COVID management
– antibiotic use and antibiotic resistance

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References


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COVID-19 pandemic

- Previous Influenza pandemics – bacterial co-infection associated with mortality (11-35%; Strept pneumoniae, Staph aureus)
- Secondary or co-infections in COVID-19 patients is variable
- But less than influenza with a different co-pathogen profile
- Higher proportion of critically ill with bacterial co-infections
  - China: 5-27% (14-44% in ICU patients); higher (50%) in non-survivors; overall 7% of hospitalized patients had a bacterial co-infection (ICU: 5-26%)
  - Systematic review of COVID-19 patients in hospital – only 8% with bacterial/fungal co-infection
  - Organisms – Acinetobacter baumanii, Klebsiella pneumoniae (CPE/ESBL), Pseud aeruginosa, Mycoplasma pneumoniae, Chlamydia pneumoniae, Enterobacter, Serratia, Aspergillus and Candida sp.
Antibiotic use

- Cough, fever and radiological infiltrates – Community Acquired Pneumonia
- Sepsis/septic shock
- Telemedicine – antibiotic over-prescribing
- Mechanical ventilation
- Immune dysregulation, Corticosteroids

→ **Widespread antibiotic use** – directed and empiric therapy
  - Antibiotic use – 58% (80-100% in ICU) in China
  - >70% received antibiotics; <10% had bacterial co-infection
- Under-estimation of bacterial co-infections
Treatment of acute co-infections suspected or confirmed

• **Mild** COVID-19
  – no antibiotic therapy or prophylaxis

• **Moderate** COVID-19
  – no antibiotics unless clinical suspicion of a bacterial infection
  – use Access group of antibiotics (AWaRe)

• **Severe** COVID-19
  – use empiric antimicrobials to treat all likely pathogens
  – base on clinical judgment, patient host factors and local epidemiology
  – start as soon as possible (within 1 hour of initial assessment)
  – ideally with blood cultures obtained first
  – assess daily for de-escalation

Test for other potential etiologies

• Subject to local epidemiology and clinical symptoms – malaria, dengue, typhoid fever

• Dual infections – other respiratory infections (viral, bacterial, fungal)
  • LRT specimens for bacterial or fungal pathogens
  • Respiratory viruses – influenza A and B, RSV, parainfluenza viruses, rhinoviruses, adenoviruses, enteroviruses, human metapneumovirus and endemic human coronaviruses (HKU1, OC43, NL63 and 229E)

• Empiric antibiotic treatment on clinical diagnosis – CAP, HAP, Sepsis
COVID-19 with pneumonia

• Severe pneumonia (SARI) – IV antibiotics

**Adults**

• Ceftriaxone 1–2 g once daily PLUS a macrolide (preferred); OR
• Ampicillin 2 g IV 4 times a day PLUS a macrolide

**Children**

• Ampicillin 50 mg/kg or benzylpenicillin 50 000 U/kg IM or IV every 6 hours
• Gentamicin 7.5 mg/kg IM or IV once a day
Antibiotic stewardship

• Reserve ABs for serious patients
• Microbiology investigations before AB treatment
• Re-evaluate and stop
• Oral switch
• Not >5 days

• Access group of antibiotics
• Biomarkers for infections
• Prevent VAP and HAIs
• No prophylactic use
• Other infections – UTI, SSTI, abdominal infections
Collateral benefits

- Focus on infection prevention and control, especially hand hygiene
- Social distancing
- “Whole of Government” approach
- Health services recognized as a critical need
- Investments for health system strengthening
COVID-19 Infection Prevention and Control Sameeksha

A compilation of recent publications on COVID-19 relevant for IPC and AMR containment in India

Publications from scientific journals

The effect of control strategies to reduce social mixing on outcomes of the COVID-19 epidemic in Shenzhen, China: a modelling study
- projections suggest that premature and sudden lifting of interventions could lead to an earlier secondary peak, which could be flattened by relaxing the interventions gradually...

Conclusion

• Judicious use of antibiotics for bacterial co-infection in COVID-19
• Better studies, based on rigorous case definitions
• Opportunities in alignment with Global Action Plan (and NAP) AMR
  • Objective 2: Diagnostic stewardship
  • Objective 3: Infection prevention and control
  • Objective 4: Antimicrobial stewardship
• Better health services
Thank you