Supported by:

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Contributors

Heads of Departments of Municipal Medical Colleges or their designates from various disciplines such as Cardiology, Chest Medicine, CVTS, Dermatology, E.N.T, Gastroenterology, G.I surgery, General Medicine, General Surgery, Microbiology, Neonatology, Nephrology, Neurology, Neurosurgery, Obstetrics and Gynaecology, Ophthalmology, Orthopaedics, Paediatrics, Pediatrics, Surgery, Pharmacology and Therapeutics, Plastic Surgery, Urology.

Disclaimer

These guidelines have been prepared by consensus based on standard practices, published evidence, updated information, available data and individual experience of the experts. These guidelines are not exhaustive by themselves. Medicine is an ever changing science and users of this guideline are encouraged to refer to latest information. The final decision on the choice and use of antimicrobials rests with the treating clinician.

Next Review: June 2018/19

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## A. LIST OF ABBREVIATIONS

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<tbody>
<tr>
<td>Alt</td>
<td>Alternate</td>
<td>IM</td>
<td>Intramuscular</td>
</tr>
<tr>
<td>ANUC</td>
<td>Acute Necrotizing Ulcerative Gingivitis</td>
<td>IV</td>
<td>Intravenous</td>
</tr>
<tr>
<td>BD</td>
<td>Twice a day</td>
<td>LA</td>
<td>Local application</td>
</tr>
<tr>
<td>Co-amoxiclav</td>
<td>Amoxicillin + Clavulanic acid</td>
<td>LOS</td>
<td>Late onset sepsis</td>
</tr>
<tr>
<td>CoNS</td>
<td>Coagulase negative staphylococci</td>
<td>mcg</td>
<td>Microgram</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>M.C.G.M</td>
<td>Municipal Corporation of Greater Mumbai</td>
</tr>
<tr>
<td>d</td>
<td>Day</td>
<td>MSSA</td>
<td>Methicillin Sensitive Staphylococcus aureus</td>
</tr>
<tr>
<td>DCR</td>
<td>Dacrocystorhinostomy</td>
<td>MRSA</td>
<td>Methicillin Resistant Staphylococcus aureus</td>
</tr>
<tr>
<td>DCT</td>
<td>Dacrocystectomy</td>
<td>MTBC</td>
<td>Mycobacterium tuberculosis complex</td>
</tr>
<tr>
<td>DS</td>
<td>Double Strength</td>
<td>NSAID</td>
<td>Non steroidal anti-inflammatory drug</td>
</tr>
<tr>
<td>e/d</td>
<td>Eye drops</td>
<td>Occ</td>
<td>Occasional / lly</td>
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<tr>
<td>e/o</td>
<td>Eye ointment</td>
<td>OD</td>
<td>Once daily</td>
</tr>
<tr>
<td>EOS</td>
<td>Early onset sepsis</td>
<td>P. aeruginosa</td>
<td>Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>g/gm</td>
<td>Gram (weight measure)</td>
<td>PHMB</td>
<td>PolyHexaMethyleneBiguanide</td>
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<tr>
<td>GI</td>
<td>Gastrointestinal</td>
<td>PO</td>
<td>Per oral</td>
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<tr>
<td>GNR / CNB</td>
<td>Gram negative rods / bacilli</td>
<td>PPi</td>
<td>Proton Pump Inhibitor</td>
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<tr>
<td>Hdy</td>
<td>Hourly</td>
<td>PPROM</td>
<td>Pre-term premature rupture of membranes</td>
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<tr>
<td>[L]</td>
<td>Influenza like illness</td>
<td>PROM</td>
<td>Premature rupture of membranes</td>
</tr>
<tr>
<td>q 4h, 6h, 8h, 12h</td>
<td>Every four, six, eight and twelve hours respectively</td>
<td>QDS</td>
<td>Four times daily</td>
</tr>
<tr>
<td>TDS</td>
<td>Thrice daily</td>
<td>THR</td>
<td>Total Hip Replacement</td>
</tr>
<tr>
<td>TKR</td>
<td>Total Knee Replacement</td>
<td>TPK</td>
<td>Therapeutic Penetrating Keratoplasty</td>
</tr>
<tr>
<td>TMP-SMX</td>
<td>Trimethoprim Sulphanmethoxazole</td>
<td>weight / weight</td>
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<td>TPK</td>
<td>Therapeutic Penetrating Keratoplasty</td>
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<tr>
<td>TMP-SMX</td>
<td>Trimethoprim Sulphanmethoxazole</td>
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</table>
# 1. Respiratory Tract Infections

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
</table>
| 1.      | **Acute pharyngitis** Majority viral, Suspect bacterial – Grp A Streptococci | None indicated in viral infections  
Amoxicillin 500 mg PO TDS  
Or Azithromycin 500 mg PO OD  
**Duration**: 5-7 days  
**Alternative options**  
Doxycycline 100 mg BD  
Or  
**Cefuroxime axetil** 500 mg BD |
| 2.      | **Acute bronchitis** Viral – ILI | OPD patients  
Oseltamivir 75 mg PO BD  
**Duration**: 5 days  
For pregnant women in epidemic setting with pharyngitis and for severely ill patients with ARDS  
Oseltamivir 150 mg PO BD  
**Duration**: 5 days |
| 3.      | **Acute bacterial exacerbation of COPD** Most likely - Atypical bacterial pathogens and viruses  
Occasional - Streptococci, Hemophilus spp, Moraxella | Co-amoxiclav 625 mg PO TDS  
**Duration**: 7 days  
**Alternatives**  
Azithromycin 500 mg oral OD × 3 days  
Or  
Doxycycline* 100 mg PO BD  
Or  
**Cefuroxime axetil**  
500 mg PO BD  
*Duration: 5-7 days  
Fluoroquinolones not to be used in outpatient settings |
### 4. Community Acquired Pneumonia

* **S. pneumoniae, Legionella, Enterobacteriaceae, Viral (high risk)**
  (S. aureus also mentioned in NG)

**OPD patients**
- Coamoxyclav 625 mg TDS
- **Duration:** 7 days
- +/- Azithromycin 500 mg OD
  - **Duration:** 5 days

**IPD patients**
- Ceftriaxone 1 gm IV BD
- Or  
- Co-amoxiclav 1.2 gm IV TDS
- **Duration:** 7 days
  +

**Remarks:**
- If no response in 72 hrs, then upgrade as per Culture and sensitivity report

### 5. Nosocomial pneumonia (VAP)

- **Gram negative Bacilli, E.coli, Klebsiella, Enterobacter, P. aeruginosa**

**Empiric therapy:**
- **Piperacillin-Tazobactam** 4.5 gm IV TDS
  +/
  - Amikacin 500 mg IV OD

**Remarks:**
- If no response in 72 hrs, then upgrade as per Culture and sensitivity report

### 6. Pneumonia in transplant recipients

* **S. pneumoniae, H. influenzae, Legionella**

**Piperacillin + tazobactam** 4.5 gm IV QDS
- Or
  - **Meropenem** 1 gm IV TDS
  - Or
  - **Ceftazidime** 1 gm IV TDS
  - **Duration:** 14 days (with renal correction)

**Remarks:**
- If no response in 72 hrs, then upgrade as per Culture and sensitivity report
  - *If Pneumocystis jiroveci pneumonia is suspected add,*
  - **Trimethoprim- Sulfamethaxazole** 960 mg 2 tablets TDS
  - **Duration:** 10-14 days
| 7. | **Empyema**  
(lung abscess/ empyema as per NG)  
*S. aureus, H. influenza*  
Grp A Strep, *S. pneumoniae*,  
Oral anaerobes | **Primary treatment** is intercostal drainage with concurrent antibiotics  
The intercostal drainage fluid should be sent for culture sensitivity  
Piperacillin-Tazobactam 4.5gm IV 6hourly or  
Cefoperazone-Sulbactam 1.5 gm IV 8 hourly +/-  
Clindamycin 600-900mg IV 8hourly  
**Duration of treatment:** Minimum 6 weeks  
**Remarks:**  
If no response in 72 hrs, then upgrade as per Culture and sensitivity report |
| 8. | **Pneumocystis jiroveci**  
Pneumonia | Cotrimoxazole DS (800+160) PO 2 TDS  
**Duration:** 14 days  
In patients with associated hypoxia parenteral corticosteroids indicated |
| 9. | **Anaerobic pneumonia** | Piperacillin + tazobactam 4.5 gm IV QDS  
+  
Metronidazole 500 mg IV TDS  
**Duration:** 14 days |
| 10. | **Bronchiectasis with infective exacerbation** *H. influenzae, P. aeruginosa* | Co-amoxiclav 625 mg PO TDS  
*If no response then,*  
Ceftriaxone 1 gm IV BD  
+  
Amikacin 500 mg IV OD  
**Duration:** 7-10 days  
**Remarks:**  
Upgrade antibiotics as per culture and sensitivity report |
| 11. | **Pulmonary tuberculosis**  
MTB complex | As per RNTCP guidelines |
| 12. | **Invasive Broncho Pulmonary Aspergillus pneumonia**  
(Immuno- compromised patient) | Itraconazole 200 mg BD  
**Duration:** 3 weeks  
**Alternatives:**  
Voriconazole 6 mg/kg IV BD day 1 followed by 4mg /kg IV BD  
**Duration:** 2- 3 weeks  
Voriconazole to be reserved for non responsive cases |
## 2. CNS Infections

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Acute Bacterial Meningitis</strong></td>
<td></td>
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<tr>
<td></td>
<td>S.pneumoniae</td>
<td><strong>Crystalline Penicillin</strong> – 20 lakh units / IV / 2 hourly or <strong>Ceftriaxone</strong> 2gm / IV / BD +/-</td>
</tr>
</tbody>
</table>
|         | N.meningitidis                  | **Vancomycin** 1g (15 mg/kg) / IV / BD  
|         | H.influenzae                    | Duration: 10-14 days  
|         |                                 | + **Inj Decadron** 8 mg stat followed by 4mg IV 8 hrly  
|         |                                 | Duration : 5 days  
|         |                                 | **Remarks:**  
|         |                                 | Penicillins to be administered only after test dose.  
|         |                                 | Indications for Vancomycin use: 1.diabetics with skin & soft tissue infection  
|         |                                 | 2. patients with acute osteomyelitis  
|         |                                 | 3. neurosurgery/ shunt  |
| 2.      | **Acute Bacterial Meningitis**  | **Inj Ampicillin** 2gm IV 4 hrly  
|         | (Elderly, alcoholics, immunocompromised) | Duration : 2 weeks  |
|         | **Listeria monocytogenes**      |                              |
| 3.      | **Brain Abscess**               |                              |
|         | S.Aureus, anaerobes, Streptococci, Gram neg. bacilli, CoNS | **Cefotaxime** 2 gm IV 4-6 hrly  
|         |                                 | Or **Ceftriaxone** 2g / IV / BD plus **Metronidazole** 500 mg IV / TDS  
|         |                                 | **2nd line:**  
|         |                                 | **Meropenem** 2gm IV TDS  
|         |                                 | Duration - 2-4 weeks  
|         |                                 | **Alternative/Remarks:**  
|         |                                 | Add Vancomycin if MRSA suspected  
|         |                                 | If fungal etiology confirmed, add Amphotericin B/ Voriconazole  
<p>|         |                                 | Consult neurosurgery for abscess aspiration/ excision  |</p>
<table>
<thead>
<tr>
<th></th>
<th>Neurocysticercosis</th>
<th>Taenia solium</th>
</tr>
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<tbody>
<tr>
<td></td>
<td><strong>Albendazole</strong> 400 mg PO BD</td>
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<tr>
<td></td>
<td><strong>Prednisone</strong> 1 mg/kg PO</td>
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<tr>
<td></td>
<td>OD</td>
<td>Duration: 15 days</td>
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<td></td>
<td><strong>Remarks:</strong> Consider antiepileptic therapy for seizures</td>
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<thead>
<tr>
<th></th>
<th>Spinal epidural abscess</th>
<th>S.aureus, Streptococcus spp., anaerobes, Gram negative organisms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>1st line:</strong> Ceftriaxone 2gm/day IV BD</td>
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<tr>
<td></td>
<td>+ Metronidazole 1500-2000 mg/day, IV 6 hrly intervals + Vancomycin 1 gm/day IV BD</td>
<td></td>
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<tr>
<td></td>
<td><strong>2nd line:</strong> Meropenem 2 gm IV 8 hrly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+/- Vancomycin 1 gm/day IV BD</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Duration:</strong> 3-4 weeks after surgical drainage</td>
<td></td>
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<tr>
<td></td>
<td><strong>Remarks:</strong> Consider Meropenem to be added as per C/S report</td>
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<tr>
<th></th>
<th>Subdural empyema</th>
<th>Oral anaerobes, <em>H. influenzae</em></th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>1st line:</strong> Ceftriaxone 2gm/day IV BD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Metronidazole 1500-2000 mg/day, IV 6 hrly intervals + Vancomycin 1 gm/day IV BD</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>2nd line:</strong> Meropenem 2 gm IV 8 hrly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+/- Vancomycin 1 gm/day IV BD</td>
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<tr>
<td></td>
<td><strong>Duration:</strong> 3-4 weeks after surgical drainage</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Remarks:</strong> Consider Meropenem to be added as per C/S report</td>
<td></td>
</tr>
</tbody>
</table>
| 7 | Cavernous or sagittal sinus thrombosis, Intracranial suppuration, thrombophlebitis  
S. aureus, Grp A  
Streptococci, H. influenzae |  
**1st line:**  
Ceftriaxone 2gm IV BD  
+  
Metronidazole 500 mg IV 8 hrly  
**2nd line:**  
Meropenem 2gm IV 8 hrly  
+  
Vancomycin 1gm/day IV/BD  
**Duration:** for 6 weeks or until there is radiographic evidence of resolution of thrombosis.  
**Alternatives:**  
**1st line:**  
Cefotaxime 12 gm/ day IV 4 hrly  
+  
Metronidazole 500 mg IV 8 hrly |
|---|---|
| 8. | **Meningitis-**  
Postneurosurgery or Penetrating head trauma | Meropenem 2gm IV 8 hourly  
+  
Vancomycin 15mg/kg IV 8 hourly For 14 days.  
S. epidermidis, S. aureus, Propionibacterium acnes, P. aeruginosa, A. baumanii |Remarks:  
May need intra ventricular therapy in severe cases |
### 3. ENT Infections

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Acute Sinusitis</strong>&lt;br&gt;S. pneumoniae, H.influenzae&lt;br&gt;M. catarrhalis</td>
<td>Co-amoxiclav&lt;br&gt;625 mg PO BD  <strong>Duration:</strong>&lt;br&gt;10-14 days  <strong>Alternative:</strong>&lt;br&gt;Levofloxacin&lt;br&gt;500 mg PO OD&lt;br&gt;Duration: 7 days&lt;br&gt;Levofloxacin not indicated in children</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Acute pharyngitis</strong>&lt;br&gt;Majority viral&lt;br&gt;Suspect bacterial- Grp A Streptococcus</td>
<td>None indicated in viral&lt;br&gt;Bacterial:&lt;br&gt;Co-amoxiclav 625 mg PO BD&lt;br&gt;+/‐ Azithromycin 500 mg PO OD&lt;br&gt;<strong>Duration:</strong> 5-7 days&lt;br&gt;Alternative:&lt;br&gt;Cotrimoxazole (DS) 800/160 mg OD&lt;br&gt;Or&lt;br&gt;Doxycycline 100 mg BD&lt;br&gt;Or&lt;br&gt;Cefuroxime axetil 500 mg BD&lt;br&gt;Or&lt;br&gt;Cefpodoxime</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Acute epiglottitis</strong>&lt;br&gt;H. influenzae, Anaerobes Polymicrobial</td>
<td>Co-amoxiclav 625 mg PO BD&lt;br&gt;Duration: 10 days&lt;br&gt;+&lt;br&gt;Metronidazole 500 mg PO TDS&lt;br&gt;<strong>Duration:</strong> 2-3 weeks&lt;br&gt;Alternative:&lt;br&gt;Ceftriaxone 2g IV.&lt;br&gt;BD&lt;br&gt;Duration: 7-10 days</td>
</tr>
</tbody>
</table>
### 4. Oral Candidiasis

- **Candida spp**
  - **Gentian violet** for LA
  - Till improvement
  - For severe cases – Fluconazole LA and 100-200 mg PO **Duration:** 2 weeks
  - **Remarks:**
    - Local Nystatin application for mild cases.
    - Correct factors predisposing to oral thrush.
    - For prophylaxis, once weekly oral dose of fluconazole is given.

### 5. Ludwig’s Angina, Vincent’s angina

- **Polymicrobial** (Oral Anaerobes)
  - **Co-amoxiclav**
    - 1.2 gm IV BD **Duration:** 5–7 days
    - + **Metronidazole**
      - 500 mg PO TDS **Duration:** 2-3 weeks
    - (please check if duration for both is appropriate)

### 6. Acute Otitis Media

- **S. pneumoniae, H.influenzae M. catarrhalis**
  - **Co-amoxiclav** 625 mg PO BD
    - **Duration:** uncomplicated - 5-7 days
    - severe complicated / ≤2 yrs for 10 days
  - **Remarks:**
    - Indications for antimicrobial therapy:
      - High risk patients
      - Patients with complicated disease
      - Patients who do not improve after 48-72 hrs
      - Newborns
      - Severely ill immunodeficiency

### 7. Prophylaxis for recurrent Otitis Media

- **Co-amoxiclav** 625 mg PO BD/
  - 375mg PO TDS/
  - 1 gm PO BD depending upon age and body weight **Duration:** 7 days
  - **Alternatives:**
    - **Levofloxacin**
      - 500 to 750 mg/ day
    - Or
    - **Cefpodoxime** 200 mg BD
    - Or
    - **Cefpodoxime with Clavulanic acid** (200 /125) BD.
    - Avoid 3<sup>rd</sup> gen cephalosporins if possible, as they are excellent ESBL inducers
| 8. | **Chronic Otitis Media**  
*S. aureus*, Enterobacteriaceae. Pseudomonas spp, anaerobes | Topical antibiotics during drainage  
**Ciprofloxacin** 500 mg PO BD  
Or  
**Ofloxacin** 200 mg PO BD  
**Duration**: 7 days  
**Alternative:**  
**Ceftazidime** 30-50 mg/kg IV TDS *(in proven Pseudomonas infection)*, not to exceed 6 g/day.  
In children, use **Cefixime**.  
Role of systemic antibiotics not proven.  
In complicated cases, **Piperacillin Tazobactam**  
2.25/4.5 gm BD, or even TDS, or in some cases Meropenem if sensitive as per culture sensitivity report. |
|---|---|
| 9. | **Otomycosis**  
Candida spp | Fungal Otitis Externa  
**Itraconazole** 200 mg BD daily  
**Duration**: 2 weeks  
**Clotrimazole** ear drops  
+  
**Topical 2% salicylic acid**  
Suction evacuation  
**Remarks:**  
Recommended to do culture |
| 10. | **Otitis externa**  
*S. aureus* | Co-amoxiclav  
625 mg PO BD/  
375 mg PO TDS/  
1 gm PO BD depending upon age and body weight  
And  
**Topical Ciprofloxacin ear drops**  
**Duration**: 7 days  
**Alternative/Remarks:**  
**Doxycycline**  
100 mg PO BD  
Or  
**Ciprofloxacin**  
500 mg PO BD  
Cleansing external ear canal. |
<table>
<thead>
<tr>
<th>11.</th>
<th><strong>Invasive/ Necrotising Otitis Externa</strong></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Pseudomonas spp</td>
</tr>
<tr>
<td>Ceftazidime</td>
<td><strong>1 g TDS</strong></td>
</tr>
<tr>
<td>Or</td>
<td><strong>Ciprofloxacin</strong></td>
</tr>
<tr>
<td></td>
<td>500 mg PO BD or 200 mg IV BD</td>
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<tr>
<td>Early cases</td>
<td>– oral &amp; topical quinolones</td>
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<td></td>
<td>Duration to be adjusted based on severity</td>
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<tr>
<td></td>
<td>and underlying condition such as</td>
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<td></td>
<td>Diabetes mellitus Diabetic</td>
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<tr>
<td></td>
<td>– Piperacillin IV for 10-14 days <strong>Alternative:</strong></td>
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<tr>
<td></td>
<td><strong>Piperacillin-Tazobactam</strong></td>
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<tr>
<td></td>
<td>4.5 g IV TDS</td>
</tr>
<tr>
<td></td>
<td>+ <strong>Aminoglycosides</strong> 500mg IV OD</td>
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<tr>
<td></td>
<td>+ Local <strong>Ciprofloxacin drops</strong></td>
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<tr>
<td></td>
<td><strong>Duration</strong>: 7 days</td>
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<tr>
<td></td>
<td>If severe,</td>
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<tr>
<td></td>
<td><strong>Quinolone + Beta lactam beta lactamase</strong></td>
</tr>
<tr>
<td></td>
<td>inhibitor <strong>Duration</strong>: 6 weeks</td>
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<tr>
<td></td>
<td>If diagnosed fungal aetiology, Fluconazole</td>
</tr>
<tr>
<td></td>
<td>(Candida spp) and Itraconazole (Aspergillus</td>
</tr>
<tr>
<td></td>
<td>spp)</td>
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<td>12.</td>
<td><strong>Diphtheria</strong></td>
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<tr>
<td></td>
<td>C. diphtheria</td>
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<tr>
<td>Erythromycin</td>
<td><strong>40 mg/kg /day IV (max) OR 2gm/day</strong></td>
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<tr>
<td>+</td>
<td><strong>Penicillin G IV</strong></td>
</tr>
<tr>
<td></td>
<td>3000000 IU/day (&lt;10kg wt)/</td>
</tr>
<tr>
<td></td>
<td>6000000 IU/day (&gt;10kg wt)</td>
</tr>
<tr>
<td>+</td>
<td><strong>Anti-diphtheria serum</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Duration</strong>: 14 days or</td>
</tr>
<tr>
<td></td>
<td>Until patient is able to swallow</td>
</tr>
<tr>
<td>Remarks:</td>
<td><strong>Penicillin should be administered only</strong></td>
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<tr>
<td></td>
<td><strong>after test dose. Anti-diphtheria serum</strong></td>
</tr>
<tr>
<td></td>
<td>For children: Laryngeal:</td>
</tr>
<tr>
<td></td>
<td>20-40,000 U</td>
</tr>
<tr>
<td></td>
<td>Nasopharyngeal: 40-60,000 U</td>
</tr>
<tr>
<td></td>
<td>Extensive disease:</td>
</tr>
<tr>
<td></td>
<td>60-80,000 U</td>
</tr>
<tr>
<td></td>
<td>Laryngitis</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>13</td>
<td>Viral (mainly), Rarely</td>
</tr>
<tr>
<td></td>
<td>Bacterial-Streptococcus, Moraxella</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Laryngotracheobronchitis</th>
<th>Co-amoxiclav 625 mg PO TDS</th>
<th>Duration: 7 days</th>
<th>Remarks: Levofoxacin 400 mg PO BD</th>
</tr>
</thead>
</table>

|   | Pre op prophylaxis – Major head and neck surgery including implant surgeries | Inj Cefazolin 2 gms (IV) 1st dose at induction or Inj Cefuroxime sodium 1.5 gm (IV) 2nd dose within 24 hrs |
## 4. Ophthalmic infections

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
</table>
| 1.      | **Blepharitis (Anterior and posterior)**<br>
*S. aureus, S. epidermidis, Non infective causes* | **Anterior:**<br>
Chloramphenicol e/d or e/o (1%w/w);<br>**Duration** - 4 to 6 weeks<br>
**Posterior blepharitis:** above<br>
+ Doxycycline 100mg PO BD<br>(Not given to pregnant women)<br>**Duration:** 1 week.<br>
Or<br>Azithromycin 500 mg PO OD<br>**Duration:** 3 days<br>In addition -<br>1. Warm wet compress to the lid with 1:4 baby shampoo or with warm 3% bicarbonate of soda lotion.<br>2. Eyelid hygiene.<br>3. Artificial tears if associated with dry eye.<br>**Alternative:** -<br>Topical sodium fusidic acid (1%) |
| 2.      | **Hordeolum (Stye)**<br>
*S. aureus* | Amoxicillin 500 mg PO QDS<br>**Duration:** 5 days<br>+ Oral NSAIDs<br>**In addition**<br>1. Warm compresses<br>2. Some cases require incision and drainage of the stye.<br>**Alternatives**<br>Ampiclox (250 mg each)PO TDS<br>**Duration:** 5 days<br>*If associated conjunctivitis-*<br>Gatiflox 0.3% / Moxifloxacin 0.5% e/d QDS<br>**Duration:** 1 week |
3. **Purulent Conjunctivitis**  
Viral – Adenovirus  

| (Antibiotics prescribed to prevent secondary bacterial infection)  
| Povidone Iodine e/d 5% solution QDS +  
| Steroid (if pupillary area is involved)  
| e/d Fluorometholone 0.1% 1 drop 4 times a day in tapering fashion  
| +  
| Topical Moxifloxacin 0.5% 1 hrly + |

4. **Purulent Conjunctivitis**  
Bacterial – Chlamydia, *S. aureus, N. gonorrhoeae, S. pneumoniae*  

| Oral NSAID  
| **Duration:** Approximate 1 week  
| In addition  
| 1. Lid hygiene  
| 2. Protective glasses  
| 3. Artificial tears  

| Povidone Iodine e/d 5% solution QDS +  
| Topical Moxifloxacin 0.5% 1 hrly  
| **Duration:** Approximate 1 week. In addition, Remarks:  
| 1. Lid hygiene  
| 2. Protective glasses  
| 3. Artificial tears if associated with dry eye. **Alternatives Bacterial:**  
| Gatifloxacin 0.3%  
| Or  
| Levofloxacin 0.5%,  
| Dose: 1-2 drops every 2hrs while awake during the first 2 days, then every 4-8hrs  
| **Duration:** 7 days |
### 5. Inclusion Conjunctivitis (Trachoma)

Chlamydia trachomatis

- **Topical Antibiotic**
  - e/o erythromycin 0.5% TDS
  - e/o tetracycline 1% TDS
  + Tab Azithromycin 1000 mg POOD; repeat after 1 week

**Duration:** 3-4 weeks

**Alternative:**

- Erythromycin 250 mg PO BD or
- Ofloxacin 400 mg PO OD or
- Doxycycline 100 mg PO BD or
- Tetracycline 250 mg PO QDS (avoid in pregnant women and in children)

**Duration:** 3-4 weeks

### 6. Orbital Cellulitis

*S.pneumoniae, H.influenza, M.catarrhalis, S.aureus, anaerobes, Grp A Streptococci, Gram Negative bacilli, Post Trauma*

- Start organism specific treatment after culture and sensitivity report. Consider fungal culture
  - Vancomycin 1gm iv BD +
  - Levofloxacin 750 mg IV once daily +
  - Metronidazole 500mg IV TDS infusion

**Duration** – 7 to 14 days

**Remarks:**

- Cloxacillin 2 gm IV 4 hrly +
- Ceftriaxone 2gm IV 24 hrly +
- Metronidazole 500mg IV TDS infusion

**Duration** – 7 to 14 days
### Corneal Ulcer/ Keratitis

#### HSV

**Viral-**

- **Topical Acyclovir 0.3% e/o**
  - 5 times a day
  + Acyclovir 400 mg PO 5 times if accompanied by iritis  
  - **Ganciclovir** 0.15% ophthalmic gel 5 times a day until corneal ulcer heals, followed by one drop three times daily for 7 days
  - **Duration**: 3 weeks
  - **Acyclovir 400 mg PO BD in recurrent herpetic eye disease**
  - **Trifluridine ophthalmic soln** 1 drop 2 hourly, up to 9 times/day until reepithelialised, then 1 drop 4 hourly up to 5 times/day
  - **Total duration**: 21 days
  - Corneal scraping and Culture should be done whenever possible.
  - Artificial eye drops to be used in case of dry eye
  - Oral NSAID and e/d Homatropine may be added in selected cases.

#### Varicella zoster

**Viral-**

- **Topical Acyclovir 0.3% e/o**
  - 5 times a day
  + Acyclovir 800 mg PO 5 times a day if accompanied by iritis
  - **Duration**: 3 weeks
  - **Acyclovir 400 mg PO BD in recurrent herpetic eye disease**
  - **Alternative/Remarks:**
    - **Famciclovir** 500mg BD/TID  
    - **Valacyclovir** 1gm oral TID  
    - **Duration**: 10 days.
  - Corneal scraping and Culture should be done whenever possible.

**Oral NSAID and e/d Homatropine (2% TDS) may be added in selected cases for 2 weeks**
9. **Corneal Ulcer/ Keratitis**
   **Bacterial** - *S.aureus, H.influenza, S.pyogenes*
   **Bacterial** -  
   **Amikacin 3% / Moxifloxacin 0.5%** 1 drop hourly e/d which is tapered according to response  
   Or  
   **Tobramycin** e/d 1.3% (fortified) 1 drop hourly  
   And e/d **Homatropine 2%** TDS  
   **Duration:** 7-14 days  
   **Gatifloxacin 0.3%** ophthalmic Solution 1 drop 1 hourly for 1st 48hrs then reduce  
   **In cases of virulent corneal ulcer:**  
   **Fortified Cefazolin 5%** e/d one drop every half hour  
   +  
   **Fortified Tobramycin 1.3%** e/d 1 drop hrly for the first 48 hrs and then reduce as per symptoms  
   **Duration:** 2 weeks

10. **Corneal Ulcer/ Keratitis**
    **Fungal**
    **Fungal**  
    1. **For filamentous fungi:**  
       **Natamycin 5%** e/d half hourly for the first two days after which it is reduced to one drop every hour  
    2. **For yeasts:**  
       **Amphotericin B 0.15%** e/d  
       **Homatropine** e/d 2% TDS to be added in both cases  
       **Duration:** 4 weeks  
       **Remarks:**  
       **Voriconazole e/d 1%** 1 drop hrly and gradually tapered over 8 weeks  
       **Duration:** 8 weeks (Tapered as infection resolves)  
       If liver function tests are within normal limits then add, Oral **Ketoconazole 200 mg BD** – dose to be titrated as per response as well as liver function tests  
       **Duration:** 3-4 weeks  
       Use artificial tears in case of dry eye

11. **Eye infection in Contact Lens Users**
    **Acanthamoeba spp**
    **PHMB (0.02%)** hourly  
    +  
    **Chlorhexidine (0.02%)** hourly  
    +  
    **Homatropine e/d 2% TDS**  
    **Duration:** 2 days, then tapered. Total duration of treatment is 3 weeks  
    **Remarks:**  
    Culture is mandatory. Consider **Propamidine isethionate (0.1%)** as an alternative. In late cases, TPK may be needed.
### Eye infection in Contact Lens Users

**Pseudomonas spp**

<table>
<thead>
<tr>
<th><strong>Pseudomonas keratitis</strong></th>
<th><strong>Tobramycin fortified e/d 1.3%</strong> 1 drop 1 hourly</th>
<th><strong>Or</strong></th>
<th><strong>Gentamicin</strong> 14 mg/ml 1 drop 1 hourly</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration:</strong> 15 days</td>
<td><strong>Alternative/Remarks:</strong> Culture is mandatory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>If no response then Colistin e/d 0.19% 2 hourly</strong></td>
<td><strong>Duration:</strong> 2 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider Propamidine isothionate (0.1%) as an alternative.</td>
<td>In late cases, TPK may be needed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dacrocystitis

**H. influenza, S. aureus, S. pyogenes, P. aeruginosa**

<table>
<thead>
<tr>
<th><strong>Gatifloxacin 0.3%</strong> Or <strong>Moxifloxacin 0.5%</strong> e/o 6 times a day</th>
<th><strong>Systemic Co-amoxiclav 625 mg PO TDS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration:</strong> 7 days</td>
<td>In addition,</td>
</tr>
<tr>
<td>• Hot fomentation and massage</td>
<td>• Oral NSAID’s for 1 week</td>
</tr>
<tr>
<td>• Oral NSAID’s for 1 week</td>
<td>• DCR/DCT to be done after inflammation subsides in acute cases and can be done as a primary indication in chronic cases</td>
</tr>
</tbody>
</table>

### Endophthalmitis

**S. epidermidis S. aureus, Streptococcus spp, Enterococcus Spp, Gram negative bacilli, anaerobes**

<table>
<thead>
<tr>
<th><strong>Intravitreal antibiotics:</strong></th>
<th><strong>Vancomycin</strong> 1 mg in 0.1 ml</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>+ Ceftazidime / Cefazolin</strong> 2.25 mg in 0.1 ml or</td>
<td><strong>Amikacin</strong> 400 mcg in 0.1 ml or</td>
</tr>
<tr>
<td><strong>Gentamicin</strong> 200 mcg in 0.1 ml</td>
<td></td>
</tr>
<tr>
<td><strong>Systemic antibiotics</strong></td>
<td><strong>Vancomycin</strong> 1gm IV BD and <strong>Amikacin</strong>240 mg IV TDS or</td>
</tr>
<tr>
<td><strong>Vancomycin and Ceftazidime</strong> 2gm IV TDS</td>
<td></td>
</tr>
<tr>
<td><strong>Topical antibiotics</strong></td>
<td><strong>Fortified tobramycin 1.3%</strong> or <strong>fortified cefazolin 5%</strong> 1 drop 1 hrly to be reduced according to response</td>
</tr>
<tr>
<td><strong>Duration:</strong> 2 weeks</td>
<td>In important considerations</td>
</tr>
<tr>
<td>• Homatropine e/d to be added</td>
<td>• Intravitreal antibiotics to be repeated after 48 hrs in case of no response</td>
</tr>
<tr>
<td>• Pars plana vitrectomy or vitreous aspiration may be performed.</td>
<td></td>
</tr>
</tbody>
</table>
|    | **Endophthalmitis**<br> *Candida sp, Aspergillus sp.* | **Intravitreal antifungals:**<br> **Amphotericin B** 5 mcg in 0.1 ml  
**Voriconazole** 0.1 ml/100 mcg  
- Pars plana vitrectomy or vitreous aspiration may be performed.  
- Send specimen for culture – bacterial and fungal.  
- Treatment is tailor made for the cause, whether exogenous (post-op./posttrauma) or endogenous. If fungal, add AmphotericinB |
|----|------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 15 | **Retinitis**<br> *HSV*<br> *Varicella Zoster Virus* | **IV antiviral drugs:**<br> **Acyclovir** IV 10 mg/kg 8 hrly for 10-14 days and then orally 800 mg five times a day for 6-12 weeks  
**Alternative/Remarks:**  
Resistant cases require intra vitreal anti-viral agents. |
| 16 | **Iridocyclitis** | To be deleted from MCGM guidelines |
| 17 | **Uveitis**<br> *Infectious, Traumatic, Immune mediated, Viral-Herpes simplex* | To be deleted from MCGM guidelines |
| 18 | **Pre-operative Prophylaxis**<br> *Clean cases*<br> Cataract, terygium, glaucoma, strabismus, lid(entropion, exotropion,ptosis), corneal transplant | **Moxifloxacin** 0.5% e/d 3 times previous day of surgery.  
Instill Povidone Iodine 5% eye drops in conjunctiva (to remain for 3 minutes), immediate preoperative preparation  
In addition,  
1. Trimming of eye lashes just before surgery  
2. Eye wash with 5% betadine prior to surgery  
3. Head bath and face wash prior to surgery  
4. Check patency of nasolacrimal duct before surgery |
| 20 | Contaminated cases | Systemic Cefotaxime 1 gm IV TDS or Ceftriaxone 1.5 gm IV BD one day prior to surgery and continue 7 days post surgery 
+ Topical Moxifloxacin 0.5% 4-6 times a day 
+ Intracameral Moxifloxacin intra op at the end of surgery |
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</thead>
<tbody>
<tr>
<td></td>
<td>Endophthalmitis, corneal ulcer, post traumatic tear with infection, intraocular foreign body, lacrimal sac surgery, dacrocystitis</td>
<td></td>
</tr>
</tbody>
</table>
| 21 | Corneal foreign body | Patch for 24 hrs for epithelisation before increased cycloplegia 
Antibiotic Chloramphenicol applicap 
Next day: Antibiotic drops Moxifloxacin/Gatifloxacin X 3 days 
Homatropine 2% BD for 1-2 days 
In addition, 
1. Trimming of eye lashes just before surgery 
2. Eye wash with 5% betadine prior to surgery 
3. Head bath and face wash prior to surgery 
4. Check patency of nasolacrimal duct before surgery |
## 5. Bone And Joint Infections

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
</table>
| 1       | **Acute osteomyelitis / Septic arthritis**  
*S.aureus, Streptococcus pyogenes, Enterobacteriaceae* | **Amoxicillin + clavulinic acid** 1.2 g IV BD  
Or  
**Cloxacillin** 1gm IV QDS  
Or  
**Linezolid** 600mg IV BD in proven MRSA  
**Duration**  
IV for 2-3 weeks followed by oral for a minimum of 6-8 weeks (maximum duration up to 3 months) |
| 2       | **Chronic osteomyelitis**  
*S.aureus, Enterobacteriaceae, Pseudomonas* | **Primary treatment**  
Surgical debridement and then send sample for culture and sensitivity (bacterial, fungal, mycobacteria). If culture positive then treat as per culture sensitivity report, until then start  
**Cloxacillin** 1gm IV QDS  
Or  
**Cefuroxime** 1.5gm IV 12 hrly  
+  
**Amikacin** 500-750mg IV OD  
**If culture negative then**  
**Cloxacillin** 1gm IV QDS  
Or  
**Cefuroxime** 1.5gm IV 12 hrly  
+  
**Amikacin** 500-750mg IV OD  
**Duration**  
Minimum 3 wks IV and continued as per patients response then shift to oral.  
Minimum duration of treatment – 6-8 wks and extended as per clinical response for maximum 3 months |
### Open Injuries - Gram Negative & S. aureus

<table>
<thead>
<tr>
<th>Antimicrobial Choices</th>
<th>Dosage/Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cephazolin</td>
<td>2gm IV 12 hrly</td>
</tr>
<tr>
<td>Or</td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>Or</td>
<td>Cefuroxime</td>
</tr>
<tr>
<td>+</td>
<td>Amikacin</td>
</tr>
<tr>
<td>+</td>
<td>Metronidazole</td>
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</tbody>
</table>

To be given pre-op and up to 72 hrs post-op

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### Prosthetic Joint Infections - Grp A,B,G & viridans Strep S. aureus CoNS Enterococcus Gram Negative Bacilli

If clinical evidence of infection
Debride and send for culture and start
Ceftriaxone | 2g IV OD |
| + | Linezolid | 600 mg IV BD |
| Or | Vancomycin | 1gm IV BD |

When culture reports available change as per culture sensitivity report.
If culture negative continue the above treatment.
Duration
Minimum 6 wks and up to maximum of 3 months.

---

### Bursitis S. aureus

No antibiotics
If culture positive,
Cloxacillin | 500mg POQDS |
| Co-amoxiclav | 625mg PO TDS |

Duration: 5 days
Alternatives:
If septic bursitis then
Flucloxacillin | 500mg , erythromycin, clarithromycin |
| BD/ QID | 7 days |
| 6 | **Gas Gangrene - Clostridia** | **Surgical debridement is primary therapy**  
Hyperbaric oxygen debated  
Antibiotics  
Penicillin + Clindamycin  
Or  
*In Penicillin allergic patients*, Clindamycin + Metronidazole  
Dose: Clindamycin 600 - 1200 mg IV/day in divided doses  
Penicillin G 24 million units/day divide 4-6hrly IV  
Metronidazole 500 mg IV TDS  
**Duration**: 2-4 weeks depending on patient’s response  
**Alternatives**:  
Penicillin to be administered only after test dose. A combination of penicillin and metronidazole may be antagonistic and is not recommended.  
Ceftriaxone 2g IV BD  
Or  
Erythromycin 1 g QDS IV (not by bolus) |

---

**Pre operative prophylaxis (revised MCGM guidelines)**

1. **Clean soft tissue surgery without implant.**  
   - Single dose Cephazolin 2gm IV  
   - Or  
   - Single dose Co-amoxyclav 1.2gm IV

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</table>
|  | **Eg : excision of benign soft tissue tumour.** | **Or**  
**Single dose Cefuroxime** 1.5gm IV 60 mins prior to incision. |

2. **Closed trauma requiring open reduction and Fixation with implant**  
   - Cephazolin 2gm IV  
   - Or  
   - Co-amoxyclav 1.2gm IV  
   - Or  
   - Cefuroxime 1.5gm IV  
   - Given pre-op and IV 12hrly for 2 doses.

3. **Open trauma requiring debridement and Internal or external fixation.**  
   - Cephazolin 2gm IV 12 hrly  
   - Or  
   - Ceftriaxone 2 gm IV OD  
   - Or  
   - Cefuroxime 1.5gm IV 12 hrly  
   - +  
   - Amikacin 500 -750 mg IV OD  
   - +  
   - Metronidazole 500 mg IV 8 hrly  
   - To be given pre-op and upto 72 hrs post-op
<p>| | | |</p>
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</table>
| 4 | Primary joint replacement| **Cephazolin** 2gm IV 12 hrly  
Or **Co-amoxyclov 1.2gm IV 12 hrly**  
Or **Cefuroxime 1.5gm IV 12 hrly**  
+ **Amikacin** 500 - 750 mg IV OD  
Pre-op and between 2-5 days post op |
| 5 | Major spinal surgery     | **Cephazolin** 2gm IV 12 hrly  
Or **Co-amoxyclov 1.2gm IV 12 hrly**  
Or **Cefuroxime 1.5gm IV 12 hrly**  
+ **Amikacin** 500 - 750 mg IV OD  
Pre-op till 5 days post op        |
| 6 | Minor spinal surgery     | **Cephazolin** 2gm IV 12 hrly  
Or **Co-amoxyclov 1.2gm IV 12 hrly**  
Or **Cefuroxime 1.5gm IV 12 hrly**  
+ **Amikacin** 500 - 750 mg IV OD  
Pre-op and upto 48 hrs post-op    |
| 7 | Revision joint surgery   | **Screen all patients for MRSA**  
(for aseptic loosening)  
If not MRSA carrier then start  
**Cephazolin** 2gm IV 12 hrly  
Or **Co-amoxyclov 1.2gm IV 12 hrly**  
or **Cefuroxime 1.5gm IV 12 hrly**  
+ **Amikacin** 500mg – 750 mg IV OD  
To be continued for 5 days post op.  
If MRSA carrier to the above add  
Vancomycin 1gm IV 12 hrly  
And treat for MRSA carriage      |
## 6. Skin and soft tissue infections

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition/ Expected pathogens</th>
<th>Current MCGM Guidelines</th>
</tr>
</thead>
</table>
| 1      | Acne vulgaris, *Propionibacterium acnes* | **Clindamycin (1%)** gel/lotion to be applied locally BD  
Duration - 15 days  
+- (depending on severity)  
Cap. Doxycycline 100mg PO OD;  
Duration - 15 days  
Or  
Oral Azithromycin 500 mg OD for 3 days.  
Repeat after one week (for upto 6 weeks)  
To follow up after 15 days for clinical evaluation and to assess response to treatment  
**Alternatives:**  
Ointment Erythromycin base (1.5%) to be applied locally BD;  
Duration - 15 days  
+- (depending on severity)  
Minocycline 100 mg PO OD  
Duration - 20 days |

*Antibiotic sparing agents have proved effective. To be given in addition to oral treatment:*  
Topical benzoyl peroxide 2.5% gel or  
Tretinoin 0.025% cream  
**Systemic:**  
Oral contraceptives with anti androgenic progesterone  
Dapsone  
Anti-androgenic agents
| 2 | **Furunculosis**  
* S. aureus –  
Methicillin susceptible S. aureus –  
Methicillin susceptible | **Co-amoxiclav** 625 mg PO TDS  
Or  
**Cefadroxil** 250 / 500 mg PO BD  
**Duration**: 7-10 days  
**Chronic cases** -  
**Minocycline or Doxycycline**  
100 mg PO BD  
**In severe cases** -  
**Clindamycin** 300–450 mg/kg TDS  
**Alternatives**:  
**TMP-SMX** 800/160 PO BD or  
**Cloxacillin** 250- 500 mg QDS  
**Duration**: 7 days  
**Local** –  
**Sodium fusidate 2%** twice  
daily for 3-4 wks |
|---|---|
| 3 | **Carbuncle**  
* S. aureus*, Gram negative rods | 1. **Incision drainage**  
2. **Co-amoxiclav** 625 mg PO TDS  
Or  
**Cefadroxil** 500 mg PO BD  
**Duration**: 7 days  
**Alternatives**:  
**T. Cephalexin**  
500 mg PO QDS  
**Duration**: 7 days |
| 4 | **Cellulitis**  
* S. pyogenes*, Other streptococci,  
*S. aureus* | **Co-amoxiclav** 625 mg PO TDS  
Or  
**TMP/SMX** 800/160 mg PO BD  
**Duration**: 7-10 days  
**Alternatives**:  
**Cefazolin**, 1–2 g TDS  
or  
**Ampicillin/sulbactam**, 1.5–3 g IV QDS or  
**Clindamycin**, 600–900 mg IV TDS |
<table>
<thead>
<tr>
<th></th>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
</table>
| 5 | Erythrasma              | **Azithromycin** 500 mg PO OD  
Duration: 3 days  
Or  
**Erythromycin** 500 mg PO QDS  
Duration: 5 days  
+  
Topical erythromycin / Clotrimazole 1% / Miconazole 2% / Clindamycin / Fusidic acid  
Duration: 2 weeks |
| 6 | Erysipelas S. pyogenes, other streptococci, S. aureus, (Facial S. pneumoniae also)  
In diabetics – maybe associated with Enterobacteriaceae | **Co-amoxiclav** 625 mg PO TDS  
Duration: 7-10 days  
Or  
**Erythromycin** 500 mg QDS  
Duration: 7-10 days  
Alternatives:  
Cefazolin, 1–2 g  
TDS or  
Ampicillin/sulbactam, 1.5–3 g IV QDS or  
**Clindamycin** 600–900 mg IV TDS |
| 7 | Folliculitis S. aureus P. aeruginosa (Hot tub) | **Co-amoxiclav** 625 mg PO TDS  
Duration: 7 days  
Or  
**Ciprofloxacin** 500 mg PO BD  
+ / -  
Local: 1% Mupirocin/ Sodium fusidate / Povidone iodine/ neomycin containing ointment |
| 8 | Chronic Folliculitis S. aureus P. aeruginosa (Hot tub) | **Doxycycline** 100 mg PO OD  
Duration: 2-4 weeks or  
**Dapsone** 100 mg PO OD  
Duration: 2-4 weeks **Topical:**  
1% Mupirocin/ Sodium fusidate / Povidone iodine/ neomycin containing ointment  
Alternatives:  
**TMP/SMX** 800/160 mg PO BD  
Duration: 2-4 weeks |
| 9  | **Hiradenitis suppurativa**  
* S. aureus, S. pyogenes, Anaerobes, Pseudomonas spp., Entero-bacteriaceae | Co-amoxiclav 625 PO TDS  
**Duration:** 7 days  
Or  
**Azithromycin** 500 mg PO OD  
**Duration:** 3 days  
**Alternatives:**  
**Minocycline** 100 mg BD  
or  
**Doxycycline** 100 mg BD  
or  
**Clindamycin** 300 mg QDS  
Or  
**TMP/SMX** 800/160 mg PO BD  
*Antibiotic sparing agents are recommended (Retinoids and antiandrogens)* |
|---|---|
| 10 | **Ecthyma**  
Grp A Strep, S. Aureus | Co-amoxiclav 625 mg PO TDS  
Or  
**Cefadroxil** 250 / 500 mg PO BD  
**Duration:** 7-10 days  
Topical mupirocin ointment/ Sodium fusidate 2% is also effective.  
**Alternatives:**  
For minor lesion, those on dangerous area of face and in children  
**Azithromycin** 500 mg PO OD  
**Duration:** 3 days  
Or  
**TMP/SMX** 800/160 mg PO BD  
**Duration:** 7-10 days |
| 11 | **Madura foot,**  
**Actinomycotic mycetoma**/
**Eumycetoma**  
Nocardia spp.  
Actinomadura spp./  
Fungal causes | Actinomycotic mycetoma:  
**Inj Amikacin** 500 mg IM BD  
+  
**Inj Ampicillin** 500 mg IV QDS  
**Duration of injectable antibiotics:** 2 weeks (to be repeated at 2 week intervals for a total duration of three months) +  
**TMP/SMX** 800/160 mg PO BD  
**Duration:** 3 months  
**Itraconazole** 100 -200 mg BD  
**Duration:** 3 months  
**Alternatives:**  
**Inj. Crystalline Penicillin** 50,000 units/kg body weight IV in  
4 divided doses/ day  
**Duration:** 2 weeks  
**Surgical debulking done to reduce infection load**  
**Eumycetoma:**  
**Itraconazole** 100 -200 mg BD  
**Duration:** 3 months |
|---|---|
| 12 | **Muco-cutaneous candidiasis**  
Candida albicans | **Correct the underlying predisposing condition**  
**Cutaneous Candidiasis**  
**Clotrimazole** cream (1%) to be applied locally twice daily  
Or  
**Miconazole** 2% cream  
**Duration:** 2 weeks.  
**To follow up after 2 weeks to assess response to therapy.**  
**Alternatives:**  
**Cap. Fluconazole** (100 mg) 2 capsules on day 1 followed by 1 capsule once daily for 2 weeks  
Or  
**Nystatin** Suspension 100000 Units to swish around in the mouth and then swallow four times daily |
| 13 | **Paronychia**  
**(Acute/chronic)**  
Acute:  
Staphylococcal infection  
Chronic : Candida | **Acute:**  
**Co-amoxiclav** 625 PO BD  
and  
**Incision and drainage to relieve pain**  
**Chronic:**  
**Oral fluconazole** 150 gm /wk  
**Topical miconazole / clotrimazole.**  
**Alternatives:**  
**Ciclopirox suspension** applied to affected area(s) BID/TDS  
Or |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Econazole cream applied to affected area(s) BD/TID</th>
</tr>
</thead>
</table>
| 14 | **Localised Pyoderma** | **Topical Treatment:**  
Sodium fusidate 2%  
Or  
Mupirocin 1%  
Or  
Povidone iodine ointment  
**Duration:** 7-10 days  
**Alternatives:**  
Topical **Nadifloxacin** cream  
**Duration:** 7-10 days |
| 15 | **Puncture wounds (foot)**  
*S.aureus*,  
Strep spp,  
*P.aeruginosa*, other GNR | **To be deleted from MCGM guidelines** |
| 16 | **Seborrhoic dermatitis**  
Malassezia spp | **To be deleted from MCGM guidelines** |
17 Other fungal infections of skin, hair and nails
Tinea versicolor, Dermatophytes

<table>
<thead>
<tr>
<th>a) Tinea corporis/Tinea cruris</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Systemic therapy</strong></td>
</tr>
<tr>
<td><strong>Terbinafine</strong> 250 mg OD/BD</td>
</tr>
<tr>
<td><strong>Duration:</strong> 14 days</td>
</tr>
<tr>
<td>Or</td>
</tr>
<tr>
<td><strong>Itraconazole</strong> 100 -200 mg BD</td>
</tr>
<tr>
<td><strong>Duration:</strong> 14 days</td>
</tr>
<tr>
<td>To follow up after 2 weeks to check response to therapy</td>
</tr>
</tbody>
</table>

Topical therapy

**Whitfield ointment**
+  **Cream Clotrimazole** (1%) to be applied locally twice daily for 2 weeks
Or  **Amorolfin** cream 1%
Or  **Luliconazole** Cream

**Alternative treatment**
(T. corporis/T cruris)

**Griseofulvin** 250 mg PO BD
**Duration:** 6 weeks to 6 months

b) Tinea capitis/Tinea barbae/Tinea pedis/Tinea manuum
<table>
<thead>
<tr>
<th>18</th>
<th>Scabies</th>
<th>Permethrin 5% cream OR GBH 1 % lotion (gamma benzene hexachloride) Apply Permethrin entire skin chin down to and including toes. Leave on for 8-14 hours Repeat application after 10 days Alternatives: Single Dose Ivermectin 200 µg/kg PO Take 2nd dose of Ivermectin after 10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Onychomycosis</td>
<td>Itraconazole 100-200 mg BD Duration: 6-12 weeks Or Terbinafine 250-500 PO per day Duration: 6-12 weeks After 3 months, repeat testing Alternative: Griseofulvin 250-500 mg PO BD Duration: 6-12 months</td>
</tr>
</tbody>
</table>
### 7. CVS Infections

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Condition/ Expected</th>
<th>No. pathogens</th>
<th>Current MCGM Guidelines</th>
</tr>
</thead>
</table>
| 1. | Infective endocarditis (native valve) *S. viridians*, Enterococcus, MSSA, MRSA, Culture negative |  | I. **Inj Ceftriaxone** 2 gm IV / IM single dose  
*Duration*: 4 weeks  
+ **Inj Gentamicin** 3 mg/kg/day IV or IM OD  
*Duration*: 2 weeks  
II. **Inj Ampicillin** 12gm/day(divided in 4-6 doses)  
+ **Inj Cloxacillin** 12gm/day (divided in 4-6 doses)  
*Duration*: 4 weeks  
+ **Inj Gentamycin** 3 mg/kg/day OD dose.  
*Duration*: 2 weeks  
-For patients unable to tolerate beta lactams or beta lactam resistance  
**Vancomycin** 30 mg/kg/day IV in 2 doses  
+ **Gentamicin** (3 mg/kg/day IV. or i.m.) Note  
: OD dosing of Gentamicin decreases the nephrotoxicity |
| 2 | Infective endocarditis (prosthetic valve) MSSA, MRSA |  | Early (<12 months)  
**Inj Vancomycin** 15-20 mg / kg /day IV in 2 doses  
*Duration*: 6 weeks  
+ **Gentamicin** (3 mg/kg/day IV or IM in OD dose)  
*Duration*: 2 weeks  
+ **Rifampicin** 900-1200 mg PO in 2-3 divided doses  
*Duration*: 6 weeks  
Late (>12 months)  
Similar to Empirical Therapy for native valve Endocarditis with total duration of 6 weeks  
**Remarks:**  
- **Inj Gentamicin** is usually used for two weeks. The duration of treatment is 4-6 weeks of effective antibiotics.  
- **Rifampicin** should not be used in the first 5 days till bacteremia is cleared because of antagonistic action of antibiotics against plaktonik /replicating bacteria |
<p>| 3 | Pacemaker/ Defibrillator infection Local microbial spectrum |  | Local antiibiogram |</p>
<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition/ Expected Pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CABG</td>
<td>Same as before</td>
</tr>
<tr>
<td>2.</td>
<td>Pacemaker/ Defibrillator Implantation <em>S. aureus</em> <em>S. epidermidis</em> Gram Negative Bacilli</td>
<td><strong>Amoxycillin-clavulanic acid</strong> 1.2 g IV. 60 min prior to skin incision and 12 hours after the procedure f/b 1g PO BD for 3 days</td>
</tr>
<tr>
<td>3.</td>
<td>Cardiac Catheterization</td>
<td><strong>Amoxycillin-clavulanic acid</strong> 1.2 g IV. 60 min prior to skin incision and 12 hours after the procedure f/b 1g PO BD for 3 days</td>
</tr>
</tbody>
</table>
### 8. Intra-abdominal infections

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Conditions/ Expected Pathogens</th>
<th>Revised MCGM guidelines</th>
</tr>
</thead>
</table>
| 1. | **Abscess-Liver Pyemic**  
Enterobacteriaeae, Enterococcus, *B. fragilis*  
Other anaerobes | **Ampicillin + Sulbactam**  
1.5g IV TDS  
**Or**  
**Ceftriaxone** 1.0 g IV BD  
**Or**  
**Ciprofloxacin** 500 mg BD IV  
**Plus**  
**Metronidazole** 500 mg IV TDS or 800 mg oral TDS  
**Duration**: 2 weeks  
**Alternatives:**  
**Piperacillin + tazobactam** 4.5 g m IV QDS X 2 weeks  
| 2. | **Abscess-Liver Amoebic**  
*E. histolytica* | **Metronidazole** 800 mg PO TDS / 500 mg IV TDS  
**+**  
**Tab Chloroquine** 250 mg BD  
**+**  
**Cefotaxime** 1 gm IV 8 hrly  
**Duration**: 10-14 days  
**Alternative:**  
Diloxanide furoate with metronidazole 500 mg + 400 mg TDS X 10 days (for cyst passers) |
| 3. | **Acute gastroenteritis**  
(indoor patient)  
Suspected- viral  
Bacterial – Pathogenic *E. coli* | **None indicated in viral**  
**Bacterial:**  
**Ciprofloxacin** 500 mg IV BD  
**Or**  
**Ofloxacin** 200 mg IV BD  
**Duration**: 3-5 days  
(convert to oral when patient stabilizes)  
**Alternative:**  
**Doxycycline** 100 mg PO BD  
**Duration**: 3-5 days  
**OR**  
**Co-trimoxazole** 800/160 mg PO OD  
**Duration**: 3-5 days |
| 3a | **Acute gastroenteritis**  
(OPD patient)  
Suspected- viral  
Bacterial – V cholera | *None indicated in viral*  
**Bacterial:**  
Doxycycline- 100 mg PO BD  
Or  
Ciprofloxacin 500 mg BD |

| 4a | **Dysentery - Bacillary**  
Shigella spp  
*Campylobacter jejuni*  
Pathogenic  
E.coli | Ciprofloxacin 500 mg BD  
Or  
Ofloxacin 200 mg BD  
(for mild cases given orally and IV for indoor patients/ patients with severe illness)  
**Duration** - 5 days  
**Alternatives:**  
Ceftriaxone 2gm IV OD for 5 days  
Remarks: For Campylobacter the drug of choice is Azithromycin |

| 4b | **Dysentery - Amoebic**  
(OPD patient)  
*E.histolytica* | Metronidazole 400 mg PO TDS  
**Duration**- 7 days  
**For severe cases:**  
Metronidazole 500 mg IV 8 hrly for 7-10 days  
**Alternatives:**  
Tinidazole 2gm oral stat  
Add *Diloxanide furoate* 500 mg TDS for 10 days for cyst passers |

| 5 | **Dysentery – Unknown**  
OPD patient | Ciprofloxacin 500 mg PO BD  
+  
Metronidazole 400 mg PO TDS  
**Duration** - 5 days  
If no response to Ciprofloxacin, add Metronidazole 400 mg PO TDS  
**Alternatives:**  
Ofloxacin 200 mg PO BD  
**Duration**: 5 days  
+  
Tinidazole 2gm oral stat |
### Cholangitis

- **Enterobacteriaceae, Anaerobes**

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Dosage</th>
<th>Route</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piperacillin- tazobactam</td>
<td>4.5 gm IV TDS</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Metronidazole</td>
<td>500 mg IV TDS</td>
<td><strong>Duration</strong> – 7 days</td>
<td></td>
</tr>
</tbody>
</table>

**Alternatives:**
- If no response after 72 hrs add,
  - **Gentamicin** 1 mg/kg IV TDS
  - Or
  - **Amikacin** 15 mg/kg IV OD

**Duration- 7 days**

Upgrade to higher antibiotics as per culture and sensitivity report.

---

**Meropenem** to be reserved for post surgical/ endoscopic cases

**Remarks:** Surgical or endoscopic intervention to be considered if there is biliary obstruction.

High prevalence of ESBL producing *E.coli, Klebsiella* sp. strains. De-escalate therapy once antibiotic susceptibility is known.

---

### Cryptosporidiosis

**Cryptosporidium parvum**

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Dosage</th>
<th>Route</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrazoxanide</td>
<td>500 mg (PO) BD</td>
<td></td>
<td>3 days</td>
</tr>
</tbody>
</table>

---

### Diarrhoea – C.difficile

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Dosage</th>
<th>Route</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metronidazole</td>
<td>400 mg PO TDS</td>
<td><strong>Duration</strong> - 10-14 days</td>
<td></td>
</tr>
</tbody>
</table>

**In seriously ill add,**

**Vancomycin** -125 mg (children) / 500 mg (adults) , PO  QDS  **Duration-** 10-14 days  **Remarks:**

Discontinue the causative antibiotic.

Correct fluid and electrolyte loss.

Intravenous vancomycin is not recommended since bactericidal concentrations are not achieved in the colon.
| 9 | Enteric fever  
*Salmonella typhi / Salmonella paratyphi A/B/C* | Ceftriaxone 2 gm IV BD  
+  
Azithromycin  
1 gm (PO or IV) OD  
*Duration: 7 days*  
*If patient discharged earlier, switch to*  
*Oral Cefixime 200 mg BD*  
+  
Azithromycin 500 mg BD  
*Duration: 7 days*  
*For susceptible strains with no response to Ceftriaxone give,*  
Chloramphenicol 500 mg IV QDS;  
*Duration: 14 days*  
*Total duration of therapy if IV drugs are given is 7 days. If IV drugs are given for 7 days in toto then no oral drugs are required*  
*However, if patient is discharged earlier than 7 days then duration of treatment for IV plus oral is 10 – 14 days.* |
|---|---|
| 10 | Acute cholecystitis  
Enterobacteriaeae, Enterococci, Anaerobes | All IV  
Ceftriaxone 1 gm BD  
Or  
Piperacillin-Tazobactam  
4.5 gm TDS  
+  
Metronidazole 500 mg TDS  
*Duration: 7-10 days* |
| 11 | Spontaneous Bacterial Peritonitis  
Enterobacteria-ecae  
Enterococci  
*S.pneumoniae*  
aerobes | All IV  
Cefotaxime, 2 gm, TDS  
Or  
Piperacillin-Tazobactam  
4.5 gm TDS  
+  
Metronidazole 500 mg TDS  
*Duration: 7 days*  
*Alternatives: Ceftriaxone 1 gm BD*  
*Duration: 7 days* |

**Alternatives/remarks:**  
Patients unresponsive to antibiotics may require surgery.
| 12. Perforative peritonitis | All IV
Enterobacteriaeeae Enterococci
*P. aeruginosa*, Anaerobes

<table>
<thead>
<tr>
<th>Piperacillin- tazobactam</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5 gm TDS +</td>
</tr>
<tr>
<td>Metronidazole 1 gm TDS</td>
</tr>
</tbody>
</table>
| Duration - 7-10 days Alternative:
  | Imipenem 1 gm TDS |
  | Or |
  | Meropenem 1 gm TDS + |
  | Metronidazole 1 gm TDS |
  | *If no response then upgrade as per culture and sensitivity report* |
  | *Addition of cover for yeast: Fluconazole* 800 mg IV loading dose day 1, followed by 400 mg 2nd day onwards Duration: ? |
  | Remarks: *Source control is important to reduce bacterial load.* |
  | *If excellent source control – for 5-7 days; otherwise 2-3 weeks suggested.* |

| 13. Intra abdominal abscess | Mild – Moderate:
Enterobacteriaeeae Gram pos cocci Anaerobes MTB Complex (rare)

| Ceftriaxone 1 gm IV BD + |
| Metronidazole 500 mg IV TDS *Severe:*
| Piperacillin- Tazobactam |
| 4.5 gm IV TDS or |
| Imipenem 1 gm + Cilastatin IV + |
| Metronidazole 500 mg IV TDS *Duration - 10 days or longer* |
| *Alternatives/Remarks:*
Antibiotics should be administered early.
Drainage should be considered. |

| If no response then modify as per culture sensitivity report. |
| *Addition of cover for yeast: Fluconazole* 800 mg IV loading dose day 1, followed by 400 mg 2nd day onwards |
| 14 | **Gastric Ulcer Disease / Peptic Ulcer Disease**  
*H.pylori* | **PPI** Pantoprazole 40 mg PO BD  
+  
**Clarithromycin** 500 mg PO BD  
+  
**Amoxicillin** 1 gm PO BD  
**Duration** 2 weeks  
**Alternative:**  
**PPI** 40 mg  
+  
**Clarithromycin** 500 mg  
+  
**Metronidazole** 500 mg |
|---|---|---|
| 15 | **Liver - Hydatid Disease**  
*E. granulosus* | **Albendazole**  
15 mg / kg PO BD  
**Duration**: 3-6 months |
| 16 | **Pancreatic abscess**  
Enterobacteriaceae  
Enterococci  
Anaerobes | **Imipenem 1gm with Cilastatin**  
IV TDS is the drug of choice  
**Or**  
**Meropenem** 2 gm IV TDS  
+  
**Metronidazole** 500 mg IV TDS  
**Duration**: 10-14 days  
**Alternative/Remarks:**  
**Addition of cover for yeast:**  
**Fluconazole** 800 mg IV loading dose day 1, followed by 400 mg 2nd day onwards |
| 17 | **Pancreatitis with sepsis**  
Enterobacteriaceae  
*P.aeruginosa* (occ)  
Enterococcus  
Bacteroides | **Imipenem 1gm with Cilastatin**  
IV TDS is the drug of choice  
**Or**  
**Meropenem** 2 gm IV TDS  
+  
**Metronidazole** 500 mg IV TDS  
**Duration**: 10-14 days  
**Addition of cover for yeast:**  
**Fluconazole** 800 mg IV loading dose day 1, followed by 400 mg 2nd day onwards |
### 9. Infections of Urinary Tract

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Cystitis</strong>&lt;br&gt;Most likely – <em>E.coli</em>&lt;br&gt;Rare cause – Proteus spp, Klebsiella spp</td>
<td><strong>Nitrofurantoin</strong> 100 mg PO BD&lt;br&gt;<strong>Duration</strong>: 7 days&lt;br&gt;Or&lt;br&gt;<strong>Cotrimoxazole</strong> DS (800/160) PO OD&lt;br&gt;<strong>Duration</strong>: 7 days&lt;br&gt;<strong>Alternative</strong>:&lt;br&gt;<strong>Ciprofloxacin</strong> 500 mg PO BD&lt;br&gt;Or&lt;br&gt;<strong>Norfloxacin</strong> 400 mg PO BD&lt;br&gt;<strong>Duration</strong>:&lt;br&gt;3 days (E.coli, Kleb)&lt;br&gt;Or&lt;br&gt;7 days (other susceptible organisms)</td>
</tr>
<tr>
<td>2.</td>
<td><strong>Complicated cystitis</strong>&lt;br&gt;(Patients with structural abnormalities, calculi, diabetics, recurrent UTI)&lt;br&gt;Most likely – <em>E.coli</em>&lt;br&gt;Rare cause – Proteus spp, Klebsiella spp</td>
<td>If patient is stable, same as above&lt;br&gt;<strong>Duration</strong>: 14 days&lt;br&gt;<strong>If patient is unstable</strong>,&lt;br&gt;<strong>Inj Piperacillin + Tazobactam</strong>&lt;br&gt;4.5 gm IV TDS&lt;br&gt;<strong>Alternative/Remarks</strong>:&lt;br&gt;Culture mandatory.&lt;br&gt;&lt;br&gt;If patient does not respond in 72 hrs, advise imaging, USG, CT and adjust antibiotic as per culture sensitivity report.</td>
</tr>
<tr>
<td>3.</td>
<td><strong>Acute uncomplicated Pyelonephritis</strong> <em>E.coli</em>, <em>Staphylococcus saprophyticus</em> (in sexually active young women), <em>Klebsiella pneumoniae</em>, <em>Proteus mirabilis</em></td>
<td><strong>Piperacillin-Tazobactam</strong> 4.5 gm IV 8hrly OR (QID if pseudomonas)&lt;br&gt;<strong>Cefoperazone-Sulbactam</strong> 3gm IV 12hrly OR&lt;br&gt;<strong>Amikacin</strong> 15-20mg/kg/d IM/IV OD (preferred if outpatient) or&lt;br&gt;<strong>Gentamicin</strong> 4-7mg/kg/d IM/IV OD (preferred if outpatient)&lt;br&gt;<strong>Duration</strong>: 2 weeks&lt;br&gt;<strong>Monitor creatinine if on amino glycoside</strong></td>
</tr>
</tbody>
</table>
|   | Complicated Pyelonephritis  
*Escherichia coli, Klebsiella pneumonia, Proteus mirabilis, Pseudomonas aeruginosa, Enterococcus sp.*  
Frequently multi-drug resistant organisms are present  | Piperacillin-Tazobactam 4.5 gm IV 6hrly  
Cefoperazone-Sulbactam 3gm IV 12hrly OR  
Amikacin 15-20mg/kg/d IM/IV OD (preferred if outpatient)  
Gentamicin 4-7mg/kg/d IM/IV OD (preferred if outpatient)  
SECOND LINE  
Meropenem 1gm IV 8hrly or Imipenem 1gm 8hrly  
In Addition:  
*Ciprofloxacin* 500mg BD or *Levofloxacin* 750 mg OD added if pseudomonas  
*Switch as per culture*  |
|---|---|
| 4 | **Duration** 2 weeks  
*Monitoring of creat if ag  
*Two agents if sepsis or MODS present  |
|   | Acute Prostatitis  
*Enterobacteriaceae*  | TMP-SMX 960 mg BD X 4-6 weeks  
*Ciprofloxacin* 500mg BD  
or  
Levofloxacin 500mg OD 4-6 weeks  
Severe systemic symptoms -treat as pyelonephritis  |
| 5 |   |   |
|   | Catheter associated UTI  |  
*Sample collection*  
*Remove catheter and collect clean catch MSU*  
*Change PUC and collect sample from new catheter*  
*Under all asepsis, puncture catheter with sterile needle*  
*Treat as complicated pyelonephritis*  |
10. Plastic surgery and burns

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Conditions/ Expected Pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
</table>
| 1.     | Maxillofacial injuries (single uncomplicated fractures) | **At induction:** Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV  
**Immediate post op:** 6-8 hrs post induction dose: Coamoxiclav 1.2g IV  
**Post op:** Tab Co-amoxiclav 625mg TDS for 5 days |
| 2.     | Maxillofacial injuries (complicated multiple fractures, panfacial fractures) | **At induction:** Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV  
**Immediate post op:** 6-8 hrs post induction dose: Coamoxiclav 1.2g IV  
**Late post op:** IV antibiotic continued for 3 days  
Switch over to oral: Tab Co-amoxiclav 625mg TDS for 7 days |
| 3.     | Clean surgery | Co-amoxiclav 1.2g IV OR Cefuroxime  
Repeat dose if surgery extends beyond 6 hrs  
In addition: Modify antibiotics as per culture and sensitivity report |
| 4.     | Clean contaminated wounds (debridement and grafting, minor debridement, etc) | **At induction:** Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV  
**Immediate post op:** 6-8 hrs post induction dose: Coamoxiclav 1.2g IV  
**Late post op:** Tab Co-amoxiclav 625mg TDS for 5 to 7 days (till 1st dressing)  
In addition: Modify antibiotics as per culture and sensitivity report |
| 5.     | Dirty wounds (major debridement and bone debridement), major flap and free flap surgeries | **At induction:** Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV or as per culture reports  
**Immediate post op:** 6-8 hrs post induction dose: Coamoxiclav 1.2g IV or as per culture reports  
**Late post op:** IV antibiotic continued for 5 days  
Switch over to Tab Co-amoxiclav for next 5 days or as per culture reports  
In addition: Modify antibiotics as per culture and sensitivity report |
| 6 | Burns (early excision and grafting) | **At induction:** Piperacillin-Tazobactum 4.5 g IV OR Meropenem 1g IV  
Immediate post op: 6-8 hrs post induction dose: Piperacillin-Tazobactum 4.5 g IV OR Meropenem 1g IV  
Late post op: IV antibiotic continued for 5 to 7 days with change as per culture reports / clinical response  

May switch over to oral as per culture reports  
Antifungal Therapy –  
When extensive burns and patient not responding to antibiotics  
  o If hemodynamically stable: Fluconazole  
  o If hemodynamically unstable: Echinocandin  

In addition:  
- Antibiotic choices are dependent on the antibiogram of the individual institution.  
- Surgical debridement as necessary.  
- Amphotericin B is toxic to all burn patient as renal system compromised, hence Caspofungin may be used |
|---|---|---|
| 7 | Burns (late grafting) | **At induction:** Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV  
Immediate post op: 6-8 hrs post induction dose: Coamoxiclav 1.2g IV  
Late post op: Tab Co-amoxiclav 625mg TDS for 5 to 7 days  

In addition:  
- Antibiotic choices are dependent on the antibiogram of the individual institution.  
- Surgical debridement as necessary.  
- Amphotericin B is toxic to all burn patient as renal system compromised, hence Caspofungin may be used |
## 11. Infections in Obstetrics and Gynaecology

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition/ Expected Pathogens</th>
<th>Revised MCGM recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vaginal discharge&lt;br&gt;Trichomonal vaginitis&lt;br&gt;Monilial vaginitis&lt;br&gt;Bacterial vaginosis</td>
<td><strong>Fluconazole</strong> 150 mg PO once and <strong>Secnidazole</strong> 2 g PO once (MDACS/NACO Green kit)&lt;br&gt;&lt;br&gt;Alternatives:&lt;br&gt;Both sexual partners to be treated simultaneously.&lt;br&gt;Both are category C, so withhold treatment until after first trimester, unless urgent treatment is felt to be necessary.&lt;br&gt;Local treatment in the form of intravaginal agents such as creams or suppositories as per requirement</td>
</tr>
<tr>
<td>2</td>
<td>Cervical discharge&lt;br&gt;Chlamydia trachomatis</td>
<td><strong>Cefixime</strong> 400 mg PO once&lt;br&gt;<strong>Azithromycin</strong> 1 g PO once (MDACS/NACO Grey kit)&lt;br&gt;Both sexual partners to be treated simultaneously.</td>
</tr>
<tr>
<td>3</td>
<td>Septic abortion, Bartholin's abscess, Chorioamnionitis, PPROM, PROM, Burst abdomen&lt;br&gt;Severe PID&lt;br&gt;Peritonitis&lt;br&gt;Enterobacteriaecae&lt;br&gt;Enterococci&lt;br&gt;Anaerobes</td>
<td>I. <strong>Co-amoxiclav</strong> 1.2 g IV q12h X ≥7 d +&lt;br&gt;Inj. <strong>Metronidazole</strong> 500 mg (100 cc) IV q8h X ≥7 d +&lt;br&gt;Inj. <strong>Gentamicin</strong> 1.5 to 2 mg/kg loading dose, followed by 1 to 1.7 mg/kg IV or IM q8h X 5 d Or&lt;br&gt;II. <strong>Ceftriaxone</strong> 1.5 gms IV q12h +&lt;br&gt;<strong>Metronidazole</strong> 500 mg IV q8h + <strong>Amikacin</strong> 500 mg IV q12h&lt;br&gt;Duration : 5 days&lt;br&gt;&lt;br&gt;Alternatives/Remarks:&lt;br&gt;Wound swab/ pus collected for culture sensitivity.&lt;br&gt;Modify if required as per culture sensitivity result.&lt;br&gt;Monitor renal function&lt;br&gt;Consider Vancomycin or Clindamycin as per clinical condition</td>
</tr>
</tbody>
</table>
### PID: Mild
- **C.trachomatis**
- **N.gonorrhoea**
- Mycoplasma
- Anaerobes
- **G.vaginalis**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tab Cefixime</strong></td>
<td>400mg PO once +</td>
</tr>
<tr>
<td><strong>Tab Metronidazole</strong></td>
<td>400 mg PO TDS for 14 days +</td>
</tr>
<tr>
<td><strong>Cap Doxycycline</strong></td>
<td>100 mg PO BD for 14 days</td>
</tr>
</tbody>
</table>

**Alternatives:**
- Contraindicated in pregnancy

---

### Syphilis
- Refer to STD program guidelines

### Tuberculosis in pregnancy
- Please refer RNTCP guideline
  - WHO has advocated that, all the first line drugs are safe in pregnancy and can be used except streptomycin. SM causes significant ototoxicity to the fetus (Pyrazinamide not recommended by US FDA)
  1. Mother and baby should stay together and the baby should continue to breastfeed.
  2. Pyridoxine supplementation is recommended for all pregnant or breastfeeding women taking isoniazid as well as to neonate who are being breast fed by mothers taking INH.

**Remarks:**
- Very small chance of transmission of infection to fetus.
- Late diagnosis can predispose to LBW, prematurity.

### Influenza in pregnancy
- **Oseltamivir** 75 mg Oral BD for 5 days

- In addition:
  - Nebulization with **Zanamivir** respules (2)
  - 5 mg each, BD for 5 days

**Remarks:**
- Tendency for severe including premature labor & delivery.
- Treatment should begin within 48 hrs of onset of symptoms.
- Higher doses commonly used in non pregnant population (150 mg) are not recommended in pregnancy due to safety concerns.
- Chemoprophylaxis can be used in significant exposures.
- Live (nasal Vaccine) is contraindicated in pregnancy.

**Complications:**
- Direct fetal infection rare
- Preterm delivery and pregnancy loss.
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
</table>
| 8 | Varicella | >20 wks of gestation, presenting within 24 hours of the onset of the rash,  
**Acyclovir** 800mg Oral 5 times a day  
IV acyclovir recommended for the treatment of severe complications,  
> 24 hrs from the onset of rash, antivirals are not found to be useful.  
VZIG should be offered to susceptible women < 10 days of the exposure. VZIG has no role in treatment once the rash appears. The dose of VZIG is 125 units / 10kg not exceeding 625 units, IM  
**Remarks:**  
Chickenpox during pregnancy does not justify termination without prior prenatal diagnosis as only.  
A minority of fetuses infected develop fetal varicella syndrome. |
| 9 | Toxoplasmosis in pregnancy | <18 weeks gestation at diagnosis  
**Spiramycin** 1 gm Oral qid until 16-18 weeks/Pyrimethamine + sulphadizine. Alternate every two weeks  
If PCR Positive -  
>18 weeks gestation and documented fetal infection by positive amniotic fluid PCR.  
**Pyremethamine** 50 mg Oral BD x 2 days then 50 mg OD +  
**Sulphadiazine** 75 mg/kg Oral x 1 dose then 50mg/kg bd +  
**Folinic Acid** (10-20 mg Oral daily) for minimum of 4 weeks or for duration of pregnancy. |
| 10 | Malaria in pregnancy | As per national program |
| 11 | Mastitis without abscess | **Amoxycillin clavulunate/Cephalexin** 500 mg QID/ OR  
**Ceftriaxone** 2 gm OD OR  
MRSA- based on sensitivities Add  
**Clindamycin** 300 QID or  
**Vancomycin** 1 gm IV 12 hourly /teicoplanin 12mg/kg IV 12 hourly x 3 doses followed by 6 once daily IV |
| 12 | Mastitis with abscess | Drainage with antibiotic cover for  
MRSA  
**Clindamycin** 300 QID or  
**Vancomycin** 15mg/kg IV 12 hourly (maximum 1gm 12 hourly)/teicoplanin 12mg/kg IV 12 hourly x 3 doses followed by 6 mg once daily IV |
## 12. Pediatric infections

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition/ Expected Pathogens</th>
<th>Revised MCGM recommendation</th>
</tr>
</thead>
</table>
| 1.     | **Tonsillitis/Pharyngitis** Grp A beta haemolytic Streptococci | Amoxycillin (Oral) 40 mg/kg/day (<30 kg); 50 mg/kg/day given TID, can be given BID (>30 kg)  
Duration: 10 days  
Alternatives  
Cefaclor (20-40 mg/kg/d in 3 divided doses) /  
Cephalexin (50 mg/kg/d in 3 divided doses)-  
Erythromycin (40 mg/kg/day in 3 divided doses for 10 days)/  
Azithromycin (12 mg/kg/day single dose for 5 days) |
| 2.     | **Otitis Media** | **Amoxicillin:** 80-90 mg/kg per day OR  
**Co-amoxiclav:** 90 mg/kg per day of Amoxicillin, with 6.4 mg/kg per day of clavulanate in 3 divided doses  
**Duration:** 7-10 days  
**Alternatives:**  
Ceftriaxone IV: 1 or 3 days OR Azithromycin  
**Remarks:** May require tympanocentesis |
| 3.     | **Sinusitis** | **Amoxicillin** (oral: 45 mg/kg/day) or  
**Co-amoxiclav** (oral: 80-90 mg/kg/day of amoxicillin) if failure to respond to amoxicillin in 72 hrs.  
**Alternatives:**  
Trimethoprim-Sulfa-methoxazole (TMP 10 mg/kg/day and SMX 50 mg/kg/day in 2 div doses) OR Azithromycin  
**Remarks:** Refer to ENT surgeon if no response |
| 4.     | **Pneumonia**  
Community acquired  
Age 3 weeks to 3 months | **IV Cefotaxime** (150mg/kg/d) in 2-3 div doses OR  
**IV Ceftriaxone** (50-75mg/kg/day OD) for hospitalized patients  
**Duration:** 10-14 days.  
Add erythromycin for chlamydia  
**Alternative:**  
Coamoxyclav 100 mg/kg/day in two divided doses  
**Remarks:** Amoxicillin (80-90 mg/kg/day oral) can be used in nonhospitalized patients |
### 5. Pneumonia  
**Community acquired**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage and Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV Cefotaxime</td>
<td>(150mg/kg/d) in 2-3 div doses OR IV Ceftriaxone (50-75mg/kg/day OD) for hospitalized patients</td>
</tr>
</tbody>
</table>

- **Age 4 months – 4 years**  
  - **Duration:** 10-14 days.  
  - **Add vancomycin or Clindamycin**  
  - **if MRSA is the etiology**  
  - **Alternatives:** Co-amoxiclav / Cefuroxime axetil (150-200mg/kg/d in 3 div doses)  
  - **Remarks:** Amoxicillin (80-90 mg/kg/day oral) can be used in nonhospitalized patients

### 6. Pneumonia  
**Community acquired Age > 5 years**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage and Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above plus</td>
<td></td>
</tr>
</tbody>
</table>
  - **Add Azithromycin** (for M.pneumoniae and C.pneumoniae)  
  - 12 mg/kg/day single dose for 5 days  
  - **Duration:** 5 days  
  - **Alternatives:** Co-amoxiclav / Cefuroxime axetil PLUS Azithromycin  
  - **Remarks:** Amoxicillin (80-90 mg/kg/day oral) can be used in nonhospitalized patients PLUS Azithromycin

### 7. Empyema

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage and Administration</th>
</tr>
</thead>
</table>
| I.V. Cefotaxime / Ceftriaxone | (100 mg/kg/24 hr divided every 12 hr IV).  
  - **Add I.V. Co-amoxiclav** 100 mg/kg/day in two divided doses  
  - **Vancomycin** (40-60 mg/kg/day in 4 div doses) or **Linezolid** (10mg/kg/dose 8-12 hrly) **if MRSA** is the etiology.  
  - **Duration:** 3-4 weeks  
  - **Remarks:** Thoraco-centesis/ ICD/ VATS as necessary

### 8. Acute epiglottitis

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dosage and Administration</th>
</tr>
</thead>
</table>
| Ceftriaxone | 50-100 mg / kg / day BD  
  - Or  
  - Cefotaxime 50-100 mg / kg / day TDS  
  - **Duration:** 7-10 days  
  - **Alternative:** Meropenem (IV 60 mg/kg/day in 3 div doses)
9. **Diphtheria**

Erythromycin
(40-50 mg/kg/day divided every 6 hr by mouth [PO] max. 2 g/day)
Or
**Aqueous crystalline penicillin G** (100,000-150,000 U/kg/day divided every 6 hr IV or intramuscularly [IM])  **Alternative:**
Procaine penicillin (25,000-50,000 U/kg/day divided every 12 hr IM). Duration- 14 days

**Remarks:**
Penicillins should be administered after test dose
Specific antitoxin to be administered

10. **Pertussis/ Whooping cough**

Azithromycin: 10 mg/kg/day in a single dose **for 5 days**
Or
Erythromycin (40-50 mg/kg/day in 4 divided doses **for 14 days**)
**Alternative:**

11. **Diarrhoea**

Viral Diarrhoea- No antibiotics required.
For Bacterial (E coli)- **TMP** 10 mg/kg/day and **SMX** 50 mg/kg/day BD× 5 days.
For Salmonella- Treat similar to Shigella **Remarks:**
Correct the dehydration. Add daily oral zinc for 14 days (10 mg/day for infants <6 mo of age and 20 mg/day for those >6 mo)

12. **Dysentery**

Shigella dysenteriae

Ceftriaxone
50-100 mg/kg/day IV or IM, qd or BD× 7 days
OR
Ampicillin PO, IV 50-100 mg/kg/day QDS× 7 days
**Alternatives:**
TMP 10 mg/kg/day and SMX 50 mg/kg/day BD × 5 days.
**Remarks:**
Nalidixic acid (50mg/kg/day in 4 div. doses)
| 13. | Cholera | **Doxycycline** (adults and older children): 300 mg given as a **single dose** or  
**Tetracycline** 12.5 mg/kg/dose 4 times/day × 3 days (up to 500 mg per dose × 3 days)  
**Alternatives:**  
**Erythromycin** 12.5 mg/kg/dose 4 times a day × 3 days (up to 250 mg 4 times a day × 3 days)  
or  
**TMP** 10 mg/kg/day and **SMX** 50 mg/kg/day  
**BD** × 5 days.  
**Remarks:**  
Rehydration. Add zinc for 14 days. |
| 14. | Giardiasis | **Metronidazole** PO 30-40 mg/kg/day in 3 div doses × 7 days  
**Alternatives:**  
**Furazolidone** PO 25 mg/kg/day QDS × 5-7 days or  
**Albendazole** PO 200 mg BD × 10 days |
| 15. | Intestinal amoebiasis | **Metronidazole** PO 30-40 mg/kg/day in 3 div doses × 7-10 days |
| 16. | Helminthic infestations | **Ascariasis- Albendazole** (400 mg PO once, for all ages) or  
**Mebendazole** (100 mg BD PO for 3 days or 500 mg PO once for all ages),  
**OR Pyrantel pamoate** (11 mg/kg PO once, maximum 1 g).  
**Trichuris- Mebendazole** (100 mg BD PO for 3 days or 500 mg PO once for all ages).  
**A.duodenale- Albendazole** (400 mg PO once, for all ages)  
**Alternatives:**  
**Ascariasis- Nitazoxanide** (100 mg BD PO for 3 days for children 1-3 yr of age and 200 mg BD PO for 3 days for children 4-11 yr.  
**Trichuris- Albendazole** (400 mg PO once for all ages) or  
**Nitazoxanide** (100 mg BD PO for 3 days for children 1-3 yr of age,  
200 mg BD PO for 3 days for children 4-11 yr of age  
**A.duodenale- Mebendazole** 100 mg BD PO for 3 days |
|   | Enteric fever | Duration: 10-14 days
|   | **Ceftriaxone**: 75mg/kg/day in 2 divided doses  
|   | Or  
|   | **Cefotaxime**: 80mg/kg/day  
|   | Or  
|   | **Fluoroquinolone, e.g., Ofloxacin** (15 mg/kg/day in 2 div doses)  
|   | Or  
|   | **Ciprofloxacin** (15-30 mg/kg/day in 2 div doses) **Alternative:**  
|   | **Azithromycin**: 20 mg/kg/day for 7 days or  
|   | **Cefixime** 20 mg/kg/day in 2 div doses for 7-14 days.  
|   |   |   |
|   | Community acquired sepsis | Cefotaxime (200 mg/kg/24 hr, given every 6 hr) or  
|   | **Ceftriaxone** (100 mg/kg/24 hr administered once per day or  
|   | 50 mg/kg/dose, given every 12 hr). **Add Amikacin** (if necessary).  
|   | **Add Vancomycin** if resistant S.aureus or resistant S.pneumoniae suspected.  
|   | **Duration**: 14 days  
|   | UTI- uncomplicated | **TMP-SMX**: 3- to 5-day course of therapy with trimethoprim-sulfamethoxazole (TMP-SMX) is effective against most strains of *E. coli*.  
|   | Or  
|   | **Nitrofurantoin**  
|   | (5-7 mg/kg/24 hr in 3-4 divided doses) also effective (also active against *Klebsiella* and *Enterobacter*). **Duration**: 7-10 days **Alternative:**  
|   | **Amoxicillin** (50 mg/kg/24 hr) also is effective as initial treatment  
|   | Or  
|   | **Cefixime** 8mg / kg / day BD  
|   | UTI-Complicated | **Ceftriaxone** (50-75 mg/kg/24 hr, not to exceed 2 g) **or**  
|   |   |   |
|   |   | Cefotaxime (100 mg/kg/24 hr), **or**  
|   | Ampicillin (100 mg/kg/24 hr) with an aminoglycoside such as  
|   | **Gentamicin** (3-5 mg/kg/24 hr in 1-3 divided doses)  
|   | **Duration**: 7-10 days  


| 21. | **Bacterial meningitis** | Cefotaxime 200 mg/kg/24 hr, given every 6 hr) **or** Ceftriaxone- first dose 75 mg/kg/dose then followed by 100 mg/kg/24 hr administered once per day or 50 mg/kg/dose, given every 12 hrs. **Add Amikacin** if necessary. **Add Vancomycin if resistant S. pneumoniae suspected.** **Duration-** 1 to 4 weeks |
| 22. | **Skin and Soft Tissue Infections**  
Cellulitis  
Carbuncle | Cloxacillin 50 – 100 mg / kg / day 6 hrly IV followed by oral. **Add Clindamycin** 20 – 30 mg / kg / day 6 hrly or **Vancomycin** 40 mg / kg / day 6 hrly over 60 mins slowly if necessary. |
| 23. | **Bone and Joint Infections** | Cloxacillin (100 mg/kg/24 hr divided QDS IV), **plus broadspectrum cephalosporin, such as Cefotaxime** (150-225 mg/kg/24 hr divided TDS IV). If methicillin-resistant *Staphylococcus* is suspected, Vancomycin is substituted for Cloxacillin. **Duration-** 4 to 6 weeks |
| 24. | **Infective endocarditis prophylaxis** | Amoxicillin (50 mg/kg 1 hr before the procedure)  
**Alternatives:**  
Ampicillin (50 mg/kg 30 min before the procedure)  
OR  
Ceftriaxone (50 mg/kg IM or IV) |
| 25. | **Malaria** | Refer to National and MCGM Guidelines |
| 26. | **Leptospirosis** | Parenteral Penicillin G (6-8 million U/m²/day divided every 4 hr IV  
**Duration :** 7 days  
**Alternative:**  
Tetracycline (10-20 mg/kg/day divided every 6 hr PO or IV for 7 days) OR Oral amoxicillin |
| 27. | **pH1N1 (pandemic influenza 2009)** | Oseltamivir  
< 15kg - 30 mg BD;  
> 15-23kg - 45 mg BD;  
> 23-40 kg - 60 mg BD;  
> 40 kg - 75 mg BD  
**Duration :** 5 days |
28. **Chicken pox**
   **(Varicella zoster)**

   Oral therapy with acyclovir (20 mg/kg/dose, maximum 800 mg/dose) given as 4 doses/day for 5 days can be used to treat uncomplicated varicella in children >12 mo of age with chronic cutaneous or pulmonary disorders, corticosteroid therapy, and long-term salicylate therapy.

   **Alternatives:**
   Start preferably within 24 hr of the onset of the exanthem. IV therapy is indicated for severe disease and for varicella in immunocompromised patients (even if begun 72 hr after onset of rash).

---

**B. (iii) PAEDIATRICS**

- Collect appropriate specimens where applicable (all requiring admission and any other)
- Revise therapy based on culture sensitivity report as required
- National guidelines to be followed where available
- Nosocomial infections to be treated based on the results of culture sensitivity and local antibiogram
- Utmost care has been taken to prepare this document; however the users are requested to refer to standard textbooks for drug dosages and side effects.

---

I. **Immunization**

   A. **Schedule (As per National Immunization Policy):**

<table>
<thead>
<tr>
<th>Age</th>
<th>Vaccines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>BCG, OPV-0</td>
</tr>
<tr>
<td>6 weeks</td>
<td>DPT1, OPV1, Hepatitis B1, Hb1*</td>
</tr>
<tr>
<td>10 weeks</td>
<td>DPT2, OPV2, Hepatitis B2, Hb2*</td>
</tr>
<tr>
<td>14 weeks</td>
<td>DPT3, OPV3, Hepatitis B3, Hb3*</td>
</tr>
<tr>
<td>9-12 months</td>
<td>Measles</td>
</tr>
<tr>
<td>16-24 months</td>
<td>DPT Booster 1, OPV4, MMR</td>
</tr>
<tr>
<td>5-6 years</td>
<td>DPT Booster 2</td>
</tr>
<tr>
<td>10 years</td>
<td>TT</td>
</tr>
<tr>
<td>16 years</td>
<td>TT</td>
</tr>
</tbody>
</table>

*(Hib has been introduced in selected states to start with)*
<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Route of administration</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. BCG</td>
<td>Intradermal</td>
<td>0.1 ml</td>
</tr>
<tr>
<td>2. DPT</td>
<td>Intramuscular</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>3. Measles / MMR</td>
<td>Subcutaneous</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>4. Hepatitis - B</td>
<td>Intramuscular</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>5. DT</td>
<td>Intramuscular</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>6. TT</td>
<td>Intramuscular</td>
<td>0.5 ml</td>
</tr>
<tr>
<td>7. OPV</td>
<td>Per oral</td>
<td>2 drops</td>
</tr>
</tbody>
</table>

B. **Optional vaccines that may be considered for immunization:** Hib vaccine, Inactivated Polio vaccine, Pneumococcal vaccine, Typhoid vaccine, Varicella vaccine, Hepatitis A vaccine.
## 13. Acute febrile illness

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Conditions/ Expected pathogens</th>
<th>Revised recommendations</th>
</tr>
</thead>
</table>
| 1.     | Leptospirosis L. icterohaemorrhagia complex | **Adults:**  
Doxycycline 100 mg twice a day for 10-14 days *(contraindicated in pregnancy)*  
+ **Inj. Crystalline penicillin** 20 lacs IU IV every 6 hourly after test dose. *(For the individuals who are allergic to penicillin group of drugs following alternative regimes may be used)*  
Ceftriaxone 1 gm IV x 6 hourly for 7 days  
OR  
Cefotaxime 1 gm IV x 6 hourly for 7 days  
OR  
Erythromycin 500 mg IV x 6 hourly for 7 days  
Remarks:  
Pregnant & lactating mothers should preferably be admitted and treated as above (except for doxycycline as it is contraindicated in pregnancy)  
If pregnant women cannot be admitted then they should be given capsule ampicillin 500 mg every 6 hourly for 10 days  
Children < 8 years  
Amoxycillin/ Ampicillin 30-50 mg/kg/day should be given in divided doses for 7 days  
Inj. Crystalline penicillin should be given 2–4 lacs IU/kg/ day for 7 days after test dose. *(For individuals who are allergic to penicillin group of drugs following alternative regimes may be used)*  
Ceftriaxone 50-75 IV mg/kg/day for 7 days  
OR  
Cefotaxime 50-100 IV mg/kg/day for 7 days  
OR  
Erythromycin 30-50mg/kg/day in divided dose for 7 days  
Prophylaxis after wading through flood water:  
**Doxycycline** 100 mg BD  
**Duration:** 2 days |
| 2.     | Malaria Plasmodium spp | Refer to national treatment guidelines  
### 14 PRE-OPERATIVE PROPHYLAXIS / THERAPY

- In patients with community / hospital acquired infection, collect appropriate specimen for culture and susceptibility testing prior to administration of antibiotic.
- It is not recommended to collect specimen from healing wounds.
- Modify / De-escalate treatment as per microbiology report and clinical response
- Basic infection prevention and control strategies should be in place.
- Definitions:
  a) Clean wound (Surgery) - An uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered.
  b) Clean contaminated - Operative wounds in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category provided no evidence of infection or major break in technique is encountered.
  c) Contaminated - Includes open, fresh, accidental wounds. In addition, operations with gross spillage from the gastrointestinal tract, and incisions in which acute, non-purulent inflammation is encountered are included in this category.
  d) Dirty - Includes old traumatic wounds with retained or devitalized tissue and those that involve existing clinical infection or perforated visera.


<table>
<thead>
<tr>
<th>Sr No</th>
<th>Condition / Expected pathogen</th>
<th>Antimicrobial of choice</th>
<th>Alternatives / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OPHTHALMOLOGY</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pre-operative Prophylaxis Clean cases Cataract, terygium, glaucoma, strabismus, lid(entropion, exotropion, ptosis), corneal transplant</td>
<td>Moxifloxacin e/d, one drop, 6 times previous day of surgery. Betadine e/d pre-operative</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Contaminated cases Endophthalmitis, corneal ulcer, post traumatic tear with infection, intraocular foreign body, lacrimal sac surgery, dacrocystitis</td>
<td>Systemic Cefotaxime 1 gm IV TDS Or Ceftriaxone 1.5 gm IV BD for 3 days prior to surgery, 7 days post surgery + Topical moxifloxacin, one drop, 6 times previous day</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Corneal foreign body</td>
<td>Patch for 24 hrs for epithelisation before increased cycloplegia Antibiotic Chloramphenicol applicap Next day: antibiotic drops moxifloxacin/ gatifloxacin X 3 days</td>
<td></td>
</tr>
<tr>
<td><strong>ENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pre op prophylaxis – Major head and neck surgery including implant surgeries</td>
<td>Inj Cefazolin /2 gms (IV) 1st dose at induction or Inj Cefuroxime sodium1.5 gm (IV) 2nd dose within 24 hrs</td>
<td></td>
</tr>
</tbody>
</table>
| Sr No | Condition / Expected pathogen | Antimicrobial of choice
Dose / Route / Frequency / Duration | Alternatives / Remarks |
|-------|-------------------------------|--------------------------------|-----------------------|
| 1     | Clean surgery
Staph aureus,
Staph epidermidis | Cefazolin 2 gms IV
OR
Co-amoxiclav (Amoxycillin 2 g + Clavulanic acid 125 mg) / IV | Total only 3 doses
If surgery beyond 4 hrs., give another dose.
Post-surgery, 2 doses at 12 hrly interval X 1 day |
| 2     | Clean contaminated | **Uncomplicated cases** (patient stable)
Appendix / gall bladder-
**Co-amoxiclav** IV 3 doses
Or
Ceftriaxone 1.5 gm IV BDX 5 days
**Complicated cases** -
**Cefotaxime 1 gm / IV TDS**
Or
Ceftriaxone 1.5 gm / IV BD
+ **Aminoglycoside**
+ **Metronidazole** 500 mg TDS
OR in case of beta lactam allergy,
**Aztreonam**, 2g IV +
**Aminoglycoside** 5 mg / kg OD
+ **Metronidazole** 500 mg TDS | For complicated cholecystectomy, cefaperazone + sulbactam should be the drug of choice as it has the best biliary penetration / concentration. |
| 3     | Contaminated | Duodenal / Ileal perforation
(Patient stable)
Cefotaxime 1 gm IV
Or
Ceftriaxone
1.5 gm IV BD X 5 days
Patients with organ failure / sepsis / In seriously ill / previous hospitalization,
Piperacillin Tazobactam 4.5 gm TDS
+ Aminoglycoside 5 mg / kg OD
+ Metronidazole 500 mg QDS 5 days | |
| 4     | Implants
(Gram pos cooci,
Enterobacteriaeceae) | Cefuroxime
1.5 gm / IV If surgery beyond 4 hrs., give another dose, then
BD X 5 days
OR | Cefazolin is preferred over 2nd and 3rd gen cephalosporins as they are potent inducers of ESBL. |
<table>
<thead>
<tr>
<th>Sr No</th>
<th>Condition / Expected pathogen</th>
<th>Antimicrobial of choice Dose / Route / Frequency / Duration</th>
<th>Alternatives / Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Co-amoxiclav  Amoxicillin 2 gm + Clavulanic acid 125 mg / IV If surgery beyond 2 hours, give another dose. Then, BD X 5 days</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Post-splenectomy - long term prophylaxis Enterobacteriaecea Anaerobes</td>
<td>2 weeks prior to elective surgery, <em>vaccinate</em> for S.pneumoniae, H.influenzae b and N.meningitidis. Repeat Hib vaccine annually. + Amoxicillin 500 mg PO OD <em>Duration</em>: 2 years</td>
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<td></td>
<td></td>
<td>CARDIAC SURGERY</td>
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</tr>
<tr>
<td>1</td>
<td>CABG</td>
<td>Prophylactic antimicrobials: Cefazolin 1 g IV. 60 min prior to skin incision Repeat the dose of 1 g every 3-4 hours as long as the surgical site is open. If high incidence of methicillin resistant staphylococci (MRSA / MRCoNS) is found (&gt;20%), then Vancomycin 1 to 1.5 or 15mg/kg administered slowly over 1 hour, with completion within 1 hour of the skin incision. Thereafter, repeat dose of Vancomycin of 7.5mg/kg may be considered during cardiopulmonary bypass. Infection control measures to be strengthened to bring down the incidence.</td>
<td>Alternative treatment: Cefuroxime If patients allergic to b-lactam antibiotics: Vancomycin Clindamycin</td>
</tr>
<tr>
<td>2</td>
<td>Other major cardiac surgery</td>
<td>Same as above</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Paediatric Cardiac Surgery</td>
<td>Same as CABG, except the dose Cefazolin: 30mg/kg Vancomycin: 15 mg/kg Gentamicin: 3 mg/kg</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Pacemaker/ Defibrillator Implantation S. aureus S. epidermidis Gram Negative Bacilli</td>
<td>Cefazolin 1 g IV. 60 min prior to skin incision</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cardiac Catheterization</td>
<td>Not routinely</td>
<td>Antibiotic prophylaxis is indicated in patients at high risk of complications</td>
</tr>
<tr>
<td>Sr No</td>
<td>Condition / Expected pathogen</td>
<td>Antimicrobial of choice Dose / Route / Frequency / Duration</td>
<td>Alternatives / Remarks</td>
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<td></td>
<td><strong>ORTHOPAEDICS</strong></td>
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<tr>
<td>1</td>
<td><strong>Clean Non Infected Cases with minor implants</strong> (K Wire etc./ No Implants) S. aureus</td>
<td><strong>Cefazolin 1 g IV. 60 min prior to skin incision</strong></td>
<td><strong>Cefuroxime 1.5 g IV one dose, one day 2&lt;sup&gt;nd&lt;/sup&gt; and 3&lt;sup&gt;rd&lt;/sup&gt; gen cephalosporins are potent inducers of ESBL</strong></td>
</tr>
<tr>
<td>2</td>
<td><strong>Surgeries with major implants</strong> (including THR, TKR) GNB, S. aureus</td>
<td><strong>Cefuroxime 1.5 g IV BD + Amikacin 750 mg IV od before surgery</strong> Maximum continued till 2 days</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Open Fractures</strong></td>
<td><strong>Cefuroxime 1.5 g IV BD + Amikacin 750 mg IV od + Metronidazole 500 mg TDS Continued for 7-10 days as per wound healing status</strong></td>
<td><strong>Cefixime as alternative for cefuroxime</strong></td>
</tr>
<tr>
<td>4</td>
<td><strong>Closed Fractures</strong></td>
<td><strong>Nil</strong></td>
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<td></td>
<td><strong>OBGY</strong></td>
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<tr>
<td>1</td>
<td><strong>Minor cases</strong> S.aureus</td>
<td><strong>Inj Co-amoxiclav 1.2 gm (IM/IV) Single dose 30-60 mins before procedure / incision</strong></td>
<td><strong>Cefazolin 1 g IV. 60 min prior to skin incision Single dose</strong></td>
</tr>
<tr>
<td>2</td>
<td><strong>Episiotomy</strong> Enterobacteriaceae, Anaerobes</td>
<td><strong>Inj. Co-amoxiclav 1.2 gm IV Single dose, Followed by 625 mg TDS X 3 days.</strong></td>
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<tr>
<td>3</td>
<td><strong>Tubal ligation</strong> S.aureus GNB</td>
<td><strong>Inj. Co-amoxiclav 1.2 gm IV Single dose followed by oral 625 mg 8 hourly X 5 days.</strong></td>
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</tr>
<tr>
<td>4</td>
<td><strong>Clean and Clean Contaminated</strong> S.aureus, Other Gram positive cocci Rarely Gram negative bacilli</td>
<td><strong>Inj Co-amoxiclav 1.2 gm 12 hourly(IV/IM) until orals started 625 mg TDS upto total 5 days + Metronidazole500 mg(100cc) IV TDS x 5 days + Inj. Gentamicin 1.5 to 2 mg/kg loading dose, followed by 1 to 1.7 mg/kg IV or IM every 8 hours x 3 days</strong></td>
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<td>5</td>
<td><strong>Post operative wound gape</strong> S.aureus, Enterobacteriaceae, Anaerobes, Enterococci,</td>
<td><strong>Inj Ceftriaxone 1gm IV BD X 5-7 days</strong> +</td>
<td><strong>Collect specimen for culture sensitivity.</strong></td>
</tr>
<tr>
<td>Sr No</td>
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<td>Alternatives / Remarks</td>
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<td></td>
<td>Other Gram positive cocci</td>
<td>Inj Metronidazole 500 mg IV TDS X 5-7 days</td>
<td>Change antibiotic based on microbiology report as required.</td>
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<td><strong>NEUROSURGERY</strong></td>
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<td></td>
<td>Clean cases</td>
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<tr>
<td>1</td>
<td>Clean cases</td>
<td>Oral: Amoxicillin 2 g (50 mg/kg) / Cephalexin 2 g (50 mg/kg) / Cefadroxil 2 g (56 mg/kg) Single dose before procedure Vancomycin 1g (20 mg/kg) IV (in MRSA positive and penicillin allergic patients)</td>
<td>For patients allergic to penicillin Clindamycin 600 mg (20 mg/kg) / Azithromycin 500 mg (15 mg/kg) / Clarithromycin 500 mg (15 mg/kg)</td>
</tr>
<tr>
<td>2</td>
<td>Surgery on contaminated cases</td>
<td>• Clindamycin 0.6 g IV 8 hrly + Gentamicin 80 mg IV 8 hrly • Ampicillin 2g IV 6 hrly/ + Gentamicin 80 mg IV 8 hrly + Metronidazole 0.5g IV 8 hrly • Amoxicillin 1g + clavunate 0.2 g IV 12 hrly</td>
<td>All given for 5 days • Cefazolin 1g IV 8 hrly + Vancomycin 1g IV 12 hrly if MRSA prevalence in centre is high / MRSA expected</td>
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<td></td>
<td><strong>PLASTIC SURGERY</strong></td>
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<tr>
<td>1</td>
<td>Clean surgery</td>
<td>Cefazolin 2 g stat in clean surgery at induction</td>
<td>Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV Immediate post op: 6-8 hrs post induction dose: Amoxclav 1.2g IV Late post op: Tab amoxclav 625mg BD for 5 to 7 days (till 1st dressing)</td>
</tr>
<tr>
<td>2</td>
<td>Clean contaminated wounds (debridement and grafting, minor debridement, etc)</td>
<td>At induction: Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2g IV Late post op: Tab Co-amoxiclav 625mg BD for 5 to 7 days (till 1st dressing)</td>
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<td>3</td>
<td>Dirty wounds (major debridement and bone debridement), major flap and free flap surgeries</td>
<td>At induction: Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV or as per culture reports Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2g IV or as per culture reports</td>
<td></td>
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<td>Antimicrobial of choice Dose / Route / Frequency / Duration</td>
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<td>4</td>
<td>Burns (early excision &amp; grafting)</td>
<td>Late post op: IV antibiotic continued for 5 days Switch over to Tab Co-amoxiclav for next 5 days or as per culture reports</td>
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<td>At induction: Piperacillin-Tazobactum 4.5 g IV OR Meropenem 1g IV Immediate post op: 6-8 hrs post induction dose: Piperacillin-Tazobactum 4.5 g IV OR Meropenem 1g IV or as per culture reports</td>
<td>Late post op: IV antibiotic continued for 5 to 7 days with change as per culture reports / clinical response May switch over to oral as per culture reports</td>
</tr>
<tr>
<td>5</td>
<td>Burns (late grafting)</td>
<td>Late post op: Tab Co-amoxiclav 625mg BD for 5 to 7 days</td>
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<tr>
<td></td>
<td></td>
<td>At induction: Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2g IV</td>
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<tr>
<td>6</td>
<td>Maxillofacial injuries (single uncomplicated fractures)</td>
<td>Late post op: IV antibiotic continued for 3 days Switch over to oral: Tab Co-amoxiclav 625mg BD for 7 days</td>
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<tr>
<td></td>
<td></td>
<td>At induction: Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2g IV</td>
<td></td>
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<tr>
<td>7</td>
<td>Maxillofacial injuries (complicated multiple fractures, panfacial fractures)</td>
<td>No antibiotics</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Local anaesthesia cases in minor OT</td>
<td>No antibiotics</td>
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</tbody>
</table>
## Paediatric Surgery

<table>
<thead>
<tr>
<th>SR. No.</th>
<th>CONDITION</th>
<th>LIKELY ETIOLOGY</th>
<th>TREATMENT</th>
<th>ALTERNATIVE TREATMENT / REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clean Surgery (Pre-operative prophylaxis)</td>
<td></td>
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</tr>
<tr>
<td>a</td>
<td>Hernia</td>
<td>S.epidermidis, S. aureus, Streptococcus, Corynebacteria, Entero-bacteriaecae</td>
<td>No antibiotic required If to be given, then Inj. Cefazolin 30 mg/kg IV single dose</td>
<td>Laparoscopic herniotomy – single shot of antibiotic (Cefazolin)</td>
</tr>
<tr>
<td>b</td>
<td>Hydrocoele</td>
<td>S.epidermidis, S. aureus, Streptococcus, Corynebacteria</td>
<td>No antibiotic required unless the patient is immunocompromised.</td>
<td>Inj. Cefazolin 30 mg/kg IV single dose</td>
</tr>
<tr>
<td>c</td>
<td>Orchiopexy</td>
<td>S.epidermidis, S. aureus, Streptococcus, Corynebacteria</td>
<td>Inj. Cefazolin 30 mg/kg IV single dose or Inj. Ceftriaxone 50 mg/kg single dose</td>
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<tr>
<td>d</td>
<td>Cyst Excision &amp; sinuses in the neck</td>
<td>S.epidermidis, S. aureus, Streptococcus, Corynebacteria, Entero-bacteriaecae</td>
<td>No antibiotic required unless 2º infection If infection, then Inj. Cefazolin 30 mg/kg IV 8 hourly for 3 days</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>Circumcision</td>
<td>S.epidermidis, S. aureus, Streptococcus, Corynebacteria, Entero-bacteriaecae</td>
<td>No antibiotic required unless 2º infection If infection, then Inj. Cefazolin 30 mg/kg IV 8 hourly for 3 days</td>
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<td>2</td>
<td>Clean Contaminated Surgery (Pre-operative prophylaxis)</td>
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<tr>
<td>a</td>
<td>Myelo-meningocoele Repair</td>
<td>S.epidermidis, S. aureus, Entero-bacteriaecae</td>
<td>Inj. Ceftriaxone 100 mg / kg / d, q12h + Inj. Metronidazole 30 mg/kg /d, q6h + Inj amikacin Duration : 5 days minimum</td>
<td>Inj. Clindamycin 20 mg/kg i.v. 8 hourly</td>
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<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
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<td>Drug / Dose / Duration / Route</td>
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<td></td>
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<td></td>
<td>Or Inj. Cefazolin 30 mg/kg i.v. 8 hourly + Inj. Metronidazole 30 mg/kg/d, q6h + Inj Amikacin Or Inj Meropenem 20-40 mg/kg/dose thrice daily <strong>Duration : 10-14 days (with CSF leakage)</strong></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Cystoscopy</td>
<td><em>S. aureus</em>, Entero-bacteriaeae</td>
<td>Inj. Ceftriaxone 100 mg/kg /d, q12h Or Inj. Cefazolin 30 mg/kg i.v. 8 hourly + Inj. Amikacin 15 mg/kg/d, q8h <strong>Duration</strong> 1-3 days if no UTI Or 5-7 days if febrile UTI</td>
<td>Antibiotic to be directed as per pre-op urine culture sensitivity report.</td>
</tr>
<tr>
<td>c</td>
<td>Thoracotomy (for decortication)</td>
<td><em>S. epidermidis</em>, <em>S. aureus</em>, Streptococcus, Coryne-bacteria, Entero-bacteriaeae</td>
<td>Inj. Ceftriaxone 100 mg/kg /d, q12h ± Amikacin ± metronidazole Or Inj. Cefazolin 30 mg/kg i.v. 8 hourly + Amikacin ± metronidazole <strong>Duration</strong> 3-5 days</td>
<td>Antibiotic as per culture sensitivity for 7-10 days</td>
</tr>
<tr>
<td>d</td>
<td>Thoracotomy (other indications)</td>
<td><em>S. epidermidis</em>, <em>S. aureus</em>, Streptococcus, Coryne-bacteria, Entero-bacteriaeae</td>
<td>Inj. Ceftriaxone 100 mg/kg /d, q12h + Amikacin + metronidazole Or Inj. Cefazolin 30 mg/kg i.v. 8 hourly + Amikacin ± metronidazole <strong>Duration</strong> 3-5 days</td>
<td>Duration and antibiotic depends on indication and surgery done</td>
</tr>
<tr>
<td>e</td>
<td>Laparotomy</td>
<td><em>S. epidermidis</em>, <em>S. aureus</em>, Streptococcus, Coryne-bacteria, Entero-bacteriaeae</td>
<td>Inj. Cefazolin 30 mg/kg i.v. 8 hourly + Inj Amikacin + Inj. Metronidazole 30 mg/kg/d, q6h <strong>Duration</strong> 3-5 days</td>
<td>Duration and antibiotic depends on indication and surgery done</td>
</tr>
<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT Drug / Dose / Duration / Route</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
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<td></td>
<td>Anaerobes</td>
<td></td>
<td>Ceftriaxone / Ceftazidime + Amikacin + Metronidazole x 5 days Or Neonates - meropenem</td>
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<tr>
<td>f</td>
<td>Laparoscopy</td>
<td>S.epidermidis S. aureus Streptococcus, Coryne- bacteria, Enterobacteriaceae Anaerobes</td>
<td>Inj. Cefazolin 30 mg / kg i.v. 8 hourly + Inj Amikacin ± Inj. metronidazole 30 mg / kg / d, q6h for 3-5 days Or 1 dose for diagnostic Laparoscopy Inj. Ceftriaxone 100 mg / kg i.v. 8 hourly + Inj. Metronidazole 30 mg / kg / d, q6h – 1-5 for appendicectomy and 5 days for resection anastomosis</td>
<td>Same as above</td>
</tr>
<tr>
<td>g</td>
<td>Thoracoscopy</td>
<td>S.epidermidis S. aureus Streptococcus, Coryne- bacteria, Enterobacteriaceae</td>
<td>CDH – a. off ventilator – Ceftriaxone or ceftazidime Duration : 3 days b. On ventilator – Meropenem or Imipenem + cilastatin Duration : 7 days</td>
<td>Same as above Antibiotics according to ICU organisms in different hospitals maybe needed.</td>
</tr>
<tr>
<td>h</td>
<td>Hypospadias</td>
<td>S.epidermidis S. aureus Streptococcus, Coryne- bacteria, Enterobacteriaceae</td>
<td>IV amoxyclovulanic acid 12.5 mg/kg/dose twice day of amoxicillin for 1-3 days</td>
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<tr>
<td>i</td>
<td>VP shunt Insertion</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaceae Anaerobes</td>
<td>Ceftriaxone (double dose ) + amikacin Duration : 5 days</td>
<td>Depending on CSF culture sensitivity reports</td>
</tr>
<tr>
<td>j</td>
<td>TEF repair</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaceae</td>
<td>Inj. Ceftriaxone 100mg/kg i.v. 8 hourly + Inj amikacin +Inj. metronidazole 30 (mg/kg)/d, q6h for 7 days or meropenem Imipenem + cilastatin or colistin for 7days for bad patients/ on ventilator/ delayed presentation</td>
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<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT Drug / Dose / Duration / Route</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
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<tr>
<td>k</td>
<td>Appendicectomy</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Ceftriaxone or Ceftazidime – single shot OR Co-amoxiclav-single shot Complicated appendicitis - Ceftriaxone ± amikacin + metronidazole Duration : 3-7 days</td>
<td>Inj. Clindamycin 20 mg /kg i.v. 8 hourly + Gentamicin, 3 mg per kg or Moxifloxacin 10 mg/kg + Metronidazole Duration : 5-7 days</td>
</tr>
<tr>
<td>l</td>
<td>Choledochal Cyst</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Ceftriaxone or Cefoperazone ± amikacin + Metronidazole Duration : 7 days</td>
<td>Same as above</td>
</tr>
<tr>
<td>m</td>
<td>Cholecystectomy</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Inj. Ceftriaxone ± Co-amoxiclav single shot Or Cefoperazone + Amikacin + Metronidazole if sick child</td>
<td>Same as above</td>
</tr>
<tr>
<td>n</td>
<td>Abdominal pull through</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Ceftriaxone or Ceftazidime ± amikacin + Metronidazole Or Cefazolin 30 mg /kg i.v. 8 hourly + Amikacin + Metronidazole 30 mg / kg /d, q6h . Duration : 5-7 days</td>
<td>Same as above</td>
</tr>
<tr>
<td>o</td>
<td>ASARP</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Ceftriaxone or Ceftazidime ± Amikacin Or Cefazolin 30 mg/kg i.v. 8 hourly + Amikacin + metronidazole 30 mg / kg /d, q6h . Duration : 5-7 days</td>
<td>Same as above</td>
</tr>
<tr>
<td>p</td>
<td>PSARP</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteraeae Anaerobes</td>
<td>Ceftriaxone or ceftazidime ± amikacin + metro OR Cefazolin 30 mg/kg i.v. 8 hourly</td>
<td>Same as above</td>
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<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT Drug / Dose / Duration / Route</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
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<tr>
<td></td>
<td>Anaerobes</td>
<td>+ Amikacin + Metronidazole 30 mg / kg /d, q6h are used. Duration : 3-5 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>q</td>
<td>Biliary atresia</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaeae Anaerobes</td>
<td>Ceftriaxone or Cefoperazone + Amikacin + Metronidazole Duration : 7 days</td>
<td>Same as above</td>
</tr>
<tr>
<td>r</td>
<td>Hepatic Resection &amp; other Hepato Biliary Conditions</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaeae Anaerobes</td>
<td>Piperacillin–tazobactam, Infants 2–9 mo: 80 mg/kg of the piperacillin component, Children &gt;9 mo and ≤40 kg: 100 mg/kg of the piperacillin component 2 hrly Or Cefoperazone /Ceftriaxone + metronidazole Duration : 5 days</td>
<td>Same as above</td>
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<tr>
<td>3</td>
<td>Contaminated (Empiric Therapy)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>a</td>
<td>Incision &amp; drainage of Abscesses Superficial abscesses</td>
<td>S.aureus (mostly), S.pyogenes, E.coli</td>
<td>cloxacillin 25-50mg/kg in 4 divided doses for 5-10 days</td>
<td>Cephalexin / co-amoxyclov for 10-14 days</td>
</tr>
<tr>
<td>b</td>
<td>Deep intra-abdominal abscesses</td>
<td>S.aureus (mostly), S.pyogenes, E.coli</td>
<td>Ceftazidime or ceftriaxone + amikacin + metro Duration : 5-7days ± chloroquine x 5-7 days</td>
<td>Surgical drainage followed by placement of indwelling drains is the procedure of choice.</td>
</tr>
<tr>
<td>c</td>
<td>Stoma formation</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaeae Anaerobes</td>
<td>Ceftriaxone/ cefuzidime + metronidazole Or Ampicillin- sulbactam 50 mg/kg of the ampicillin component + Gentamicin 2.5mg/kg i.v. 8 hourly +Metronidazole 15mg/kg i.v. 8 hourly Duration – 3days If neonate – 5 days</td>
<td>May need to be stepped up if enterocolitis, sick child, sepsis or depending on icu flora</td>
</tr>
<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT Drug / Dose / Duration / Route</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
</tr>
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<td>---------</td>
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<td>----------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>c</td>
<td>Fistulectomies</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaceae Enterococci Anaerobes</td>
<td>– oral cefazolin + metronidazole for 3 days cefazolin 30mg/kg i.v. 8 hourly + metronidazole 30 (mg/kg)/d, q6h or 40 mg/kg 2 hrly or ampicillin–sulbactam 50 mg/kg of the ampicillin component or ceftriaxone + metronidazole</td>
<td>Clindamycin 20mg/kg i.v. q8h + Gentamicin, 3 mg per kg or fluoroquinolone (moxifloxacin 10 mg/kg) Or Metronidazole + aminoglycoside or fluoroquinolone</td>
</tr>
<tr>
<td>d</td>
<td>Rectal Polyp Excision</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaceae Enterococci Anaerobes</td>
<td>cefazolin 30mg/kg i.v. q8h + metronidazole 30 mg/kg /d, q6h Or ampicillin–sulbactam 50 mg/kg of the ampicillin component Or ceftriaxone + metronidazole Duration – 1-3 days</td>
<td>Same as above</td>
</tr>
<tr>
<td>e</td>
<td>Debridement of burns</td>
<td>S. aureus Enterobacteriaceae Pseudomonas</td>
<td>Piperacillin–tazobactam, Infants 2–9 mo: 80 mg/kg of the piperacillin component, Children &gt;9 mo and ≤40 kg: 100 mg/kg of the piperacillin component 2 hrly + metro for 5-7 days or cefotaxime 50 mg/kg 3 hrly + ampicillin 50 mg/kg/2 hrly for 5-7 days</td>
<td>as per tissue culture sensitivity Topical therapy is often applied to prevent infection and to treat ongoing infections or used as an adjunct to surgical treatment and systemic antibiotics. Topical silver nitrate + gentamicin are preferred</td>
</tr>
<tr>
<td>f</td>
<td>Resection &amp; anastomosis</td>
<td>S.epidermidis S. aureus Streptococcus, Enterobacteriaceae Enterococci Anaerobes</td>
<td>Ceftriaxone / ceftazidime-amikacin + metro x 5 days Or Neonates – meropenem /colistin x 5-7 days</td>
<td>Clindamycin 20mg/kg i.v. 8 hourly + aminoglycoside (gentamicin, 3 mg per kg) or fluoroquinolone (moxifloxacin 10 mg/kg) + Metronidazole + aminoglycoside – as per requirement x 5-7 days</td>
</tr>
<tr>
<td>g</td>
<td>Perforative peritonitis</td>
<td>Enterococci Enterobacteriaceae Anaerobes</td>
<td>Ceftriaxone / ceftazidime-amikacin + metro x 5 days OR</td>
<td>as per requirement In pediatric surgery conditions, in neonates for surgical intervention –</td>
</tr>
<tr>
<td>SR. No.</td>
<td>CONDITION</td>
<td>LIKELY ETIOLOGY</td>
<td>TREATMENT Drug / Dose / Duration / Route</td>
<td>ALTERNATIVE TREATMENT / REMARKS</td>
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<tr>
<td></td>
<td></td>
<td>Neonates – meropenem /colistin x 5-7 days</td>
<td>meropenem or imipenem + cilastatin are required</td>
<td></td>
</tr>
</tbody>
</table>
This document is based on
1. National Neonatal Perinatal Database (NNPD) Network, the largest hospital based study comprising of 145623 intramural & 11026 extramural neonates from 18 centers, conducted over 2 years, published in 2004.
2. Evidence Based Clinical Practice Guidelines published by National Neonatology Forum India in October 2010 (www.nnfpublication.org)
3. Clinical experience at medical college hospitals in Mumbai

As per NNPD data,

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Intramural data</th>
<th>Extramural data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence</td>
<td>3.0%, (EOS: 67% &amp; LOS: 31.6%)</td>
<td>39.7%, (EOS: 56.1% &amp; LOS: 45%)</td>
</tr>
<tr>
<td>Organisms</td>
<td>Klebsiella pneumoniae, Staphylococcus aureus,</td>
<td>Klebsiella pneumoniae, Staphylococcus aureus,</td>
</tr>
<tr>
<td></td>
<td>E. coli, Pseudomonas aeruginosa</td>
<td>E. coli, Pseudomonas aeruginosa</td>
</tr>
<tr>
<td>Clinical category</td>
<td>Septicemia, Pneumonia, Meningitis</td>
<td>Pneumonia, Meningitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Infective diarrhoea, Bone/joint infection</td>
</tr>
<tr>
<td>Mortality</td>
<td>18.6% Secondary cause of death</td>
<td>39%, Primary cause of death</td>
</tr>
</tbody>
</table>
1. In India, bacterial and sensitivity profile of organisms is similar for EOS and LOS. Hence, the following policies can be used irrespective of whether it is EOS or LOS. No distinction is needed in the choice of empirical antibiotics.

2. It is not possible to suggest a single antibiotic policy for use in all new-born units. Every new-born unit must have its own antibiotic policy based on the local sensitivity patterns and the profile of pathogens.
   • Preferably choose Penicillin group plus an Aminoglycoside combination.
   • Cephalosporins rapidly induce the production of extended spectrum beta-lactamases (ESBL), cephalosporinases and fungal colonization. Use judiciously.
   • In all cases, collect specimens for culture prior to administration of antibiotics. Modify antibiotic use if clinically indicated based on culture sensitivity results.
<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Type of Infection</th>
<th>Line of Infection</th>
<th>Community Acquired</th>
<th>Hospital Acquired</th>
<th>Duration of Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Septicemia (EOS or LOS)</td>
<td>Pneumonia</td>
<td>1st</td>
<td>Amoxicillin - Clavulanic acid + Amikacin Or Ampicillin - Sulbactam + Amikacin</td>
<td>Amoxicillin - Clavulanic acid + Amikacin Or Ampicillin - Sulbactam + Amikacin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2nd</td>
<td>Cefturoxime + Amikacin</td>
<td>(Piperacillin - tazobactam) + Amikacin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3rd</td>
<td>Meropenem / Imipenem</td>
<td>Meropenem / Imipenem +/− Amikacin / Colistin</td>
</tr>
<tr>
<td>2</td>
<td>Meningitis</td>
<td></td>
<td>1st</td>
<td>Ceftaxime + Amikacin</td>
<td>Meropenem +/- Amikacin</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2nd</td>
<td>As per culture &amp; sensitivity Meropenem +/- Amikacin</td>
<td>As per culture and Sensitivity</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Type of Infection</td>
<td>Line of Antibiotics choice</td>
<td>Community Acquired</td>
<td>Hospital Acquired</td>
<td>Duration of Antibiotics</td>
</tr>
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<td>------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Bone</td>
<td>1st</td>
<td>Amoxicillin - Clavulanic acid + Amikacin</td>
<td>(Pipercillin - tazobactam) + Amikacin</td>
<td>6 weeks (4 wks IV + 2 wks oral)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd</td>
<td>Vancomycin + Amikacin/ Cefotaxime</td>
<td>Vancomycin + Amikacin Or Linezolid + Amikacin</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3rd</td>
<td>Linezolid + Amikacin/ Colistin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>UTI*</td>
<td>1st</td>
<td>Cefotaxime + Amikacin</td>
<td></td>
<td>7-10 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2nd</td>
<td>As per culture report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fungal</td>
<td>1st</td>
<td>NA</td>
<td>Fluconazole Amphotericin B (Preferably liposomal)</td>
<td></td>
</tr>
</tbody>
</table>

*UTI occurring in the setting of generalized sepsisemia may not be associated with VUR or malformations. However, an isolated UTI could be associated with these conditions. Hence, after treatment of isolated UTI all cases must be started on Amoxicillin 10 mg/kg once a day oral prophylaxis, till such time that a renal ultrasound, MCU and DMSA scan are performed to exclude VUR or malformations.
**Drug Dosage:**

Ref: Manual of Neonatal Care, 7th Edn, Cloherty & Neefax 2011

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of Antibiotics</th>
<th>Dose</th>
<th>PMA (weeks)</th>
<th>Postnatal (days)</th>
<th>Internal (hours)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amoxicillin - Clavulanic acid</td>
<td>50 mg/kg/dose</td>
<td>All</td>
<td>1-7</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Amikacin</td>
<td>15 mg/kg/dose</td>
<td>All</td>
<td></td>
<td>24</td>
<td>Potentially nephrotoxic, ototoxic &amp; neurotoxic. Ototoxicity is usually irreversible.</td>
</tr>
<tr>
<td>3</td>
<td>Ampicillin - Sulbactam</td>
<td>50 mg/kg/dose (as ampicillin component)</td>
<td>&lt;30</td>
<td>1 - 28</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt; 28</td>
<td>8</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Meningitis : 300-400 mg/kg/day</td>
<td>&gt; 14</td>
<td>8</td>
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<td></td>
<td></td>
<td></td>
<td>All</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sr. No</td>
<td>Name of Antibiotics</td>
<td>Dose</td>
<td>Dose Interval</td>
<td>Remarks</td>
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<tr>
<td>4</td>
<td>Piperacillin-tazobactam</td>
<td>50 - 100 mg/kg dose (as piperacillin component) IV infusion over 30 minutes.</td>
<td></td>
<td></td>
<td>CNS penetration modest. Use for treatment of non CNS infections</td>
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<td></td>
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<td></td>
<td>FMA (weeks) Postnatal (days) Internal (hours)</td>
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<td></td>
<td></td>
<td>0 - 28</td>
<td>12</td>
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<td></td>
<td>&gt;28</td>
<td>8</td>
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<td>0 - 14</td>
<td>12</td>
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<td>&gt;14</td>
<td>8</td>
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<td>0 - 7</td>
<td>12</td>
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<td>&gt;7</td>
<td>8</td>
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<tr>
<td>5</td>
<td>Cefotaxime</td>
<td>50 - 100 mg/kg dose</td>
<td></td>
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<td></td>
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<td>0 - 28</td>
<td>12</td>
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<td></td>
<td></td>
<td>&gt;28</td>
<td>8</td>
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<td>0 to 14</td>
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<td>&gt;14</td>
<td>8</td>
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<td>0 to 7</td>
<td>12</td>
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<td>&gt;7</td>
<td>8</td>
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<td></td>
<td></td>
<td>&gt;45</td>
<td>6</td>
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<tr>
<td>Sr. No</td>
<td>Name of Antibiotics</td>
<td>Dose</td>
<td>Dose Interval</td>
<td>Remarks</td>
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<tr>
<td>6</td>
<td>Mometromor</td>
<td>Sepsis: 20 mg/kg/dose</td>
<td>&lt;32 1 – 14 12</td>
<td>For meningitis &amp; Pseudomonas infection, all ages: 40 mg/kg per dose every 8 hours.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Meningitis: all ages: 40 mg/kg/dose</td>
<td>&gt;32 1 – 14 12</td>
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<td></td>
<td>&gt;14 8</td>
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<td></td>
<td></td>
<td>&gt;7 8</td>
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</tr>
<tr>
<td>7</td>
<td>Imipenem/</td>
<td>20 to 25 mg/dose IV infusion over 30 minutes.</td>
<td>12</td>
<td>Restricted to treatment of non CNS infections</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>cilastatin</td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>Colistin</td>
<td>25000 units/kg/dose IV infusion over 30 minutes.</td>
<td>8</td>
<td>Use only for MDR Klebsiella, Acinetobacter, Pseudomonas</td>
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<tr>
<td>9</td>
<td>Vancomycin</td>
<td>Meningitis: 15 mg/kg/dose</td>
<td>&lt;30 1 – 14 18</td>
<td>Use only if MRSA</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Bacteraemia: 10 mg/kg/dose IV infusion over 30 minutes.</td>
<td>30 – 36 1 – 14 12</td>
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<td></td>
<td></td>
<td>&gt;14 8</td>
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<td>&gt;7 12</td>
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<td>&gt;7 8</td>
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<td>Sr. No</td>
<td>Name of Antibiotics</td>
<td>Dose</td>
<td>Dose Interval</td>
<td>Remarks</td>
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<tr>
<td>10</td>
<td>Linezolid</td>
<td>10 mg/kg/dose IV infusion over 30 minutes.</td>
<td>&lt;37</td>
<td>&lt;7</td>
<td>12</td>
<td>Oral dosing is the same as IV. Do not use as empiric treatment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;37</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>Fluconazole</td>
<td>Invasive Candidiasis: Loading dose: 12 - 25 mg/kg, then 6 to 12 mg/kg/dose IV infusion by syringe pump over 30 minutes.</td>
<td>&lt;30</td>
<td>1 - 14</td>
<td>48</td>
<td>Extended dosing intervals should be considered for neonates with renal insufficiency (S. Creatinine &gt; 1.3 mg/dL). Good penetration into CSF after both oral &amp; IV administration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;14</td>
<td>24</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;30</td>
<td>1 - 7</td>
<td>48</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;7</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Amphotericin B</td>
<td>1 to 1.5 mg/kg IV infusion over 2 to 6 hours.</td>
<td></td>
<td>24</td>
<td></td>
<td>Incompatible with saline. Dosage modification if S. Creatinine &gt; 0.4 mg/dL from baseline, hold dose for 2 to 5 days. Alt. day dosing recommended over decreasing daily dose in renal toxicity.</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Name of Antibiotics</td>
<td>Dose</td>
<td>Dose Interval</td>
<td>Remarks</td>
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<tr>
<td>13</td>
<td>Amphotericin B Liposome</td>
<td>5 - 7 mg/kg/dose IV infusion over 2 hours.</td>
<td>24</td>
<td>Use in patients with renal or hepatic dysfunction. Monitor urine output.</td>
<td></td>
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</tr>
<tr>
<td>14</td>
<td>Metronidazole</td>
<td>Loading dose: 15 mg/kg IV infusion over 80 minutes. Maintenance dose 7.5 mg/kg IV infusion over 60 mins</td>
<td>&lt;30</td>
<td>48</td>
<td></td>
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<td>0 - 28 d</td>
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<td>&gt;28 d</td>
<td>24</td>
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<td>30–36</td>
<td>0 - 14</td>
<td>24</td>
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<td>&gt;14</td>
<td>12</td>
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<td>37–44</td>
<td>0 - 7</td>
<td>24</td>
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<td>&gt;7</td>
<td>12</td>
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<td></td>
<td></td>
<td>&gt;44</td>
<td>All</td>
<td>8</td>
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</tbody>
</table>
Upgradation of empirical antibiotics

- Empirical upgradation may be done if the expected clinical improvement with the ongoing line of antibiotics does not occur.

- At least 48-72 hours period of observation should be allowed before declaring the particular line as having failed. If any new sign appears and/or the existing signs fail to begin remitting, it would be considered that the expected clinical improvement has not occurred.

- Current evidence does not support the use of serial quantitative CRP as a guide for deciding whether or not antibiotics should be upgraded empirically.

- In case the neonate is extremely sick or deteriorating very rapidly, a decision may be taken to bypass the first line of antibiotics and start with the second/third-line of antibiotics.
Antibiotic therapy once culture report is available

- It must first be assessed whether the positive blood culture is a contaminant. The following are suggestive of contamination: growth in only one bottle (if two had been sent), growth of a known non-pathogen: e.g. aerobic spore bearers, mixed growth of doubtful significance and onset of growth beyond 96 hours in the absence of a history of prior exposure of antibiotics in the 72 hours before sending the blood culture. This must be discussed with the microbiologist because certain slow growing organisms may have onset of growth beyond 96 hours.
- If the growth is a non-contaminant, the antibiotic sensitivity must be assessed to decide whether antibiotics need to be changed.

The following guidelines would allow a rationale use.

- If the organism is sensitive to an antibiotic with a narrower spectrum, therapy must be changed to such an antibiotic, even if the neonate was improving with the empirical antibiotics and/or the empirical antibiotics are reported sensitive.
- If possible, a single sensitive antibiotic must be used, the exception being Pseudomonas for which 2 sensitive antibiotics must be used.
- If the empirical antibiotics are reported sensitive, but the neonate has worsened on these antibiotics, it may be a case of in vivo resistance. Antibiotics may be changed to an alternate sensitive antibiotic with the narrowest spectrum.
- If the empirical antibiotics are reported resistant but the neonate has improved clinically, it may or may not be a case of in-vivo sensitivity. In such cases, a careful assessment must be made before deciding on continuing with the empirical antibiotics. One must not continue with resistant antibiotics with in vitro resistance in case of Pseudomonas, Klebsiella and MRSA; and in cases of CNS infections and deep-seated infections.
If no antibiotic has been reported sensitive, but one or more have been reported as intermediate sensitive, therapy must be changed to such antibiotics at the highest permissible dose. Use a combination, in such cases.

Duration of antibiotics

Evidence and Recommendations:

1. Culture positive sepsis: Total duration of 10-14 days. There is no definitive published literature regarding the optimum duration of antibiotics for neonatal sepsis.

2. Culture negative sepsis: If the blood culture is reported sterile at 48 hours, the following guidelines must be adhered to:
   - Asymptomatic neonate at risk of EOS: stop antibiotics
   - Suspected EOS/LOS: the neonate becomes completely asymptomatic over time: stop antibiotics
   - Suspected EOS or LOS and the neonate improves but does not become asymptomatic: repeat a CRP. If CRP positive: continue antibiotics & if CRP negative: stop antibiotics
   - Suspected EOS or LOS and the neonate has not improved or has worsened: upgrade antibiotics as per the antibiotic policy. Simultaneously, alternative explanations for the clinical signs must be actively sought for.

Fungal sepsis

- Do a fungal culture prior to starting empiric therapy.
## Dental Guidelines

### Oral Medicine and Radiology

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition</th>
<th>Expected pathogens/s</th>
<th>Antimicrobial of choice</th>
<th>Alternatives Remarks</th>
</tr>
</thead>
</table>
| 1      | Parotitis | Bacterial: S. aureus, and anaerobic bacteria with predominance of gram negative bacilli  
Viral: Paramyxovirus, EBV, Coxsackie virus, Influenza A and Parainfluenza viruses | Acute Suppurative condition  
**Co-amoxiclav** 523 mg PO TDS  
If allergic to penicillin: Clindamycin 300 mg, QDS | Contra-indications: Hypersensitivity to acyclovir/valacyclovir  
Monitor: Urine analysis, BUN, Creatinine, liver enzymes, CBC |
|        |           |                       | **DURATION**: 7 days     |                     |
|        |           |                       | Viral parotitis: Acyclovir 400 mg PO QDS  
Or: Valacyclovir 1g PO QDS |                     |
<p>|        |           |                       | <strong>DURATION</strong>: 7 days     |                     |</p>
<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition</th>
<th>Expected pathogen/s</th>
<th>Antimicrobial of choice Duration/Frequency/Duration</th>
<th>Alternatives Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Periapical Abcess</td>
<td>Strict anaerobes, viridians: streptococci, Strep. anginosus (milleri) group</td>
<td>Mild-Moderate acute condition: Penicillin V 250 mg PO QDS Duration: 5 days + Metronidazole 200 mg POBD Duration: 3 days. If allergic to penicillin: Clindamycin Unresolved infection/ immunocompromised: Co-amoxiclav 625 mg PO TDS Duration: 5 days</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Periodontal Abcess</td>
<td>Anaerobes, Fusobacterium, P. ginvialis</td>
<td>Doxycycline 100 mg PO BID Duration: 10 days</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cellulitis</td>
<td>S. viridans and Prevotella species.</td>
<td>Ampicillin 500 mg PO TDS Duration: 7 days.</td>
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</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>5</td>
<td>Osteomyelitis</td>
<td>Alpha haemolytic streptococcus, S. aureus, Enterobacteriaceae, Actinomyces, Various anaerobes</td>
<td>Co-amoxiclav 625 mg PO TDS</td>
<td>If allergic to penicillin: Ciprofloxacin 400 mg IV PB q 12 hr + Clindamycin 600 mg IV PB q 8 hr. Duration: 6 weeks</td>
</tr>
<tr>
<td>6</td>
<td>Acute Necrotising Ulcerative gingivitis</td>
<td>P. intermedia and Spirochetes</td>
<td>Amoxicillin 500 mg PO TDS + Metronidazole 250 mg PO TDS</td>
<td>Duration: 10 days</td>
</tr>
<tr>
<td>7</td>
<td>Mucormycosis</td>
<td>Rhizopus</td>
<td>Liposomal Amphotericin B 5mg/kg IV q day</td>
<td>Monitor- Liver function tests.</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected Pathogen/s</td>
<td>Antimicrobial of Choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>8</td>
<td>Herpes Zoster</td>
<td>Varicella Zoster virus</td>
<td>Acyclovir 800 mg PO q 5 hr Or Valacyclovir 100 mg PO q 8 hr Or Famciclovir 100 mg PO q 8 hr</td>
<td>Duration: 7 days</td>
</tr>
<tr>
<td>9</td>
<td>Herpes Simplex</td>
<td>Herpes Simplex Virus</td>
<td>Recurrent infection: Acyclovir cream 5% topical application qid for 4 days Or penciclovir cream 1% topical q 2h for 4 days Or Docosanol cream 10% topical qid until healed Active lesion/large/frequent episodes: Valacyclovir 1 g PO q 8 hr for 7 days Or Famciclovir 500 mg PO q 8 hr for 7 days</td>
<td></td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogens</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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</tr>
<tr>
<td>1</td>
<td>Clean/ Atraumatic extractions/ Orthodontic extractions/ Clean Closed fractures</td>
<td>—</td>
<td>No Antibiotics</td>
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</tr>
<tr>
<td>2</td>
<td>Extraction of infected teeth</td>
<td>—</td>
<td>Amoxicillin 500 mg PO TDS Duration: 5 days</td>
<td>Co-amoxiclav 625 mg TDS 5 days</td>
</tr>
<tr>
<td>3</td>
<td>Minor surgical procedures Extraction of teeth with intra/extra oral swelling, impacted teeth, peri-apical abscess, extraction in medically compromised patients.</td>
<td>—</td>
<td>Co-amoxiclav 625 mg PO TDS + Metronidazole 400 mg PO TDS Duration: 5 days</td>
<td>—</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice Dose/Route/ Frequency/Duration</td>
<td>Alternatives Remarks</td>
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</tbody>
</table>
| 4     | **Removal of infected Implants** | Gram positive cocci, Enterobacteriaceae | **Cefuroxime** 1.5 gm / IV  
If surgery beyond 4 hrs, give another dose, then BD  
**Duration** : 5 days  
**OR**  
**Co-amoxiclav** Amoxicillin 2 gm + Clavulanic acid 125 mg / IV  
If surgery beyond 2 hours , give another dose. Then, BD X 5 days | Cefoxolin is preferred over 2nd and 3rd gen cephalosporins as they are potent inducers of ESBL. |
<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Condition</th>
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<th>Antimicrobial of choice</th>
<th>Alternatives Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Clean contaminated wounds e.g. lacerations</td>
<td></td>
<td>At induction: Co-amoxiclav 1.2 g IV Or Ceftriaxone 1g IV immediate post op: 6-8 hrs Post induction dose: Co-amoxiclav 1.2 g IV Late post op: Tab Co-amoxiclav 625 mg BD for 5 to 7 days (till 1&quot; dressing) Metro 500 mg i.v Amikacin 500 mg i.v</td>
<td>Duration: 7-10 d</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives</td>
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<tr>
<td>6</td>
<td>Dirty Wounds</td>
<td></td>
<td>At induction: Co-amoxiclav 1.2 g IV OR Ceftriaxone 1g IV or Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2 g IV or as per culture reports Late post op: IV antibiotic continued for 5 days Switch to Tab Co-amoxiclav for next 5 days</td>
<td>As per culture reports</td>
</tr>
<tr>
<td>7</td>
<td>Clean surgery</td>
<td></td>
<td>Cefazolin 2 g stat in clean surgery at induction</td>
<td>Co-amoxiclav 1.2g IV OR Ceftriaxone 1g IV Immediate post op: 6-8 hrs post induction dose Amoxiclav 1.2g IV Late post op: Tab amoxiclav 625mg BD for 5 to 7 days (till 1° dressing)</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>8</td>
<td><strong>Open Injuries</strong>&lt;br&gt;Abrasions, Lacerations.</td>
<td>Gram negative bacilli &amp; S. aureus</td>
<td><strong>Cefuroxime 1.5 g IV BD</strong>&lt;br&gt;<strong>+ Amikacin 750 mg IV OD</strong>&lt;br&gt;<strong>+ Metronidazole 500 mg TDS</strong>&lt;br&gt;<strong>Duration</strong>: 7-10 days as per wound healing status&lt;br&gt;Switch to oral Co-amoxiclav BD&lt;br&gt;<strong>Duration</strong>: 5 days</td>
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</tr>
<tr>
<td>9</td>
<td><strong>Open Fractures</strong></td>
<td></td>
<td><strong>Cefuroxime 1.5 g IV BD</strong>&lt;br&gt;<strong>+ Amikacin 750 mg IV OD</strong>&lt;br&gt;<strong>+ Metronidazole 500 mg TDS</strong>&lt;br&gt;<strong>Continued for 7-10 days as per wound healing status</strong></td>
<td>Cefixime as alternative for cefuroxime</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice Dose/Route/ Frequency/Duration</td>
<td>Alternatives Remarks</td>
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<tr>
<td>10</td>
<td>Maxillofacial injuries (complicated multiple fractures, panfacial fractures)</td>
<td></td>
<td>At induction: Co-amoxiclav 1.2 g IV OR Ceftriaxone 1 g IV Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2 g IV Post op: Tab Co-amoxiclav 625 mg 3D for 5 days</td>
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</tr>
<tr>
<td>11</td>
<td>Maxillofacial injuries (complicated multiple fractures, panfacial fractures)</td>
<td></td>
<td>At induction: Co-amoxiclav 1.2 g IV OR Ceftriaxone 1 g IV Immediate post op: 6-8 hrs post induction dose: Co-amoxiclav 1.2 g IV Late post op: IV antibiotic continued for 5 days Switch over to oral: Tab Co-amoxiclav 625 mg 8D for 5 days</td>
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<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>12</td>
<td>Elective/clean major surgical</td>
<td>Cefazolin 2 gms IV or Co-amoxiclav 125 mg IV</td>
<td>Total only 3 doses. If surgery beyond 4 hrs, give another dose. Post surgery 2 doses at 12 hly interval for 1 day.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Clean minor surgical procedures e.g. surgical removal of impacted teeth, impacted teeth exposure, dental implants, pre-prosthetics etc.</td>
<td>Amoxicillin 500 mg TDS Duration: 5 days</td>
<td>Co-amoxiclav 625 mg TDS Duration: 5 days</td>
<td></td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogens</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<td></td>
<td><strong>Amoxicillin 500 mg PO TDS</strong>&lt;br&gt;<strong>Duration</strong>: 3 days</td>
<td>If sensitive to penicillin than ciprofloxacin 500 mg BD</td>
</tr>
<tr>
<td>1</td>
<td><strong>Chronic periodontitis</strong></td>
<td><em>P. gingivalis,</em>&lt;br&gt;<em>Aggregatibacter actinomycetemcomitans,</em>&lt;br&gt;<em>P. intermedia,</em>&lt;br&gt;<em>T. forsythia,</em>&lt;br&gt;<em>T. denticola,</em>&lt;br&gt;<em>Fusobacterium</em></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td><strong>Locally aggressive periodontitis</strong></td>
<td><em>Aggregatibacter actinomycetemcomitans</em></td>
<td><strong>Tetracycline 250 mg PO QDS</strong>&lt;br&gt;for 14 days every 8 weeks,&lt;br&gt;or&lt;br&gt;<strong>Amoxicillin 500mg PO TDS</strong>&lt;br&gt;for 7 days</td>
<td>Doxycycline 100 mg/day for 5 days.</td>
</tr>
<tr>
<td>3</td>
<td><strong>Refractory periodontitis</strong></td>
<td></td>
<td><strong>Metronidazole 400mg PO TDS</strong>&lt;br&gt;<strong>Ciprofloxacin 500 mg PO BD</strong>&lt;br&gt;<strong>Duration</strong>: 7 days</td>
<td></td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>4</td>
<td>Generalised aggressive periodontitis</td>
<td><em>P. gingivalis, Bacteroides forsythus, Aggregatibacter actinomycetemcomitans</em></td>
<td>Azithromycin 500 mg PO OD, or Amoxicillin 500mg PO TDS</td>
<td>Duration : 7 days</td>
</tr>
<tr>
<td>5</td>
<td>ANUG</td>
<td>Spirochetes, fusobacterium, Borrelia</td>
<td>Penicillin 500 mg PO QDS</td>
<td>For penicillin-sensitive patients, other antibiotics, such as erythromycin (500 mg every 6 hours) are prescribed. Metronidazole (500 mg twice times daily for 7 days), is also effective</td>
</tr>
<tr>
<td>6</td>
<td>Periodontal abscess</td>
<td>Gram negative cocci, diphlococci, fusiforms, and spirochetes</td>
<td>Amoxicillin 500 mg PO TDS, Metronidazole 400 mg PO TDS</td>
<td>Duration : 5 days. Clindamycin 300 mg BD for 5 days.</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen(s)</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Remarks</td>
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<tr>
<td>7</td>
<td>Gingival abscess</td>
<td>Gram negative cocci, diplococci, fusiforms, and spirochaetes</td>
<td>Amoxicillin 500mg PO TDS + Metronidazole 400 mg PO TDS</td>
<td>Duration: 5 days</td>
</tr>
<tr>
<td>8</td>
<td>Post surgical antibiotics</td>
<td></td>
<td>Amoxicillin 500mg PO TDS</td>
<td>If sensitive to penicillin then ciprofloxacin 500 mg bd</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Conditions</td>
<td>Antibiotics</td>
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<tr>
<td>1</td>
<td>Caries</td>
<td>No antibiotics indicated</td>
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<tr>
<td>2</td>
<td>Root canal treatment</td>
<td>No antibiotics indicated</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Root canal treatment with flare up</td>
<td>No antibiotics indicated</td>
<td></td>
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<tr>
<td>4</td>
<td>Acute alveolar abscess</td>
<td>No antibiotics indicated</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Hypersensitivity</td>
<td>No antibiotics indicated</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>Acute alveolar abscess with systemic symptoms</td>
<td><strong>Amoxicillin</strong> 500 mg TDS</td>
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<tr>
<td></td>
<td></td>
<td><strong>Duration</strong>: 5 days</td>
<td></td>
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<tr>
<td>7</td>
<td>Peri-apical surgery</td>
<td><strong>Amoxicillin</strong> 500 mg TDS</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Duration</strong>: 5 days</td>
<td></td>
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<tr>
<td>8</td>
<td>Trauma to the teeth</td>
<td>To be decided on case to case basis</td>
<td></td>
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<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Treatment</td>
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</tr>
<tr>
<td>1</td>
<td>Intra-oral swelling due to pulpaely involved tooth</td>
<td>Staphylococci, Streptoccci, Bacteroids melaninogenicus</td>
<td>Amoxicillin</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Acute alveolar abscess</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Chronic alveolar abscess</td>
<td>Alpha hemolytic streptoccci, obligate anaerobes Actinomyces, Arachnia</td>
<td>Amoxicillin</td>
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<tr>
<td>Sr. No</td>
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</tr>
<tr>
<td>2</td>
<td>Cellulitis due to tooth / tooth: With systemic involvement</td>
<td>Beta haemolytic streptococci E. coli</td>
<td><strong>Amoxicillin</strong> 20-40 mg / Kg / day divided in 3 doses + Cloxacillin 50-100 mg / Kg / day divided in 4 doses + Metronidazole 7.5 mg/kg 3 times a day</td>
<td>Co-amoxiclav Children &lt;40kgs 20-40 mg / Kg / day divided in 3 doses Children &lt;3 years 30 mg/kg/day divided in 2 doses Or Cefadroxil &gt;6 years 500 mg BD 1-6 years 250 mg BD &lt;1 year 25 mg/kg/day divided doses</td>
</tr>
<tr>
<td>3</td>
<td>Extra-oral swelling during root canal treatment procedures</td>
<td></td>
<td><strong>Amoxicillin</strong> 20-40 mg / Kg / day divided in 3 doses + Metronidazole 7.5 mg/kg 3 times a day</td>
<td>Cefadroxil &gt;6 years 500 mg BD 1-6 years 250 mg BD &lt;1 year 25 mg/kg/day divided doses</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice</td>
<td>Dose/Route/Frequency/Duration</td>
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</tr>
<tr>
<td>4</td>
<td>Extra-oral swelling after extraction With systemic involvement</td>
<td></td>
<td>Amoxicillin</td>
<td>20-40 mg/Kg/day divided in 3 doses Duration: 3-7 days</td>
</tr>
<tr>
<td>5</td>
<td>Extraction of infected teeth/ Prophylaxis for minor intra-oral surgeries</td>
<td></td>
<td>Amoxicillin</td>
<td>20-40 mg/Kg/day divided in 3 doses Duration: 3-7 days</td>
</tr>
<tr>
<td>6</td>
<td>Pericoronitis</td>
<td></td>
<td>Amoxicillin</td>
<td>20-40 mg/Kg/day divided in 3 doses Duration: 3-7 days</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen(s)</td>
<td>Antimicrobial of choice</td>
<td>Alternatives Treatment</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>7</td>
<td>ANUG</td>
<td>Spirachetes, Fusobacterium, Borrelia vincenti</td>
<td>Amoxicillin 20-40 mg/Kg/day divided in 3 doses</td>
<td>If allergic to penicillin Erythromycin 30-50 mg/Kg/day in divided doses 2-8 years 1gm/day in divided doses &lt;2 years 500 mg/day in divided doses</td>
</tr>
<tr>
<td>8</td>
<td>Gingival abscess</td>
<td>Gram negative cocci, diplococci, Fusiforms and Spirochetes</td>
<td>Amoxicillin 20-40 mg/Kg/day divided in 3 doses + Metronidazole 7.5 mg/kg 3 times a day</td>
<td>Duration: 3-7 days</td>
</tr>
<tr>
<td>Sr. No</td>
<td>Condition</td>
<td>Expected pathogen/s</td>
<td>Antimicrobial of choice Dose/Route/ Frequency/Duration</td>
<td>Alternatives Treatment</td>
</tr>
<tr>
<td>--------</td>
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<td>------------------------</td>
</tr>
<tr>
<td>9</td>
<td>Extra-oral sinus tract due to pulpally involved tooth</td>
<td></td>
<td><strong>Amoxicillin</strong> 20 40 mg / Kg / day divided in 3 doses + <strong>Metronidazole</strong> 7.5 mg/kg 3 times a day <strong>Duration</strong>: 3-7 days</td>
<td><strong>Cefadroxil</strong> &gt;6 years 500 mg BD 1-6 years 250 mg BD &lt;1 year 25 mg/kg/day in divided doses</td>
</tr>
<tr>
<td>10</td>
<td>Avulsion of teeth</td>
<td></td>
<td><strong>Amoxicillin</strong> 20 40 mg / Kg / day divided in 3 doses + <strong>Clarithromycin</strong> 50-100 mg / kg/ day divided in 4 doses <strong>Duration</strong>: 3-7 days</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Luxation injuries to teeth</td>
<td></td>
<td><strong>Amoxicillin</strong> 20 40 mg / Kg / day divided in 3 doses <strong>Duration</strong>: 3-7 days</td>
<td></td>
</tr>
</tbody>
</table>