preferred in a metastatic setting	-
Chronic obstructive pulmonary disease (COPD)	Quality of life, Exacerbation	Use of macrolide antibiotics prescribed at least three times per week; The benefit may be generalizable only to patients with moderate-severity COPD or advanced age	4
Cirrhosis with ascites	Spontaneous bacterial peritonitis (SBP), Mortality	Norfloxacin is a valuable option; Especially for patients with high-risk SBP	9, 10
Normal vaginal birth	Endometritis	A balance between women's needs, childbirth setting and provider's experience is needed	62
Maternal Group B Streptococcal colonization	Neonatal all cause infections	Penicillin was the chief, with ampicillin as an acceptable alternative	14
Tick bite	Unfavorable events	A single-dose oral doxycycline administration is preferred	69
Open globe injury	Endophthalmitis	Intracameral/intravitreal administration	15
Coma	Ventilator-associated pneumonia	The effect of long-term antibiotics is not clear	4
History of cellulitis	Recurrence of cellulitis	Penicillin or erythromycin is an alternative option	5
Second or third trimester of pregnancy	Puerperal sepsis	Lack of evidence for neonatal morbidity and mortality and has substantial bias	13
Chemotherapy for acute leukemia	Febrile neutropenia	Levofloxacin is effective; No improvement of mortality	2
Chest Trauma	Empyema	Use of antibiotics should continue for more than 24 hours	16
Gastrointestinal bleeding in cirrhotic patients	Overall mortality, Bacterial infections	Oral quinolones (norfloxacin 400 mg b.i.d. for 7 days) or intravenous cephalosporins (ceftriaxone 1g/day for 7 days)	22, 4
Afebrile neutropenic following chemotherapy	All cause mortality	Quinolones are optimum; Especially for hematologic cancer patients	34
Acute stroke	Poststroke infection	No benefit for mortality or improvement of prognosis; Early antibiotics therapy for poststroke infections are recommended, whereas antibiotics for prevention are not	15
ICU stay	ICU-acquired pneumonia	Limited evidence; Concerns about development of antibiotic-resistant pathogens	8
Vesicoureteral reflux	Febrile and symptomatic UTIs	Decision analysis and cost-effectiveness analysis are needed	12
Non-HIV immunocompromise	Pneumocystis pneumonia	TMP/SMX prophylaxis is highly effective	19
Burn injury	-	Insufficient evidence to support	-
Open distal phalanx fractures	-	The focus of treatment should be on prompt irrigation and debridement	-
Basilar skull fracture	-	Insufficient evidence to support	-
Cardiac arrest	-	Insufficient evidence to support	-
Premature rupture of the membranes (PROM)	-	Only effective in women with latency longer than 12 hours	-
Women at risk of preterm birth	-	Original studies were conducted long ago (before 2006)	-
Acute necrotizing pancreatitis	-	Insufficient evidence to support	-
Symptomatic or febrile UTIs in children	-	Watchful-waiting approach is preferred for first febrile UTIs in infants and young children	-
Children at risk of recurrent UTIs	-	Long term and low dose antibiotics have very low benefit; Administration for young infants or children with renal abnormalities is preferred	-
Newly diagnosed multiple myeloma	-	Within the first 3 months following diagnosis; At the threshold of statistical significance	-
Peritoneal dialysis	-	Insufficient evidence to support	-

NNT=number need to treat; UTIs=urinary tract infections; ERCP= endoscopic retrograde cholangiopancreatography; PTB= preterm birth; ICU=intensive care unit; EGFR=epidermal growth factor receptor; COPD= chronic obstructive pulmonary disease; TMP/SMX=trimethoprim/sulfamethoxazole.