Antibiotic Use and Access in Patients undergoing Cardiothoracic Surgeries in a Tertiary Care Setting of a Lower-Middle Income Country

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Introduction

Surgical Antimicrobial Prophylaxis WHO Recommendation-Cefazolin 2g single dose 30 minutes before surgery

Supply Chain issues

Clinical judgement

Better quality of life

Gap in the evidence on practice of surgical antimicrobial prophylaxis in critical life saving cardiothoracic surgeries

Objective: Describe the antibiotic use and access in patients undergoing cardiothoracic surgeries in a high-volume centre of a lower-middle income country

Methodology

Descriptive study
Jan -May 2025

→ IRB/GMCK 267/2023 dated 22.08.2023

Department of CTVS and Pharmacology

→ Census type-434
Jamovi 2.6.44
WHO AWaRe, WHO AMC Tool

Results

Age :4 months-77 years Mean -53.6±16.2 years
Males:291(67%) Females:143(33%)
Elective:380(87.6%) Emergency:54(12.4%)
Adult:409(94.2%) Pediatric:25(5.8%)
Coronary Artery Bypass Grafts- 236(54.5%)

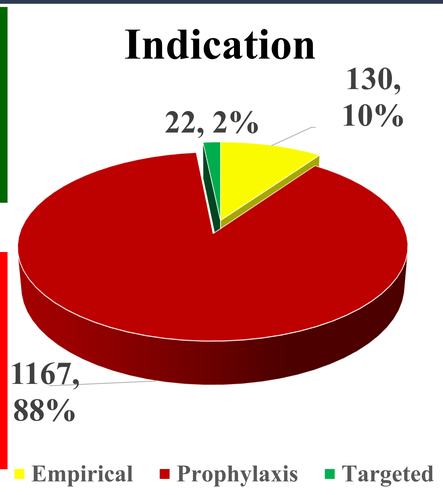
Results

1319 antibiotics of 26 different types

7 Access (418,31.7%)

11 Watch (845,64.1%)

7 Reserve (19,1.4%)



Generic- 50(3.8%) Parenteral- 535(40.6%)

WHO EML- 16 (95.1%) listed

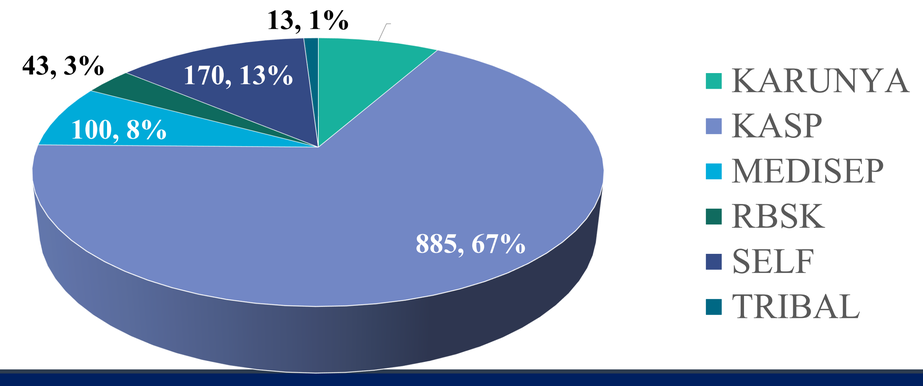
- Piperacillin-Tazobactam 427(32.4%) (median -2 days, 6 doses) – 19.63DDD/100bed days
- Amoxicillin-Clavulanic Acid-368(27.9%) (median- 4 days, 12 doses) – 35.92DDD/100bed days
- Ciprofloxacin-348(26.4%) (median- 4 days, 8 doses)- 28.07 DDD/100bed days

Prophylaxis-Extended surgical antimicrobial prophylaxis(SAP)

Targeted-
Sepsis, Ventilator Associated Pneumonia, Osteomyelitis

Empirical-Urinary Tract Infection, Respiratory Tract Infection, Soft tissue Infection, Diarrhoea

AMSP-Practices
Intravenous to Oral Switch
Renal Dosing,
Escalation/Deescalation
Redundant Coverage
Length(LOT) 4.04±2.days



Discussion

Abdul-Rahman et al-**Cephalosporins, Vancomycin, Aminoglycoside-Surgical Site Infection prophylaxis**.[1]
de Tymowski et al-**SAP –lower incidence of SSI and postoperative complications**. [2]
Ninnya et al-**Piperacillin-tazobactam** prescribed for post operative infectious complications after cardiac surgery.[3]

Conclusion

Extended surgical antimicrobial prophylaxis, Access to antibiotics for all patients
Piperacillin-Tazobactam most commonly used, Watch Category Antibiotics were more in use

References

1. Abdul-Rahman T, Omran MO, Ekerin O,Ghosh S, Awuah WA. Current state of the use of antibiotic prophylactics in cardiac surgery – correspondence. Int J Surg 2023; 109:2542–3
2. de Tymowski C, Sahnoun T, Provenchere S. Impact of antibiotic prophylaxis on surgical site infections in cardiac surgery. Antibiotics (Basel) 2023;12:8
3. Ninnya R, Chooriyil N, Krishnannair JT, Kizhedath S, Sreedharan S, Palappallil DS. Prescription pattern of antibiotics in patients with postoperative infectious complications after cardiac surgery. Perspect Clin Res 2025, Online first