GUIDELINES FOR ANTIMICROBIAL THERAPY AND PROPHYLAXIS

Break the Cycle of Drug Resistance

Right Patient
Right Antimicrobial
Right Dose
Right Route
Right Duration

June 2016

Version 1.2

Supported by :

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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

Abb	Full Form	Abb	Full Form
Alt	Alternate	IM	Intramuscular
ANUG	Acute Necrotizing Ulcerative Gingivitis	IV	Intravenous
BD	Twice a day	LA	Local application
Co-amoxiclav	Amoxicillin + Clavulanic acid	LOS	Late onset sepsis
CoNS	Coagulase negative staphylococci	mcg	Microgram
COPD	Chronic Obstructive Pulmonary Disease	M.C.G.M	Municipal Corporation of Greater Mumbai
d	Day	MSSA	Methicillin Sensitive Staphylococcus aureus
DCR	Dacryocystorhinostomy	MRSA	Methicillin Resistant Staphylococcus aureus
DCT	Dacryocystectomy	MTBC	Mycobacterium tuberculosis complex
DS	Double Strength	NSAID	Non steroidal anti-inflammatory drug
e/d	Eye drops	Occ	Occasional / lly
e/o	Eye ointment	OD	Once daily
EOS	Early onset sepsis	*P.aeruginosa*	Pseudomonas aeruginosa
g/gm	Gram (weight measure)	PHMB	PolyHexaMethyleneBiguanide
GI	Gastrointestinal	PO	Per oral
GNR / GNB	Gram negative rods / bacilli	PPI	Proton Pump Inhibitor
Hrly	Hourly	PPROM	Pre-term premature rupture of membranes
ILI	Influenza like illness	PROM	Premature rupture of membranes

A. LIST OF ABBREVIATIONS

Abb	Full Form
q 4h,6h, 8h,12h	Every four, six, eight and twelve hours respectively
QDS	Four times daily
TDS	Thrice daily
THR	Total Hip Replacement
TKR	Total Knee Replacement
TPK	Therapeutic Penetrating Keratoplasty
TMP-SMX	Trimethoprim Sulphamethoxazole
w/w	weight / weight

1. Respiratory Tract Infections

Sr. No.	Conditions/ Expected pathogens	Revised MCGM recommendations
1.	**Acute pharyngitis** Majority viral, Suspect bacterial – Grp A Streptococci	None indicated in viral infections **Amoxycillin 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 +
		Azithromycin 500 mg IVOD **Duration** - 5 days ***In epidemic settings:*** **Oseltamivir** 75 mg PO BD Duration: 5 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. influenzae* 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:** **Voricanazole** 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

Sr. No.	Conditions/ Expected pathogens	Revised MCGM recommendations
1.	**Acute Bacterial Meningitis** S.pneumoniae N.meningitidis H.influenzae	**Crystalline Penicillin** – 20 lakh units / IV / 2 hourly or **Ceftriaxone** 2gm / IV / BD +/- **Vancomycin** 1g (15 mg/kg) / IV / BD 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 (Elderly, alcoholics, immunocompromised)** *Listeria mono-cytogenes*	**Inj Ampicillin** 2gm IV 4 hrly Duration : 2 weeks
3.	**Brain Abscess** *S.Aureus, a*naerobes, 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 Consult neurosurgery for abscess aspiration/ excision

4.	**Neurocysticercosis** Taenia solium	**Albendazole** 400 mg PO BD + **Prednisone 1** mg/kg PO OD **Duration:** 15 days **Remarks:** Consider antiepileptic therapy for seizures

5.	**Spinal epidural abscess** *S.aureus*, Streptococcus spp., anaerobes, Gram negative organisms	***1st line:*** **Ceftriaxone** 2gm /day IV BD + **Metronidazole** 1500-2000 mg/day, IV 6 hrly intervals + **Vancomycin** 1 gm /day IV BD ***2nd line:*** **Meropenem** 2 gm IV 8 hrly +/- **Vancomycin** 1 gm /day IV BD **Duration :**3-4 weeks after surgical drainage **Remarks:** Consider Meropenem to be added as per C/S report.
6.	**Subdural empyema** Oral anaerobes, *H. influenzae*	***1st line:*** **Ceftriaxone** 2gm /day IV BD + **Metronidazole** 1500-2000 mg/day, IV 6 hrly intervals + **Vancomycin** 1 gm /day IV BD ***2nd line:*** **Meropenem** 2 gm IV 8 hrly +/- **Vancomycin** 1 gm /day IV BD **Duration :**3-4 weeks after surgical drainage **Remarks:** Consider Meropenem to be added as per C/S report

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

Sr. No.	Conditions/ Expected pathogens	Revised MCGM recommendations
1.	**Acute Sinusitis** *S. pneumoniae, H.influenzae* *M. catarrhalis*	**Co-amoxiclav** 625 mg PO BD **Duration:** 10-14 days **Alternative:** **Levofloxacin** 500 mg PO OD Duration: 7 days Levofloxacin not indicated in children
2.	**Acute pharyngitis** Majority viral Suspect bacterial- Grp A Streptococcus	**None indicated in viral** **Bacterial:** **Co-amoxiclav**625 mg PO BD +/- **Azithromycin** 500 mg PO OD **Duration**: 5- 7 days **Alternative:** **Cotrimoxazole** (DS) 800/160 mg OD Or **Doxycycline** 100 mg BD Or **Cefuroxime axetil**500 mg BD Or **Cefpodoxime**
3.	**Acute epiglottitis** *H. influenzae,* Anaerobes Polymicrobial	**Co-amoxiclav** 625 mg PO BD Duration : 10 days + **Metronidazole** 500 mg PO TDS **Duration**: 2-3 weeks **Alternative:** **Ceftriaxone** 2g IV. BD Duration: 7-10 days

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 **+** **Metronidazol**e 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 3rd 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, **PiperacillinTazobactam** 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** 200mg 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/ 375mg 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.

11.	**Invasive/ Necrotising Otitis Externa** **Pseudomonas spp**	**Ceftazidime** 1 g TDS **Or** **Ciprofloxacin** 500 mg PO BD or 200 mg IV BD Early cases – oral & topical quinolones Duration to be adjusted based on severity and underlying condition such as Diabetes mellitus Diabetic – **Piperacillin** IV for 10-14 days **Alternative:** **Piperacillin-Tazobactam** 4.5 g IV TDS **+** **Aminoglycosides** 500mg IV OD **+** Local **Ciprofloxacin drops** **Duration**:7 days *If severe*, **Quinolone + Beta lactam beta lactamase inhibitor** **Duration:** 6 weeks If diagnosed fungal aetiology, Fluconazole (Candida spp) and Itraconazole (Aspergillus spp)
12.	**Diphtheria** C. diphtheria	**Erythromycin** 40 mg/kg /day IV (max) OR 2gm/day + **Penicillin G IV** 300000 IU/day (<10kg wt)/ 600000 IU/day (>10kg wt) + **Anti-diphtheria serum** **Duration**: 14 days or Until patient is able to swallow **Remarks:** **Penicillin should be administered only after test dose. Anti-diphtheria serum** For children: Laryngeal: 20-40,000 U Nasopharyngeal: 40-60,000 U Extensive disease: 60-80,000 U

13.	**Laryngitis** Viral (mainly), Rarely Bacterial- Streptococcus, Moraxella	**Co-amoxiclav** 625 mg PO TDS **Duration:**7 days **Remarks:** Antibiotics are not recommended unless Grp A Strep is isolated.
14.	**Laryngotracheobronchitis**	**Co-amoxiclav** 625 mg PO TDS **Duration:**7 days **Remarks:** **Levofloxacin** 400 mg PO BD
15.	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

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

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** +

		Oral NSAID **Duration:** Approximate 1 week In addition 1.Lid hygiene 2.Protective glasses 3. Artificial tears
4.	**Purulent Conjunctivitis** Bacterial –Chlamydia, *S. aureus, N. gonorrhoeae, S. pneumoniae*	**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, a*naerobes, 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

7.	**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 **Or** **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** 1drop 2 hourly, up to 9times/day until reepithilealised, then 1 drop 4 hourly upto 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.
8.	**Corneal Ulcer/ Keratitis** 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** **<u>Alternative/Remarks:</u>** **Famciclovir** 500mg BD/TID **Or** **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.

12.	**Eye infection in Contact Lens Users** Pseudomonas spp	**Pseudomonas keratitis** (topical and systemic antibiotics) **Tobramycin fortified e/d 1.3 %** 1 drop 1 hourly **Or** **Gentamicin** 14 mg/ml 1 drop 1 hourly **Duration**: 15 days **Alternative/Remarks:** Culture is mandatory. **If no response then Colistin e/d 0.19% 2 hrly** **Duration: 2 weeks** Consider Propamidine isothionate (0.1%) as an alternative. In late cases, TPK may be needed.
13.	**Dacrocystitis** *H. influenza, S. aureus, S. pyogenes, P. aeruginosa*	**Gatifloxacin** 0.3% Or **Moxifloxacin 0.5%** e/o 6 times a day + **Systemic Co-amoxiclav** 625 mg PO TDS **Duration** : 7 days In addition, • Hot fomentation and massage • Oral NSAID's for 1 week • DCR/DCT to be done after inflammation subsides in acute cases and can be done as a primary indication in chronic cases
14.	**Endophthalmitis** *S. epidermidis S. aureus,* Streptococcus spp, Enterococcus Spp, Gram negative bacilli, anaerobes	**<u>Intravitreal antibiotics:</u>** **Vancomycin** 1 mg in 0.1 ml + **Ceftazidime / Cefazolin** 2.25 mg in 0.1 ml **or** **Amikacin** 400 mcg in 0.1 ml **or** **Gentamicin** 200 mcg in 0.1 ml **<u>Systemic antibiotics</u>** **Vancomycin** 1gm IV BD **and Amikacin**240 mg IV TDS **or** **Vancomycin and Ceftazidime** 2gm IV TDS **<u>Topical antibiotics</u>** **Fortified tobramycin** 1.3% **or fortified cefazolin** 5% 1 drop 1 hrly to be reduced according to response **Duration:** 2 weeks Important considerations • Homatropine e/d to be added • Intravitreal antibiotics to be repeated after 48 hrs in case of no response • 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	**Endophthalmitis** *Candida sp, Aspergillus sp.*	**<u>Intravitreal antifungals:</u>** **Amphotericin B** 5 mcg in 0.1 ml **or** **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
16	**Retinitis** HSV Varicella Zoster Virus	<u>IV antiviral drugs</u>: **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.
17	**Iridocyclitis**	To be deleted from MCGM guidelines
18	**Uveitis** Infectious, Traumatic, Immune mediated, Viral-Herpes simplex	To be deleted from MCGM guidelines
19	Pre-operative Prophylaxis Clean cases 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 Endopthalmitis, corneal ulcer, post traumatic tear with infection,intraocular foreign body, lacrimal sac surgery, dacrocystitis	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
		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 **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**
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

Sr. No.	Conditions/ Expected pathogens	Revised MCGM recommendations
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 upto 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

3	**Open Injuries -** Gram Negative & *S. aureus*	**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

4	**Prosthetic Joint Infections -** Grp A,B,G & viridans Strep *S. aureus*CoNS Enterococcus Gram Negative Bacilli	**<u>If clinical evidence of infection</u>** **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 upto maximum of 3 months.
5	**Bursitis** *S. aureus*	No antibiotics **If culture positive,** **Cloxacillin** 500mg POQDS or **Co-amoxiclav** 625mg PO TDS **Duration :** 5 days **Alternatives:** *<u>If septic bursitis then</u>* **Flucloxacillin** 500mg , **erythromycin**, **clarithromycin** BD/ QID for 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
	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

4	Primary joint replacement	**Cephazolin** 2gm IV 12 hryly **Or** **Co-amoxyclav 1.2gm IV** 12 hryly **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 lasting more than 8 hrs	**Cephazolin** 2gm IV 12 hryly **Or** **Co-amoxyclav** 1.2gm IV 12 hryly **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 hryly **Or** **Co-amoxyclav** 1.2gm IV 12 hryly **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 hryly **Or** **Co-amoxyclav** 1.2gm IV 12 hryly **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

Sr. No.	Condition/ Expected pathogens	Current MCGM Guidelines
1	**Acne vulgaris** *Propionibacterium acnes*	**Clindamycin (1%)** gel/lotion to be applied locally BD **Duration - 15days** **+/- (depending on severity)** **Cap. Doxycycline 100mg PO OD;** **Duration -** 15 days **Or** **Oral Azithromycin** 500 mg OD for 3days. 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 - 15days** **+/- (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/kgTDS **Alternatives:** **TMP-SMX** 800/160 PO BD **or** **Cloxacillin** 250- 500 mg QDS **Duration:** 7days ***Local –*** **Sodium fusidate 2%** twice daily for 3-4 wks
		Or **Mupirocin 1%** twice daily **Or** **Povidone iodine ointment**
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

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,* (FacialS.pneumoniae also) In diabetics – maybe associated with Entero-bacteriaeceae	**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 :** 7days **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:**7days **Or** **Azithromycin** 500 mg PO OD **Duration:** 3days **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	**Ecthyema** 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:** 3days Or **TMP/SMX** 800/160 mg PO BD **Duration:** 7-10 days

11	**Madura foot, Actinomycoticmycetoma/ 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 50,000units/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**

		Econazole cream applied to affected area(s) BD/TID
14	**Localised Pyoderma**	**<u>Topical Treatment:</u>** **Sodium fusidate 2%** **Or** **Mupirocin 1%** **Or** **Povidone iodine ointment** **Duration:** 7-10 days ***<u>Alternatives:</u>*** Topical **Nadifloxacin** cream **Duration:** 7-10 days
15	**Puncture wounds (foot)** S.*aureus*, Strep spp, *P.aeruginosa*, other GNR	***<u>To be deleted from MCGM guidelines</u>***
16	**Seborrhoiec dermatitis** **Malassezia spp**	***<u>To be deleted from MCGM guidelines</u>***

17	**Other fungal infections of skin, hair and nails** Tinea versicolor, Dermatophytes	**a) Tinea corporis/Tinea cruris** Systemic therapy **Terbinafine** 250 mg OD/BD **Duration:** 14 days Or **Itraconazole** 100 -200 mg BD **Duration:** 14 days To follow up after 2 weeks to check response to therapy Topical therapy **Whitfield ointment** + **Cream Clotrimazole** (1%) to be applied locally twice daily for 2 weeks **Or** **Amorolfine** 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**

		Systemic therapy **Terbinafine** 250 mg OD/BD **Duration:** 21 days Or **Itraconazole** 100 -200 mg BD **Duration:** 21 days To follow up after 2 weeks to check response to therapy. Topical therapy **Whitfield ointment** + **Cream Clotrimazole** (1%) to be applied locally twice daily for 2 weeks Or **Amorolfine** cream 1% **Or** **Luliconazole** Cream **c) Other fungal infections of skin, hair and nails (Pityriasis/Tinea Versicolor of trunk/face)** Systemic therapy **Fluconazole** 200 mg 2 tablets once a month **Duration:** 3 months Topical therapy **Lotion Clotrimazole (1%)/ miconazole/ oxyconazole/ selenium sulfide** applied locally twice daily for 6 weeks To follow up after 3 weeks to check response to therapy
18	**Scabies** Sarcoptes scabiei	**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**
19	**Onychomycosis** Fungal	**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

7.CVS Infections

Sr. No.	Condition/ Expected pathogens	Current MCGM Guidelines
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
3.	**Pacemaker/ Defibrillator infection** Local microbial spectrum	Local antibiogram

CARDIOVASCULAR SYSTEM INFECTIONS POST SURGERY IN ADULTS		
Sr. No	Condition/ Expected Pathogens	Revised MCGM recommendations
1	**CABG**	Same as before
2.	**Pacemaker/ Defibrillator Implantation** ***S. aureus*** ***S. epidermidis*** **Gram Negative Bacilli**	**Amoxycillin-clavulanic acid** 1.2 g IV. 60 min prior to skin incision and 12 hours after the procedure f/b 1g PO BD for 3 days
3.	**Cardiac Catheterization**	**Amoxycillin-clavulanic acid** 1.2 g IV. 60 min prior to skin incision and 12 hours after the procedure f/b 1g PO BD for 3 days

8.Intra-abdominal infections

Sr. No	Conditions/ Expected Pathogens	Revised MCGM guidelines
1.	**Abscess-Liver Pyemic** Enterobacteriaeceae, 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 gm IV QDS X 2 weeks Remarks: Ultrasound guided drainage indicated in large abscesses, signs of imminent rupture and no response to medical treatment.
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
		Duration - 3-5 days **Remarks:** **Rehydration is life saving**
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**

6	**Cholangitis** Enterobacteriaeceae, Anaerobes	**Piperacillin- tazobactam** 4.5 gm IV TDS **+** **Metronidazole** 500 mg IV TDS **Duration** – 7 days **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.
7	**Cryptosporidiosis** *Cryptosporidium parvum*	**Nitazoxanide**500 mg (PO) BD **Duration**- 3 days
8	**Diarrhoea – C.difficile**	**Metronidazole** 400 mg PO TDS **Duration** - 10-14 days **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** Enterobacteriaeceae, Enterococci, Anaerobes	All IV **Ceftriaxone** 1 gm BD **Or** **Piperacillin- Tazobactam** 4.5 gm TDS **+** **Metronidazole** 500 mg TDS **Duration**- 7-10 days

		Alternatives/remarks: Patients unresponsive to antibiotics may require surgery.
11	**Spontaneous Bacterial Peritonitis** Enterobacteria-eceae Enterococci *S.pneumoniae* naerobes	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 day

12.	**Perforative peritonitis** Enterobacteriaeceae Enterococci *P.aeruginosa,* Anaerobes	All IV **Piperacillin- tazobactam** 4.5 gm TDS + **Metronidazole** 1 gm TDS **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; other wise 2- 3 weeks suggested.*
13	**Intra abdominal abscess** Enterobacteriaeceae Gram pos cocci Anaerobes MTB Complex (rare)	**Mild – Moderate:** **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** Enterobacteriaeceae 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** Enterobacteriaeceae *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

Sr. No	Conditions/ Expected pathogens	Revised MCGM recommendations
1.	**Cystitis** Most likely – *E.coli* Rare cause – Proteus spp, Klebsiella spp	**Nitrofurantoin** 100 mg PO BD **Duration : 7 days** **Or** **Cotrimoxazol**e DS (800/160) PO OD **Duration : 7 days** **Alternative:** **Ciprofloxacin** 500 mg PO BD Or **Norfloxacin** 400 mg PO BD **Duration:** 3 days (E.coli, Kleb) **Or** 7 days (other susceptible organisms)
2	**Complicated cystitis (Patients with structural abnormalities, calculi, diabetics, recurrent UTI)** Most likely – *E.coli* Rare cause – Proteus spp, Klebsiella spp	If patient is stable, same as above **Duration:** 14 days *If patient is unstable,* **Inj Piperacillin + Tazobactam** 4.5 gm IV TDS **Alternative/Remarks:** Culture mandatory. If patient does not respond in 72 hrs, advise imaging , USG, CT and adjust antibiotic as per culture sensitivity report.
3	***Acute uncomplicated Pyelonephritis*** *E.coli*, *Staphylococcus saphrophyticus* (in sexually active young women), *Klebsiella pneumoniae, Proteus mirabilis*	**Piperacillin-Tazobactam** 4.5 gm IV 8hrly OR (QID if pseudomonas) **Cefoperazone-Sulbactam** 3gm IV 12hrly OR **Amikacin** 15-20mg/kg/d IM/IV OD (preferred if outpatient) or **Gentamicin** 4-7mg/kg/d IM/IV OD (preferred if outpatient) **Duration** 2 weeks *Monitor creatinine if on amino glycoside*

4	***Complicated Pyelonephritis*** *Escherichia coli, Klebsiella pneumonia, Proteus mirabilis, Pseudomonas aeruginosa, Enterococcus* sp. Frequently multi-drug resistant organisms are	**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
	present	***Duration** 2 weeks *Monitoring of creat if ag *Two agents if sepsis or MODS present
5	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**
6	Cathetar associated UTI	• **<u>Sample collection</u>** • **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

Sr. No	Conditions/ Expected Pathogens	Revised MCGM recommendations
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)**	**<u>At induction:</u> Piperacillin-Tazobactum** 4.5 g IV **OR Meropenem** 1g IV **<u>Immediate post op:</u>** 6-8 hrs post induction dose: **Piperacillin-Tazobactum** 4.5 g IV **OR Meropenem** 1g IV **<u>Late post op:</u>** ***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 **<u>Antifungal Therapy –</u>** When extensive burns and patient not responding to antibiotics o <u>If hemodynamically stable</u>: **Fluconazole** o <u>If hemodynamically unstable</u>: **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)**	**<u>At induction:</u> Co-amoxiclav** 1.2g IV **OR Ceftriaxone** 1g IV **<u>Immediate post op:</u>** 6-8 hrs post induction dose: **Coamoxiclav** 1.2g IV **<u>Late post op:</u> 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

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

4	**PID: Mild** *C.trachomatis* *N.gonorrhoea* Mycoplasma Anaerobes *G.vaginalis*	Tab **Cefixime** 400mg PO once + Tab **Metronidazole** 400 mg PO TDS for 14 days + Cap **Doxycycline**100 mg PO BD for 14 days (MDACS/NACO yellow kit) **Alternatives:** Contraindicated in pregnancy

5	Syphilis	Refer to STD program guidelines
6	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.
7	Influenza in pregnancy	**Oseltamivir** 75 mg Oral BD for 5 days In addition: Nebulization with **Zanamvir** respules (2) 5 mg each, BD for 5 days Remarks: 1. Tendency for severe including premature labor &delivery. 2. Treatment should begin within 48 hrs of onset of symptoms. 3. Higher doses commonly used in non pregnant population (150 mg) are not recommended in pregnancy due to safety concerns. 4. Chemoprophylaxis can be used in significant exposures. 5. Live (nasal Vaccine) is contraindicated in pregnancy. Complications: -Direct fetal infection rare -Preterm delivery and pregnancy loss.

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/**Pyrimathamine** + **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** I 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

Sr. No	Condition/ Expected Pathogens	Revised MCGM recommendation
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**	**IV Cefotaxime** (150mg/kg/d) in 2-3 div doses **OR** **IV Ceftriaxone** (50-75mg/kg/day OD) for hospitalized patients

	Age 4 months – 4 years	**Duration:** 10-14 days. **Add vancomycin or Clindamycin if MRSA i**s 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**	**Above plus** **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**	**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 aetiology . **Duration**: 3-4 weeks **Remarks:** Thoraco-centesis/ ICD/ VATS as necessary
8.	**Acute epiglottitis**	**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:**
		Clarithromycin (15 mg/kg/day in 2 divided doses for 7 days) Or **TMP-SMZ** (For infants aged ≥2 mo: TMP 8mg/kg/day plus SMZ 40 mg/kg/day in 2 divided doses for 14 days) **Remarks:** Same drugs are useful for prophylaxis
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**	**Metronidazol**e 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

17.	**Enteric fever**	**Ceftriaxone:** 75mg/kg/day in 2 divided doses **Duration** : 10-14 days Or **Cefotaxime:** 80mg/kg/day **Duration** : 10-14 days Or **Fluoroquinolone, e.g., Ofloxacin** (15 mg/kg/day in 2 div doses) Or **Ciprofloxacin** (15-30 mg/kg/day in 2 div doses) **Duration**: 5-7 days **Alternative:** **Azithromycin**: 20 mg/kg/day for 7 days or **Cefixime** 20 mg/kg/day in 2 div doses for 7-14 days.
18.	**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**
19	**UTI-uncomplicated**	**TMP-SMX**: **3- to 5-day course** of therapy with trimethoprimsulfamethoxazole (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
20.	**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/m^2/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):

Age	Vaccines
Birth	BCG, OPV-0
6 weeks	DPT1, OPV1, Hepatitis B1, Hib1*
10 weeks	DPT2, OPV2, Hepatitis B2, Hib2*
14 weeks	DPT3, OPV3, Hepatitis B3, Hib3*
9- 12 months	Measles
16- 24 months	DPT Booster 1, OPV4, MMR
5- 6 years	DPT Booster 2
10 years	TT
16 years	TT

*(Hib has been introduced in selected states to start with)

	Vaccine	Route of administration	Dose
1.	BCG	Intradermal	0.1 ml
2	DPT	Intramuscular	0.5 ml
3	Measles / MMR	Subcutaneous	0.5 ml
4	Hepatitis - B	Intramuscular	0.5 ml
5	DT	Intramuscular	0.5 ml
6	TT	Intramuscular	0.5 ml
7	OPV	Per oral	2 drops

B. **Optional vaccines that maybe considered for immunization:** Hib vaccine, Inactivated Polio vaccine, Pneumococcal vaccine, Typhoid vaccine, Varicella vaccine, Hepatitis A vaccine.

13. Acute febrile illness

Sr. No	Conditions/ Expected pathogens	Revised recommendations
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 maybe 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 http://www.nvbdcp.gov.in/Doc/Diagnosis-Treatment-Malaria-2013.pdf

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 viscera.
  References - 1. American Society of Health System Pharmacists (ASHP) 2013 Report 2. WHO Safe Surgery 2009

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
	OPHTHALMOLOGY		
1	Pre-operative Prophylaxis **Clean cases** Cataract, terygium, glaucoma, strabismus, lid(entropion, exotropion,ptosis), corneal transplant	**Moxifloxacin e/d,** one drop**,** 6 times previous day of surgery. Betadine e/d pre-operative	
2	**Contaminated cases** Endopthalmitis, corneal ulcer, post traumatic tear with infection,intraocular foreign body, lacrimal sac surgery, dacrocystitis	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	
3	Corneal foreign body	Patch for 24 hrs for epithelisation before increased cycloplegia Antibiotic Chloramphenicol applicap Next day: antibiotic drops moxifloxacin/ gatifloxacin X 3 days	
	ENT		
1	Pre op prophylaxis – Major head and neck surgery including implant surgeries	Inj Cefazolin /2 gms (IV) 1st dose at induction or Inj Cefuroxime sodium1.5 gm (IV) 2nd dose within 24 hrs	

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
	GENERAL SURGERY / GI surgery		
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 **+** **Amikacin** 5 mg / kg OD **+** **Metronidazole** 500 mg TDS OR in case of beta lactam allergy, **Aztreonam,** 2g IV **+** **Amikacin** 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 gmIV BD X 5 days Patients with organ failure / sepsis / In seriously ill / previous hospitalization, Piperacillin Tazobactam 4.5 gm TDS + Amikacin 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.

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
		Co-amoxiclav Amoxicillin 2 gm + Clavulanic acid 125 mg / IV If surgery beyond 2 hours , give another dose. Then, BD X 5 days	
5	**Post-splenectomy - long term prophylaxis** **Enterobacteriaeceae** **Anaerobes**	2 weeks prior to elective surgery,**vaccinate** for S.pneumoniae, H.influenzae b and N.meningitidis. Repeat Hib vaccine annually. + **Amoxicillin** 500 mg PO OD **Duration** : 2 years	
	CARDIAC SURGERY		
1	**CABG**	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 (>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.	Alternative treatment: Cefuroxime If patients allergic to b-lactam antibiotics: Vancomycin Clindamycin
2	**Other major cardiac surgery**	Same as above	
3	**Paediatric Cardiac Surgery**	Same as CABG, except the dose Cefazolin: 30mg/kg Vancomycin : 15 mg/kg Gentamicin: 3 mg/kg	
4	**Pacemaker/ Defibrillator Implantation** **S. aureus** **S. epidermidis** **Gram Negative Bacilli**	Cefazolin 1 g IV. 60 min prior to skin incision	
5	**Cardiac Catheterization**	Not routinely	Antibiotic prophylaxis is indicated in patients at high risk of complications

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
			secondary to Infective Endocarditis
	ORTHOPAEDICS		
1	**Clean Non Infected Cases with minor implants** (K Wire etc./ No Implants) S. aureus	Cefazolin 1 g IV. 60 min prior to skin incision	Cefuroxime 1.5 g IV one dose, one day 2nd and 3rd gen cephalosporins are potent inducers of ESBL
2	**Surgeries with major implants** (including THR, TKR) GNB, S. aureus	Cefuroxime 1.5 g IV BD + Amikacin 750 mg IV od before surgery Maximum continued till 2 days	
3	**Open Fractures**	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	Cefixime as alternative for cefuroxime
4	**Closed Fractures**	Nil	
	OBGY		
1	**Minor cases** S.aureus	Inj Co-amoxiclav 1.2 gm (IM/IV) Single dose 30-60 mins before procedure / incision	Cefazolin 1 g IV. 60 min prior to skin incision Single dose
2	**Episiotomy** Enterobacteriaeceae, Anaerobes	Inj. Co-amoxiclav 1.2 gm IV Single dose , Followed by 625 mgTDS X 3 days.	
3	**Tubal ligation** S.aureus GNB	Inj. Co-amoxiclav 1.2 gm IV Single dose followed by oral 625 mg 8 hourly X 5 days.	
4	**Clean and Clean Contaminated** S.aureus, Other Gram positive cocci Rarely Gram negative bacilli	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	
5	**Post operative wound gape** S.aureus, Enterobacteriaeceae, Anaerobes, Enterococci,	Inj Ceftriaxone 1gm IV BD X 5-7 days +	Collect specimen for culture sensitivity.

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
	Other Gram positive cocci	Inj Metronidazole500 mg IV TDS X 5-7 days	Change antibiotic based on microbiology report as required.
	NEUROSURGERY		
1	**Clean cases**	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)	For patients allergic to penicillin Clindamycin 600 mg (20 mg/kg) / Azithromycin 500 mg (15 mg/kg) / Clarithromycin 500 mg (15 mg/kg)
2	**Surgery on contaminated cases**	⋅ 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	All given for 5 days ⋅ Cefazolin 1g IV 8 hrly + Vancomycin 1g IV 12 hrly if MRSA prevalence in cenre is high / MRSA expected
	PLASTIC SURGERY		
1	**Clean surgery**	Cefazolin 2 g stat in clean surgery at induction	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)
2	**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: Co-amoxiclav 1.2g IV Late post op: Tab Co-amoxiclav 625mg BD for 5 to 7 days (till 1st dressing)	
3	**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: Co-amoxiclav 1.2g IV or as per culture reports	

Sr No	Condition / Expected pathogen	Antimicrobial of choice Dose / Route / Frequency / Duration	Alternatives / Remarks
		Late post op: IV antibiotic continued for 5 days Switch over to Tab Co-amoxiclav for next 5 days or as per culture reports	
4	**Burns (early excision & 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 ~~or as per culture reports~~ 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	
5	**Burns (late grafting)**	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	
6	**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: Co-amoxiclav 1.2g IV Post op: Tab Co-amoxiclav 625mg BD for 5 days	
7	**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: Co-amoxiclav 1.2g IV Late post op: IV antibiotic continued for 3 days Switch over to oral : Tab Co-amoxiclav 625mg BD for 7 days	
8	**Local anaesthesia cases in minor OT**	No antibiotics	

Paediatric Surgery

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
1	**Clean Surgery (Pre-operative prophylaxis)**			
a	Hernia	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	**No antibiotic required** **If to be given, then** Inj. Cefazolin 30 mg/kg IV single dose	Laparoscopic herniotomy – single shot of antibiotic (Cefazolin)
b	Hydrocoele	S.epidermidis S. aureus Streptococcus, Coryne-bacteria	**No antibiotic required** unless the patient is immunocompromised. Inj. Cefazolin 30 mg/kg IV single dose	
c	Orchiopexy	S.epidermidis S. aureus Streptococcus, Coryne-bacteria,	Inj. Cefazolin 30 mg/kg IV single dose or Inj. Ceftriaxone 50 mg/kg single dose	
d	Cyst Excision & sinuses in the neck	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	**No antibiotic required unless 2^0 infection** If infection, then Inj. Cefazolin 30 mg/kg IV 8 hourly for 3 days	
e	Circumcision	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	**No antibiotic required unless 2^0 infection** If infection, then Inj. Cefazolin 30 mg/kg IV 8 hourly for 3 days	
2	**Clean Contaminated Surgery(Pre-operative prophylaxis)**			
a	Myelo-meningocoele Repair	S.epidermidis S. aureus Entero-bacteriaeceae	Inj. Ceftriaxone 100 mg / kg / d, q12h + Inj. Metronidazole 30 mg/kg /d, q6h + Inj amikacin **Duration : 5 days minimum**	Inj. Clindamycin 20 mg/kg i.v. 8 hourly

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
			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 **Duration : 10-14 days (with CSF leakage)**	
b	Cystoscopy	*S. aureus*, Entero-bacteriaeceae	Inj. Ceftriaxone 100 mg / kg / d, q12h Or Inj. Cefazolin 30 mg /kg i.v. 8 hourly + Inj. Amikacin 15mg/kg/d, q8h **Duration** 1-3days if no UTI Or 5-7 days if febrile UTI	**Antibiotic to be directed as per pre-op urine culture sensitivity report.**
c	Thoracotomy (for decortication)	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae		**antibiotic as per culture sensitivity for 7-10 days**
d	Thoracotomy (other indications)	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	Inj. Ceftriaxone 100 mg / kg /d, q12h ± Amikacin ± metronidazole **Or** Inj. Cefazolin 30mg/kg i.v. 8 hourly +amikacin ± metronidazole Duration - 3-5 days	
e	Laparotomy	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	Inj. Cefazolin 30 mg / kg i.v. 8 hourly + Inj Amikacin + Inj. Metronidazole 30 mg / kg / d, q6h Duration : 3-5days **Or**	Duration and antibiotic depends on indication and surgery done

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
		Anaerobes	Ceftriaxone / Ceftazidime + Amikacin + Metronidazole x 5 days Or Neonates - meropenem	
f	Laparoscopy	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae Anaerobes	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**	Same as above
g	Thoracoscopy	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	**CDH –** a. **off ventilator** – Ceftriaxone or ceftazidime Duration : 3 days b. **On ventilator** – Meropenem or Imipenem + cilastatin Duration : 7 days	Same as above Antibiotics according to ICU organisms in different hospitals maybe needed.
h	Hypospadias	S.epidermidis S. aureus Streptococcus, Coryne-bacteria, Entero-bacteriaeceae	Inj. Cefazolin 30 mg /kg i.v. 8 hourly + Inj. Metronidazole 30 mg / kg /d, q6h **or** Inj. Ceftriaxone 100 mg/kg i.v. 8 hourly + Inj. Metronidazole 30 mg / kg /d, q6h	IV amoxyclavulanic acid 12.5 mg/kg/dose twice day of amoxicillin for 1-3 days
i	VP shunt Insertion	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone (double dose) + amikacin Duration : 5 days	Depending on CSF culture sensitivity reports
j	TEF repair	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae	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

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
		Anaerobes	Piperacillin + tazobactam 90mg/kg/dose four times a day + metro	Antibiotics according to ICU organisms in different hospitals maybe needed.
k	Appendicectomy	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone or Ceftazidime – single shot OR Co-amoxiclav-single shot Complicated appendicitis - Ceftriaxone ± amikacin + metronidazole Duration :3-7 days	Inj. Clindamycin 20 mg /kg i.v. 8 hourly + Gentamicin, 3 mg per kg or Moxifloxacin 10 mg/kg + Metronidazole Duration :5-7days
l	Choledochal Cyst	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone or Cefoperazone ± amikacin + Metronidazle Duration : 7 days	Same as above
m	Cholecystectomy	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Inj. Ceftriaxone ± Co-amoxiclav single shot Or Cefoperazone + Amikacin + Metronidazole if sick child	Same as above
n	Abdominal pull through	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	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	Same as above
o	ASARP	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone or Ceftazidime ± Amikacin + Metro Or Cefazolin 30 mg/kg i.v. 8 hourly +Amikacin + metronidazole 30 mg / kg /d, q6h Duration : 5-7days	Same as above
p	PSARP	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae	Ceftriaxone or ceftazidime ± amikacin + metro OR Cefazolin 30 mg/kg i.v. 8 hourly	Same as above

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
		Anaerobes	+ Amikacin + Metronidazole 30 mg / kg /d, q6h are used. Duration : 3-5days	
q	Biliary atresia	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone or Cefoperazone ± Amikacin + Metronidazole Duration : 7 days	Same as above
r	Hepatic Resection & other Hepato Biliary Conditions	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Piperacillin–tazobactam, Infants 2–9 mo: 80 mg/kg of the piperacillin component, Children >9 mo and ≤40 kg: 100 mg/kg of the piperacillin component 2 hrly Or Cefoperazone /Ceftriaxone + metronidazole Duration : 5 days	Same as above
3	**Contaminated (Empiric Therapy)**			
a	Incision & drainage of Abscesses **Superficial abscesses**	S.aureus (mostly), S.pyogenes, E.coli	**cloxacillin** 25-50mg/kg in 4 divided doses for 5-10 days	Cephalexin / co-amoxyclav for 10-14 days
b	**Deep intra-abdominal abscesses**	S.aureus (mostly), S.pyogenes, E.coli	Ceftazidime or ceftriaxone + amikacin + metro Duration : 5-7days ± chloroquine x 5-7 days	Surgical drainage followed by placement of indwelling drains is the procedure of choice.
c	Stoma formation	S.epidermidis S. aureus Streptococcus, Entero-bacteriaeceae Anaerobes	Ceftriaxone/ ceftazidime + 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	May need to be stepped up if enterocolitis, sick child, sepsis or depending on icu flora

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
c	Fistulectomies	S.epidermidis S. aureus Streptococcus, Entero-Bacteriaeceae Enterococci Anaerobes	– **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	Clindamycin 20mg/kg i.v. q8h + Gentamicin, 3 mg per kg or fluoroquinolone (moxifloxacin 10 mg/kg) Or Metronidazole + aminoglycoside or fluoroquinolone
d	Rectal Polyp Excision	S.epidermidis S. aureus Streptococcus, Entero-Bacteriaeceae Enterococci Anaerobes	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	Same as above
e	Debridement of burns	S. aureus Entero-Bacteriaeceae Pseudomonas	Piperacillin–tazobactam, Infants 2–9 mo: 80 mg/kg of the piperacillin component, Children >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	**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
f	Resection & anastomosis	S.epidermidis S. aureus Streptococcus, Entero-Bacteriaeceae Enterococci Anaerobes	**Ceftriaxone / ceftazidime+amikacin + metro x 5 days** **Or** **Neonates – meropenem /colistin** **x 5-7 days**	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 5-7days**
g	Perforative peritonitis	Enterococci Entero-Bacteriaeceae Anaerobes	**Ceftriaxone / ceftazidime+amikacin + metro x 5 days** **OR**	**as per requirement** **In pediatric surgery conditions , in neonates for surgical intervention –**

SR. No.	CONDITION	LIKELY ETIOLOGY	TREATMENT Drug / Dose / Duration / Route	ALTERNATIVE TREATMENT / REMARKS
			Neonates – meropenem /colistin x 5-7 days	**meropenem or imipenem + cilastatin are required**

15 NEONATAL INFECTIONS : ANTIBIOTIC POLICY

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. Evidenced 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,

Particulars	Intramural data	Extramural datra
Incidence	3.0%, (EOS: 67% & LOS: 31.6%)	39.7%, (EOS: 56.1% & LOS: 45%)
Organisms	Klebsiella pneumoniae, Staphylococcus aureus, E. coli, Pseudomonas aeruginosa	Klebsiella pneumoniae, Staphylococcus aureus, E. coli, Pseudomonas aeruginosa
Clinical category	Septicemia, Pneumonia, Meningitis	Pneumonia, Meningitis Infective diarrhoea, Bone/joint infection
Mortality	18.6% Secondary cause of death	39%, Primary cause of death

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.

Sr. No	Type of Infection	Line of Antibiotics choice	Community Acquired	Hospital Acquired	Duration of Antibiotics
1	**Septicemia (EOS or LOS)** **Pneumonia**	**1st**	Amoxicillin - Clavulanic acid + Amikacin Or Ampicillin - Sulbactam + Amikacin	Amoxicillin - Clavulanic acid + Amikacin Or Ampicillin - Sulbactam + Amikacin	Culture positive sepsis: 10-14 days Culture negative sepsis: 7-10 days
		2nd	Cefuroxime + Amikacin	(Piperacillin - tazobactam) + Amikacin	
		3rd	Meropenem / Imipenem	Meropenem / Imipenem +/- Amikacin / Colistin	
				If MRSA evidence (culture proven): Vancomycin/ Linezolid	
2	**Meningitis**	**1st**	Cefotaxime + Amikacin	Meropenem +/- Amikacin	21 days
		2nd	As per culture & sensitivity Meropenem +/- Amikacin	As per culture and Centivity	

Sr. No	Type of Infection	Line of Antibiotics choice	Community Acquired	Hospital Acquired	Duration of Antibiotics
3	**Bone**	**1st**	Amoxicillin - Clavulanic acid + Amikacin	(Piperacillin - tazobactam) + Amikacin	6 weeks (4 wks IV + 2 wks oral)
		2nd	Vancomycin + Amikacin/ Cefotaxime	Vancomycin + Amikacin Or Linezolid + Amikacin	
		3rd	Linezolid + Amikacin/ Colistin		
4	**UTI***	**1st**	Cefotaxime + Amikacin		7-10 days
		2nd	As per culture report		
5	**Fungal**		NA	Fluconazole Amphotericin B (Preferably liposomal)	

*UTI occurring in the setting of generalized septicemia 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 & Neofax 2011)

Sr. No	Name of Anti-biotics	Dose	Dose Interval			Remarks
			PMA (weeks)	Postnatal (days)	Internal (hours)	
1	Amoxicillin - Clavulanic acid	50 mg/kg/dose	All	1–7	12	
				>7	8	
2	Amikacin	15 mg/kg/dose	All		24	Potentially nephrotoxic, ototoxic & neurotoxic. Ototoxicity is usually irreversible.
3	Ampicillin - Sulbactam	50 mg/kg/dose (as ampicillin component) Meningitis : 300-400 mg/ kg/day	<30	1 - 28	12	
				> 28	8	
			30 – 37	1 - 14	12	
				> 14	8	
			>37	All	8	

Sr. No	Name of Anti-biotics	Dose	Dose Interval			Remarks
			PMA (weeks)	Postnatal (days)	Internal (hours)	
4	Piperacillin - tazobactam	50 - 100 mg/kg/ dose (as piperacillin component) IV infusion over 30 minutes.	<30	0 - 28	12	CNS penetration modest. Use for treatment of non CNS infections
				>28	8	
			30–36	0 - 14	12	
				>14	8	
			37–44	0 - 7	12	
				>7	8	
5	Cefotaxime	50 - 100 mg/kg/ dose	< 30	0-28	12	
				>28	8	
			30 - 36	0 to 14	12	
				>14	8	
			37 - 44	0 to 7	12	
				>7	8	
			=45	All	6	

Sr. No	Name of Anti-biotics	Dose	Dose Interval			Remarks
			PMA (weeks)	Postnatal (days)	Internal (hours)	
6	Meropenem	Sepsis: 20 mg/kg/dose Meningitis: all ages: 40 mg/kg/ dose	<32	1 – 14	12	For meningitis & Pseudomonas infection, all ages: 40 mg/kg per dose every 8 hours.
				>14	8	
			>32	1 – 7	12	
				>7	8	
7	Imipenem/ Cilastatin	20 to 25 mg/dose IV infusion over 30 minutes.			12	Restricted to treatment of non CNS infections
8	Colistin	25000 units/kg/dose IV infusion over 30 minutes.			8	Use only for MDR Klebsiella, Acinetobacter, Pseudomonas Use only if MRSA
9	Vancomycin	Meningitis: 15 mg/kg/dose Bacteraemia: 10 mg/kg/dose IV infusion over 60 minutes.	<30	1 – 14	18	
				>14	12	
			30 – 36	1 – 14	12	
				>14	8	
			37 – 44	0– 7	12	
				>7	8	

Sr. No	Name of Anti-biotics	Dose	Dose Interval			Remarks
			PMA (weeks)	Postnatal (days)	Internal (hours)	
10	Linezolid	10 mg/kg/dose IV infusion over 30 minutes.	<37	<7	12	Oral dosing is the same as IV. Do not use as empiric treatment.
			<37		8	
11	Fluconazole	Invasive Candidiasis: Loading dose: 12 - 25 mg/kg, then 6 to 12 mg/kg/dose IV infusion by syringe pump over 30 minutes.	<30	1 – 14	48	Extended dosing intervals should be considered for neonates with renal insufficiency (S. Creatinine > 1.3 mg/dL). Good penetration into CSF after both oral & IV administration.
				>14	24	
			>30	1 – 7	48	
				>7	24	
12	Amphotericin B	1 to 1.5 mg/kg IV infusion over 2 to 6 hours.			24	Incompatible with saline. Dosage modification if S. Creatinine > 0.4 mg/dl from baseline, hold dose for 2 to 5 days. Alt. day dosing recommended over decreasing daily dose in renal toxicity.

Sr. No	Name of Anti-biotics	Dose	Dose Interval			Remarks
			PMA (weeks)	Postnatal (days)	Internal (hours)	
13	Amphotericin B Liposome	5 - 7 mg/kg/dose IV infusion over 2 hours.			24	Use in patients with renal or hepatic dysfunction. Monitor urine output.
14	Metronidazole	Loading dose: 15 mg/kg IV infusion over 60 minutes. Maintenance dose 7.5 mg / kg IV infusion over 60 mins	<30	0 - 28 d	48	
				>28 d	24	
			30–36	0 - 14	24	
				>14	12	
			37–44	0 - 7	24	
				>7	12	
			>44	All	8	

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.

16 Dental Guidelines

Oral Medicine and Radiology

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
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** 625 mg PO TDS If allergic to penicillin: Clindamycin 300 mg , QDS **Duration :** 7 days Viral parotitis: Acyclovir 400 mg PO QDS Or Valacyclovir 1g PO QDS **Duration :** 7 days	Contra-indications: Hypersensitivity to acyclovir/valacyclovir Monitor : Urine analysis, BUN, Creatinine, liver enzymes, CBC.

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
2	Peri-apical Abscess	Strict anaerobes , viridians streptococci , Strep. angionosus (milleri) group	Mild-Moderate acute condition: **Penicillin** V 250 mg PO QDS **Duration :** 5 days + Metronidazole 200 mg PO BD **Duration :** 3 days. If allergic to penicillin: Clindamycin Unresolved infection/ immunocompromised: Co-amoxiclav 625 mg PO TDS **Duration :** 5 days	
3	Periodontal Abscess	Anaerobes Fusobacterium, P. gingivalis	**Doxycycline** 100 mg PO BD **Duration :** 10 days	
4	Cellulitis	S. viridians and Prevotella species.	**Amoxicillin** 500 mg PO TDS **Duration :** 7 days.	

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
5	Osteomyelitis	Alpha haemolytic streptococcus, S. aureus, Enterobacteriaceae, Actinomycetes, Various anaerobes	**Co-amoxiclav** 625 mg PO TDS **Duration** :6 weeks If allergic to penicillin: Ciprofloxacin 400 mg IV PB q 12 hr + Clindamycin 600 mg IV PB q 8 hr.	
6	Acute Necrotising Ulcerative gingivitis	P. intermedia and Spirochetes	**Amoxicillin** 500 mg PO TDS + Metronidazole 250 mg PO TDS **Duration :** 10 days	
7	Mucormycosis	Rhizopus	Liposomal **Amphotericin B** 5mg/kg IV / q day	Monitor- Liver function tests.

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
8	Herpes Zoster	Varicella Zoster virus	**Acyclovir** 800 mg PO q 5 hr Or Valcyclovir 100 mg PO q 8 hr Or Famciclovir 100 mg PO q 8 hr **Duration :** 7 days	
9	Herpes Simplex	Herpes Simplex Virus	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	

Oral and Maxillofacial surgery				
Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
1	**Clean/ Atraumatic extractions/ Orthodontic extractions/ Clean Closed fractures**	–	No Antibiotics	–
2	**Extraction of infected teeth**	–	**Amoxicillin** 500 mg PO TDS **Duration :** 5 days	Co-amoxiclav 625 mg TDS 5 days
3	**Minor surgical procedures Extraction of teeth with intra/extra oral swelling, impacted teeth, peri-apical abscess,extractionin medically compromised patients.**	–	**Co-amoxiclav** 625 mg PO TDS + **Metronidazole** 400 mg PO TDS **Duration :** 5 days	–

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
4	**Removal of infected Implants**	Gram positive cooci, 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	Cefazolin is preferred over 2nd and 3rd gen cephalosporins as they are potent inducers of ESBL.

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
5	**Clean contaminated wounds e.g. lacerations**		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 1st dressing) Metro 500 mg i.v Amikacin 500 mg, i.v **Duration :** 7-10 d	

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
6	**Dirty Wounds**		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	As per culture reports
7	**Clean surgery**		**Cefazolin** 2 g stat in clean surgery at induction	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)

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
8	**Open Injuries Abrasions, Lacerations.**	Gram negative bacilli & S. aureus	**Cefuroxime** 1.5 g IV BD + **Amikacin** 750 mg IV OD + **Metronidazole** 500 mg TDS **Duration :** 7-10 days as per wound healing status Switch to oral Co-amoxiclav BD **Duration :** 5 days	–
9	**Open Fractures**		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	Cefixime as alternative for cefuroxime

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
10	**Maxillofacial injuries (complicated multiple fractures, panfacial fractures)**		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 Post op: Tab Co-amoxiclav 625 mg BD for 5 days	–
11	**Maxillofacial injuries (complicated multiple fractures, panfacial fractures)**		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: IV antibiotic continued for 5 days Switch over to oral : Tab Co-amoxiclav 625 mg BD for 5 days	–

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
12	**Elective/ clean major surgical**		**Cefazolin** 2 gms IV or Co-amoxiclav 125 mg IV	Total only 3 doses. If surgery beyond 4hrs, give another dose. Post surgery 2 doses at 12 hrly interval for 1 day
13	**Clean minor surgical procedures e.g. surgical removal of impacted teeth, impacted teeth exposure, dental implants, pre-prosthetics etc.**		**Amoxicillin** 500 mg TDS **Duration :** 5 days	Co-amoxiclav 625 mg TDS Duration : 5 days

Periodontal management				
Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
1	**Chronic periodontitis**	P.gingivalis, Aggregatibacter actinomycetemcomitans, P. intermedia, T. forsythia, T. denticola, Fusobacterium	**Amoxicillin** 500 mg PO TDS **Duration :** 3 days	If sensitive to penicillin than ciprofloxacin 500 mg BD
2	**Localised aggressive periodontitis**	Aggregatibacter actinomycetemcomitans	**Tetracycline** 250 mg **PO QDS** for 14 days every 8 weeks, **or** **Amoxicillin** 500mg PO TDS for 7 days	Doxycycline 100 mg/day for 5 days.
3	**Refractory periodontitis**		**Metronidazole** 400mg PO TDS **+ Ciprofloxacin** 500 mg PO BD **Duration :** 7 days	

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
4	**Generalised aggressive periodontitis**	**P. gingivalis,** *Bacteriodes forsythus,* **Aggregatibacter-actinomycetemcomitans**	**Azithromycin 500 mg PO OD ,** or Amoxicillin 500mg PO TDS **Duration :** 7 days	
5	**ANUG**	Spirochetes, fusobacterium, Borrelia	**Penicillin** 500 mg PO QDS	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
6	**Periodontal abscess**	Gram negative cocci, diplococci, fusiforms, and spirochetes	**Amoxicillin 500 mg PO TDS, Metronidazole 400 mg PO TDS** **Duration : 5 days**	Clindamycin 300 mg BD for 5 days.

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Remarks
7	**Gingival abscess**	Gram negative cocci, diplococci, fusiforms, and spirochaetes	**Amoxicillin** 500mg PO TDS + **Metronidazole** 400 mg PO TDS **Duration :** 5 days	
8	**Post surgical antibiotics**		**Amoxicillin** 500mg PO TDS **Duration :** 5 days	If sensitive to penicillin then ciprofloxacin 500 mg bd

Conservative Dentistry		
Sr. No	**Conditions**	**Antibiotics**
1	Caries	No antibiotics indicated
2	Root canal treatment	No antibiotics indicated
3	Root canal treatment with flare up	No antibiotics indicated
4	Acute alveolar abscess	No antibiotics indicated
5	Hypersensitivity	No antibiotics indicated
6	Acute alveolar abscess with systemic symptoms	**Amoxicillin** 500 mg TDS **Duration :** 5 days
7	Peri-apical surgery	**Amoxicillin** 500 mg TDS **Duration :** 5 days
8	Trauma to the teeth	To be decided on case to case basis

Pediatric Dentistry					
Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Treatment	Remarks
1	Intra-oral swelling due to pulpally involved tooth				
	Acute alveolar abscess	Staphylococci, Streptococci, Bacteroides melaninogenicus	**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days		Management of local focus of infection by curettage and debridement
	Chronic alveolar abscess	Alpha hemolytic streptococci, obligate anaerobes Actinomyces, Arachnia	**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses for 3-7 days if systemic involvement		

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Treatment	Remarks
2	Cellulitis due to tooth / teeth With systemic involvement	Beta haemolytic streptococci E. coli	**Amoxicillin** 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 **Duration :** 3-7 days	Co-amoxiclav Children <40kgs 20 40 mg / Kg / day divided in 3 doses Children<3years 30 mg/kg/day divided in 2 doses Or Cefadroxil >6years 500 mg BD 1-6 years250 mg BD <1 year25 mg/kg/day in divided doses	Along with establishment of drainage for pus
3	Extra-oral swelling during root canal treatment procedures		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses + **Metronidazole** 7.5 mg/kg 3 times a day **Duration :** 3-7 days	Cefadroxil >6years 500 mg BD 1-6 years250 mg BD <1 year25 mg/kg/day in divided doses	

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Treatment	Remarks
4	Extra-oral swelling after extraction With systemic involvement		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days		
5	Extraction of infected teeth/ Prophylaxis for minor intra-oral surgeries		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days		
6	Pericoronitis		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days	Amoxicillin 20-40 mg/ Kg / day divided in 3 doses + Metronidazole 7.5 mg/kg 3 times a day	

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Treatment	Remarks
7	ANUG	Spirochetes, Fusobacterium, Borrelia vincenti	**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days	If allergic to penicillin Erythromycin 30-50 mg/kg/day in divided doses 2-8 years 1gm /day in divided doses <2 years 500 mg/day in divided doses	Should be accompanied with local debridement
8	Gingival abscess	Gram negative cocci, diplococci, Fusiforms and Spirochetes	**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses + **Metronidazole** 7.5 mg/kg 3 times a day **Duration :** 3-7 days		

Sr. No	Condition	Expected pathogen/s	Antimicrobial of choice Dose/Route/ Frequency/Duration	Alternatives Treatment	Remarks
9	Extra-oral sinus tract due to pulpally involved tooth		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **+** **Metronidazole** 7.5 mg/kg 3 times a day **Duration :** 3-7 days	Cefadroxil >6years 500 mg BD 1-6 years 250 mg BD <1 year 25 mg/kg/day in divided doses	Management of local focus of infection
10	Avulsion of teeth		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **+ Cloxacillin** 50 100 mg / kg/ day divided in 4 doses **Duration :** 3-7 days		
11	Luxation injuries to teeth		**Amoxicillin** 20 40 mg / Kg / day divided in 3 doses **Duration :** 3-7 days		