

The Challenges of Antibiotic Use in Surgery



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Antimicrobial Resistance (AMR)

- * The natural evolution of microbes
- * Human activities accelerate the pace at which microorganisms develop and spread resistance



AMR

complex and multidimensional problem

threatening not only human and animal health

regional, national, and global security, and the economy



Inappropriate use of antibiotics, and poor infection prevention and control strategies are contributing to the emergence and dissemination of AMR

A Global Challenge

The Challenges

Worse Health Facilities

Highly susceptible vulnerable populations

Poor environment sanitation

Low income

Law / Regulation



burden mainly
due to increasing
AMR

The Global Alliance for Infections in Surgery

instituted an interdisciplinary working group including healthcare professionals from different countries with different backgrounds to assess *the need for implementing education and increasing awareness about correct antibiotic prescribing practices across the surgical pathways*

The Challenges

Empiric Therapy use

Important role in the management of surgical infections, particularly in critically ill patients who need immediate empiric antibiotic therapy

Prophylaxis use

A pivotal role in a perioperative infection prevention approach Programs to improve compliance with antibiotic prophylaxis protocols have shown good results when guided and monitored by pharmacists and supportive surgeons

* poor antibiotic coverage, inappropriate regimens  the factors most strongly associated with unfavourable outcomes

- The dose, regimen, timing, route of administration, and duration of antibiotic therapy must be optimized
 - In most patients with surgical infections, after adequate source control, the aim of antibiotic therapy is to treat any residual infection.
- * the prolongation of antibiotic treatment beyond the duration suggested by established guidelines not only may lead to AMR, but also does not prevent the persistence or recurrence of the infection

prophylaxis

a medication or a treatment designed and used to prevent a disease from occurring

before

Infection occur (SSI, septic etc)

Surgery

“bad thing” happened (mortality)

The Challenges

What kind of antibiotic for prophylaxis

How

Why

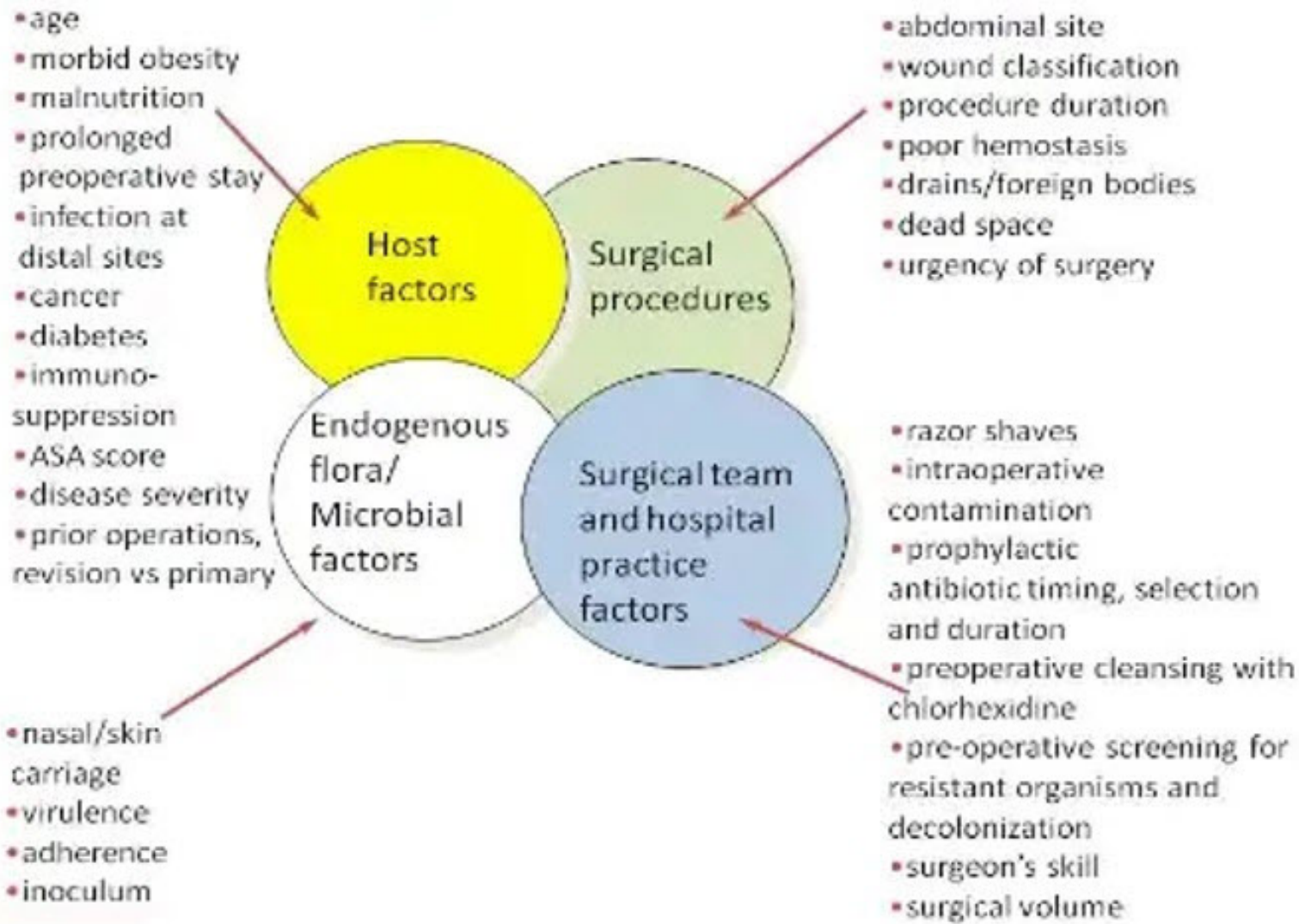
When



Prophylaxis antibiotics

- *Should be initiated **within one hour before surgical incision**,
- *Appropriate for their specific procedure (clean, clean contaminated)
- *Reduces the incidence of postoperative wound infection by decreasing the bacterial inoculum contaminating the wound at the time of surgery.

Factors Affecting Rates of Surgical Site Infections



Incidence and Risk Factors for Long-Term Mesh Explantation Due to Infection in over 100,000 Hernia Surgery Patients

Risk factors



Obesity
OR: 1.72



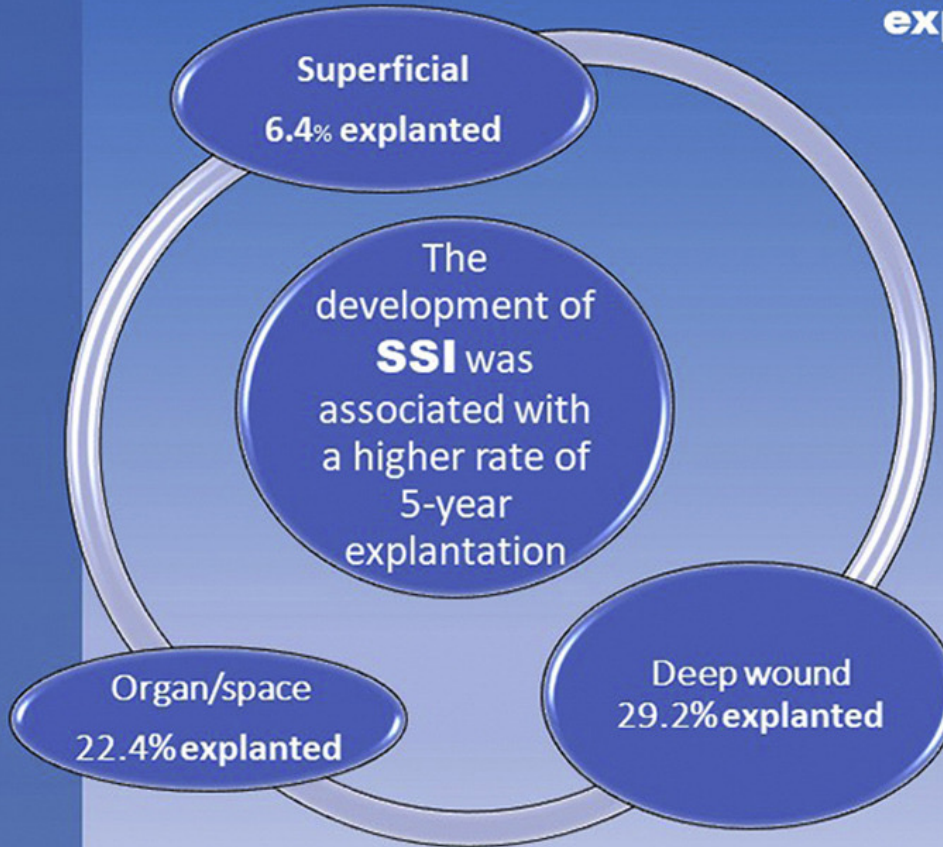
Emergency
OR: 1.87



Long operative time
OR: 1.83



Open surgery
OR: 3.57



Incidence rate of mesh explantation due to infection

Ventral
1.5%

Umbilical
0.6%

Inguinal
0.1%

The comparison of double gloving to single gloving in the theatre environment

by Steven Phillips AfPP

Recommendations

- * Wearing of double gloves should be mandatory in all major surgical procedures, especially those involving heavy contamination, of long duration and of high exposure to sharps.
- * A double glove indicator system should be the preferred option, over gloves of the same colour, when double gloving.
- * For long procedures, gloves should be changed at least every two hours, so that barrier integrity can be maintained to an optimum level.
- * If the wearer sees a perforation in the glove, then they should be changed.
- * After the procedure, hands should be washed when gloves are removed, to eliminate any chance of cross infection due potentially to unseen damaged gloves

Bowel Preparation in Patients with Colon Cancer who Undergo Elective Surgery: A Prospective Randomized Trial Using Oral Antibiotics

Suzuki T. · Sadahiro S. · Tanaka A. · Okada K. · Saito G. · Miyakita H.
· [Ogimi](#) 2020

Conclusions: MBP combined with oral antibiotics and intravenous antibiotics remains standard in elective colon cancer surgery.

Surgical Site Infection after Hepatectomy for Hepatocellular Carcinoma

Shirata C.^a · [Hasegawa K.](#)^a · Kokudo T.^a · Arita J.^a · Akamatsu N.^a · Kaneko J.^a · Sakamoto Y.^a · Makuuchi M.^b · Kokudo N.^a 2018

Retrograde drain infections increased when drain placement was prolonged for more than 4 postoperative days

perception

Osteomyelitis patients were treated with antibiotic therapy ciprofloxacin 2 x 400 mg iv , during treat antibiotic, on day 5, planned debridement surgery with cefazolin prophylaxis iv

The patient had an initial diagnosis of intra-abdominal abcess, was given antibiotics amikacin and metronidazole, and before laparotomy was given the prophylactic antibiotic ceftriaxone 2 gram iv

2-month-old baby with abscess in right shoulder post BCG, incision for drainage of pus, previously given prophylactic antibiotics

time

Prophylactic antibiotics were given at 07.15. Surgery start at 9:00. and lasts 2 hours.

Do you need additional antibiotics?

Internal bleeding patient , cito surgery, prophylactic antibiotic: **when, how ?**

EYE

The danger of blindness

When is the best time to present?

What class of antibiotics ?

Giving iv / intra ocular? Or just eye drops

How many times?

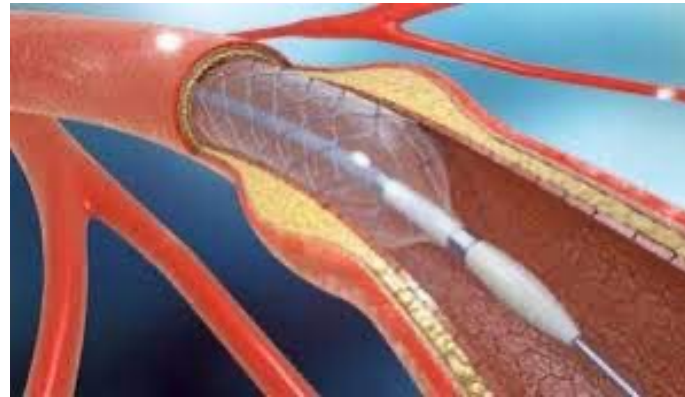
Do you need a repeat dose during and Post-surgery ?



Cardio/-vascular intervention

Antibiotic prophylactic?

Pace maker implantation?



Other importants

Any proof about Resistance to cefazoline?

Stock of cefazoline, alternative ?

The price

Microbial culture / microbiology laboratory

Need antibiotic suture?

Sophisticated device

Any suggestions, input, critics, or additions ?



Terima kasih