Case Definition and Treatment Guidelines

Revised January 2013

GENERAL COMMENTS ABOUT DOING MEDICAL WORK IN HAITI - MEDICAL WORK IS DIFFICULT IN HAITI FOR A NUMBER OF DIFFERENT REASONS.

Cultural differences - The language is not the only thing that makes working in Haiti difficult. Many of the people you see may not have access to regular care and are, therefore, motivated to get as much out of each visit as possible. It is not uncommon to get a history of fevers, chills, vomiting, and diarrhea, only to find out later that these symptoms resolved weeks ago. Many people complain of chest pain, which is generally heartburn. Almost everyone has musculoskeletal chest pain and headaches as well, which isn't surprising given that they do hard labor in a hot environment with very little access to food or water. Other common complaints consist of eye problems- there are a lot of cataracts from sun exposure and pterygium from eye irritation- and there are a lot of dry irritated eyes. We generally do not have the money to provide eye drops for everyone as they are about $6 per bottle and we could hand out 300 bottles per week. We are working to find ways to incorporate ophthalmologists for simple ocular procedures, but for now we are stuck referring patients with cataracts. Vaginal infection is a common complaint among women. This is difficult to sort out given our limited resources and the difficulty with private exams. We have had several gynecologists come along, and they feel that the majority of women are just experiencing physiologic discharge. There are further details below. Many people will complain of poor appetite or being tired which generally means that they want vitamins. Everyone should get albendazole for parasites (even pregnant women) and vitamins. Just those 2 interventions likely save dozens of lives every trip. Generally, people are very satisfied with albendazole, vitamins, and Tylenol. Utilize your interpreters to help you figure things out if you have questions or concerns- they're good people and have a lot of insight.

Pathology - You will be exposed to a range of illnesses, some of which are familiar, some of which you don't deal with commonly. Hopefully you will find this guide helpful. The goal is to provide standardized treatment with a standardized list of medications so that we avoid exposing these populations to huge variations in care and a wide range of medications. Our experience is that about 1-2% of people in each clinic are acutely ill. When deciding on how to treat patients, bear in mind that follow up is extremely difficult for them, so it is OK to err on the side of using antibiotics if you are unsure of the need.

Testing - You will not have the ability to do much testing beyond a urine dipstick and urine pregnancy. You will occasionally have access to strep screens, HIV tests, and malaria tests but these are intermittently available, limited in number, and sometimes difficult to perform. We would encourage you NOT to utilize these tests unless they will definitively change your management (.i.e- child with fever in coma). This is especially true for the HIV tests. Our policy is not to test unless we can offer definitive treatment. These tests should be saved for people who have had significant body fluid exposures.

TREATMENT GUIDELINES

1. General Health

a. In our clinics, everyone should get vitamins
b. Everybody should get albendazole unless they are sure that they are pregnant or under 1 year of age
    i. Dose
        1. 200 mg (1/2 tab) for ages 1-2
        2. 400 mg (1 tab) for ages 2 and above
c. All children ages 6 months to 6 years should get Vitamin A supplementation. This reduces the risk of all-cause mortality by 23%. These are in the vitamins
    i. Dose:

1. 100,000 IU for children age 6 months to 1 year
2. 200,000 IU for children 1 year to 6 years
3. 200,000 IU for all post partum women (within 6 wks delivery)

2. Anemia

a. Case definition-
   i. Fatigue, pallor of the nailbeds, pallor of the ocular conjunctiva.
   ii. May also see glossitis, atrophy of little papillae, angular stomatitis (erosions at corner of mouth), brittle frontal fingernails, spooning of fingernails
   iii. May have a history of menorrhagia, malnutrition, recent delivery, iron deficiency, or intestinal parasitic infection
   iv. May or may not be tachycardic
b. Treatment
   i. **Prenatal vitamins with iron** x6 months or supplementation with **ferrous sulfate** (10 mg per kilogram per dose, t.i.d. in children, 325 mg per day in adults

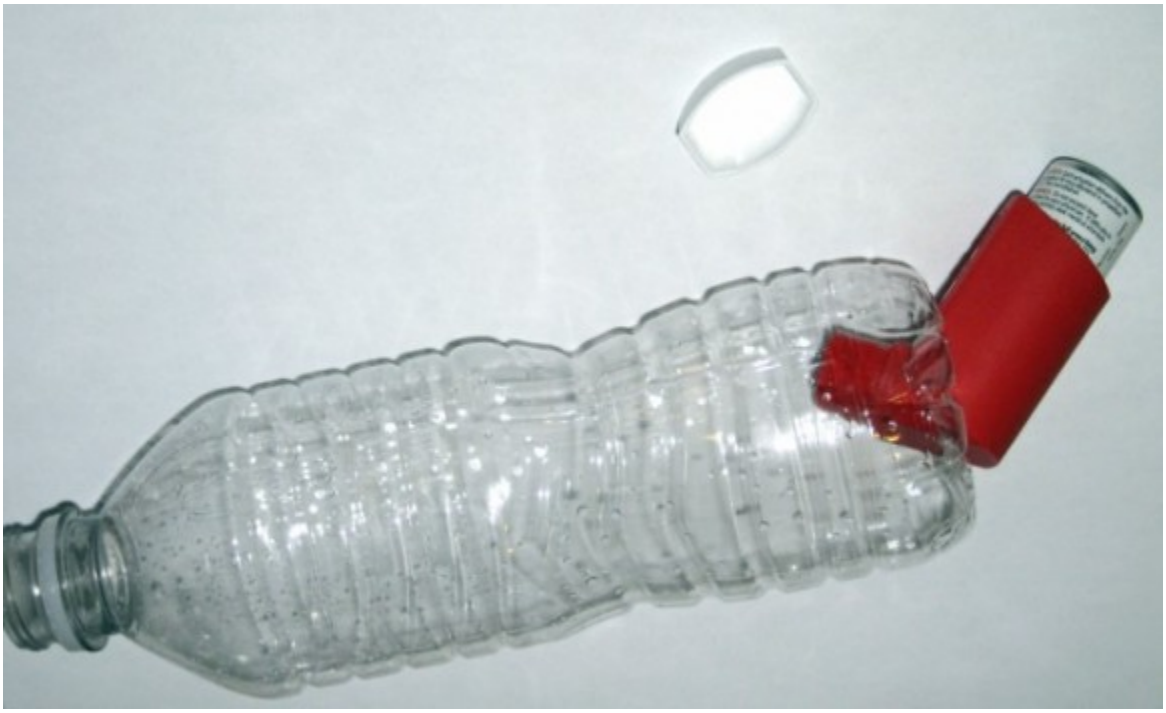
3. Angina

a. Case definition-
   i. Substernal chest pain with activity
   ii. Not positional or related to food
   iii. May be associated with shortness of breath, nausea
   iv. May radiate to arms, back, jaw
b. Treatment
   i. 325 mg of aspirin p.o. daily
   ii. Atenolol if BP will tolerate
   iii. Sublingual nitroglycerin 0.4 mg p.r.n.

4. Asthma

a. Case definition-
   i. Expiratory wheezing and chest tightness that responds to beta agonist therapy
   ii. Night time non-productive cough
   iii. Exam may reveal tachycardia, tachypnea, long expiratory phase, expiratory wheezing, and respiratory distress
b. Treatment
   i. Inhaled beta agonist (Salbutamol or albuterol MDI)
      1. This gets into the lungs best if you can make a jerry-rigged spacer
         a. Cut a hole in the bottom of a cup or bottle about the size of the mouthpiece
         b. Fit/tape the MDI into the whole
         c. Put the rim of the cup around the child's mouth/nose

2. Dose is 2-4 puffs every 4 hours as needed



   ii. 1-2 mg/kg of prednisone daily for 5 days, dexamethasone 0.1 mg per kilogram IM, ~~or methylprednisolone 1 mg per kilogram IM~~ if wheezing in clinic or having frequent symptoms

5. Depression

a. This is thought to be the #1 health problem in the developing world
b. You should screen everyone that you think may be depressed using the PHQ-2 (see appendix 6), that consists of only 2 questions:
   i. "Do you have little interest or pleasure in doing things?"
   ii. "Do you feel down, depressed, or hopeless?"
   iii. People answer these either: never, some days, more than half of days, or most days and get 0-3 points for each question. If they score more than 3 points, then move on to the more formal assessment, the PSQ-9.
c. The PHQ-9 involves 9 questions (actually 7 plus the ones from PHQ-2) and is pretty good at picking up depression. See Appendix 6. If they score 10 or greater, they have moderate depression and you should start meds.
d. Make sure to counsel them that they have to try the medicine for at least 6 weeks before they know if it will work or not and that they have to take it every day
e. WARN THEM ABOUT THE RISK OF WORSENING DEPRESSION IN THE FIRST FEW WEEKS
f. Treatment-
   i. Fluoxetine 20 mg daily

6. Diabetes

a. Case definition-
   i. Fasting blood sugar >124
   ii. Any blood sugar > 200
   iii. Polyuria, polydipsia, unexplained weight loss
b. Treatment[i]

i. Metformin 500 mg daily up to 2500 mg per day
    1. Avoid in situations predisposed to development of lactic acidosis (renal insufficiency, CHF, severe dehydration)
ii. Consider ACE inhibitor

7. **Diarrhea** (incl. traveler's diarrhea, dysentery, cholera, giardia)
    a. Worldwide, an estimated 4 million children die each year from diarrhea
    b. There are 2 types of diarrheal emergencies: Cholera and dysentery.
    c. The majority of acute watery diarrhea is not emergent and will spontaneously resolve.
    d. Common causes of acute diarrhea are rotavirus, Norwalk virus, adenovirus, and calicivirus
    e. Bacterial causes include salmonella, Escherichia coli, shigella, Campylobacter, clostridium, yersinia, and cholera. Also consider the protozoan Giardia[ii]
    f.

Type of Diarrhea	Gastroenteritis (Non-inflammatory)	Dysentery (Inflammatory)
Location	Proximal small bowel	Distal small bowel, colon
Illness	Watery diarrhea, frequently with vomiting	Abdominal pain, tenesmus, small volume, mucoid, bloody stools
Stool exam	No fecal leukocytes	Fecal PMN's, frequently with rbcs
Organisms	Rotavirus, Norwalk virus Enterotoxigenic and enterohemmorhagic (O157) *E. coli* *Staphylococcus aureus* *Clostridium difficile* *Giardia lamblia* *Vibrio cholera* *Cryptosporidium* *Clostridium perfringens* *Bacillus cereus*	*Invasive E. coli* *Shigella* *Salmonella enteritidis* *Salmonella typhi* *Vibrio parahemolyticus* *Yersinia enterocolitica* *Campylobacter*

    g. Case definition-
        i. Stool production greater than 10 g/kilogram/day in infants or 300 g/day in children greater than 3 years of age-adults
        ii. It is vital to distinguish watery diarrhea from bloody diarrhea from rice water diarrhea
        iii. Dr. Joseph in Arcahaie says that if they have a lot of straining but just produce a small amount of white mucus, it is likely entamoeba histolytica and should be treated with flagyl.
    h. Treatment-
        i. Oral rehydration (ORS) and replacement of fluid losses 1:1 will be adequate for most cases- See appendix for recipe
        ii. Antibiotics generally are of no benefit, and in some cases (salmonella, E. coli O157) antibiotic therapy can actually be harmful
        iii. Zinc- supplementation for 10-14 days during/after a course of diarrhea (this is in our vitamins) decreases the duration of diarrhea and the likelihood of dying. In addition, this dose of zinc protects against future episodes of diarrhea for 2-3 months
            1. Dose 10 mg per day for 10-14 days dissolved in expressed breast milk or clean water for children under 6 months of age
            2. Dose 20 mg per day for 10-14 days for children 6 months to 6 years old
            3. May add to ORS
    i. See below for discussion of dysentery and cholera
        i. Special populations-

1. Traveler's diarrhea
    a. Case definition-
        i. Onset usually 5-15 days after arrival in foreign country
        ii. Malaise, anorexia, vomiting, cramping, watery diarrhea
        iii. Usually self-limited
        iv. Avoid antimotility agents in patients with fever, bloody stool, or children
    2. Treatment-
        a. **Ciprofloxacin** 500 mg x1, **azithromycin** 1 gm x 1, or ~~Rifaximine~~

j. Dysentery
    i. Case definition-
        1. Diarrhea accompanied by fever, blood, mucus, tenesmus, or pain on defecation
        2. Usually transmitted via fecal oral route from infected food or water
        3. Salmonella is usually from infected eggs or poultry
    ii. Treatment-
        1. Most dysentery is self-limited. Only consider treatment in the toxic-appearing patients, patients with comorbidities, or in children less than 6 months of age[iii]
        2. **Co-trimoxazole 1 tab DS BID x 1 wk** will treat Shigella, Salmonella, Yersinia
            a. Can also use **quinolones 1 tab BID x 3 days** in adults
        3. Use **azithromycin**, **doxycycline 100 mg BID x 5 days (not for kids or pregnant women)**, **Cipro 500 mg BID x 5 days (not for kids)**, or **co-trimoxazole 1 po BID x 5 days**

k. Cholera
    i. Case definition-
        1. Acute watery diarrhea caused by Vibrio cholera
        2. Symptoms usually presents within 8 hours (up to 5 days) after ingestion of contaminated food or water
        3. Can lead to hypovolemic shock and death within 4 hours[iv]
    ii. Treatment[v]- See Appendix
        1. 80% of cases can be treated with oral rehydration solution alone
        2. If the patient has mild to moderate dehydration and can tolerate oral fluids, give oral rehydration solution (ORS)
        3. See attachment for specific volumes and recipe for **ORS**.
        4. If the patient is lethargic, unconscious, unable to drink, in shock, or has tenting skin, give **IV fluids**
            a. Give 30 mL/kg bolus within 30 minutes
            b. Patient should get 100 mL/kg within first 3 hours
            c. Patient should get approximately 200 mL/kg in first 24 hours
            d. Monitor urine and stool output carefully, record input carefully
        5. Antibiotics are indicated for patients with severe dehydration or suspected Shigella (bloody stool)
            a. Priority should go to children under age 5, elderly, malnourished, and patients with seizures
            b. Use **doxycycline 100 mg BID x 5 days** in adults and nonpregnant females
            c. Use **azithromycin 1 gm x 1 or 20 mg/kg/d x 1** in children and pregnant females

d. If Shigella suspected, use **co-trimoxazole 1 tab BID x 5 days** or **ciprofloxacin 500 mg BID x 5 days**
e. Consider the addition of zinc 10 (<6 mo) -20 mg (6mo -3yr) daily for children

l. Giardia
  i. Case definition-
    1. Diarrhea caused by a flagellated protozoan inhabiting the upper small intestine
    2. Fecal oral transmission
    3. 50% of infected individuals are asymptomatic carriers
    4. Intermittent or prolonged episodes of diarrhea with bloating, flatulence, fatty foul smelling stools, uncontrollable sulfur-like belching.
  ii. Treatment-
    1. **Metronidazole** 250 mg p.o. t.i.d. for 5 days
    2. In Children metronidazole 5 mg per kilogram divided t.i.d. for 5 days
    3. Can also use **albendazole** 400 mg p.o. daily for 5 days

8. Family Planning

a. NONE OF THESE WORK TO PREVENT STDs!
b. OCPs (Oral Contraceptive Pills)
  i. These can be started during the first day of their next period and should be taken every day
  ii. They may not be effective for the first month, so back up contraceptives should be used.
  iii. Contraindications are personal history of venous thrombosis, really high blood pressure (180/90), and migraines with aura
c. IUDs (Intrauterine devices)
  i. Good for up to 5 years
  ii. Can be placed during period (if negative pregnancy test) or if definitely no intercourse since last period
  iii. Risk of IUD extrusion, negligible risk of PID, higher risk of ectopic if they get pregnant
  iv. They should know that their periods might become heavier
  v. Contraindications: No active cervicitis, PID, or pregnancy
  vi. Give 100 mg doxycycline before placing the IUD and then 12 hours later (with food if possible)
d. Tubal ligations
  i. We sometimes offer these. THEY ARE PERMANENT. Women who are interested in this option should have their name and contact information taken down when we are at Arcahaie.

9. Gastritis/GERD

a. Case definition-
  i. Complaints of epigastric and chest pain, worse with supine position
  ii. Gastric ulcers typically worsened with food, duodenal ulcers typically improved with food and worsen 2- 5 hours after a meal
  iii. Pain radiating to the back suggest either a penetrating ulcer or pancreatitis
  iv. Our best information is that the rate of H. pylori infection is around 5%[vi] in the population complaining of epigastric pain, acid, or stomach discomfort. Consider H. pylori infection in a patient who is significantly anemic, has not improved on first-line therapy, is losing weight, or appears ill[vii]
b. Treatment

i. Avoid NSAID S, alcohol, cigarettes
ii. First line therapy is **TUMS** or an **H2 blocker**
iii. **Can also use Pepto Bismol 100 mg/kg/day divided into 5 equal doses in kids. 524 mg 5x/d in adults. Do not use in pregnant women. *Use with caution in kids < 16 yo.***
iv. **Second line therapy is Omeprazole 20 mg BID x 1 month, then daily**
v. If considering H. pylori infection, may use a **"prev pack".** These should be reserved for people mentioned above and can be used simultaneously with TUMS
    1. Our "prev packs" are Amoxicillin 2gm QID, Bismuth subsalicylate 524 mg QID, Metronidazole 500 mg QID, and a PPI (Omeprazole or Lansoprazole) Double treatment dose, once. This has a 95% eradication rate[viii] and we believe compliance is higher with the one-day regimen, but it can cause some GI upset.

10. Goiter

a. Case definition-
    i. Smooth uniform enlargement of the thyroid gland
    ii. Usually from lack of iodine in the soil
    iii. The majority of patients with goiter are euthyroid
    iv. Can be associated with subtle intellectual and neuromuscular disabilities
    v. Large goiters can cause airway compromise
b. Treatment-
    i. **Iodinated salt**- no standard dosage, just add to food as usual
    ii. Lugol's solution (one drop per day is usually more than enough)

11. HIV

a. Case definition-
    i. Contact with person who is losing weight or has died young?
    ii. WHO and CDC definitions of an AIDS-defining illness

iii.

TABLE 1 WHO CLINICAL STAGING	
STAGE 1	No clinical symptoms Normal activity May have lymphadenopathy
STAGE 2	Weight loss < 10% Minor skin rash Herpes zoster Recurrent upper respiratory infections Symptomatic but still normal activity
STAGE 3	Weight loss >10% Chronic diarrhea >1 month Recurrent fevers >1 month Oral thrush Pulmonary tuberculosis Bedridden <50% of time for past month
STAGE 4	Cryptococcal meningitis Toxoplasmosis, central nervous system Kaposi sarcoma Dementia Bedridden 75% for past month

TABLE 2 CDC CLASSIFICATION	
A	Asymptomatic Persistent generalized lymphadenopathy Acute (primary) HIV illness
B	Vulvovaginal candidiasis > 1 month, persistent Candidiasis, oropharyngeal Constitutional symptoms - fever, diarrhea > 1 month Cervical dysplasia, severe or carcinoma in situ
C	Candidiasis, esophageal, tracheal, bronchial Coccidiomycosis, extrapulmonary Cryptococcosis, extrapulmonary Cervical cancer, invasive Cryptosporidiosis, chronic (diarrhea > 1 month) CMV retinitis, GI, CNS HIV encephalopathy Herpes simplex with ulcers > 1 month Isosporosis, chronic > 1 month Kaposi sarcoma Lymphoma, Burkitt's immunoblastic, CNS *M. Avium, M. Kansasii*, extrapulmonary *M. tuberculosis* pulmonary and extrapulmonary *Pneumocystis carinii* pneumonia Recurrent pneumonia (> two episodes/year) Progressive multifocal leukoencephalopathy Salmonella bacteremia, recurrent Toxoplasmosis, cerebral Wasting syndrome

b. Treatment
   i. We cannot definitively diagnose or treat HIV/AIDS at this point
   ii. All of these patients should be referred to the sanitorium at Signeau, National Route 1, Leogane, The Centre Sante in Les Anglais, Dabuk in Archaiae, or other local treatment center
   iii. Mothers should be encouraged to continue breast feeding until a definitive diagnosis is made- at this time the baby as a better chance of dying from malnutrition and diarrhea than vertically transmitted HIV that may have already been passed transplacentally.
   iv. We can treat complications:
      1. Pneumonia (especially with hypoxia)- **co-trimoxazole**
      2. Diarrheal illness- **co-trimoxazole**

3. Thrush- **fluconazole 1 tab weekly**
4. Skin/soft tissue infections- **cephalexin, clindamycin**, or **co-trimoxazole**

c. Post Exposure Prophylaxis (PEP)

i. If you have a significant exposure to a potentially contaminated bodily fluid:
   1. ask the source patient's permission to test them for HIV. If they do not give you permission, you can not test them
   2. Test the source patient and yourself
   3. Start the PEP kit- you will feel sick from these
   4. You need to arrive home before you run out of PEP meds and may have to be evacuated
   5. Follow up immediately with your regular doctor

12. Hypertension

a. Case definition-
   i. BP > 140/90 on 2 separate clinic visits or >180/100 when checked twice during same visit

b. Treatment[ix]
   i. 1st line= Hydrochlorothiazide 25 mg po daily
   ii. 2nd line= Atenolol 50 mg OR Amlodipine 5 mg po daily
   iii. 3rd line= ACE inhibitor[x] (Lisinopril 10 mg daily)
   iv. In mild hypertension (140-159/90-99) initiate monotherapy
   v. In moderate hypertension (160-179/100-109) consider initiating treatment with 2 drugs
   vi. In severe hypertension (greater than 180/greater than 110) consider 2 drug therapy with recheck in 1-2 days[xi]

c. Special circumstances
   i. Comorbidities
      1. Diabetes- consider ACE inhibitor
      2. Angina- consider atenolol, amlodipine
      3. Congestive heart failure-consider furosemide or ACE inhibitor
      4. Pregnancy- consider Aldomet 250 mg BID to TID, also add baby aspirin for increased risk of pre-eclampsia
      5. Post- MI or LV dysfunction- consider ACE inhibitor

13. Lymphatic filariasis

a. Case definition-
   i. Usually presents with unilateral edema of the leg, massive hydrocele, unilateral breast or arm swelling
   ii. Caused by mosquito transmitted filarial worms

b. Treatment-
   i. Treatment of this disease involves a complex mix of medical and surgical procedures
   ii. Simple symptomatic treatments include compression of swollen extremities with Ace bandages, elevated and a swollen body part, and wearing supportive undergarments.
   iii. You should **not** initiate antibiotic treatment as this requires long-term follow up and symptoms often worsen after treatment as the microfilaria die and cause further lymphatic inflammation.
   iv. Medications usually include **albendazole** 400 mg x1 with **ivermectin 200**-400 mg/kg, or diethylcarbamazine (DEC)
   v. The University of Notre Dame specializes in treating this disease. It is best to refer all patients to the University of Notre Dame filariasis program, Leogane.

14. Malaria

a. Case definition-
   i. Clinical diagnosis of malaria is very difficult. When possible (adequate tests available), testing should be performed
   ii. Fever, chills, headache, myalgias, arthralgias, anorexia, nausea, abdominal pain, diarrhea. Fever often lacks periodicity until infection is well established.
   iii. Signs of anemia, splenomegaly, scleral icterus, and dark urine make diagnosis more likely.

b. Treatment
   ~~i.~~ As of March 5, 2010, the CDC recommends chloroquine as first-line chemoprophylaxis and treatment. ~~In Haiti we use **hydroxychloroquine,** which is equivalent in terms of efficacy~~
   ~~ii. Treatment for children:~~
      ~~1. 13 mg /kilogram hydroxychloroquine stat, 6.5 mg/ kilogram at 6, 24, and 48 hours following the initial dose~~
   ~~iii. Treatment for adults:~~
      ~~1. 800 mg hydroxychloroquine stat, 400 at 6-8 hours, 24, and 48 hours following the initial dose.~~
   iv. Treatment for children:
      1. Chloroquine 10 mg/kg (up to 600 mg) initial dose followed by 5 mg/kg/dose 6 hrs later, then once daily for 2 days.
   v. Treatment for adults:
      1. Chloroquine 600 mg initial dose followed by 300 mg 6 hrs later and 300 mg daily for 2 days.

c. Special populations
   i. Pregnant women
      1. Hydroxychloroquine (and Chloroquine) is a Category C in pregnancy. However, the CDC has determined that the benefits of prophylaxis outweigh the risks of adverse affects on the fetus. Pregnant women face:
         a. Increased case fatality rate due to hypoglycemia and pulmonary edema
         b. Increased risk of transplacental transmission leading to IUFD (fetal demise), premature labor, low birthweight
      2. Pregnant women should receive chemoprophylaxis
      3. Prophylaxis:
         ~~a. Hydroxychloroquine 400 mg p.o. weekly~~ Chloroquine 300 mg p.o. weekly

d. Complications
   i. Cerebral malaria
      1. More common in children
      2. Fever, altered mental status, coma, seizures, no other signs of meningitis
      3. Treat with chloroquine, IV, p.o., or PR
      4. May need to treat concurrently for meningitis
      5. Need to be admitted to hospital
   ii. Anemia
      1. Iron supplementation
      2. Consider trying to obtain transfusion for respiratory distress or hemoglobin less than 4 g/dL
   iii. Acute renal failure

1. More common in adults
2. Usually seen with high levels of parasitemia, hemolysis, and hypoperfusion
3. Usually presents with oliguria, jaundice, respiratory distress from pulmonary edema
4. Blackwater fever refers to the passage of black or dark red-brown urine due to sudden massive hemolysis and precipitation of hemoglobin and renal tubules.
5. Assess volume status carefully and give isotonic fluid replacement
6. Consider alkalinization of the urine with sodium bicarbonate, 1ampule in each liter of half normal saline. If patient is hypoglycemic, consider 3 ampules of sodium bicarbonate in 1 L of D5W. Avoid loop diuretics as they will acidify the urine.
7. Monitor carefully for volume overload
8. Need to be admitted to hospital

15. Malnutrition

a. Case definition
   i. Inadequate weight-for-age or weight-for-height
   ii. Get accurate age (years and months) weight, and height. Double check this- people aren't so good with dates and time in Haiti
   iii. Get Mid-Upper Arm Circumference Measurement
   iv. Look for hepatomegally, edema, pallor, respiratory distress, thrush, rashes
b. Treatment
   i. **No** IV fluids
   ii. **No** ORS
   iii. **No** ibuprofen or aspirin. May give small doses of acetaminophen (5-10 mg/kg) if febrile. Beware of increased absorption.
   iv. **No** vitamins
   v. Antibiotics for severe acute malnutrition- **amoxicillin** or **co-trimoxazole** (if hypoxic)
   vi. Get feeding history. Vomiting, diarrhea, meeting milestones, exposure to HIV, TB, Measles?
   vii. Generally these children look more volume depleted than they are. IV fluids and ORS without adequate phosphorus can be fatal.

Malnutrition[xii], [xiii]

ALL children between the ages of 6 and 59 months need a Mid Upper Arm Circumference (MUAC). This is done by using the colored measuring tapes.

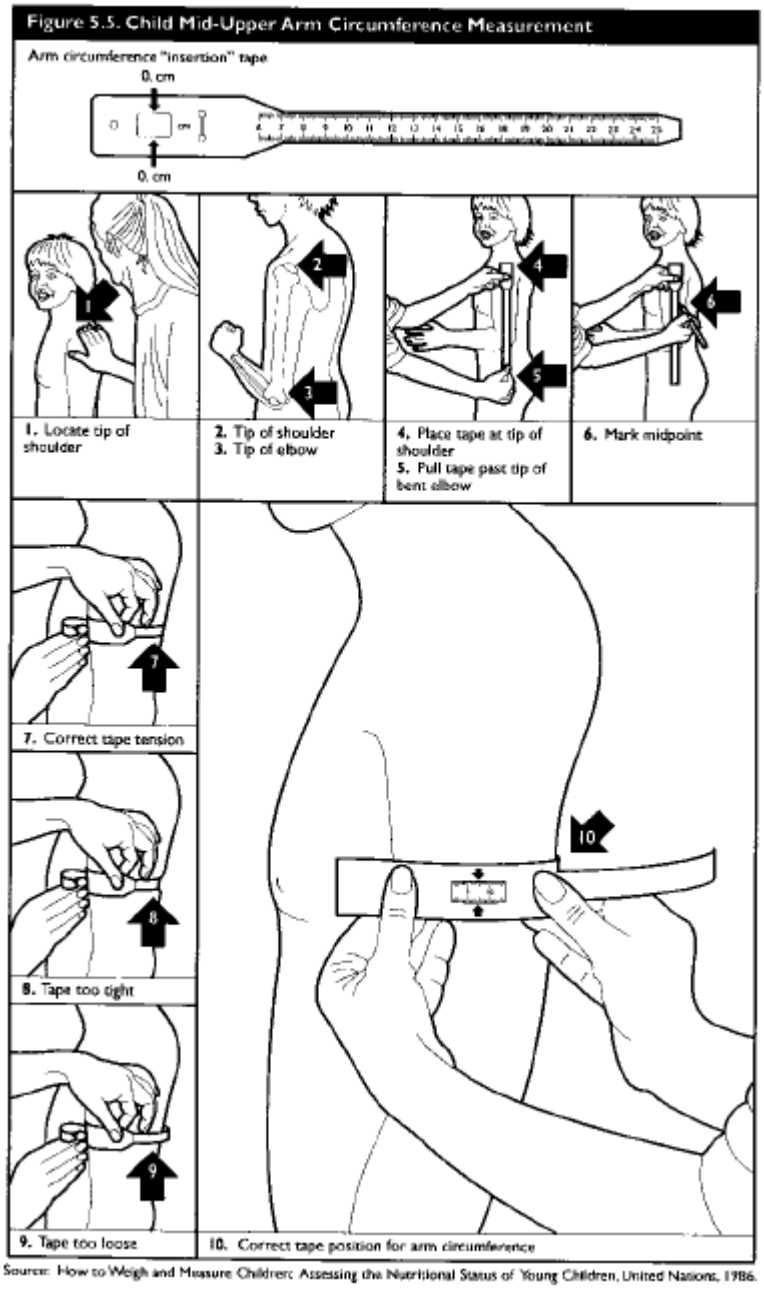
Measuring the MUAC:

1. Place the tape around the middle of the upper left arm at a point halfway between the bony prominence of the shoulder (acromion) and the bony prominence of the elbow (olecranon). You can measure this by stretching a string between those two points, folding the string in half, and marking that point on the skin with a pen.
2. Wrap the tape around the arm until it is taught against the skin without indenting the arm.

3. Read the MUAC measurement at the arrow.

Interpreting the MUAC:

If kids between 6 and 59 months are in the Green or White, they are good
If they are in the Yellow, they are at risk for malnutrition
If they are in the Red, they are at risk for severe malnutrition.



Source: How to Weigh and Measure Children: Assessing the Nutritional Status of Young Children, United Nations, 1986.

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ANY CHILDREN THAT MEASURE IN THE YELLOW OR RED NEED A WEIGHT AND HEIGHT

The MUAC is just a screening tool for malnutrition. To accurately diagnose malnutrition you need to figure out their weight in kg and height in cm.

Figure out their weight for height on the following tables.
A -3 SD child will need 200 kcal/kg body weight per day. 150 to the kid, and 50 to the rest of the family who ALWAYS shares it.

A -2 SD child we treat the same way and they recover faster. If you do 75 kcal/kg per day AND they share you are looking at a long time getting better.

You'll have to use a calculator to figure out how many packets of Medika Mamba/ Plumpy Nut that is. Each packet is 500 kcal. So, for example, a 5 kg kid would need 2 packets per day.

Anyone who is not less than -2 SD does not need Medika Mamba.

Definition of Serious Complications

- 3+ bilateral pitting oedema
- Anorexia- won't take anything by mouth
- Lower respiratory tract infection
- High fever
- Severe dehydration- all of these kids look dehydrated. Ask about urine output.
- Severe anemia, pallor
- Not Alert
- Hypoglycemia
- Hypothermia

All of these kids should have a blood sugar checked

Determine if they will eat the mamba. If not, they should be admitted for NG feeding.

If they have a lot of edema (look at feet and ankles, butt), they have CHF and should be admitted.

All of these kids should get ALBENDAZOLE as long as they are over 1 year old (200 mg in 1-2 year olds, 400 mg over 2 years old).

You should give them the pill to take home and take during their *second week* of treatment. Due to break down of the GI lining, there is a theoretical risk of over absorption and toxicity

All of these kids should get amoxicillin

If they have a cough, rales, are breathing hard, or may be hypoxic they should get Bactrim (can get PCP pneumonia if very malnourished). These kids should be admitted to a local hospital.

If they look septic, Rocephin is probably OK if they are more than a few months old (risk of kernicterus under 1 month of age).

ANNEX 1

Weight-for-Length Reference Card (below 87 cm)

Boys' weight (kg)					Length	Girls' weight (kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Médian	(cm)	Médian	-1 SD	-2 SD	-3 SD	-4 SD
1.7	1.9	2.0	2.2	2.4	45	2.5	2.3	2.1	1.9	1.7
1.8	2.0	2.2	2.4	2.6	46	2.6	2.4	2.2	2.0	1.9
2.0	2.1	2.3	2.5	2.8	47	2.8	2.6	2.4	2.2	2.0
2.1	2.3	2.5	2.7	2.9	48	3.0	2.7	2.5	2.3	2.1
2.2	2.4	2.6	2.9	3.1	49	3.2	2.9	2.6	2.4	2.2
2.4	2.6	2.8	3.0	3.3	50	3.4	3.1	2.8	2.6	2.4
2.5	2.7	3.0	3.2	3.5	51	3.6	3.3	3.0	2.8	2.5
2.7	2.9	3.2	3.5	3.8	52	3.8	3.5	3.2	2.9	2.7
2.9	3.1	3.4	3.7	4.0	53	4.0	3.7	3.4	3.1	2.8
3.1	3.3	3.6	3.9	4.3	54	4.3	3.9	3.6	3.3	3.0
3.3	3.6	3.8	4.2	4.5	55	4.5	4.2	3.8	3.5	3.2
3.5	3.8	4.1	4.4	4.8	56	4.8	4.4	4.0	3.7	3.4
3.7	4.0	4.3	4.7	5.1	57	5.1	4.6	4.3	3.9	3.6
3.9	4.3	4.6	5.0	5.4	58	5.4	4.9	4.5	4.1	3.8
4.1	4.5	4.8	5.3	5.7	59	5.6	5.1	4.7	4.3	3.9
4.3	4.7	5.1	5.5	6.0	60	5.9	5.4	4.9	4.5	4.1
4.5	4.9	5.3	5.8	6.3	61	6.1	5.6	5.1	4.7	4.3
4.7	5.1	5.6	6.0	6.5	62	6.4	5.8	5.3	4.9	4.5
4.9	5.3	5.8	6.2	6.8	63	6.6	6.0	5.5	5.1	4.7
5.1	5.5	6.0	6.5	7.0	64	6.9	6.3	5.7	5.3	4.8
5.3	5.7	6.2	6.7	7.3	65	7.1	6.5	5.9	5.5	5.0
5.5	5.9	6.4	6.9	7.5	66	7.3	6.7	6.1	5.6	5.1
5.6	6.1	6.6	7.1	7.7	67	7.5	6.9	6.3	5.8	5.3
5.8	6.3	6.8	7.3	8.0	68	7.7	7.1	6.5	6.0	5.5
6.0	6.5	7.0	7.6	8.2	69	8.0	7.3	6.7	6.1	5.6
6.1	6.6	7.2	7.8	8.4	70	8.2	7.5	6.9	6.3	5.8
6.3	6.8	7.4	8.0	8.6	71	8.4	7.7	7.0	6.5	5.9
6.4	7.0	7.6	8.2	8.9	72	8.6	7.8	7.2	6.6	6.0
6.6	7.2	7.7	8.4	9.1	73	8.8	8.0	7.4	6.8	6.2
6.7	7.3	7.9	8.6	9.3	74	9.0	8.2	7.5	6.9	6.3
6.9	7.5	8.1	8.8	9.5	75	9.1	8.4	7.7	7.1	6.5
7.0	7.6	8.3	8.9	9.7	76	9.3	8.5	7.8	7.2	6.6
7.2	7.8	8.4	9.1	9.9	77	9.5	8.7	8.0	7.4	6.7
7.3	7.9	8.6	9.3	10.1	78	9.7	8.9	8.2	7.5	6.9
7.4	8.1	8.7	9.5	10.3	79	9.9	9.1	8.3	7.7	7.0
7.6	8.2	8.9	9.6	10.4	80	10.1	9.2	8.5	7.8	7.1
7.7	8.4	9.1	9.8	10.6	81	10.3	9.4	8.7	8.0	7.3
7.9	8.5	9.2	10.0	10.8	82	10.5	9.6	8.8	8.1	7.5
8.0	8.7	9.4	10.2	11.0	83	10.7	9.8	9.0	8.3	7.6
8.2	8.9	9.6	10.4	11.3	84	11.0	10.1	9.2	8.5	7.8
8.4	9.1	9.8	10.6	11.5	85	11.2	10.3	9.4	8.7	8.0
8.6	9.3	10.0	10.8	11.7	86	11.5	10.5	9.7	8.9	8.1

Weight-for-Height Reference Card (87 cm and above)

Boys' weight (kg)					Height	Girls' weight (kg)				
-4 SD	-3 SD	-2 SD	-1 SD	Médian	(cm)	Médian	-1 SD	-2 SD	-3 SD	-4 SD
8.9	9.6	10.4	11.2	12.2	87	11.9	10.9	10.0	9.2	8.4
9.1	9.8	10.6	11.5	12.4	88	12.1	11.1	10.2	9.4	8.6
9.3	10.0	10.8	11.7	12.6	89	12.4	11.4	10.4	9.6	8.8
9.4	10.2	11.0	11.9	12.9	90	12.6	11.6	10.6	9.8	9.0
9.6	10.4	11.2	12.1	13.1	91	12.9	11.8	10.9	10.0	9.1
9.8	10.6	11.4	12.3	13.4	92	13.1	12.0	11.1	10.2	9.3
9.9	10.8	11.6	12.6	13.6	93	13.4	12.3	11.3	10.4	9.5
10.1	11.0	11.8	12.8	13.8	94	13.6	12.5	11.5	10.6	9.7
10.3	11.1	12.0	13.0	14.1	95	13.9	12.7	11.7	10.8	9.8
10.4	11.3	12.2	13.2	14.3	96	14.1	12.9	11.9	10.9	10.0
10.6	11.5	12.4	13.4	14.6	97	14.4	13.2	12.1	11.1	10.2
10.8	11.7	12.6	13.7	14.8	98	14.7	13.4	12.3	11.3	10.4
11.0	11.9	12.9	13.9	15.1	99	14.9	13.7	12.5	11.5	10.5
11.2	12.1	13.1	14.2	15.4	100	15.2	13.9	12.8	11.7	10.7
11.3	12.3	13.3	14.4	15.6	101	15.5	14.2	13.0	12.0	10.9
11.5	12.5	13.6	14.7	15.9	102	15.8	14.5	13.3	12.2	11.1
11.7	12.8	13.8	14.9	16.2	103	16.1	14.7	13.5	12.4	11.3
11.9	13.0	14.0	15.2	16.5	104	16.4	15.0	13.8	12.6	11.5
12.1	13.2	14.3	15.5	16.8	105	16.8	15.3	14.0	12.9	11.8
12.3	13.4	14.5	15.8	17.2	106	17.1	15.6	14.3	13.1	12.0
12.5	13.7	14.8	16.1	17.5	107	17.5	15.9	14.6	13.4	12.2
12.7	13.9	15.1	16.4	17.8	108	17.8	16.3	14.9	13.7	12.4
12.9	14.1	15.3	16.7	18.2	109	18.2	16.6	15.2	13.9	12.7
13.2	14.4	15.6	17.0	18.5	110	18.6	17.0	15.5	14.2	12.9
13.4	14.6	15.9	17.3	18.9	111	19.0	17.3	15.8	14.5	13.2
13.6	14.9	16.2	17.6	19.2	112	19.4	17.7	16.2	14.8	13.5
13.8	15.2	16.5	18.0	19.6	113	19.8	18.0	16.5	15.1	13.7
14.1	15.4	16.8	18.3	20.0	114	20.2	18.4	16.8	15.4	14.0
14.3	15.7	17.1	18.6	20.4	115	20.7	18.8	17.2	15.7	14.3
14.6	16.0	17.4	19.0	20.8	116	21.1	19.2	17.5	16.0	14.5
14.8	16.2	17.7	19.3	21.2	117	21.5	19.6	17.8	16.3	14.8
15.0	16.5	18.0	19.7	21.6	118	22.0	19.9	18.2	16.6	15.1
15.3	16.8	18.3	20.0	22.0	119	22.4	20.3	18.5	16.9	15.4
15.5	17.1	18.6	20.4	22.4	120	22.8	20.7	18.9	17.3	15.6

Followup:

This could be pretty challenging depending on where you are working. Try to arrange follow up with someone locally that you trust. They need to be able to weigh the kids at follow up.

These kids should be gaining 4 gm/kg of body weight per day. The goal is to get them to the -1 SD mark. This should take about 8 weeks for kids who start out at -2 SD, about 12 for kids that start out at -3 SD. See weight gain schedule below. For the little girl that we're using as an example, the goal weight would be about 6 kg (or 20% of her starting weight).

We'll have to leave the Medika Mamba with the follow up person. So, to use our 5 kg kiddo (4 month old girl) that is -3SD as an example again, they'll need 2 packets per day for approximately 12 weeks. That's 2 x 12 x 7 = 168 packets. They come in boxes of 150 (for $75/box), so that's a lot of mamba.

There's always a risk that parents will give some of the mamba to the kiddo and sell the rest. That's why we can't just give them the whole box at once. They need to come back every 2 weeks for a weight check. If the kiddo is making the weight goals at each visit, we can give them another 2 weeks of mamba. If they miss their goals 2 visits in a row we should stop giving the mamba to them. They should then be referred for TB and HIV testing and to find other reasons that they are not gaining weight. WE HAVE TO EXPLAIN THIS TO THE PARENTS. If the kid isn't making weight, no more mamba. The weight goals are in the charts below:

Case Definition and Treatment Guidelines

Revised January 2013

Weekly Weight Gain Schedule/Calendrier hebdomadaire de gain poids (4g/kg/jour)

Weight (in kg) at Visit# Poids (kg) à la visite #								
1	2	3	4	5	6	7	8	9
4	4.11	4.23	4.35	4.47	4.59	4.72	4.85	4.99
4.05	4.16	4.28	4.40	4.52	4.65	4.78	4.91	5.05
4.1	4.21	4.33	4.45	4.58	4.71	4.84	4.97	5.11
4.15	4.27	4.39	4.51	4.63	4.76	4.90	5.04	5.18
4.2	4.32	4.44	4.56	4.69	4.82	4.96	5.10	5.24
4.25	4.37	4.49	4.62	4.75	4.88	5.02	5.16	5.30
4.3	4.42	4.54	4.67	4.80	4.94	5.07	5.22	5.36
4.35	4.47	4.60	4.73	4.86	4.99	5.13	5.28	5.43
4.4	4.52	4.65	4.78	4.91	5.05	5.19	5.34	5.49
4.45	4.57	4.70	4.83	4.97	5.11	5.25	5.40	5.55
4.5	4.63	4.76	4.89	5.03	5.17	5.31	5.46	5.61
4.55	4.68	4.81	4.94	5.08	5.22	5.37	5.52	5.67
4.6	4.73	4.86	5.00	5.14	5.28	5.43	5.58	5.74
4.65	4.78	4.91	5.05	5.19	5.34	5.49	5.64	5.80
4.7	4.83	4.97	5.11	5.25	5.40	5.55	5.70	5.86
4.75	4.88	5.02	5.16	5.30	5.45	5.61	5.76	5.92
4.8	4.93	5.07	5.21	5.36	5.51	5.67	5.82	5.99
4.85	4.99	5.13	5.27	5.42	5.57	5.72	5.88	6.05
4.9	5.04	5.18	5.32	5.47	5.63	5.78	5.94	6.11
4.95	5.09	5.23	5.38	5.53	5.68	5.84	6.01	6.17
5	5.14	5.28	5.43	5.58	5.74	5.90	6.07	6.24
5.05	5.19	5.34	5.49	5.64	5.80	5.96	6.13	6.30
5.1	5.24	5.39	5.54	5.70	5.86	6.02	6.19	6.36
5.15	5.29	5.44	5.59	5.75	5.91	6.08	6.25	6.42
5.2	5.35	5.50	5.65	5.81	5.97	6.14	6.31	6.49
5.25	5.40	5.55	5.70	5.86	6.03	6.20	6.37	6.55
5.3	5.45	5.60	5.76	5.92	6.08	6.26	6.43	6.61
5.35	5.50	5.65	5.81	5.97	6.14	6.31	6.49	6.67
5.4	5.55	5.71	5.87	6.03	6.20	6.37	6.55	6.74
5.45	5.60	5.76	5.92	6.09	6.26	6.43	6.61	6.80
5.5	5.65	5.81	5.98	6.14	6.31	6.49	6.67	6.86
5.55	5.71	5.87	6.03	6.20	6.37	6.55	6.73	6.92
5.6	5.76	5.92	6.08	6.25	6.43	6.61	6.79	6.98
5.65	5.81	5.97	6.14	6.31	6.49	6.67	6.85	7.05
5.7	5.86	6.02	6.19	6.37	6.54	6.73	6.92	7.11
5.75	5.91	6.08	6.25	6.42	6.60	6.79	6.98	7.17
5.8	5.96	6.13	6.30	6.48	6.66	6.85	7.04	7.23
5.85	6.01	6.18	6.36	6.53	6.72	6.90	7.10	7.30
5.9	6.07	6.24	6.41	6.59	6.77	6.96	7.16	7.36
5.95	6.12	6.29	6.46	6.64	6.83	7.02	7.22	7.42
6	6.17	6.34	6.52	6.70	6.89	7.08	7.28	7.48
6.05	6.22	6.39	6.57	6.76	6.95	7.14	7.34	7.55
6.1	6.27	6.45	6.63	6.81	7.00	7.20	7.40	7.61
6.15	6.32	6.50	6.68	6.87	7.06	7.26	7.46	7.67
6.2	6.37	6.55	6.74	6.92	7.12	7.32	7.52	7.73
6.25	6.43	6.60	6.79	6.98	7.18	7.38	7.58	7.80
6.3	6.48	6.66	6.84	7.04	7.23	7.44	7.64	7.86
6.35	6.53	6.71	6.90	7.09	7.29	7.49	7.70	7.92
6.4	6.58	6.76	6.95	7.15	7.35	7.55	7.76	7.98
6.45	6.63	6.82	7.01	7.20	7.41	7.61	7.83	8.04
6.5	6.68	6.87	7.06	7.26	7.46	7.67	7.89	8.11
6.55	6.73	6.92	7.12	7.31	7.52	7.73	7.95	8.17
6.6	6.78	6.97	7.17	7.37	7.58	7.79	8.01	8.23
6.65	6.84	7.03	7.22	7.43	7.63	7.85	8.07	8.29
6.7	6.89	7.08	7.28	7.48	7.69	7.91	8.13	8.36
6.75	6.94	7.13	7.33	7.54	7.75	7.97	8.19	8.42
6.8	6.99	7.19	7.39	7.59	7.81	8.03	8.25	8.48
6.85	7.04	7.24	7.44	7.65	7.86	8.08	8.31	8.54
6.9	7.09	7.29	7.50	7.71	7.92	8.14	8.37	8.61
6.95	7.14	7.34	7.55	7.76	7.98	8.20	8.43	8.67
7	7.20	7.40	7.60	7.82	8.04	8.26	8.49	8.73
7.05	7.25	7.45	7.66	7.87	8.09	8.32	8.55	8.79
7.1	7.30	7.50	7.71	7.93	8.15	8.38	8.61	8.86
7.15	7.35	7.56	7.77	7.99	8.21	8.44	8.67	8.92
7.2	7.40	7.61	7.82	8.04	8.27	8.50	8.74	8.98
7.25	7.45	7.66	7.88	8.10	8.32	8.56	8.80	9.04
7.3	7.50	7.71	7.93	8.15	8.38	8.62	8.86	9.10
7.35	7.56	7.77	7.98	8.21	8.44	8.67	8.92	9.17
7.4	7.61	7.82	8.04	8.26	8.50	8.73	8.98	9.23
7.45	7.66	7.87	8.09	8.32	8.55	8.79	9.04	9.29
7.5	7.71	7.93	8.15	8.38	8.61	8.85	9.10	9.35
7.55	7.76	7.98	8.20	8.43	8.67	8.91	9.16	9.42
7.6	7.81	8.03	8.26	8.49	8.73	8.97	9.22	9.48
7.65	7.86	8.08	8.31	8.54	8.78	9.03	9.28	9.54
7.7	7.92	8.14	8.37	8.60	8.84	9.09	9.34	9.60
7.75	7.97	8.19	8.42	8.66	8.90	9.15	9.40	9.67
7.8	8.02	8.24	8.47	8.71	8.95	9.21	9.46	9.73
7.85	8.07	8.30	8.53	8.77	9.01	9.26	9.52	9.79
7.9	8.12	8.35	8.58	8.82	9.07	9.32	9.58	9.85
7.95	8.17	8.40	8.64	8.88	9.13	9.38	9.65	9.92

Weight (in kg) at Visit# Poids (kg) à la visite #								
1	2	3	4	5	6	7	8	9
8	8.22	8.45	8.69	8.93	9.18	9.44	9.71	9.98
8.05	8.28	8.51	8.75	8.99	9.24	9.50	9.77	10.04
8.1	8.33	8.56	8.80	9.05	9.30	9.56	9.83	10.10
8.15	8.38	8.61	8.85	9.10	9.36	9.62	9.89	10.16
8.2	8.43	8.67	8.91	9.16	9.41	9.68	9.95	10.23
8.25	8.48	8.72	8.96	9.21	9.47	9.74	10.01	10.29
8.3	8.53	8.77	9.02	9.27	9.53	9.80	10.07	10.35
8.35	8.58	8.82	9.07	9.33	9.59	9.85	10.13	10.41
8.4	8.64	8.88	9.13	9.38	9.64	9.91	10.19	10.48
8.45	8.69	8.93	9.18	9.44	9.70	9.97	10.25	10.54
8.5	8.74	8.98	9.23	9.49	9.76	10.03	10.31	10.60
8.55	8.79	9.04	9.29	9.55	9.82	10.09	10.37	10.66
8.6	8.84	9.09	9.34	9.60	9.87	10.15	10.43	10.73
8.65	8.89	9.14	9.40	9.66	9.93	10.21	10.49	10.79
8.7	8.94	9.19	9.45	9.72	9.99	10.27	10.56	10.85
8.75	9.00	9.25	9.51	9.77	10.05	10.33	10.62	10.91
8.8	9.05	9.30	9.56	9.83	10.10	10.39	10.68	10.98
8.85	9.10	9.35	9.61	9.88	10.16	10.44	10.74	11.04
8.9	9.15	9.41	9.67	9.94	10.22	10.50	10.80	11.10
8.95	9.20	9.46	9.72	10.00	10.28	10.56	10.86	11.16
9	9.25	9.51	9.78	10.05	10.33	10.62	10.92	11.23
9.05	9.30	9.56	9.83	10.11	10.39	10.68	10.98	11.29
9.1	9.35	9.62	9.89	10.16	10.45	10.74	11.04	11.35
9.15	9.41	9.67	9.94	10.22	10.50	10.80	11.10	11.41
9.2	9.46	9.72	9.99	10.27	10.56	10.86	11.16	11.47
9.25	9.51	9.78	10.05	10.33	10.62	10.92	11.22	11.54
9.3	9.56	9.83	10.10	10.39	10.68	10.98	11.28	11.60
9.35	9.61	9.88	10.16	10.44	10.73	11.03	11.34	11.66
9.4	9.66	9.93	10.21	10.50	10.79	11.09	11.40	11.72
9.45	9.71	9.99	10.27	10.55	10.85	11.15	11.47	11.79
9.5	9.77	10.04	10.32	10.61	10.91	11.21	11.53	11.85
9.55	9.82	10.09	10.37	10.67	10.96	11.27	11.59	11.91
9.6	9.87	10.15	10.43	10.72	11.02	11.33	11.65	11.97
9.65	9.92	10.20	10.48	10.78	11.08	11.39	11.71	12.04
9.7	9.97	10.25	10.54	10.83	11.14	11.45	11.77	12.10
9.75	10.02	10.30	10.59	10.89	11.19	11.51	11.83	12.16
9.8	10.07	10.36	10.65	10.94	11.25	11.57	11.89	12.22
9.85	10.13	10.41	10.70	11.00	11.31	11.63	11.95	12.29
9.9	10.18	10.46	10.76	11.06	11.37	11.68	12.01	12.35
9.95	10.23	10.52	10.81	11.11	11.42	11.74	12.07	12.41
10	10.28	10.57	10.86	11.17	11.48	11.80	12.13	12.47
10.05	10.33	10.62	10.92	11.22	11.54	11.86	12.19	12.53
10.1	10.38	10.67	10.97	11.28	11.60	11.92	12.25	12.60
10.15	10.43	10.73	11.03	11.34	11.65	11.98	12.31	12.66
10.2	10.49	10.78	11.08	11.39	11.71	12.04	12.38	12.72
10.25	10.54	10.83	11.14	11.45	11.77	12.10	12.44	12.78
10.3	10.59	10.88	11.19	11.50	11.83	12.16	12.50	12.85
10.35	10.64	10.94	11.24	11.56	11.88	12.22	12.56	12.91
10.4	10.69	10.99	11.30	11.61	11.94	12.27	12.62	12.97
10.45	10.74	11.04	11.35	11.67	12.00	12.33	12.68	13.03
10.5	10.79	11.10	11.41	11.73	12.05	12.39	12.74	13.10
10.55	10.85	11.15	11.46	11.78	12.11	12.45	12.80	13.16
10.6	10.90	11.20	11.52	11.84	12.17	12.51	12.86	13.22
10.65	10.95	11.25	11.57	11.89	12.23	12.57	12.92	13.28
10.7	11.00	11.31	11.62	11.95	12.28	12.63	12.98	13.35
10.75	11.05	11.36	11.68	12.01	12.34	12.69	13.04	13.41
10.8	11.10	11.41	11.73	12.06	12.40	12.75	13.10	13.47
10.85	11.15	11.47	11.79	12.12	12.46	12.81	13.16	13.53
10.9	11.21	11.52	11.84	12.17	12.51	12.86	13.22	13.59
10.95	11.26	11.57	11.90	12.23	12.57	12.92	13.29	13.66
11	11.31	11.62	11.95	12.28	12.63	12.98	13.35	13.72
11.05	11.36	11.68	12.00	12.34	12.69	13.04	13.41	13.78
11.1	11.41	11.73	12.06	12.40	12.74	13.10	13.47	13.84
11.15	11.46	11.78	12.11	12.45	12.80	13.16	13.53	13.91
11.2	11.51	11.84	12.17	12.51	12.86	13.22	13.59	13.97
11.25	11.57	11.89	12.22	12.56	12.92	13.28	13.65	14.03
11.3	11.62	11.94	12.28	12.62	12.97	13.34	13.71	14.09
11.35	11.67	11.99	12.33	12.68	13.03	13.40	13.77	14.16
11.4	11.72	12.05	12.38	12.73	13.09	13.45	13.83	14.22
11.45	11.77	12.10	12.44	12.79	13.15	13.51	13.89	14.28
11.5	11.82	12.15	12.49	12.84	13.20	13.57	13.95	14.34
11.55	11.87	12.21	12.55	12.90	13.26	13.63	14.01	14.41
11.6	11.92	12.26	12.60	12.95	13.32	13.69	14.07	14.47
11.65	11.98	12.31	12.66	13.01	13.37	13.75	14.13	14.53
11.7	12.03	12.36	12.71	13.07	13.43	13.81	14.20	14.59
11.75	12.08	12.42	12.76	13.12	13.49	13.87	14.26	14.65
11.8	12.13	12.47	12.82	13.18	13.55	13.93	14.32	14.72
11.85	12.18	12.52	12.87	13.23	13.60	13.99	14.38	14.78
11.9	12.23	12.58	12.93	13.29	13.66	14.04	14.44	14.84
11.95	12.28	12.63	12.98	13.35	13.72	14.10	14.50	14.90

Case Definition and Treatment Guidelines

Revised January 2013

Weight Gain Schedule--One Week Follow-up (4g/kg/jour)

Weight (in kg) at Visit # Poids (kg) à la visite #								
1	2	3	4	5	6	7	8	9
12	12.34	12.68	13.04	13.40	13.78	14.16	14.56	14.97
12.05	12.39	12.73	13.09	13.46	13.83	14.22	14.62	15.03
12.1	12.44	12.79	13.15	13.51	13.89	14.28	14.68	15.09
12.15	12.49	12.84	13.20	13.57	13.95	14.34	14.74	15.15
12.2	12.54	12.89	13.25	13.62	14.01	14.40	14.80	15.22
12.25	12.59	12.95	13.31	13.68	14.06	14.46	14.86	15.28
12.3	12.64	13.00	13.36	13.74	14.12	14.52	14.92	15.34
12.35	12.70	13.05	13.42	13.79	14.18	14.58	14.98	15.40
12.4	12.75	13.10	13.47	13.85	14.24	14.63	15.04	15.47
12.45	12.80	13.16	13.53	13.90	14.29	14.69	15.11	15.53
12.5	12.85	13.21	13.58	13.96	14.35	14.75	15.17	15.59
12.55	12.90	13.26	13.63	14.02	14.41	14.81	15.23	15.65
12.6	12.95	13.32	13.69	14.07	14.47	14.87	15.29	15.72
12.65	13.00	13.37	13.74	14.13	14.52	14.93	15.35	15.78
12.7	13.06	13.42	13.80	14.18	14.58	14.99	15.41	15.84
12.75	13.11	13.47	13.85	14.24	14.64	15.05	15.47	15.90
12.8	13.16	13.53	13.91	14.29	14.70	15.11	15.53	15.96
12.85	13.21	13.58	13.96	14.35	14.75	15.17	15.59	16.03
12.9	13.26	13.63	14.01	14.41	14.81	15.22	15.65	16.09
12.95	13.31	13.69	14.07	14.46	14.87	15.28	15.71	16.15
13	13.36	13.74	14.12	14.52	14.92	15.34	15.77	16.21
13.05	13.42	13.79	14.18	14.57	14.98	15.40	15.83	16.28
13.1	13.47	13.84	14.23	14.63	15.04	15.46	15.89	16.34
13.15	13.52	13.90	14.29	14.69	15.10	15.52	15.95	16.40
13.2	13.57	13.95	14.34	14.74	15.15	15.58	16.01	16.46
13.25	13.62	14.00	14.39	14.80	15.21	15.64	16.08	16.53
13.3	13.67	14.06	14.45	14.85	15.27	15.70	16.14	16.59
13.35	13.72	14.11	14.50	14.91	15.33	15.76	16.20	16.65
13.4	13.78	14.16	14.56	14.97	15.38	15.81	16.26	16.71
13.45	13.83	14.21	14.61	15.02	15.44	15.87	16.32	16.78
13.5	13.88	14.27	14.67	15.08	15.50	15.93	16.38	16.84
13.55	13.93	14.32	14.72	15.13	15.56	15.99	16.44	16.90
13.6	13.98	14.37	14.77	15.19	15.61	16.05	16.50	16.96
13.65	14.03	14.43	14.83	15.24	15.67	16.11	16.56	17.02
13.7	14.08	14.48	14.88	15.30	15.73	16.17	16.62	17.09
13.75	14.14	14.53	14.94	15.36	15.79	16.23	16.68	17.15
13.8	14.19	14.58	14.99	15.41	15.84	16.29	16.74	17.21
13.85	14.24	14.64	15.05	15.47	15.90	16.35	16.80	17.27
13.9	14.29	14.69	15.10	15.52	15.96	16.40	16.86	17.34
13.95	14.34	14.74	15.15	15.58	16.02	16.46	16.92	17.40

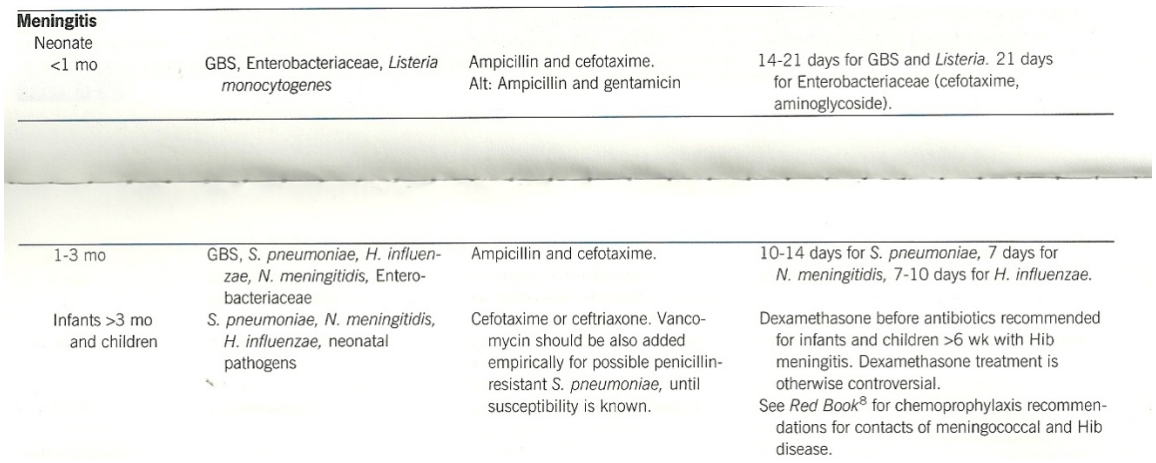
Weight (in kg) at Visit # Poids (kg) à la visite #								
1	2	3	4	5	6	7	8	9
14	14.39	14.79	15.21	15.64	16.07	16.52	16.99	17.46
14.05	14.44	14.85	15.26	15.69	16.13	16.58	17.05	17.52
14.1	14.49	14.90	15.32	15.75	16.19	16.64	17.11	17.59
14.15	14.55	14.95	15.37	15.80	16.25	16.70	17.17	17.65
14.2	14.60	15.01	15.43	15.86	16.30	16.76	17.23	17.71
14.25	14.65	15.06	15.48	15.91	16.36	16.82	17.29	17.77
14.3	14.70	15.11	15.54	15.97	16.42	16.88	17.35	17.84
14.35	14.75	15.16	15.59	16.03	16.47	16.94	17.41	17.90
14.4	14.80	15.22	15.64	16.08	16.53	17.00	17.47	17.96
14.45	14.85	15.27	15.70	16.14	16.59	17.05	17.53	18.02
14.5	14.91	15.32	15.75	16.19	16.65	17.11	17.59	18.08
14.55	14.96	15.38	15.81	16.25	16.70	17.17	17.65	18.15
14.6	15.01	15.43	15.86	16.31	16.76	17.23	17.71	18.21
14.65	15.06	15.48	15.92	16.36	16.82	17.29	17.77	18.27
14.7	15.11	15.53	15.97	16.42	16.88	17.35	17.83	18.33
14.75	15.16	15.59	16.02	16.47	16.93	17.41	17.90	18.40
14.8	15.21	15.64	16.08	16.53	16.99	17.47	17.96	18.46
14.85	15.27	15.69	16.13	16.58	17.05	17.53	18.02	18.52
14.9	15.32	15.75	16.19	16.64	17.11	17.59	18.08	18.58
14.95	15.37	15.80	16.24	16.70	17.16	17.64	18.14	18.65
15	15.42	15.85	16.30	16.75	17.22	17.70	18.20	18.71
15.05	15.47	15.90	16.35	16.81	17.28	17.76	18.26	18.77
15.1	15.52	15.96	16.40	16.86	17.34	17.82	18.32	18.83
15.15	15.57	16.01	16.46	16.92	17.39	17.88	18.38	18.90
15.2	15.63	16.06	16.51	16.98	17.45	17.94	18.44	18.96
15.25	15.68	16.12	16.57	17.03	17.51	18.00	18.50	19.02
15.3	15.73	16.17	16.62	17.09	17.57	18.06	18.56	19.08
15.35	15.78	16.22	16.68	17.14	17.62	18.12	18.62	19.14
15.4	15.83	16.27	16.73	17.20	17.68	18.18	18.68	19.21
15.45	15.88	16.33	16.78	17.25	17.74	18.23	18.74	19.27
15.5	15.93	16.38	16.84	17.31	17.79	18.29	18.81	19.33
15.55	15.99	16.43	16.89	17.37	17.85	18.35	18.87	19.39
15.6	16.04	16.49	16.95	17.42	17.91	18.41	18.93	19.46
15.65	16.09	16.54	17.00	17.48	17.97	18.47	18.99	19.52
15.7	16.14	16.59	17.06	17.53	18.02	18.53	19.05	19.58
15.75	16.19	16.64	17.11	17.59	18.08	18.59	19.11	19.64
15.8	16.24	16.70	17.16	17.65	18.14	18.65	19.17	19.71
15.85	16.29	16.75	17.22	17.70	18.20	18.71	19.23	19.77
15.9	16.35	16.80	17.27	17.76	18.25	18.77	19.29	19.83
15.95	16.40	16.86	17.33	17.81	18.31	18.82	19.35	19.89
16	16.45	16.91	17.38	17.87	18.37	18.88	19.41	19.96
16.05	16.50	16.96	17.44	17.92	18.43	18.94	19.47	20.02
16.1	16.55	17.01	17.49	17.98	18.48	19.00	19.53	20.08
16.15	16.60	17.07	17.54	18.04	18.54	19.06	19.59	20.14
16.2	16.65	17.12	17.60	18.09	18.60	19.12	19.65	20.21
16.25	16.71	17.17	17.65	18.15	18.66	19.18	19.72	20.27
16.3	16.76	17.23	17.71	18.20	18.71	19.24	19.78	20.33
16.35	16.81	17.28	17.76	18.26	18.77	19.30	19.84	20.39
16.4	16.86	17.33	17.82	18.32	18.83	19.36	19.90	20.45
16.45	16.91	17.38	17.87	18.37	18.89	19.41	19.96	20.52
16.5	16.96	17.44	17.93	18.43	18.94	19.47	20.02	20.58
16.55	17.01	17.49	17.98	18.48	19.00	19.53	20.08	20.64
16.6	17.06	17.54	18.03	18.54	19.06	19.59	20.14	20.70
16.65	17.12	17.60	18.09	18.59	19.12	19.65	20.20	20.77
16.7	17.17	17.65	18.14	18.65	19.17	19.71	20.26	20.83
16.75	17.22	17.70	18.20	18.71	19.23	19.77	20.32	20.89
16.8	17.27	17.75	18.25	18.76	19.29	19.83	20.38	20.95
16.85	17.32	17.81	18.31	18.82	19.34	19.89	20.44	21.02
16.9	17.37	17.86	18.36	18.87	19.40	19.95	20.50	21.08
16.95	17.42	17.91	18.41	18.93	19.46	20.00	20.56	21.14
17	17.48	17.97	18.47	18.99	19.52	20.06	20.63	21.20
17.05	17.53	18.02	18.52	19.04	19.57	20.12	20.69	21.27
17.1	17.58	18.07	18.58	19.10	19.63	20.18	20.75	21.33
17.15	17.63	18.12	18.63	19.15	19.69	20.24	20.81	21.39
17.2	17.68	18.18	18.69	19.21	19.75	20.30	20.87	21.45
17.25	17.73	18.23	18.74	19.26	19.80	20.36	20.93	21.51
17.3	17.78	18.28	18.79	19.32	19.86	20.42	20.99	21.58
17.35	17.84	18.34	18.85	19.38	19.92	20.48	21.05	21.64
17.4	17.89	18.39	18.90	19.43	19.98	20.54	21.11	21.70
17.45	17.94	18.44	18.96	19.49	20.03	20.59	21.17	21.76
17.5	17.99	18.49	19.01	19.54	20.09	20.65	21.23	21.83
17.55	18.04	18.55	19.07	19.60	20.15	20.71	21.29	21.89
17.6	18.09	18.60	19.12	19.66	20.21	20.77	21.35	21.95
17.65	18.14	18.65	19.17	19.71	20.26	20.83	21.41	22.01
17.7	18.20	18.71	19.23	19.77	20.32	20.89	21.47	22.08
17.75	18.25	18.76	19.28	19.82	20.38	20.95	21.54	22.14
17.8	18.30	18.81	19.34	19.88	20.44	21.01	21.60	22.20
17.85	18.35	18.86	19.39	19.93	20.49	21.07	21.66	22.26
17.9	18.40	18.92	19.45	19.99	20.55	21.13	21.72	22.33
17.95	18.45	18.97	19.50	20.05	20.61	21.18	21.78	22.39

16. Meningitis

a. Case definition-

i. Acute fever, headache, stiff neck, bulging fontanelle , cranial nerve palsy, petechia, +/- altered mental status
ii. Usually caused by strep pneumonia, Haemophilus influenza, and Neisseria meningitidis
iii. May also be associated with CSF leak a history of head trauma
iv. Also consider viral causes, malignancy, or drugs (NSAID s, co-trimoxazole, et cetera)

b. Treatment
   i. Consider lumbar puncture if you have access to a laboratory and can perform the procedure under sterile conditions.
   ii. [xiv]



Meningitis			
Neonate <1 mo	GBS, Enterobacteriaceae, *Listeria monocytogenes*	Ampicillin and cefotaxime. Alt: Ampicillin and gentamicin	14-21 days for GBS and *Listeria*. 21 days for Enterobacteriaceae (cefotaxime, aminoglycoside).
1-3 mo	GBS, *S. pneumoniae*, *H. influenzae*, *N. meningitidis*, Enterobacteriaceae	Ampicillin and cefotaxime.	10-14 days for *S. pneumoniae*, 7 days for *N. meningitidis*, 7-10 days for *H. influenzae*.
Infants >3 mo and children	*S. pneumoniae*, *N. meningitidis*, *H. influenzae*, neonatal pathogens	Cefotaxime or ceftriaxone. Vancomycin should be also added empirically for possible penicillin-resistant *S. pneumoniae*, until susceptibility is known.	Dexamethasone before antibiotics recommended for infants and children >6 wk with Hib meningitis. Dexamethasone treatment is otherwise controversial. See *Red Book*[8] for chemoprophylaxis recommendations for contacts of meningococcal and Hib disease.

   iii. Ceftriaxone
      1. Substitute **cefotaxime** in children less than 1-month-old due to risk of kernicterus
      2. Consider addition of **amoxicillin or co-trimoxazole**[xv] in children less than 2 months to cover Listeria
      3. Consider **dexamethasone** 0.4 mg/kilogram IV q.12 hours x2 days started with first dose of antibiotics
   iv. Total course of antibiotics (IV plus p.o.) should be 10-14 days (continue for 21 days in children less than 2 months)

17. Pneumonia

a. Case definition-
   i. fever, cough, tachypnea, tachycardia
b. Treatment
   i. **Amoxicillin 80 mg/kg divided BID**, **augmentin 45 mg/kg divided BID**, **azithromycin 10 mg/kg x 1 dose then 5 mg/kg/day x 4 days**, **co-trimoxazole 10 mg/kg divided BID**, **doxycycline 5 mg/kg/d divided BID, max dose of 100 mg BID** in children over the age of 8 and nonpregnant females, metronidazole
      1. Save suspensions for children who cannot chew.
   ii. Consider azithromycin in school-aged children
      1. 10-20 kg = ½ tab (250 mg) x 1, then ¼ tab (125 mg) daily x 4.
   iii. Consider **co-trimoxazole** in severely malnourished children and immunosuppressed. Give **co-trimoxazole** if the patient is significantly hypoxic and assume that they are immunosuppressed.

iv. [xvi]

Pneumonia			
Neonatal	*E. coli*, GBS, *S. aureus*, *Listeria monocytogenes*	Ampicillin + gentamicin or ampicillin + cefotaxime.	10-21 days. Blood cultures indicated. Effusions should be drained, Gram's stain of fluid obtained.
3 wk-4 mo Infant/child (6 wk-4 yr)	*Chlamydia trachomatis*	Erythromycin. Alt: Clarithromycin.	10 days.
Lobar	*S. pneumoniae*	PO: Amoxicillin. Alt. Clindamycin. IV: Cefuroxime, ceftriaxone, cefotaxime.	7-10 days.
Atypical	*Bordetella pertussis*	Erythromycin (estolate preparation preferred) or clarithromycin.	14 days. Chemoprophylaxis indicated for close contacts.
	Respiratory viruses	No antibiotics indicated.	
	Influenza	Zanamivir or oseltamivir	Reduces symptoms notably if given within 36 hours after onset of symptoms.
≥4 yr			
Lobar	*S. pneumoniae*	PO: Amoxicillin. Alt: Erythromycin. IV: Cefuroxime, ceftriaxone, or cefotaxime PLUS PO/IV macrolide.	7-10 days.
		Clarithromycin.	10 days.
		Azithromycin.	5 days.
Atypical	*Mycoplasma pneumoniae* or *Chlamydia pneumoniae*	Erythromycin, clarithromycin, azithromycin, or tetracycline (>8 yr).	14-21 days (5 days if using azithromycin).
	Influenza	Zanamivir or oseltamivir.	See comments above.

18. Preeclampsia

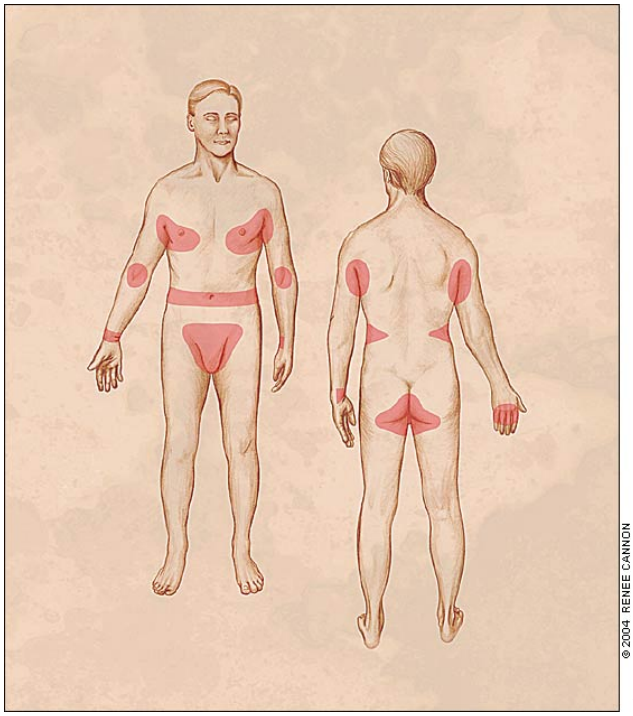
a. Case definition-
   i. Blood pressure of >140/90 in woman > 20 weeks gestation (fundus at umbilicus) with protein on urine dipstick.
   ii. Severe preeclampsia is BP of >160/110

b. Treatment
   i. Bedrest. Transfer to hospital for definitive management (delivery if close to term or severely preeclamptic)
   ii. Severe preeclampsia will require:
      1. Magnesium Sulfate- 4-6 gm IV over 20 min (or 4-6 gm IM), then 1-3 gm per hour infusion (or 4 gm IM q 4 hrs)
         a. Monitor urine output (minimum 25 cc/hr), respirations, mental status and reflexes. Stop infusion or IM if decreased UOP, respirations, mental status, or reflexes
   iii. Consider metoprolol or atenolol (little or no transplacental transmission), especially with severe preeclampsia with headache. Avoid diuretics.
   iv. IVF of 60-150 cc/hr
   v. Dexamethasone 6 mg IM bid x 2 days (every 12 hours x 4 doses)
   vi. Aldomet 250 mg BID-TID for hypertension (not preeclampsia) in pregnancy
   vii. A baby aspirin per day may decrease the risk of pre-eclampsia in at risk women[xvii]. Ideally, it should be started before the 20th week of pregnancy in anyone who has had pre-eclampsia or eclampsia with previous pregnancies.

19. Scabies

a. Case definition-
   i. Small mite that lives beneath the skin
   ii. It usually takes 2 weeks after exposure to develop symptoms- therefore treat all household contacts
   iii. Intensely pruritic

iv. Small papules, plaques, and occasionally pustules- may see burrows and streaks. Concentrated in between fingers, flexural surfaces, ankles, palms, soles.



xviii

b. Treatment-
   i. Should treat all family members, regardless of symptoms
   ii. **Ivermectin** 200 mcg/kg in kids > 15 kg and non-pregnant adults (usually 3-4 tabs), may repeat in 10 days if new lesions
   iii. **Permethrin** cream applied from scalp to soles in kids (<15 kg)and pregnant women
      1. Leave on overnight, may repeat in 1 wk if new lesions
   iv. **Benadryl** or short course of **prednisone** for itching (may be worse immediately after treatment)
   v. Must wash all bedding and clothing in hot soapy water

20. Sexually Transmitted Infections

a. Unsure of prevalence
b. The majority of patients are asymptomatic
c. Case definitions-
   i. Dysuria with urethral discharge +/- epididymitis in males
   ii. Dysuria and vaginal or urethral discharge, lower abdominal pain, or dyspareunia in females
d. Treatment-
   i. **Rocephin** 250 mg IM x 1 PLUS **Doxycycline** 100 mg po BID for 7 days
   ii. In pregnant women can use **Rocephin** plus 1 gm of **Azithromycin** po x 1 OR **Rocephin** plus **Amoxicillin** 500 mg po TID x 10 days
   iii. Partners, past and present, must all be treated, too.
   iv. Should abstain from intercourse until antibiotics are finished (or for 3 days after 1-day treatment regimen)

21. Tinea Capitus, Kerion

a. This is super common, and let's face it, nobody's ever died from a fungal spot on their skin.

b. Case definition- Tinea capitus
    i. Patch on head with alopecia. Often see black dots which are hairs broken off at skin in follicle. Often associated with posterior cervical lymphadenopathy
    ii. Kerion is a huge boggy mass that often looks pustular. It is not bacterial, even though it looks like it.
    iii. Treatment- Tinea capitus
        1. Selenium sulfide shampoo, if you brought some. They may be able to buy this in Haiti
        2. Griseofulvin- This has to be take every day for 6-10 weeks. It can be hepatotoxic, so you should save it for the bad looking cases
            a. Dose in kids > 2 yo is 20-25 mg/kg/day. Take with fatty food (peanut butter)
            b. Kerion can also be treated with 1-2 mg/kg/day of prednisone for 10 days. No need to taper.

22. Tuberculosis

a. Case definition-
    i. There is a high incidence of tuberculosis in Haiti (238 cases per 100,000 population [US is 4.1/100,000])[xix]
    ii. Tuberculosis can present in a number of ways depending on the site of infection
    iii. Diagnosis is suggested by persistent cough for more than 3 weeks, fever, night sweats, weight loss, or malnutrition that is unresponsive to therapy
    iv. History of contact with the patient with these symptoms should also raise suspicion.
    v. Tuberculous meningitis often has an insidious onset with low-grade fever and associated cranial nerve palsies (especially III, IV, VI, VIII)
    vi. You should also suspect HIV in any patient with tuberculosis
b. Treatment-
    i. Treatment of tuberculosis patients is medically very complicated and requires very close followup.
    ii. The patient should be isolated and given a surgical mask if possible
    iii. They can be referred to Hospital Ste. Croix or other local health center for a chest Xray
    iv. They must be referred to the sanitorium at Signeau on National Route 1 in Leogane or local TB treatment center for further diagnosis and treatment

23. Typhoid fever

a. Case definition-
    i. Infection with salmonella typhi. Transmitted by fecal oral route
    ii. Multisystem illness with fever, abdominal pain, diarrhea (+/- blood), epistaxis, delirium, and in untreated cases, intestinal perforation
    iii. Often will have a relative bradycardia (heart rate not as high as expected for level of fever). May see rose spots on chest and abdomen.
b. Treatment-
    i. Chloramphenicol, **co-trimoxazole, ceftriaxone, quinolones**
    ii. **Dexamethasone** 3 mg/kilogram followed by 1 mg/kilogram q6 hours x48 hours has been shown to reduce mortality in severe cases
    iii. If you are suspicious of GI hemorrhage make sure antibiotic coverage includes anaerobes and gram-negative rods
    iv. Beware of risk of bowel perforation
    v. Send to hospital

24. Vaginitis

a. The majority of vaginitis in Haiti is thought to be yeast, but this has not been studied
b. Case definition-
    i. Abnormal vaginal discharge, itching, abnormal odor to discharge, or dyspareunia in women
    ii. Thick white discharge with itching suggests Candida
    iii. Thin foamy yellow discharge with itching suggests Trichomonas
    iv. Watery discharge with fishy odor suggests bacterial vaginosis
    v. Dysuria and vaginal or urethral discharge, lower abdominal pain, or dyspareunia should prompt consideration of sexually transmitted infections
    vi. If vaginal pH is low (can use urine dipstick)- patient likely has Trichomonas or BV- treat with metronidazole
    vii. If vaginal pH is normal other causes are more likely.
c. Treatment-
    i. Candida- **fluconazole** 100mg- 150 mg by mouth x 1, may repeat in 1 week or azole vaginal suppositories
    ii. Trichomonas- **Metronidazole** 2 gm po x1 (may cause GI upset and vomiting) or 500 mg BID x 7 days. DO NOT DRINK ALCOHOL while on this medicine
    iii. Bacterial vaginosis- **Metronidazole** 500 mg BID x7 days or **Clindamycin** 300 mg BID x 7 days or MetroGel vaginal applicator bid x 5 days.

REFERRALS:

Lab work, Radiography, Outpatient follow up, and Inpatient treatment is all available at Hopital Ste. Croix in Leogane, The Book in Arcahaie, is a hospital set up by Cuban doctors and currently being transitioned to Haitian medical staff. They also have labs and Xray, as well as limited inpatient treatment and outpatient follow up. Complicated OB cases in Arcahaie should be referred to the PIH hospital in St. Marc, about 1 hour north. Some labs are available at the Health Center in Les Anglais.

The Children's Nutrition Program will care for all children under the age of 2 that are moderately to severely malnourished. If several cases are found in a community, they will perform a community assessment. Email Kerry Kelly, the executive director at: kkelly@cnphaiti.org.

Acutely severely malnourished kids who need inpatient treatment in Arcahaie can be sent to Cazale, run by Real Hope for Haiti. They must be contacted first. You can reach Lori or Licia by email at lori@realhopeforhaiti.org or licia@realhopeforhaiti.org.

The University of Notre Dame runs the lymphatic filariasis treatment program. Their offices are adjacent to the main building at Hopital St. Croix, or Wesley Pierre can be found at the Residence Filariose in Belval.

Currently (June 25, 2012) Doctors Without Borders (MSF) is doing emergency surgery and deliveries in Chatuley outside of Leogane. They don't do anything else.

The Sanitorium at Signeau, National Route 1 is doing HIV and TB testing and treatment. The Health Center in Les Anglais also do testing and treatment for HIV and TB. This may be available at The Book in Arcahaie.

The Book will do oral contraceptives and depot provera shots for free (we are told).

CHI HIV Testing POLICY

Providers and nurses traveling to Haiti need to be acutely aware of the lack of resources in Haiti, and the implications that this has on medical care.

HIV in Haiti is an enormous problem. The stigma associated with HIV alone can dramatically impact a patient's life and livelihood in the future. Moreso, resources for treatment are few and far between.

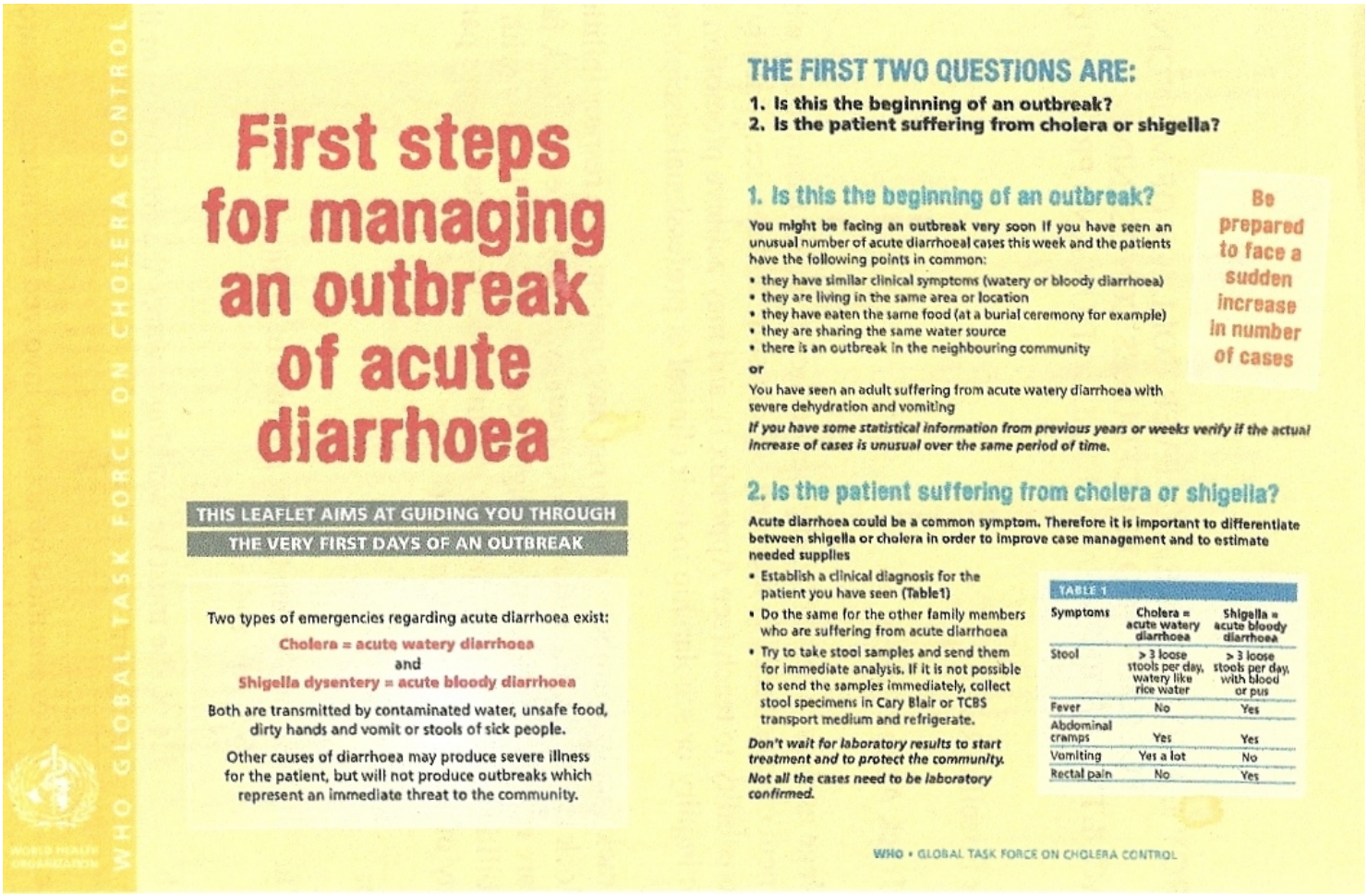
The CHI carries HIV testing kits on our clinics. The primary purpose of these kits is for testing of a source patient in the event of a team member blood or body fluid exposure, such as a needle-stick.

HIV testing on any patient should NOT be undertaken by any provider or nurse under ANY circumstances without consultation with the team leader. If there are appropriate referrals to be made for confirmatory testing and treatment, the test may be performed. No test should be performed without appropriate informed consent. If there are no referrals or treatment options, and the test is not for purposes of a blood/body fluid exposure, the test should NOT be performed. The CHI does not currently have the resources to provide confirmatory testing or treatment for these patients.

Without appropriate resources for confirmatory testing and treatment, a provider informing a patient that they have HIV is effectively telling a patient that they are doomed, that there is nothing to be done about it, and wishing them luck that they won't become socially ostracized, divorced, abandoned, and otherwise have an already quite difficult existence made much worse. This is obviously ethically problematic and inappropriate.

If a provider or nurse is concerned about a patient that may have an STD such as HIV, counseling should be provided from a public health perspective. This should include safe sex practices, etc. This type of counseling is generally appropriate anyways in an environment with such high rates of STDs. If a patient expresses interest in HIV testing, they can be referred to a resource with appropriate confirmatory testing and treatment options.

Appendix 1: First steps for managing an outbreak of acute diarrhea, WHO global task force on cholera control



WHO GLOBAL TASK FORCE ON CHOLERA CONTROL

First steps for managing an outbreak of acute diarrhoea

THIS LEAFLET AIMS AT GUIDING YOU THROUGH THE VERY FIRST DAYS OF AN OUTBREAK

Two types of emergencies regarding acute diarrhoea exist:

Cholera = acute watery diarrhoea

and

Shigella dysentery = acute bloody diarrhoea

Both are transmitted by contaminated water, unsafe food, dirty hands and vomit or stools of sick people.

Other causes of diarrhoea may produce severe illness for the patient, but will not produce outbreaks which represent an immediate threat to the community.

THE FIRST TWO QUESTIONS ARE:

1. **Is this the beginning of an outbreak?**
2. **Is the patient suffering from cholera or shigella?**

1. Is this the beginning of an outbreak?

You might be facing an outbreak very soon if you have seen an unusual number of acute diarrhoeal cases this week and the patients have the following points in common:

- they have similar clinical symptoms (watery or bloody diarrhoea)
- they are living in the same area or location
- they have eaten the same food (at a burial ceremony for example)
- they are sharing the same water source
- there is an outbreak in the neighbouring community

or

You have seen an adult suffering from acute watery diarrhoea with severe dehydration and vomiting

If you have some statistical information from previous years or weeks verify if the actual increase of cases is unusual over the same period of time.

Be prepared to face a sudden increase in number of cases

2. Is the patient suffering from cholera or shigella?

Acute diarrhoea could be a common symptom. Therefore it is important to differentiate between shigella or cholera in order to improve case management and to estimate needed supplies

- Establish a clinical diagnosis for the patient you have seen (Table1)
- Do the same for the other family members who are suffering from acute diarrhoea
- Try to take stool samples and send them for immediate analysis. If it is not possible to send the samples immediately, collect stool specimens in Cary Blair or TCBS transport medium and refrigerate.

Don't wait for laboratory results to start treatment and to protect the community.

Not all the cases need to be laboratory confirmed.

TABLE 1

Symptoms	Cholera = acute watery diarrhoea	Shigella = acute bloody diarrhoea
Stool	> 3 loose stools per day, watery like rice water	> 3 loose stools per day, with blood or pus
Fever	No	Yes
Abdominal cramps	Yes	Yes
Vomiting	Yes a lot	No
Rectal pain	No	Yes

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WHAT TO DO IF YOU SUSPECT AN OUTBREAK

- **Inform and ask for help**
- **Protect the community**
- **Treat the patients**

Inform and ask for help

The outbreak can evolve quickly and the rapid increase of cases may prevent you from doing your daily activities

- Inform your supervisor about the situation
- Ask for more supplies if needed (see Box)
- Ask for help to control the outbreak among and outside the community

Check the supplies you have and record available quantities

- IV fluids (Ringer Lactate is the best)
- Drips
- Nasogastric tubes
- Oral Rehydration Salt (ORS)
- Antibiotics (see Table 2)
- Soap
- Chlorine or bleaching powder
- Rectal swabs and transport medium (Cary Blair or TCBS) for stool samples
- **Safe water is needed to rehydrate patients and to wash clothes and instruments**

Collect data on the patients

Note carefully the following data that will help to investigate the outbreak

N°	Name	Address	Symptoms	Age (<5 or >5 years)	Sex (male M) or (female F)	Date of onset	Outcome

DON'T FORGET ...

PROTECT YOURSELF FROM CONTAMINATION

- **Wash your hands with soap before and after taking care of the patient**
- **Cut your nails**

ISOLATE CHOLERA PATIENTS

- **Stools, vomit and soiled clothes of patients are highly contagious**
- **Latrines and patients' buckets need to be washed and disinfected with chlorine**
- **Cholera patients have to be in a special ward, isolated from other patients**

CONTINUOUS PROVISION OF NUTRITIOUS FOOD is important for all patients, especially for those with shigella dysentery

- **Provide frequent small meals with familiar foods during the first two days rather than infrequent large meals**
- **Provide food as soon as the patient is able to take it**
- **Breastfeeding of infants and young children should continue**

For more information, see the cholera web site
http://www.who.int/healthtopics/cholera

Protect the community

HOW TO PROTECT THE COMMUNITY

- Isolate the severe cases
- Provide information
  - on how to avoid cholera through simple messages
  - on the outbreak
- Disinfect water sources with chlorine
- Promote water disinfection at home using chlorine
- Avoid gatherings

Stool and vomit are highly contagious

PRECAUTIONS FOR FUNERALS

- Disinfect corpses with chlorine solution (2%)
- Fill mouth and anus with cotton wool soaked with chlorine solution
- Wash hands with soap after touching the corpse
- Disinfect the clothing and bedding of the deceased by stirring them in boiling water or by drying them thoroughly in the sun

GIVE SIMPLE MESSAGES TO THE COMMUNITY

To avoid cholera and shigella

- Wash your hands with soap
  - after using toilets and latrines
  - before preparing food
  - before eating
- Boil or disinfect the water with chlorine solution
- Only eat freshly cooked food
- Do not defecate near the water sources
- Use latrines and keep them clean

In case of acute diarrhoea

- Start oral rehydration with ORS (see **Boxes 1 and 2**) before going to the health centre
- Go to the health centre as soon as possible

BOX 1. HOW TO PREPARE HOME-MADE ORS SOLUTION

- If ORS sachets are available: dilute one sachet in one litre of safe water
- Otherwise: Add to **one litre** of **safe water**:
  - **Salt** 1/2 small spoon (3.5 grams)
  - **Sugar** 4 big spoons (40 grams)

And try to compensate for loss of potassium
(for example, eat bananas or drink green coconut water)

WHO • GLOBAL TASK FORCE ON CHOLERA CONTROL

Treat the patients

Summary of the treatment

A. Rehydrate with ORS or IV solution depending on the severity
B. Maintain hydration and monitor frequently the hydration status
C. Give antibiotics for severe cholera cases and for shigella cases

80% of the cases can be treated using only Oral Rehydration Salt (ORS)

A. Rehydrate depending on severity

Is the patient dehydrated?

- The patient is losing a lot of fluids because of diarrhoea and vomiting.
- Does he have two or more of the following signs? The lack of water in his body results in:
  - — sunken eyes
  - — absence of tears
  - — dry mouth and tongue
  - — the patient is thirsty and drinks eagerly
  - — the skin pinch goes back slowly

If NO THEN

There is NO dehydration: Give Oral Rehydration Salt (Box 2)

BOX 2. THERE IS NO SIGN OF DEHYDRATION

When there is NO sign of dehydration: give ORS solution (see Box 1) after each stool

- **Child less than 2 years old:** 50–100 ml (1/4–1/2 cup) ORS solution. Up to approximately 1/2 litre a day.
- **Child between 2 and 9 years old:** 100–200 ml. Up to approximately 1 litre a day.
- **Patient of 10 years of age or more** as much as wanted, up to approximately 2 litres a day.

If YES, check if the dehydration is very severe

Is the dehydration very severe?

When dehydration is very severe in addition to the above mentioned signs:

- The patient is lethargic, unconscious or floppy
- He is unable to drink
- His radial pulse is weak
- The skin pinch goes back very slowly

If NO THEN

There is some dehydration:

- Give Oral Rehydration Salt in the amount recommended in **Box 3**
- Nasogastric tubes can be used for rehydration when ORS solution increases vomiting and nausea or when the patient cannot drink
- Monitor the patient frequently

BOX 3. THERE IS SOME SIGN OF DEHYDRATION

Approximate amount of ORS solution to give in the first 4 hours

Age	Less than 4 months	4–11 months	12–23 months	2–4 years	5–14 years	15 years or older
Weight	Less than 5 kg	5–7.9 kg	8–10.9 kg	11–15.9 kg	16–29.9 kg	30 kg or more
ORS solution in ml	200–400	400–600	600–800	800–1200	1200–2200	2200–4000

If YES THEN

There is severe dehydration

- Put an IV drip to start intravenous rehydration
- In case this is not possible, rehydrate with ORS
- In any case, refer the patient to the higher level and rehydrate as shown in **Box 4**

BOX 4. THERE IS SEVERE DEHYDRATION

Give IV drips of Ringer Lactate or if not available cholera saline (or normal saline)

- 100 ml/kg in three-hour period (in 6 hours for children aged less than 1 year)
- Start rapidly (30ml/kg within 30 min) and then slow down.

Total amount per day: 200 ml/kg during the first 24 hours

B. Maintain hydration and monitor the patient

Reassess the patient for signs of dehydration regularly during the first six hours:

- Number and quantity of stools and vomit in order to compensate for the loss of body fluids
- Radial pulse: if it remains weak, IV rehydration has to be continued.

C. Give antibiotics if needed

When is it useful to give antibiotics?

- **For cholera cases with severe dehydration only.**
- **Ideally for all of *Shigella dysenteriae* cases, but as a priority for the most vulnerable patients: children under five, elderly, malnourished, patients with convulsions.**

TABLE 2. WHICH ANTIBIOTICS CAN BE GIVEN?

Cholera

Doxycycline single dose	300 mg		
or tetracycline	12.5 mg/kg	4 times a day	for 3 days
Young children: erythromycin liquid	12.5 mg/kg	4 times a day	for 3 days

Note: There is increasing resistance to doxycycline, tetracycline and TMP-SMX.

Shigella

Adults: ciprofloxacin	500 mg	twice a day	for 3 days
Children: ciprofloxacin	250 mg/15kg	twice a day	for 3 days
For children below 6 months of age: add zinc	10 mg	daily	for 2 weeks
For children 6 months to 3 years of age: add zinc	20 mg	daily	for 2 weeks

Note: Rapidly evolving antimicrobial resistance is a real problem.
Shigella is usually resistant to ampicillin and TMP-SMX.

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Appendix 2[xx]

Recipe #1 for oral rehydration solution

Mix an oral rehydration solution using one of the following recipes; depending on ingredients and container availability:

Ingredients:

- one level teaspoon of salt
- eight level teaspoons of sugar
- one litre of clean drinking or boiled water and then cooled

Stir the mixture till the salt and sugar dissolve.

Be sure to measure accurately because incorrect amounts can make the solution less effective or even harmful.

Recipe #2 for oral rehydration solution

You can prepare your own rehydrating solution in an emergency by mixing together:

- 1/2 teaspoon salt
- 1/2 teaspoon baking soda
- 2 tablespoons sugar or rice powder
- 1/4 teaspoon potassium chloride (salt substitute)
- 1 liter safe drinking water

Case Definition and Treatment Guidelines

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Appendix 3: Severe Acute Malnutrition

A BRIEFING FOR DOCTORS AND NURSES
The Children's Nutrition Program of Haiti

Medical practice for the management of Severe Acute Malnutrition has dramatically changed in the last 20 years. This affects all aspects, from diagnosis to treatment, and includes a more profound understanding of its pathophysiology, the mechanisms of development of complications (natural and iatrogenic) and even its name.

Severe Acute Malnutrition used to be referred to in medical books as "Protein Energy Malnutrition (PEM)". This name implied that malnutrition was deficiency of protein or energy and, as for other specific deficiencies, suggested that treatment should consist on proteins or energy. Usually textbooks went on to say that Marasmus (extreme thinness) was due to lack of energy, and Kwashiorkor (oedematous malnutrition) to lack of proteins. This has been now proved incorrect and even dangerous.

Since there is little activity around this condition in western countries, some medical textbooks keep referring to it in the old – out-dated – way, maintaining old concepts and treatment. These treatments are associated with a mortality of more than 50 %. Modern treatment of malnutrition can reach mortality rates as low as 1 to 3 percent.

Here are some misconceptions that need to be eradicated:

- Marasmus is lack of energy: It can be true, but it can be due as well to lack of other essential micronutrients needed for growth and tissue renovation (the sort of nutrients that are present in every cell). Marasmus can happen with excess energy if no nutrients are taken.
- Kwashiorkor is lack of protein: The oedema of malnutrition is not due to osmotic causes, as has been long thought. In fact, it is due to membrane leaking, after damage produced by free radicals. These are in turn the consequence of an external noxa (usually infection) and specific deficiencies of antioxidants (probably Selenium). Kwashiorkor can happen with protein excess in diet.
- Treatment consists in big amounts of proteins and energy: Since the metabolism of the malnourished child is slowed down, excessive proteins and energy may be deleterious. For example, the ability of the liver to detoxify proteins is very limited, and a protein-rich diet may become toxic.

In fact, the modern treatment of acute malnutrition is based on an initial treatment with low protein, low energy diet, enriched with essential micronutrients. Only after metabolic equilibrium is obtained (without weight gain) the patient can start to recover with high quantities of energy, proteins and the right balance of macro and micronutrients to promote tissue growth.
Malnutrition is usually diagnosed through anthropometry (weight-for-height, in which the weight and height of the child is compared to those of an international reference; MUAC, or other). However, the main symptom that reveals the metabolic status of the child is "lack of appetite". Patients with no appetite usually present a severe complication -visible or not- that need specialised treatment. Malnourished children without complications – and with appetite- can be treated at home.

Pathophysiology of Severe Acute Malnutrition

Severe acute malnutrition can result in profound metabolic, physiological and anatomical changes. Virtually all physiological processes are altered due to severe acute malnutrition. Every organ system is involved in reductive adaptation.

Reductive adaptation is the physiological response of the body to under nutrition i.e. systems slowing down to survive on limited macro and micro-nutrients intake. The system *reduces* activity, to *adapt* to the lack of nutrients and energy.

This results in profound **physiological and metabolic changes**, some of which can be observed by the clinician, and other which are not. The initial reductions will not alter normal function of the body BUT will affect its capacity to adapt to any other new situation (an infection, cold, or even to an IV infusion or excessive oral liquids). For example, the circulatory system may be still working correctly, with no signs or symptoms of presence of a problem... BUT it may not be able to adapt to a sudden increase of circulatory volume (after an infusion or a transfusion, for example). Since the adaptive mechanisms to increased volume cannot be mobilised, a simple infusion may result in cardiac overload and lethal pulmonary oedema. Similar situations occur with: digestive system, and the amount of proteins and other nutrients that can be absorbed in one meal; immune system, and its ability to respond to infection; liver ability to detoxify and kidney ability to excrete, etc.

Children with malnutrition do not show usual symptoms and signs:

In addition, some of the changes mentioned result in unusual signs and symptoms. For example, a child with severe acute malnutrition may not be able to present fever in face of an infection. In fact, very often the infection will present with hypothermia! You can see other examples in the following page.

Usual life-saving actions may be dangerous in the malnourished child!!!!

These are the reasons why it is so important to follow standard protocols for the treatment of severe acute malnutrition and its complications (like this one). The changes in metabolic and physiological responses in the malnourished child are so important that therapeutic decisions that are live-saving in a well-nourished child can be potentially mortal in the malnourished child.

The following page presents some of the main alterations in each of the body systems. Knowing them can help understand the evolution and therapy of severe acute malnutrition and its complications.

Cardiovascular system:

- Cardiac output and stroke volume are reduced.
- Infusion of saline may cause an increase in venous pressure.
- Any increase in blood volume can easily produce acute heart failure.
- Any decrease will further compromise tissue perfusion.
- Blood pressure is low.
- Renal perfusion and circulation time are reduced.
- Plasma volume is usually normal and red cell volume is reduced.

Gastro-intestinal system

- Production of gastric acid is reduced.
- Intestinal motility is reduced.
- Pancreas is atrophied and production of digestive enzymes is reduced.
- Small intestinal mucosa is atrophied; secretion of digestive enzymes is reduced.
- Absorption of nutrients is reduced.

Liver function

- Synthesis of all proteins is reduced.
- Abnormal metabolites of amino acids are produced.
- Capacity of liver to take up, metabolize and excrete toxins is severely reduced.
- Energy production from galactose and fructose is much slower than normal.
- Gluconeogenesis is reduced, with high risk of hypoglycaemia during infection.
- Bile secretion is reduced.

Genitourinary system

- Glomerular filtration is reduced.
- Capacity of kidney to excrete excess acid or a water load is greatly reduced.
- Urinary phosphate output is low.
- Sodium excretion is reduced.
- Urinary tract infection is common.

Immune system

• All aspects of immunity are diminished.

• Lymph glands, tonsils and thymus are atrophied Cell-mediated immunity is severely depressed.

• Ig-A levels in secretions are reduced.

• Complement components are low.

• Phagocytes do not kill ingested bacteria efficiently.

• Tissue damage does not result in inflammation or migration of white cells to the affected area.

• Acute phase immune response is diminished.

• Typical signs of infection, such as an increased white cell count and fever, are frequently absent.

• Hypoglycaemia and hypothermia are signs of severe infection usually associated with septic shock

Endocrine system

• Insulin levels are reduced and the child has glucose intolerance.

• Insulin growth factor 1 (IGF-1) levels are reduced.

• Growth hormone levels are increased.

• Cortisol levels are usually increased.

Circulatory system

• Basic metabolic rate is reduced by about 30%.

• Energy expenditure due to activity is very low.

• Both heat generation and heat loss are impaired.

• The child becomes hypothermic in a cold environment and hyperthermic in a hot environment.

Taking the child's medical history and conducting the physical examination. Check list.

Medical history:

1. Usual diet before current episode of illness,
2. Breastfeeding history,
3. Food and fluids taken in the past few days,
4. Recent sinking of eyes,
5. Duration and frequency of vomiting or diarrhoea, appearance of vomit or diarrhoeal stools,
6. Time when urine was last passed,
7. Contact with people with measles or tuberculosis,
8. Any deaths of siblings,
9. Birth weight,
10. Milestones reached (sitting up, standing, etc.)

11. Immunisations.

Physical examination:

1. Weight and length or height,
2. Oedema,
3. Appetite: anorexia,
4. Enlargement or tenderness of the liver, jaundice,
5. Abdominal distension, bowel sounds, “abdominal splash” (a splashing sound in the abdomen),
6. Severe pallor,
7. Signs of circulatory collapse: cold hands and feet, weak radial pulse, diminished consciousness,
8. Temperature: hypothermia or fever,
9. Thirst,
10. Eyes: corneal lesions indicative of Vitamin A deficiency,
11. Ears, mouth, throat: evidence of infection,
12. Skin: evidence of infection or purpura,
13. Respiratory rate and type of respiration: signs of pneumonia or heart failure,
14. Appearance of faeces.

WARNING: NEVER DO ANY OF THE FOLLOWING:

- Never give diuretics against malnutrition oedema. The oedema is partially due to potassium and magnesium deficiency that can easily recover in two weeks. Oedema disappears with appropriate feeding adding a micronutrient solution. Giving diuretics would aggravate the electrolyte imbalance and would risk death.
- Do not give Iron in the first days of treatment (until Phase 2 or Rehabilitation phase). It risks having toxic effects and reduces defense against infections.
- Do not give preparations rich in proteins (more than 1.5 g of protein per kg/day). Any excess in the first days can be dangerous, because the severely malnourished child is not able to assume the metabolic effort needed to deal with them. An excess of proteins can overload the liver, the heart and kidneys and provoke death.
- Do not give liquids in perfusion (IV fluids). In the child with severe malnutrition liquids in perfusion can easily produce cardiac overload. These are only given when there is a diagnosis of septic shock.
- Do not give blood transfusion. Most anaemia in malnourished children under treatment is in fact an hemo-dilution, due to the return to the blood stream of liquid accumulated as oedema, or retained in cells (marasmus). This is resolved in less than 2 – 4 days. Wrong treatment with transfusion often results in cardiac overload and death from pulmonary oedema.

Some references for those who would like to know more:

Most manuals are not up to date in treatment of malnutrition. Here are some that are:

Oxford Handbook of Tropical Medicine. 3rd Edition. All should read page 64 and following. Actually, a great bedside reference for medicine in the tropics (not just a parasitology manual).

- http://www.oup.com/us/catalog/general/subject/Medicine/ImmunologyInfectiousDisease/?view=usa&ci=9780199204090#Features

WHO protocols for treatment of Severe Acute Malnutrition.

- www.who.int/nutrition/publications/malnutrition/en/

Malnutrition and HIV/AIDS:

- Several documents can be found here: www.fantaproject.org/focus/hiv_aids.shtml
- And here: www.unsystem.org/scn/
- Look nutrition and HIV on the left side of the screen to acced the material by main subject

Physiopathology and treatment of severe malnutrition:

- And here is a brief paper on the physiopatology of severe acute malnutrition, that is free access on the web. **Ashworth, A. 2001, 'Treatment of severe malnutrition',** J Pediatr Gastroenterol Nutr, vol. 32, no. 5, pp. 516-8. (www.jpgn.org).

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Appendix 5: The PHQ-2

If score is 3 of greater, go on to PHQ-9…

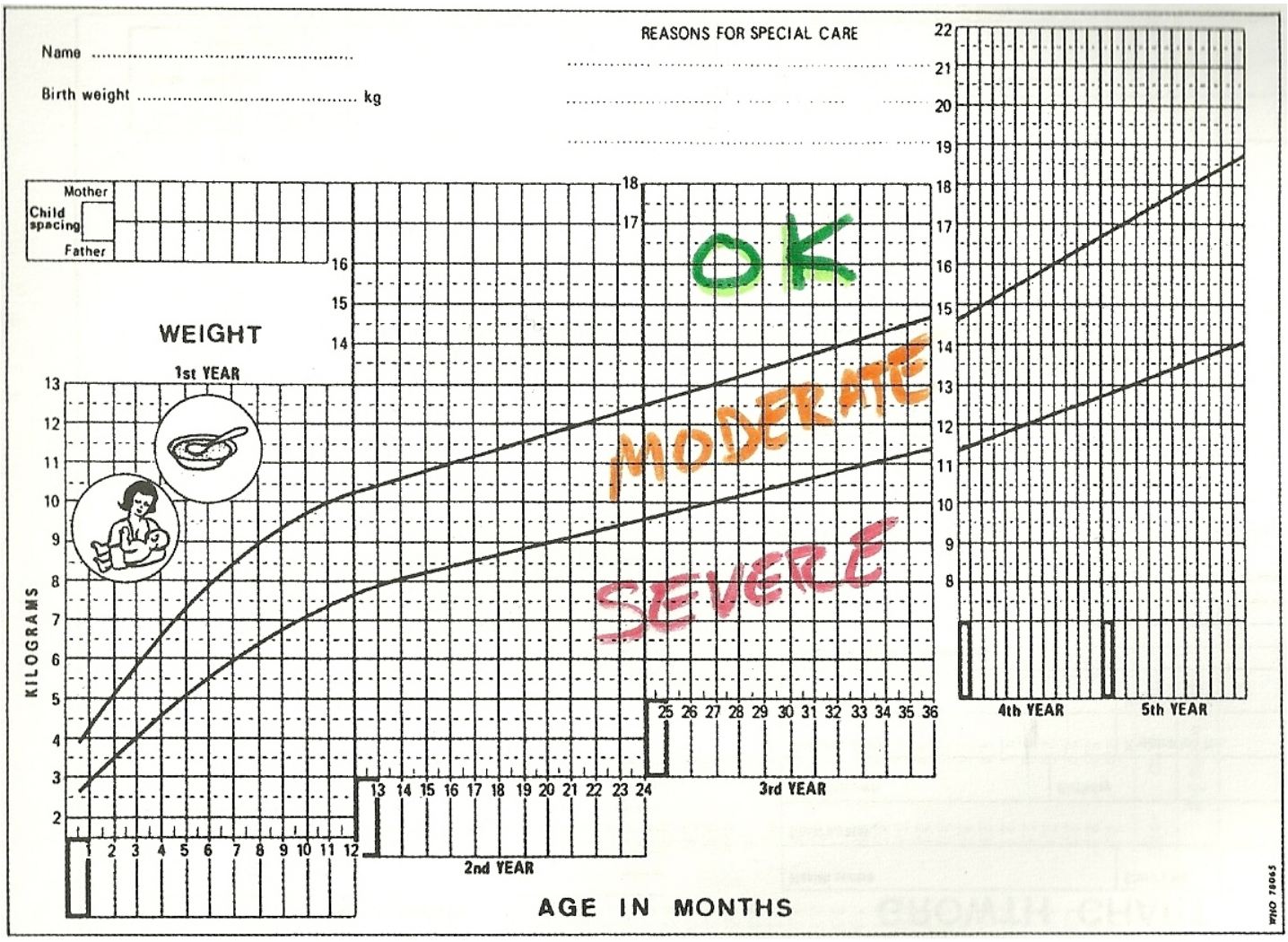
STABLE RESOURCE TOOLKIT

The Patient Health Questionnaire-2 (PHQ-2)

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not At all	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3

If score is 10 or more, start Fluoxetine 20 mg daily



Appendix 6: Helpful Kreole Phrases

Bon jou- good morning

Bon swa- good afternoon/good evening

Como ou ye?- How are you?

Pa pi mal- not too bad

M'ap boule- I'm on fire

Mwe rele_____ - My name is_____

Non pam se_____- I am called_____

Mwe kontan wayo- I'm pleased to meet you

Chita la- Sit here

Sorgen?- What's wrong?

Ki pwoblem ou geyen?- what problem do you have?

Ki pwoblem li geyen?- what problem does he/she have?

Ou- you

Li-him/her

Sa- that

Femal- pain

Tet- head

Vant- stomach (ie- tet femal= headache, vant femal= stomach pain)

Vomi- vomiting

Djirae- diarrhea

Anpil- a lot

Anpil plus- a whole lot

Combien? – how much,

Fwa- time (ie- Combien fwa?- how many times? Combien sa?- how much is that?)

Mesi- Thanks. Mesi anpil- Thanks a lot

Yon lot fwa anko- See you next time

Na wa pita- See you later

[i] glibenclamide is also listed as a WHO essential drug, however due to the risk of hypoglycemia and hepatic problems we do not recommend its use in patients who cannot be monitored

[ii] The 5 minute pediatric consult, second edition, Schwarts, MW, et. al., Lippincott, Williams, and Wilkins, Philadelphia, 2000

[iii] Harriet Lane

[iv] American Academy of pediatrics, committee on infectious disease, red book, 2009

[v] World Health Organization global task force on cholera control, http://www.who.int/topics/cholera/publications/en/first_steps.pdf

[vi] Ongoing research, contact Chris Buresh, Christopher-buresh@uiowa.edu, for data and further information.

[vii] consensus opinion only, would welcome comments

[viii] Ables, AZ, Simon, DI, Melton, ER, "Update on Helicobacter pylori Treatment", *Am Fam Prac*,75(3), Feb, 2007, http://www.aafp.org/afp/2007/0201/p351.html

[ix] 2003 world health organization/international Society of hypertension statement on management of hypertension http://www.who.int/cardiovascular_diseases/guidelines/hypertension_guidelines.pdf

[x] the use of ACE inhibitors deserves careful consideration, as a chronic cough in Haiti may be assumed to be tuberculosis.

[xi] Palmer, Dennis, Wolf, Catherine, handbook of medicine and developing countries, second edition, Christian medical and dental Association, 2002

[xii] Meds and Food for Kids Treatment Protocols available at: https://sites.google.com/site/mfkdocsexternal/Home/malnutrition-protocols

[xiii] WHO and UNICEF, WHO Growth Standards and the Identification of Infants and Children With Severe Acute Malntrition, 2009, available at: http://www.who.int/nutrition/publications/severemalnutrition/9789241598163_eng.pdf

[xiv] The Harriet Lane Handbook, The John Hopkins Hospital, 16th ed., Mosby, Inc., 2000

[xv] Blanot S, Boumalia C, Berche P., "Intracerebral activity of antibiotics against *Listeria monocytogenes* during experimental rhombencephalitis", *Journal of Antimicrobial Therapy*, 1999, 44 (4), http://jac.oxfordjournals.org/content/44/4/565.full

[xvi] The Harriet Lane Handbook, The John Hopkins Hospital, 16th ed., Mosby, Inc., 2000

[xvii] WHO Recommedations for Prevention and Treatment of Pre-eclampsia and Eclampsia, 2011: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9789241548335/en/index.html

[xviii] American Academy of Family Practitioners, www.aafp.org

[xix] Kaiser Family Foundation, US Global Health Policy, New TB cases per 100,000 population, www.globalhealtfacts.org/topic.jsp?i=14, accessed 11/16/10

[xx] Personal communication, bonnie elam, the Haiti connection, 11/9/10