GASTROINTESTINAL TRACT INFECTIONS

PEDIATRIC GASTROINTESTINAL TRACT INFECTIONS

Acute diarrhea

- Acute diarrhea is defined as diarrhea lasting less than 14 days. Mainstay of treatment is to give fluids, zinc supplements, and food.

Classification of dehydration status of children 2 months to 5 years of age (IMCI 2014):

- **Severe dehydration** (when 2 of the following signs are present)
  - Lethargic or unconscious
  - Sunken eyes
  - Not able to drink or drinking poorly
  - Skin pinch goes back very slowly

- **Some dehydration** (when 2 of the following signs are present)
  - Restless, irritable
  - Sunken eyes
  - Drinks eagerly, thirsty
  - Skin pinch goes back slowly

- **No dehydration** (when there are not enough signs to classify patient's status as some or severe)

Etiology	Preferred regimen	Comments
Community and hospital-based based studies in children < 5 years (Saniel et al 1982-84, Lucero et al 1982-83, Carlos et al 1989) • *Salmonella*: 10-15% • ETEC: 9-15% • Rotavirus: 7-17% Etiology of acute diarrheas in developing countries expressed in weighted annual incidence per 100 child years (Nelson's Textbook of Pediatrics, 20th edition, 2015): • **<12 months** – Rotavirus: 2.1-10.1 – Enterotoxigenic *Escherichia coli* (ETEC): 0.7-3.6	**IMCI protocol for neonate up to 2 months:** *For suspected dysentery:* **Ciprofloxacin** tab 30 mg/kg/d div 2 doses x 3d **IMCI protocol for child 2 months to 5 years:** *For suspected cholera:* **Erythromycin** 250 mg tab qid x 3d OR **Tetracycline** 250 mg tab qid x 3d *For suspected dysentery* **Ciprofloxacin** 30 mg/kg/d div 2 doses x 3d **RECOMMENDATIONS OF FEIGIN AND CHERRY:** *For suspected antibiotic-associated colitis presenting as severe*	For children with severe dehydration living in an area with reported cases of cholera, give antibiotic for cholera. For cases of acute diarrhea with dysentery (blood in the stool), give ciprofloxacin for 3 days. For suspected antibiotic-associated colitis, mild disease

– *Cryptosporidium*: 0.7-5.4 • **12-23 months** – Rotavirus: 1.6-12.4 – ETEC: 0.7-2.8 – *Shigella*: 0.5-8.5 • **24-59 months** – Rotavirus: 0.3-3.5 – *Shigella*: 0.2-3.1 – *Vibrio cholera* 01: 0.2-1.8	*disease or with prolonged symptoms:* **Metronidazole** 30 mg/kg/d IV or PO div 4 doses x 10-14d OR **Vancomycin** 40 mg/kg/day PO div 4 doses especially for patients with severe disease *For suspected nontyphoidal Salmonella in the setting of severe diarrhea in infants less than 6 months of age, malnourished and immunocompromised children:* **Ciprofloxacin** 30 mg/kg/d IV div 2 doses x 10-14d OR **Azithromycin** 6 mg/kg/d PO OD x 5d OR **Ceftriaxone** 75-100 mg/kg/d IV q24h x 14d *For Campylobacter:* **Azithromycin** 10 mg/kg/d PO x 3d OR **Erythromycin** 40 mg/kg/d PO div 4 doses x 5d *For Entamoeba histolytica:* **Metronidazole** 35-50 mg/kg/d PO div 3 doses x 7-10d *For Giardia:* **Metronidazole** 15 mg/kg/day PO div 3 doses x 5-7d *For Cyclospora:* **Trimethoprim-sulfamethoxazole**, with **Trimethoprim** 10 mg/kg/d and **Sulfamethoxazole** 50 mg/kg/d PO div 2 doses x 7-10d	does not warrant antibiotic treatment since symptoms resolve within 7-10 days after discontinuing precipitating antibiotics. Probiotic treatment of children with *C. difficile* diarrhea has not been well studied. Immunization of infants starting at 6 weeks of age with either of 2 available live attenuated rotavirus vaccines is recommended to afford protection against severe rotavirus disease. The monovalent human rotavirus vaccine is given as a 2-dose series and the pentavalent human bovine rotavirus vaccine is given as a 3-dose series. Oral vancomycin is not available locally.

Hepatic abscess		
Etiology	**Preferred regimen**	**Comments**
Etiology of pyogenic abscess: • 50% polymicrobial • *Staphylococcus aureus* • *Streptococcus sp*. • *E. coli* • *Klebsiella pneumoniae, Salmonella*	**Ampicillin sulbactam** 100-200 mg/kg/d ampicillin component IV div 4 doses (max 8 g) OR **Piperacillin tazobactam** 300 mg/kg/d piperacillin component IV div 3 doses (Daily adult dose 9-16 g) OR	If MRSA is suspected, start on anti-MRSA regimen (refer to section on treatment of MRSA infections)

• Anaerobic organisms (Nelson's Textbook of Pedia, 2015) In developing countries, may consider *E. histolytica* and *Toxocara canis*	**Ceftriaxone** 100 mg/kg/day IV in 1-2 doses (daily adult dose: 2-4 g) PLUS **Metronidazole** 30-50 mg/kg/day IV div 3 doses (daily adult dose 0.75-2.25 g) for 2-3 weeks then shift to oral to complete 4-6 weeks. <u>*For hepatic abscess secondary to* E. histolytica*:*</u> **Metronidazole** 30-50 mg/kg/day IV div 3 doses x 10d FOLLOWED BY Intraluminal amoebicides such as **paromomycin** or **diloxanide** (2nd line agent) to cure luminal infection: **Paromomycin** 25-35 mg/kg/day PO div 3 doses x 7d	

Primary spontaneous bacterial peritonitis		
Etiology	**Preferred regimen**	**Comments**
Streptococcus pneumoniae – 30-50%; most common *E. coli* – 25-40% Staphylococci – 2-4% Group A *Streptococcus* *Enterococci* *Klebsiella pneumoniae* (Feigin Textbook)	<u>*Streptococcus pneumoniae:*</u> **Cefotaxime** 200 mg/kg/day IV div 4 or 6 doses OR **Ceftriaxone** 100 mg/kg/day IV div 1-2 doses OR If penicillin sensitive *Streptococcus pneumoniae*, aqueous **Penicillin** G– 200,000-300,000 U/kg/day IV in 6 divided doses X10-14d <u>*For Gram-negative bacilli:*</u> **Cefotaxime** 200 mg/kg/day IV div 4 or 6 doses x 10d to 3 weeks OR **Ceftriaxone** 100 mg/kg/day IV div 1-2 doses x 10d to 3 weeks +/- **Gentamicin** 3-7.5 mg/kg/day IV div 3 doses OR Monotherapy with the following antibiotic: **Piperacillin tazobactam** 300 mg/kg/day of piperacillin component	Perform analysis, Gram stain and culture of peritoneal fluid to distinguish primary from secondary peritonitis. Maintain fluid and electrolyte balance. Do surgical consult. Start antimicrobials as soon as possible. Generally managed medically. Duration of antibiotic therapy depends on clinical course of the patient. Antibiotic prophylaxis may be administered to patients with cirrhosis as a preventive measure against primary peritonitis

	IV div 3 doses	

Secondary peritonitis		
Etiology	**Preferred regimen**	**Comments**
Usually polymicrobial consisting of anaerobes and facultative gram negative bacilli *Bacteroides fragilis* group *Peptostreptococcus* *E. coli* *Klebsiella* *Pseudomonas aeruginosa* *Enterococcus* (Feigin)	**Metronidazole** 22.5-40 mg/kg/day IV div 3 doses PLUS **Cefotaxime** 200 mg/kg/day IV div 4 or 6 doses OR Monotherapy with the following antibiotics: **Piperacillin tazobactam** 300 mg/kg/d piperacillin component IV div 3 doses OR **Meropenem** 30-60 mg/kg/day IV div 3 doses Antibiotics are generally given for 5-10d but the primary basis for duration of antibiotic treatment is the patient's clinical course..	Patient may require either immediate surgery to control the source of contamination and to remove necrotic tissue, blood and intestinal contents from the peritoneal cavity or a drainage procedure if a limited number of large abscesses can be shown.
Chronic Ambulatory Peritoneal Dialysis (CAPD)-associated peritonitis: • Gram-positive organisms, coagulase negative staphylococci, *S. aureus* – 30-45% • *Enterobacteriaceae* – 20-30% • *Pseudomonas* – 6% • *Acinetobacter* -4%	**Vancomycin** 45-60 mg/kg/day IV or intraperitoneal in 3-4 doses PLUS **Gentamicin** 3-7.5 mg/kg/day IV div 3 doses Antibiotics are generally given for 10d but the primary basis for duration of antibiotic treatment is the patient's clinical course.	The following are the recommendations based on the Consensus Guidelines for Prevention and Treatment of Catheter-related infections and peritonitis in pediatric patients receiving peritoneal dialysis (2012 update): • Empiric diagnosis of PD-related peritonitis can be made if the effluent WBC count > 100/mm^3 and at least 50% of the WBCs are polymorphonuclear leukocytes. Effluent should be centrifuged and sediment should be cultured. • Antibiotics for the treatment of bacterial peritonitis should be administered by the intraperitoneal route. Beta lactam antibiotics should be administered continuously. • Center-specific antibiotic susceptibility patterns should guide selection of empiric antibiotic therapy

Ventriculo-peritoneal shunt peritonitis Coagulase positive or negative Staphylococci mostly Gram negative bacilli	**Vancomycin** 45-60 mg/kg/day IV or intraperitoneal div 3-4 doses PLUS for Gram-negative infections **Cefotaxime** 200 mg/kg/day IV div 4 or 6 doses OR **Ceftriaxone** 100 mg/kg/day IV div 1 or 2 doses OR **Ceftazidime** 200-300 mg/kg/day div 3 doses OR **Meropenem** 30-60 mg/kg/day div 3 doses Antibiotics are generally given for 10d but the primary basis for duration of antibiotic treatment is the patient's clinical course.	although the ISPD recommends cefepime as empiric treatment. Refer to a specialist for co-management. Higher cure rate achieved with VP shunt removal.

Hepatitis		
Etiology	**Preferred regimen**	**Comments**
Hepatotropic viruses (Hepatitis A, B, C, D, E)	**Chronic Hepatitis B:** Should be individualized. Refer to infectious disease specialist or gastroenterologist. **Hepatitis C:** Refer to specialist.	No antiviral treatment is recommended for hepatitis A. Safe vaccines are available for preventing HAV and HBV. Hepatitis A vaccine is given intramuscularly as a 2 dose series at a minimum age of 12 months. A second dose is given at least 6 months from the first dose. Hepatitis B vaccine is given intramuscularly. The first dose is given at birth or within the first 12hours of life. The minimum interval between doses is 4 weeks. The final dose is administered not earlier than age 24 weeks. Another dose is needed if the last dose was given at age < 24 weeks. For preterm infants, if born to HBsAg (-) mothers and medically stable, the first dose of HBV may be given at 30 days of chronological age regardless of weight, and this can be counted as part of the 3 dose primary

		series. Another dose of HBV is needed for those < 2 kgs whose 1st dose was received at birth. For infants born to HBsAg (+) mothers, administer HBV and HBIG (0.5ml) within 12hours of life. HBIG should be administered not later than 7 days of age, if not immediately available. For infants born to mothers with unknown HBsAg status, if birth weight is ≥2 kgs, administer HBV within 12hours of birth and determine mother's HBsAg status as soon as possible. If HBsAg(+), administer HBIG not later than 7 days of age. If with birth weight of < 2 kgs, administer HBIG in addition to HBV within 12hours of life. Referral to an infectious disease specialist is recommended for management of hepatitis cases.

Gallbladder infection		
Etiology	**Preferred regimen**	**Comments**
Acute acalculous cholecystitis is uncommon in children and usually caused by an infection secondary to Groups A and B *Streptococci*, Gram-negative bacilli (like *Salmonella*) and *Leptospirosis interrogans*. Antibiotic therapy should cover for gut luminal flora (*E. coli, Klebsiella*, *Enterococcus*).	1st line: **Piperacillin tazobactam** 300 mg/kg/day of piperacillin component IV div 3 doses OR **Ampicillin-sulbactam** 100-200 mg/kg/day of ampicillin component div 4 doses OR **Cefotaxime** 200 mg/kg/day IV div 4-6 doses +/- **Gentamicin** 3.75 mg/kg/day IV div 3 doses x 14-21d OR **Amikacin** 15-22.5 mg/kg/day div 3 doses x 14-21d	Laparoscopic cholecystectomy is the most common surgical treatment for acute calculous or acalculous cholecystitis in over 95% of pediatric cases. Other treatment options when laparoscopic or open cholecystectomy is not feasible include cholecystostomy.

GASTROINTESTINAL TRACT INFECTIONS (ADULTS)

Gastroenteritis (infectious diarrhea)		
Clinical Setting	**Preferred regimen**	**Comments**
Mild Diarrhea (≤3 unformed stools per day; minimal associated symptomatology) **Moderate Diarrhea** (3 - 4 unformed stools per day; with orwithout systemic symptoms) **Severe Diarrhea** (≥ 6 unformed stools per day± fever, tenesmus, blood or fecal leukocytes) **Etiologies:** • Bacterial - *Shigella* sp., *Salmonella* sp., *C. jejuni, C. difficile* (Toxin positive) *E. coli* (enterotoxigenic, enteroaggregative, Shiga-toxin producing) *K. oxytoca* (Toxin producer) • Parasitic - *Giardia lamblia, E. histolytica*, *Cryptosporidium*	Oral Hydration Oral or Parenteral Hydration **<u>Empiric therapy:</u>** **Ciprofloxacin** 500 mg PO q12h OR **Levofloxacin** 500 mg PO q24h x 3–5d OR **Azithromycin** 500 mg PO q24h for 3 days (preferred for *Campylobacter*) **Cotrimoxazole** DS PO bid x 3–5 days **<u>Specific Therapy:</u>** *<u>Entamoeba histolytica:</u>* **Metronidazole** 500-750mg PO tid x 7-10 days OR **Tinidazole** 2 gm PO daily x 3 days *<u>Vibrio cholera:</u>* **Doxycycline** 300 mg single dose OR **Tetracycline** 500 mg qid X 3 days OR **Cotrimoxazole** DS PO bid X 3 days *<u>Shigella</u>* <u>species:</u> **Cotrimoxazole** DS PO bid X 3days OR **Ciprofloxacin** 500 mg PO bid X 3 days *<u>Clostridium difficile:</u>* **Metronidazole** 500 mg PO tid x 10–14 days. Offending antibiotic should be withdrawn if possible.	Try to make specific diagnosis, especially in patients with severe diarrhea or systemic symptoms.

COMPLICATED INTRA-ABDOMINAL INFECTIONS

- Complicated intra-abdominal infection extends beyond the hollow viscus of origin into the peritoneal space and is associated with either abscess formation or peritonitis. Contamination of peritoneal cavity by bowel flora due to bowel perforation, ruptured appendix, ruptured diverticula, ischemic bowel, leaking surgical anastomosis, intra-abdominal abscess or other like conditions.
- Common pathogens: *Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa, Enterobacter cloacae, Acinetobacterbaumannii*

(Antibiotic management of complicated intra-abdominal infections in adults: The Asian perspective, Annals of Medicine and Surgery 2014)

Biliary complicated intra-abdominal infections		
Clinical Setting	**Preferred regimen**	**Comments**
Community-acquired acute cholecystitis of mild-to-moderate severity	**Cefazolin** 1–2 g IV q8h OR **Cefuroxime** 1.5 g IV q8h OR **Ceftriaxone** 1–2 g IV q12–24h	Obtain surgical consult for possible gallbladder removal. Patients undergoing cholecystectomy for acute cholecystitis should have antimicrobial therapy discontinued within 24hours unless there is evidence of infection outside the wall of the gallbladder. (IDSA Complicated Intra-abdominal Infection Guidelines, CID 2010:50)
Community-acquired acute cholecystitis of severe physiologic disturbance, advanced age, or immunocompromised state	1st line: **Piperacillin-tazobactam** 4.5 g IV q6h 2nd line: **Metronidazole** 500 mg IV q8–12h PLUS any of the following: **Ciprofloxacin** 400 mg IV q12h OR **Levofloxacin** 750 mg IV q24h OR **Cefepime** 2 g IV q8–12h	
Acute cholangitis following bilio-enteric anastamosis of any severity	1st line:	

Health care–associated biliary infection of any severity (IDSA 2010)	**Meropenem** IV 1g q8h 2nd line: **Metronidazole** 500 mg IV q8–12h PLUS any of the following: **Ciprofloxacin** 400 mg IV q12h OR **Levofloxacin** 750 mg IV q24h OR **Cefepime** 2 g IV q8–12h	

Primary spontaneous peritonitis (PSP) • Primary spontaneous bacterial peritonitis (SBP): patient with cirrhosis, ascites, fever, and ≥ 250 neutrophils/µl of ascitic fluid.		
Etiology	**Preferred regimen**	**Comments**
Enterobacteriaceae *Strep. pneumoniae* *Enterococcus* sp. Anaerobes Extended spectrum β-lactamase (ESBL) positive *Klebsiella* sp. reported	1st line: **Cefotaxime** 2 gm IV q8h (q4h, if life-threatening infection) OR **Piperacillin-tazobactam** 4.5 gm IV q6h (or 4-hour infusion of 4.5 gm q8h) OR **Ceftriaxone** 2 gm IV q24h OR **Ertapenem** 1 gm IV q24h 2nd line: If resistant *E. coli*, *Klebsiella* species (e.g., ESBL) **Meropenem** 1 g IV q8h	Duration of therapy unclear. Treat at 5 days and perhaps longer if documented bacteremia. (Pharmacy and Therapeutics 34:204, 2009).

Extra-biliary complicated intra-abdominal infections		
Clinical Setting	**Preferred regimen**	**Comments**
Mild-to-moderate severity: perforated or abscessed appendicitis and other infections of mild-to-moderate severity	Monotherapy: **Cefoxitin** 2 g IV q6h OR **Ertapenem** 1 g IV q24h OR	An appropriate source control procedure to drain infected foci, control ongoing peritoneal contamination by diversion or resection, and restore anatomic and physiological function to the extent feasible is recommended for nearly all patients with intra-abdominal infection.

High risk or severity: severe physiologic disturbance, advanced age, or immunocompromised state	Combination Therapy: **Metronidazole** 500 mg IV q8–12h PLUS **Cefazolin** 1–2 g IV q8h OR **Cefuroxime** 1.5 g IV q8h OR **Ceftriaxone** 1–2 g IV q12–24h OR **Cefotaxime** 1–2 g IV q6–8h OR **Ciprofloxacin** 400 mg IV q12h OR **Levofloxacin** 750 mg IV q24h *High risk or severity:* 1st line: Monotherapy **Piperacillin-tazobactam** 4.5 g IV q6h OR **Meropenem** 1 g IV q8h OR 2nd line: Combination Therapy **Metronidazole** 500 mg IV q8–12h PLUS **Cefepime** 2 g IV q8–12h OR **Ceftazidime** 2 g IV q8h OR **Ciprofloxacin** 400 mg IV q12h OR **Levofloxacin** 750 mg IV q24h Antimicrobial therapy of established infection should be limited to 4–7 days, unless it is difficult to achieve adequate source control. Longer durations of therapy have not been associated with improved outcome. (IDSA Complicated Intra-abdominal Infection Guidelines, CID 2010:50)	

	Duration of therapy is variable and clinical trial data, especially for severe disease is sparse: • Mild or moderate peritonitis: clinical trial found comparable clinical outcomes in patients treated for 4 days vs those treated until vital signs and GI continuity had returned (mean of 8 days). All patients had "source control". Normalization of serum procalcitonin concentration may assist in customizing the duration of therapy. • Severe peritonitis: need source control and resolution of fever, leukocytosis and ileus. Some centers continue antibiotics until the serum procalcitonin serum concentration is <0.25 mg/ml or has decreased by 90% from its peak concentration. (Sanford Guide to Antimicrobial Therapy 2016)	

CAPD-associated peritonitis • Infectious complication of chronic ambulatory peritoneal dialysis (CAPD)		
Etiology	**Preferred regimen**	**Comments**
Gram-positive cocci (45%) Gram-negative bacilli (15%) Mixture (1%) Fungi (2%) *M. tuberculosis* (0.1%)	<u>For Gram-positive cocci:</u> **Vancomycin** added to the dialysis fluid. <u>For Gram-negative bacilli:</u> **Cefepime** 2 gm IV q8–12h OR **Ceftazidime** 3 gm loading dose intraperitoneal (IP), then 1-2 g IP q24h or 2g IP q48h OR **Meropenem** 1 gm IV q8h OR **Aztreaonam** 1–2 gm IV q6–8h OR **Ciprofloxacin** 400 mg IV q12h OR **Amikacin** 15–20 mg/kg IV q24h Add an antifungal only if yeast seen on Gram stain.	A positive Gram stain will help guide initial therapy. If polymicrobic gram-negative flora is cultured, consider possibility of catheter-induced bowel perforation, and/or concomitant underlying GI pathology (e.g., dead bowel). Infection almost always limited to abdominal cavity; complicating bacteremia is rare. Hence, usually treat by adding drugs to dialysis fluid; if bacteremia documented or likely, treat via IV route.

Acute pancreatitis

- Patients with necrotizing pancreatitis who develop gas in the area of necrosis, rising inflammatory markers or persistent fever may be suspected of having infected pancreatic necrosis and would be candidates for antibiotic therapy.
- Post-Necrotizing pancreatitis, infected pseudocyst or pancreatic abscess

Etiology	Preferred regimen	Comments
Enterobacteriaceae *Enterococcus* sp. *Staphylococcus aureus* *Staphylococcus epidermidis* Anaerobes *Candida* sp.	1st line: Piperacillin-tazobactam 4.5 gm IV q4-6h OR **Meropenem** 1 gm IV q8h 2nd line: **Ciprofloxacin** 400 mg IV q12h OR **Levofloxacin** 750 mg IV q24h PLUS **Metronidazole** 500 mg IV every 8–12h	Current consensus is that use of prophylactic antibiotics is not advisable in pancreatitis, but that they should be employed when clinical factors point to infected pancreatic necrosis. Those with necrosis involving 30% or more of the pancreas are at greatest risk of developing infection. (Sanford Guide to Antimicrobial Therapy 2016)

Liver abscess
- Fever, right upper quadrant tenderness
- Findings consistent with single or multiple abscesses on abdominal ultrasound or CT

Etiology	Preferred regimen	Comments
Enterobacteriaceae (esp. *Klebsiella* sp.) *Bacteroides* sp. *Enterococcus* sp. *Entamoebahistolytica* *Fusobacteriumnecrophorum* (Lemierre's)	Pending determination of bacterial versus amoebic liver abscess: **Metronidazole** 30-40 mg/kg/day div 3 doses IV q8h or 500 mg PO q6-8h PLUS **Ceftriaxone** 1-2 gm IV q24h OR **Piperacillin-tazobactam** 4.5g IV q4-6h OR **Ciprofloxacin** 400 mg IV q12h 750 mg PO OR **Levofloxacin** 750 mg PO/IV q24h OR **Ertapenem** 1 gm IV q24h If amoeba serology is positive, treat with: **Metronidazole** 750 mg IV to PO tid x 10d	Serological tests for amebiasis should be done on all patients. For anaerobic or mixed infections piperacillin-tazobactam, ertapenem (or other carbapenem) are sufficiently active alone and metronidazole may be discontinued.

Hepatitis A

Clinical Setting	Preferred regimen	Comments
Acute hepatitis A infection	No antibiotic therapy recommended. Give supportive measures. Immunoglobulin 0.02 mL/kg IM x 1 dose is protective (if administered within 2 weeks of exposure) – not locally available Immunoglobulin might be preferred over Hepatitis A vaccination among seronegative individuals with significant underlying liver disease. (Sanford Guide to Antimicrobial Therapy 2016)	If within 2 weeks of exposure, Hepatitis A vaccination: • **Monovalent Hepatitis A vaccine** a) 720 ELISA units/ml IM - 2 doses 1 month apart b) 1440 ELISA units/ml IM single dose • **Booster dose** between 6 & 12 months after initiation of primary course is recommended to ensure long term antibody titers. (Handbook on Adult Immunization for Filipinos 2012)

Hepatitis B		
Clinical Setting	**Preferred regimen**	**Comments**
• Patients with Hepatitis B (HBV) are usually asymptomatic. • When symptomatic, common complaints include: fatigue, nausea, anorexia, myalgias, arthralgias, asthenia, weight loss (except where ascites). • Poor correlation between symptoms and disease stage or transaminase elevation	**Specialist referral RECOMMENDED** Indications for treatment: The following are key indicators: HBeAg status, HBV viral load (HBV DNA), elevated liver enzymes (ALT level), cirrhosis. For HBeAg+ patients treatment is typically deferred for 3-6 months to observe spontaneous seroconversion from HBeAg+ to negative. [Sanford]	<u>Vaccination:</u> **Recombinant Hepatitis B Vaccine** (20 ug/ml) IM 3 doses at0,1,6months **Combined Hepatitis A** (720 ELISA units) & B (20 ug/ml recombinant) – 3 doses IM at 0,1,6 months (Handbook on Adult Immunization for Filipinos 2012)

Hepatitis C • Usually asymptomatic (elevated transaminases). • When symptomatic, common complaints include fatigue, nausea, anorexia, myalgias, arthralgias, asthenia, weight loss (except where ascites). • If symptomatic, usually abates in days to weeks; rarely associated with hepatic failure. • 75-85% of persons with acute infection progress to chronic HCV.		
Clinical Setting	**Preferred regimen**	**Comments**
Acute HCV	**Specialist referral RECOMMENDED.**	No recommended prophylaxis; immune serum globulin not effective.