

Solve These Emergency Cases!!

Nicholas Comninellis MD, MPH, DIMPH

President & Professor

Institute for International Medicine

www.inmed.us

**CAN YOU
SOLVE THIS
CASE OF
RESPIRATORY
DISTRESS?**



HISTORY



Five-year old male in southern Africa with five days of severe cough and rapid breathing. For three months he also has weight loss and intermittent diarrhea.

WHAT ARE YOUR QUESTIONS ABOUT THE HISTORY?



PHYSICAL EXAM



Child is alert and coughing frequently. Temperature is 38 degrees, pulse 100, respirations 30 and labored, capillary refill 2 seconds.

WHAT ARE YOUR QUESTIONS ABOUT THE PHYSICAL EXAM?



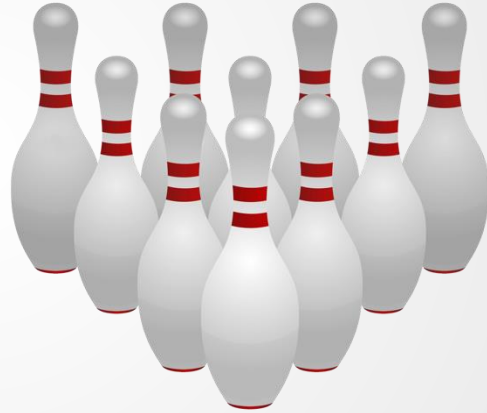
WHAT IS YOUR DIFFERENTIAL DIAGNOSIS?



ACUTE PEDIATRIC RESPIRATORY INFECTION

Consider:

- Pneumonia
- Bronchitis
- Influenza
- Tuberculosis
- Pneumocystis pneumonia (PCP)



HOW CAN YOU NARROW THIS DIFFERENTIAL?

Consider:

- Pneumonia
- Bronchitis
- Influenza
- Tuberculosis
- Pneumocystis pneumonia (PCP)

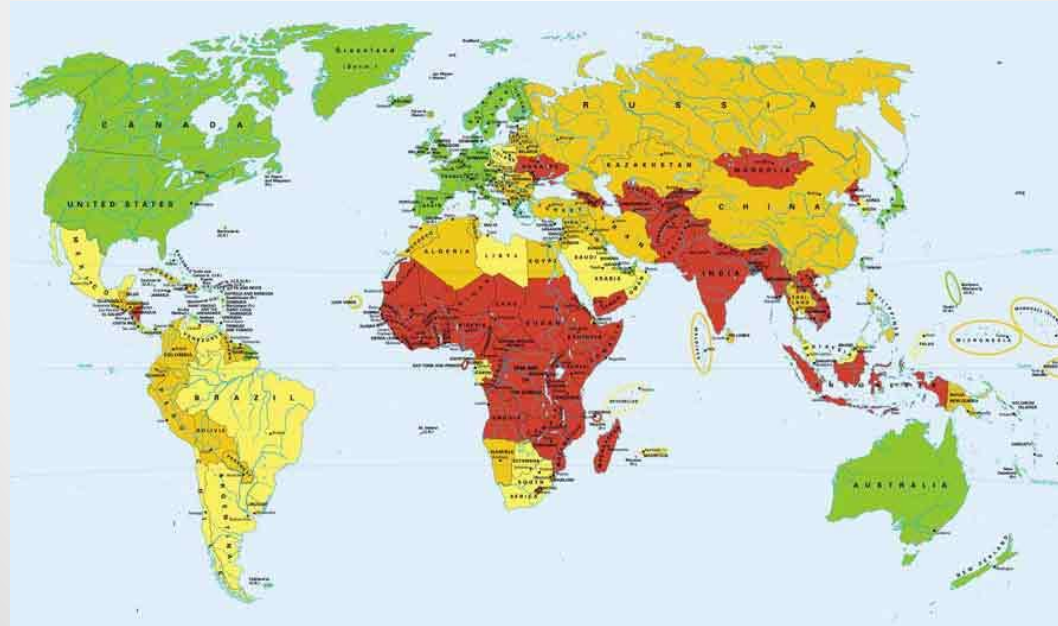


FIRST CONSIDER GEOGRAPHY & EPIDEMIOLOGY



*Note: Many developing nations do not
have reliable health statistics*

WHAT IS THE LEADING CAUSE OF LIFE YEARS LOST IN DEVELOPING NATIONS?



LEADING CAUSES OF DEATH – DEVELOPING NATIONS

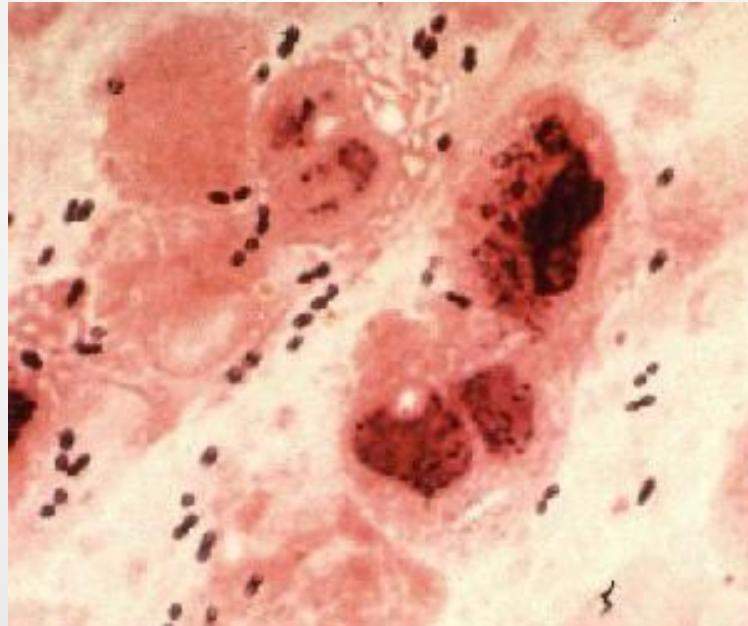
Disease or Injury	Percentage of Total DALYs Lost
Lower respiratory infection	9.7
Diarrheal diseases	6.9
Malaria	5.1
Preterm birth complications	5.1
HIV/AIDS	5.0
Birth asphyxia & birth injury	4.9
Congenital anomalies	3.2
Road injury	3.0
Neonatal sepsis & infections	2.7
Tuberculosis	2.5

PEDIATRIC PNEUMONIA & BRONCHITIS

Pneumonia and bronchitis are the leading cause of death for children up to age 5 years.

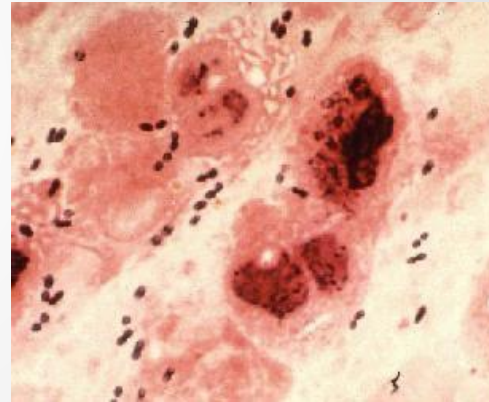


WHAT ORGANISMS CAUSE PNEUMONIA & BRONCHITIS IN DEVELOPING NATIONS?

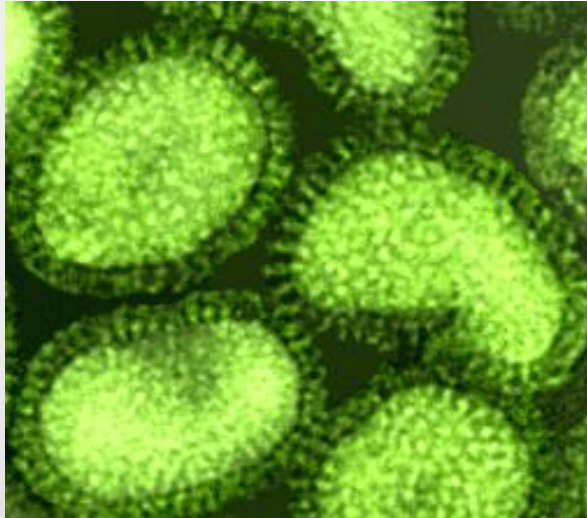


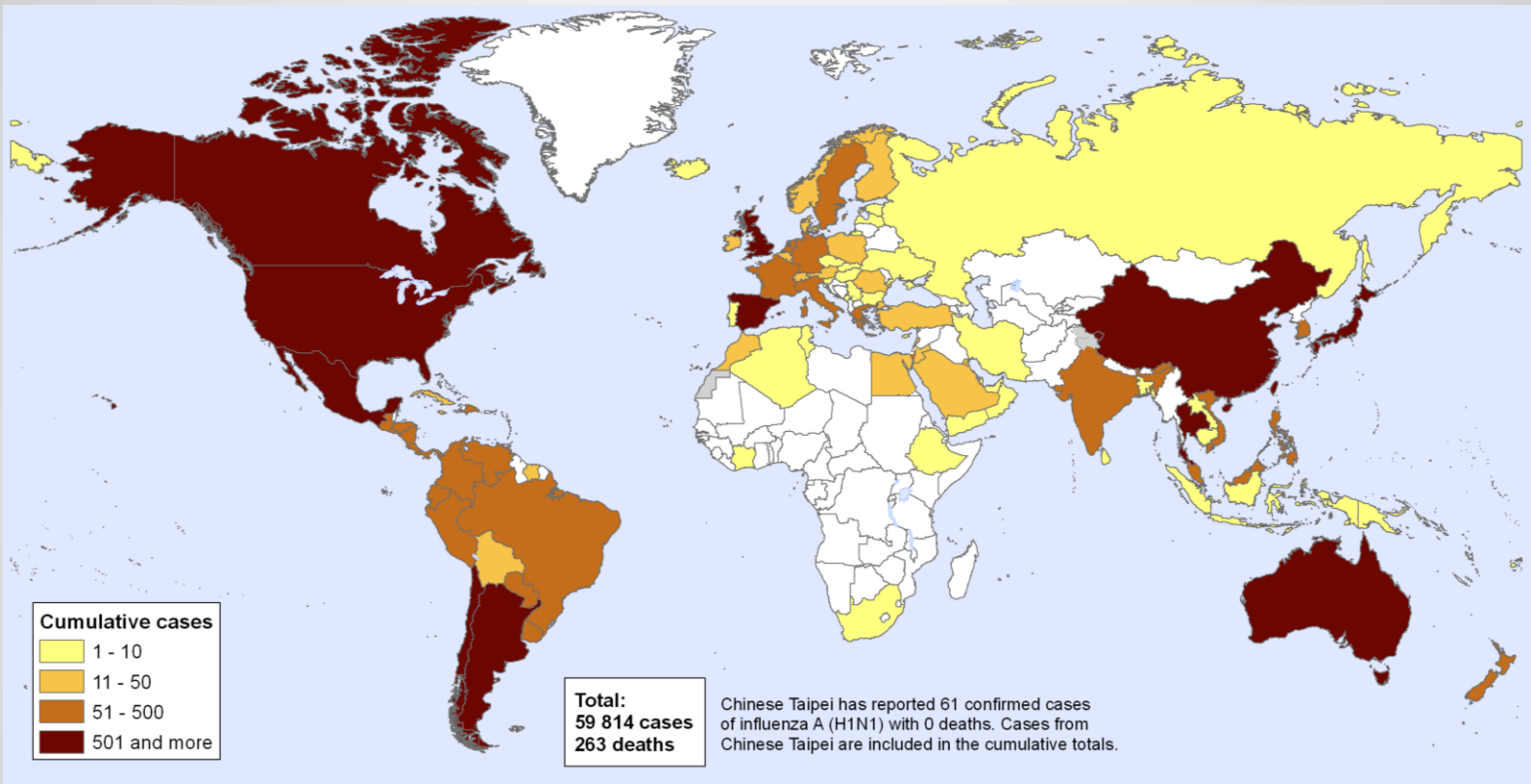
ORGANISMS CAUSING PNEUMONIA & BRONCHITIS

- Leading Bacteria:
Streptococcus pneumoniae,
Haemophilus influenzae,
Staphylococcus aureus
- Leading Viral: Influenza,
parainfluenza, respiratory
syncytial virus,
adenovirus



WHAT IS THE EPIDEMIOLOGY OF INFLUENZA?





The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities,

Data Source: World Health Organization
Map Production: Public Health Information



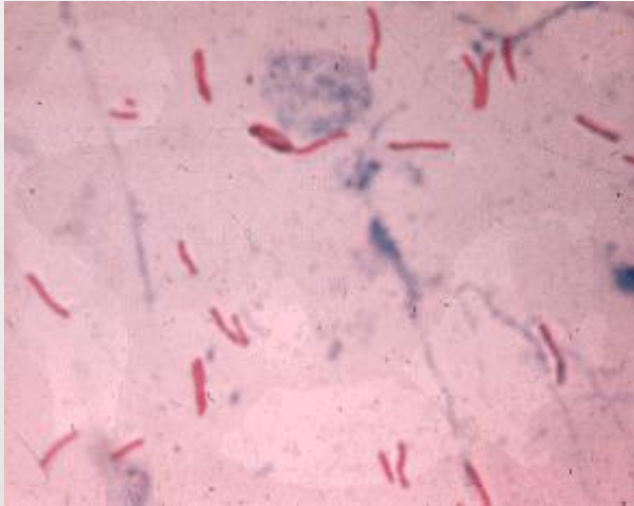
INFLUENZA

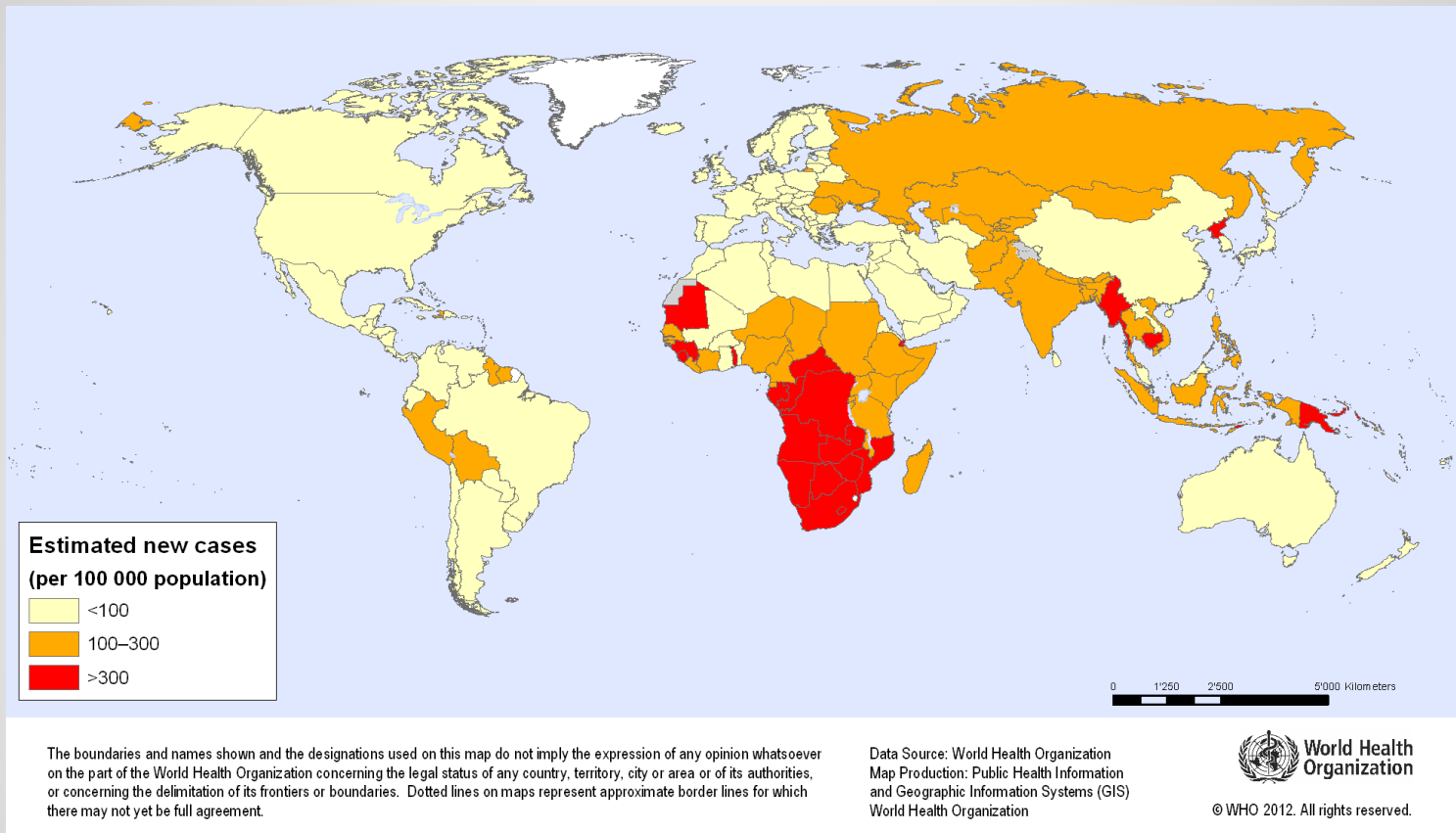
INFLUENZA PNEUMONIA

- Influenza pneumonia is a lethal complication of generalized influenza infection.
- Vaccination against influenza is critical to prevention.



WHAT IS THE EPIDEMIOLOGY OF TUBERCULOSIS?



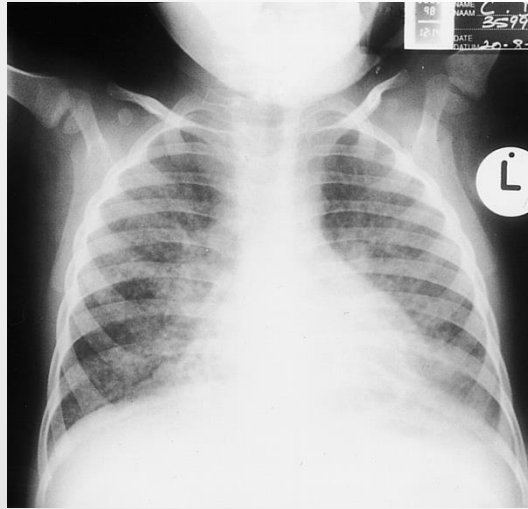


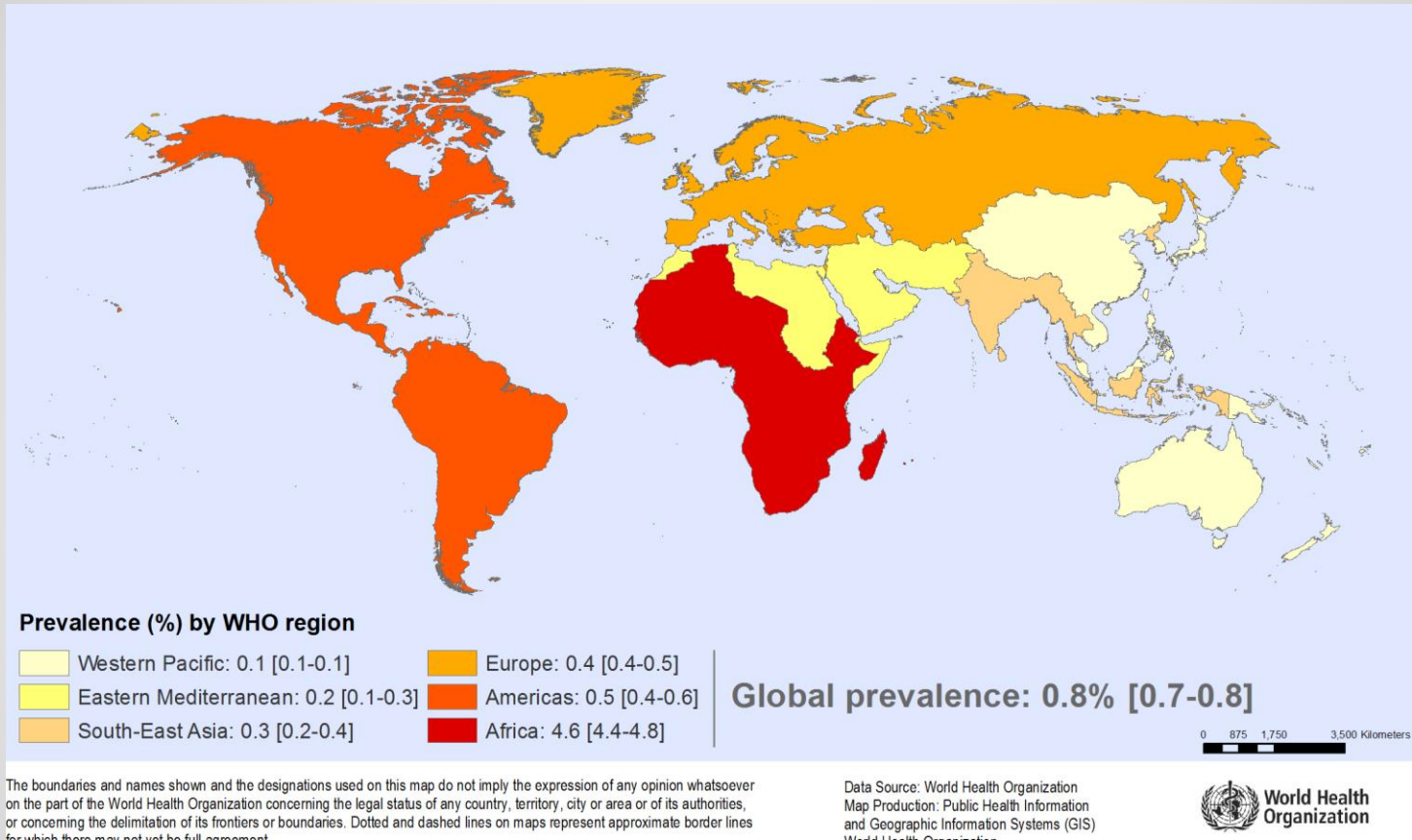
TUBERCULOSIS INCIDENCE

TUBERCULOSIS IN CHILDREN

- TB is among the top 10 causes of death among children worldwide.
- Pediatric TB is a low priority in most health programs.
- BCG vaccine is safe and protective in infants and children against TB meningitis and miliary TB.
- TB is especially virulent in HIV-positive children.

WHAT IS THE EPIDEMIOLOGY OF PNEUMOCYSTIS CARINII PNEUMONIA (PCP-PCJ)?





HIV PREVALENCE

PNEUMOCYSTIS CARINII PNEUMONIA

- A leading infection among those with immunodeficiency.
- Caused by a fungus *pneumocystis jirovecii*.
- Findings include fever, non-productive cough, shortness of breath, weight loss, night sweats, and minimal sputum.
- CXR shows diffuse pulmonary infiltrates.
- Diagnosis is by histological identification of the organism in bronchio-alveolar lavage.

HOW TO FURTHER NARROW THE DIAGNOSIS?

Consider:

- Pneumonia
- Bronchitis
- Influenza
- Tuberculosis
- Pneumocystis pneumonia (PCP)



HOW TO FURTHER NARROW THE DIAGNOSIS?

Consider:

- Pneumonia
- Bronchitis
- Influenza
- Tuberculosis
- Pneumocystis pneumonia (PCP)

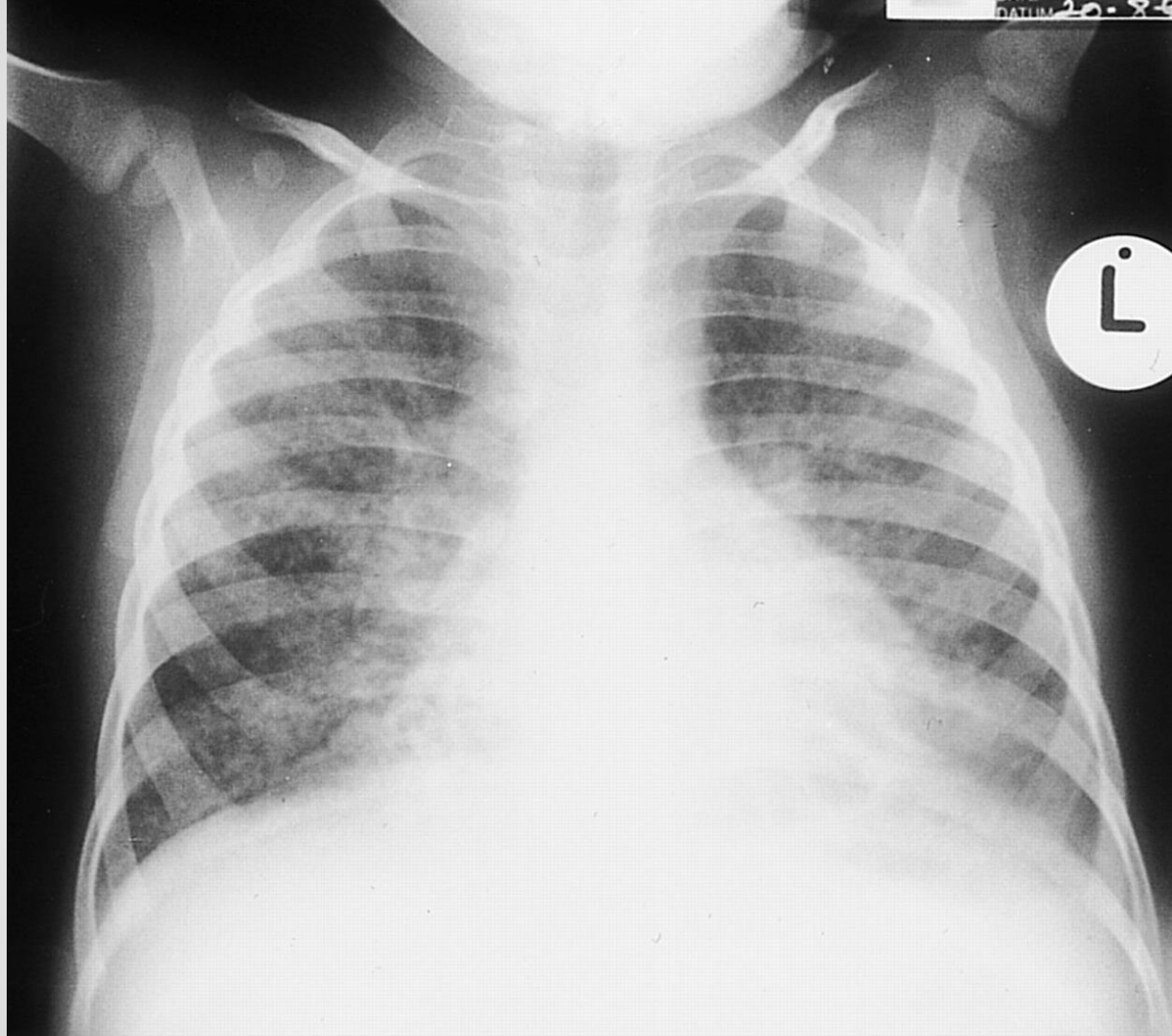


WHAT BASIC TESTS WOULD YOU RECOMMEND?

Consider:

- Pneumonia
- Bronchitis
- Influenza
- Tuberculosis
- Pneumocystis pneumonia (PCP)





R AP SUPINE

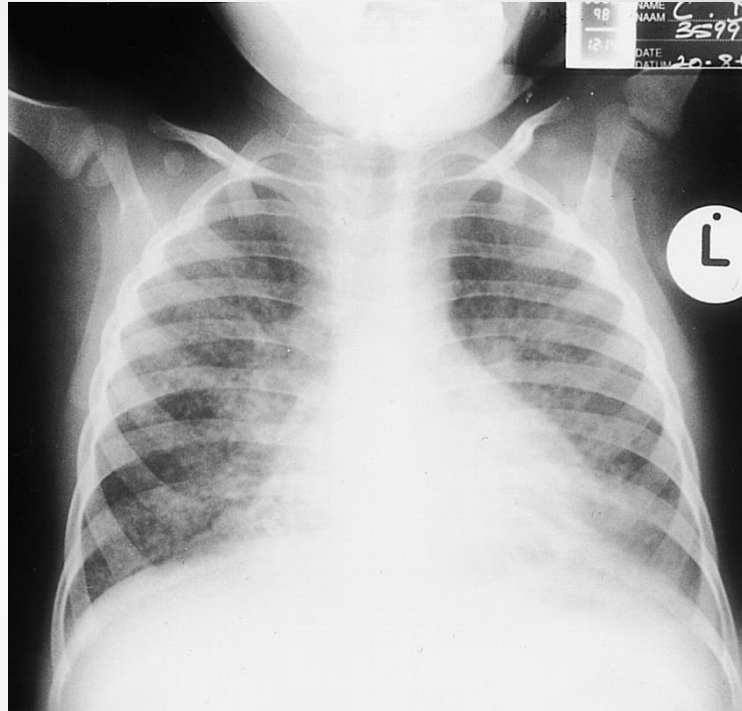


LABORATORY TESTS



- Hemoglobin 9, White blood cells 10,000, Bands 5, Polys 50, Lymph 40, Eos 5
- HIV antibody test positive
- Sputum sample is unobtainable
- PCP lab testing is not available

**WHAT DO
YOU KNOW
ABOUT
PEDIATRIC
HIV
INFECTION?**



PEDIATRIC HIV INFECTION

- 2.3 million children worldwide are living with HIV, 90% in Sub-Saharan Africa.
- During 2019 160,000 children became newly infected with HIV
- 90% of all HIV-infected children acquired the disease from their mothers during pregnancy, at birth, or through breastfeeding.

HOW TO PREVENT HIV MOTHER-TO-CHILD- TRANSMISSION?



PREVENTION OF MOTHER-TO-CHILD HIV

Without intervention, what is the risk a baby will become HIV-infected during pregnancy, at birth, or through breastfeeding?

PREVENTION OF MOTHER-TO-CHILD HIV

Without intervention:

HIV pos mother has 20% chance of passing HIV to infant in pregnancy or at delivery. 40% if she breast feeds her infant.

PREVENTION OF MOTHER-TO-CHILD HIV

- Identify and treat HIV positive mothers.
- If not identified earlier, treat mother while in labor and newborn after delivery.
- Reduces risk of newborn infect down to 2-8%.

QUESTION

Which ONE of the following statements about HIV prevention is TRUE?

- A. Orphans of AIDS victims are at no increased risk of becoming HIV infected.
- B. Barrier contraceptives are nearly 100% effective in reducing risk of acquiring HIV infection.
- C. Prophylaxis of HIV-positive pregnant women greatly lowers risk of mother-to-child transmission.
- D. Treatment of other Sexually Transmitted Infections (STIs) has no influence on the risk of acquiring HIV.
- E. Without treatment, HIV infection has a 47% fatality rate.

ANSWER

Which ONE of the following statements about HIV prevention is TRUE?

- A. Orphans of AIDS victims are at no increased risk of becoming HIV infected.
- B. Barrier contraceptives are nearly 100% effective in reducing risk of acquiring HIV infection.
- C. Prophylaxis of HIV-positive pregnant women greatly lowers risk of mother-to-child transmission.
- D. Treatment of other Sexually Transmitted Infections (STIs) has no influence on the risk of acquiring HIV.
- E. Without treatment, HIV infection has a 47% fatality rate.

WHEN TO INITIATE ART IN CHILDREN?



WHEN TO INITIATE ART IN CHILDREN?

- Infants and children: Start ART immediately upon diagnosis of HIV
- *Especially* in WHO clinical stage 3 or 4 or at onset of first opportunistic infection

HOW TO TREAT PCP IN CHILDREN?



HOW TO TREAT PCP IN CHILDREN?

- Maintain adequate oxygenation and hydration
- Benefit from corticosteroid therapy
- First line: trimethoprim-sulfamethoxazole (TMP-SMX) for 21 days
- Second line: pentamidine

QUESTION

An infant is born to an HIV positive mother, who wants to know whether her child is infected with HIV. Which ONE of the following is TRUE?

- A. A HIV antibody test make a reliable diagnosis
- B. A CD4 count of less than 25% confirms HIV.
- C. PCR testing is reliable in adults but not in children
- D. All of these
- E. None of these

ANSWER

An infant is born to an HIV positive mother, who wants to know whether her child is infected with HIV. Which ONE of the following is TRUE?

- A. A HIV antibody test make a reliable diagnosis
- B. A CD4 count of less than 25% confirms HIV.
- C. PCR testing is reliable in adults but not in children
- D. All of the above
- E. None of the above

**CAN YOU
SOLVE THIS
CASE OF
ABDOMINAL
PAIN?**



HISTORY

8-year-old African male with severe abdominal pain increasing for one day, with vomiting and subjective fever.

What are your questions about the history?





PHYSICAL EXAM

He is alert, trying not to move, BP is 92/55, pulse 125, respiration 30, temperature 38 degrees

What are your questions about the physical exam?



WHAT IS YOUR DIFFERENTIAL DIAGNOSIS?



ACUTE ABDOMINAL PAIN IN A CHILD

Consider:

- Appendicitis
- Gastroenteritis
- Acid peptic disease
- Peritonitis
- Cholecystitis
- Mesenteric lymphadenitis
- Inflammatory bowel disease



HOW CAN YOU NARROW THIS DIFFERENTIAL?

Consider:

- Appendicitis
- Gastroenteritis
- Acid peptic disease
- Peritonitis
- Cholecystitis
- Mesenteric lymphadenitis
- Inflammatory bowel disease



BASIC LABS

- Hemoglobin: 10
- White blood cells: 18,000 with bands 15%, polys 70%, lymphs 15%,
- Platelets: 240,000
- Urine SpGr 1.035, trace protein
- Negative malaria smear

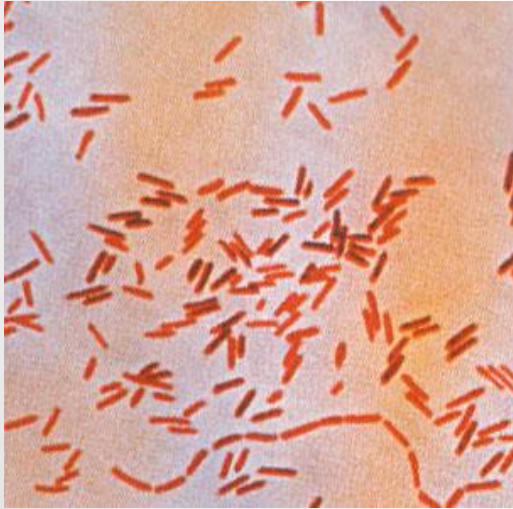


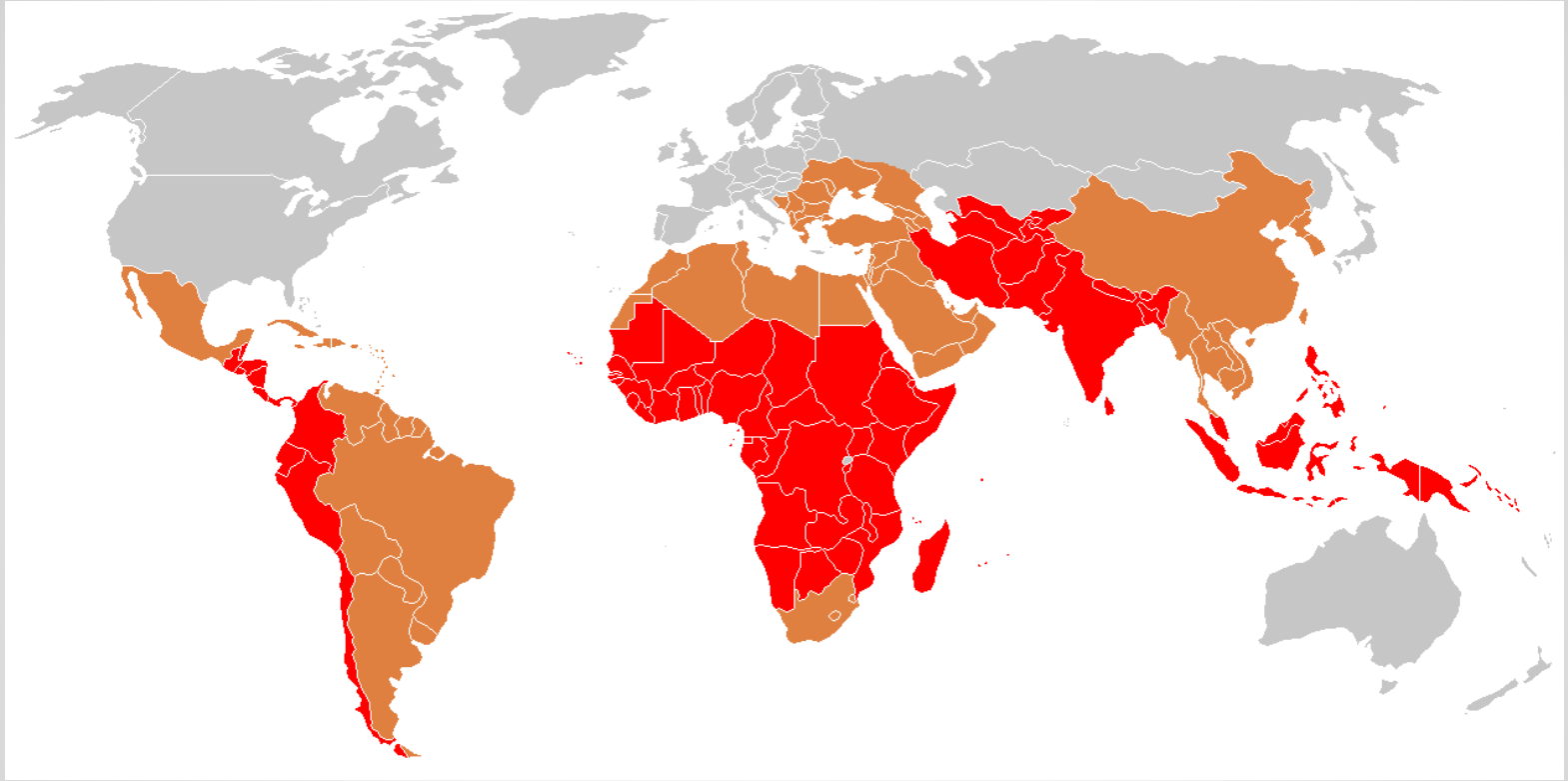






WHAT IS THE EPIDEMIOLOGY OF TYPHOID?





TYPHOID INCIDENCE

TYPHOID BACKGROUND

- An acute multisystem illness caused by *Salmonella typhi*.
- Transmitted by fecal-oral route through ingestion of contaminated food or water.
- Endemic where sanitation is poor.
- 16-30 million new cases worldwide each year, with some 216,000 deaths.
- Severely afflicts school-age children.
- Does not frequently cause diarrhea, but shares many of the risk factors associated with water-borne, diarrheal diseases

TYPHOID NATURAL HISTORY

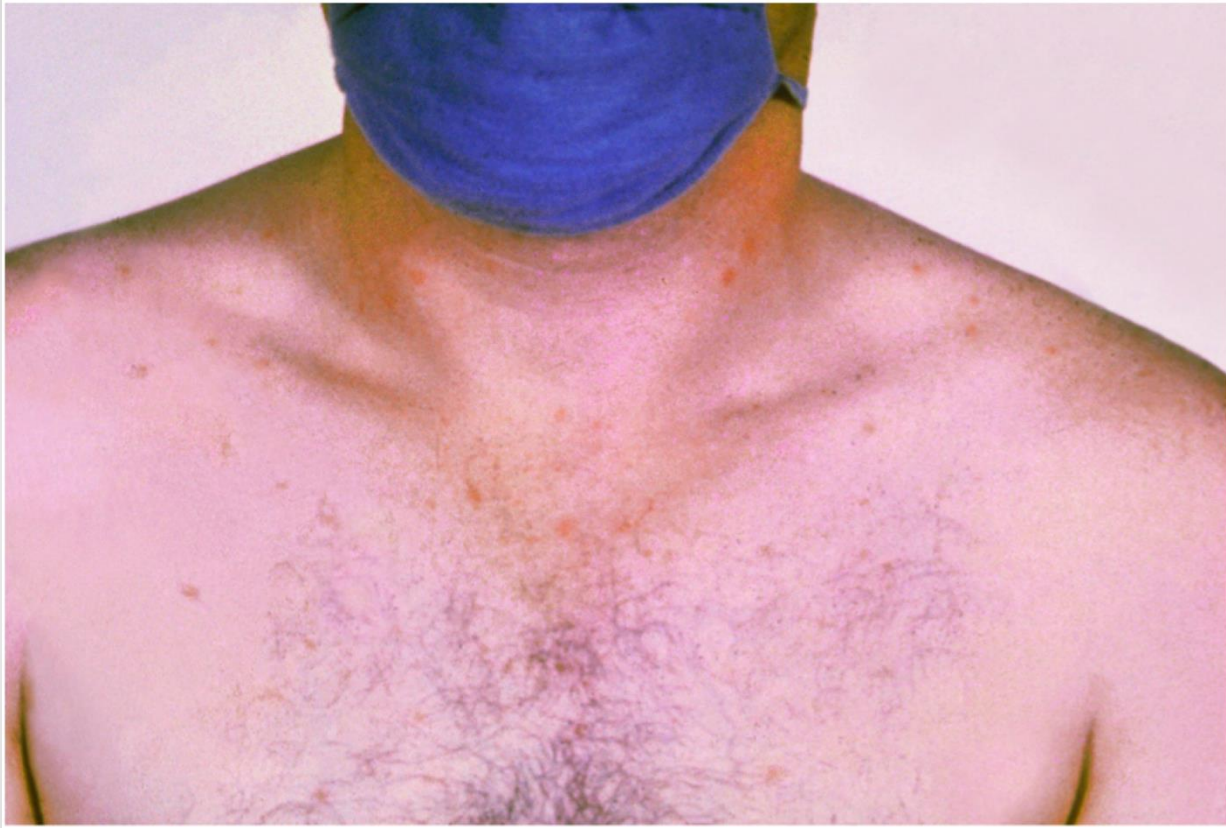
- Follow ingestion, incubation period is 7-21 days.
- Symptoms include fever, headache, fatigue, abdominal pain, diarrhea, cough, lethargy, and slow pulse.
- Untreated complications include intestinal perforation and hemorrhage, typhoid encephalopathy, meningitis, and DIC.
- Untreated mortality 12-30%.

HOW IS TYPHOID DIAGNOSED?



TYPHOID DIAGNOSIS

- Consider in high-risk persons with persistent, unexplained fever and GI symptoms.
- Physical findings may include bradycardia, cervical adenopathy, hepatosplenomegaly, and conjunctivitis.
- Differential diagnosis may include malaria, amoebiasis, viral hepatitis, mononucleosis, Shigellosis, tuberculosis, and brucellosis.

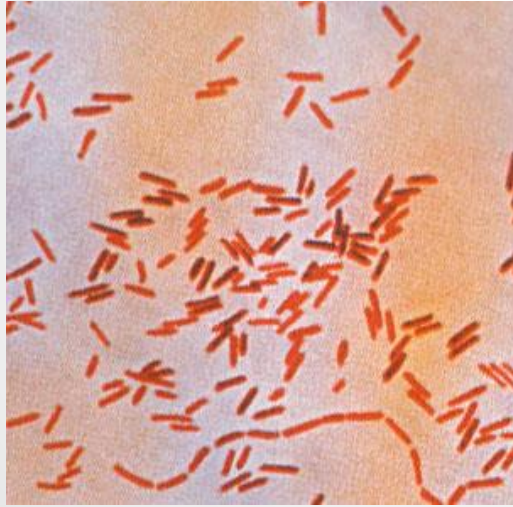


**ROSE SPOTS OF *SALMONELLA*
TYPHI INFECTION**

TYPHOID TESTS

- Nonspecific anemia, leucopenia, thrombocytopenia, and elevated liver enzymes may occur in typhoid fever.
- Blood or bone marrow culture are the most reliable tests.
- ELISA blood test for antibodies to *S typhi*.
- The Widal test, a serologic cold agglutinin test, is nonspecific, requires acute and convalescent comparison titers.

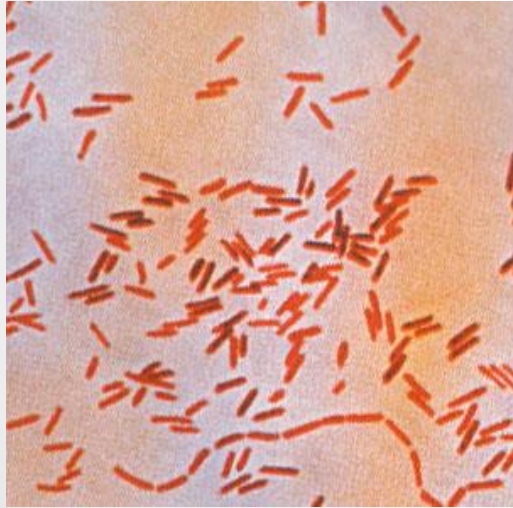
WHAT IS TREATMENT FOR TYPHOID?



TYPHOID TREATMENT

- Use enteric precautions.
- Assure adequate hydration, whether by oral rehydration solution or intravenous fluids.
- The antibiotic treatment of choice is a fluoroquinolone, third-generation cephalosporins, macrolide,
- Monitor for serious complications including intestinal perforation, endocarditis, and encephalitis resulting from hematogenous spread.

HOW CAN TYPHOID BE PREVENTED?



TYPHOID PREVENTION

- Typhoid spreads where human excrement contacts food or drinking water.
- Sanitation, safe drinking water, food hygiene, and personal hygiene are essential.
- Chlorination of drinking water has been followed by dramatic decreases in typhoid fever
- Two vaccines now available, one oral and one injectable. Both are 50-80 percent protective. Repeat dosing is recommended each five years for the oral vaccine and each two years for the injectable.

QUESTION

Typhoid fever is an acute multisystem illness. Which ONE of the following statements regarding typhoid fever is NOT true?

- A Typhoid vaccination should be considered for travelers to endemic areas.
- B Typhoid typically causes profuse diarrhea.
- C Common complications include intestinal hemorrhage and perforation.
- D Typhoid should be considered in persons who have persistent, unexplained fever and GI symptoms.
- E Typhoid is endemic in some countries where sanitation is suboptimal.

ANSWER

Typhoid fever is an acute multisystem illness. Which ONE of the following statements regarding typhoid fever is NOT true?

A Typhoid vaccination should be considered for travelers to endemic areas.

B Typhoid typically causes profuse diarrhea.

C Common complications include intestinal hemorrhage and perforation.

D Typhoid should be considered in persons who have persistent, unexplained fever and GI symptoms.

E Typhoid is endemic in some countries where sanitation is suboptimal.

**CAN YOU
SOLVE THIS
CASE OF
SEVERE
DIARRRHEA?**



HISTORY



Eight-year-old female in southeast Asia with sudden onset of frequent, high volume watery diarrhea that is clear in color, along with abdominal cramps, and fatigue.

**WHAT MORE WOULD YOU
LIKE TO KNOW ABOUT
THE HISTORY?**



PHYSICAL EXAM



She is alert and uncomfortable appearing. Temperature is 37 degrees, pulse 110, respirations 28. Chest sounds are normal. Abdomen has mild diffuse is tender without peritoneal signs. Bowel sounds are hyperactive.

**WHAT MORE
WOULD YOU LIKE
TO KNOW ABOUT
THE PHYSICAL
EXAM?**

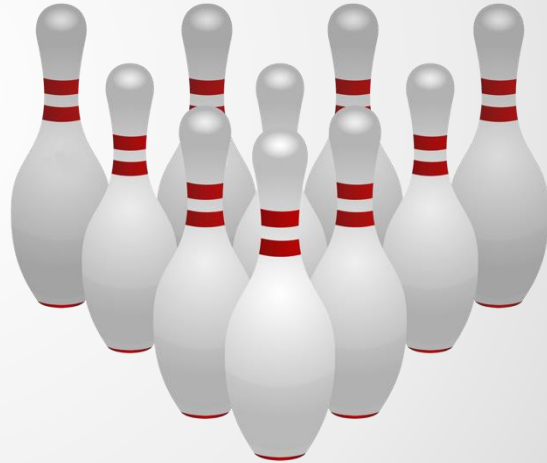


WHAT IS YOUR DIFFERENTIAL DIAGNOSIS?



SYNDROMES OF SUDDEN ONSET SEVERE DIARRRHEA

- Gastroenteritis
- Dysentery



GASTROENTERITIS

A diarrheal syndrome marked by over secretion of liquid by the gastrointestinal tract. The mucosa is noninflamed and the intestinal liquid *does not contain inflammatory cells*. This syndrome is usually self-limited.

GASTROENTERITIS FINDINGS

- Symptoms are usually mild diarrhea with minimal abdominal pain and minimal fatigue.
- Signs are usually normal vitals and unremarkable physical exam.
- Diarrhea is usually watery, without blood or pus.

GASTROENTERITIS ORGANISMS

Causative organisms include:

- Rotavirus, enterovirus, or enterotoxigenic *E. coli*
- Traveler's diarrhea, usually from enterotoxigenic *E. coli*
- *Giardia lamblia*, a protozoa.
- *Vibrio cholerae*, a bacteria.

QUESTION

While most enteric infections typically present with diarrhea, which of the following infections usually does not?

- A. Campylobacter
- B. Shigella
- C. Giardia lamblia
- D. Salmonella typhi
- E. Rotavirus

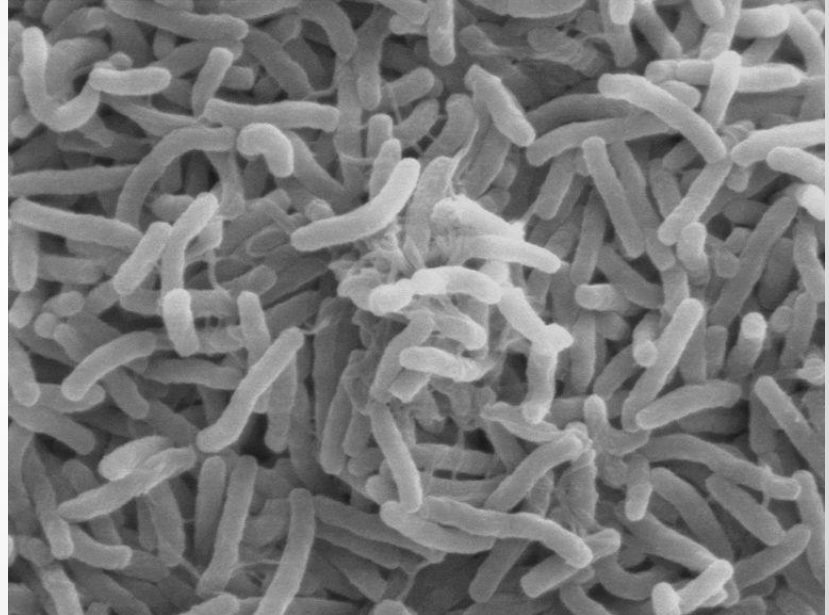
ANSWER

While most enteric infections typically present with diarrhea, which of the following infections usually does not?

- A. Campylobacter
- B. Shigella
- C. Giardia lamblia
- D. **Salmonella typhi**
- E. Rotavirus

CHOLERA

Cholera may cause severe dehydration, hypovolemic shock, and death within 24-48 hours.



CHOLERA IN HAITI



**WHAT IS THE
MANAGEMENT OF
GASTROENTERITIS?**

DYSENTERY

A diarrheal syndrome marked by overt inflammation of the intestinal mucosa, resulting in *inflammatory cells within the intestinal liquid*.

This syndrome is associated with more severe complications.

DYSENTERY FINDINGS

- Symptoms are usually more severe diarrhea with significant abdominal pain, cramps, painful defecation, and greater fatigue.
- Signs are may include fever, tachycardia, abdominal tenderness and guarding.
- Diarrhea is more likely to be bloody, foul smelling, with pus and mucus.

DYSENTERY ORGANISMS

Causative organisms include:

- *Shigella* and *Salmonella enteritidis*, both gram-negative bacilli
- *Yersinia enterocolitica*, a gram-negative, anaerobic bacteria
- *Campylobacter jejuni*, gram-negative bacilli
- Hemorrhagic *E. coli* (O157), gram-negative rod causing invasion of intestinal mucosa.

QUESTION

Each of the following organisms cause dysentery, EXCEPT which ONE?

- A. *Salmonella enteritidis*
- B. *Yersinia enterocolitica*
- C. Enterotoxigenic *E. coli* (ETEC)
- D. *Campylobacter jejuni*
- E. *Shigella*

ANSWER

Each of the following organisms cause dysentery, EXCEPT which ONE?

- A. *Salmonella enteritidis*
- B. *Yersinia enterocolitica*
- C. Enterotoxigenic *E. coli* (ETEC)
- D. *Campylobacter jejuni*
- E. *Shigella*

WHAT IS THE MANAGEMENT OF DYSENTERY?

DYSENTERY MANAGEMENT

- Clinical monitoring
- Maintenance of hydration
- Symptomatic treatment
- Antimotility drugs with caution
- Antibiotic for severe disease:
ciprofloxacin (E. coli, shigella),
metronidazole (C. dif, giardia),
azithromycin (E. coli, salmonella)
- Chronic dysentery should prompt search for other causes (Crohns, giardiasis, etc)

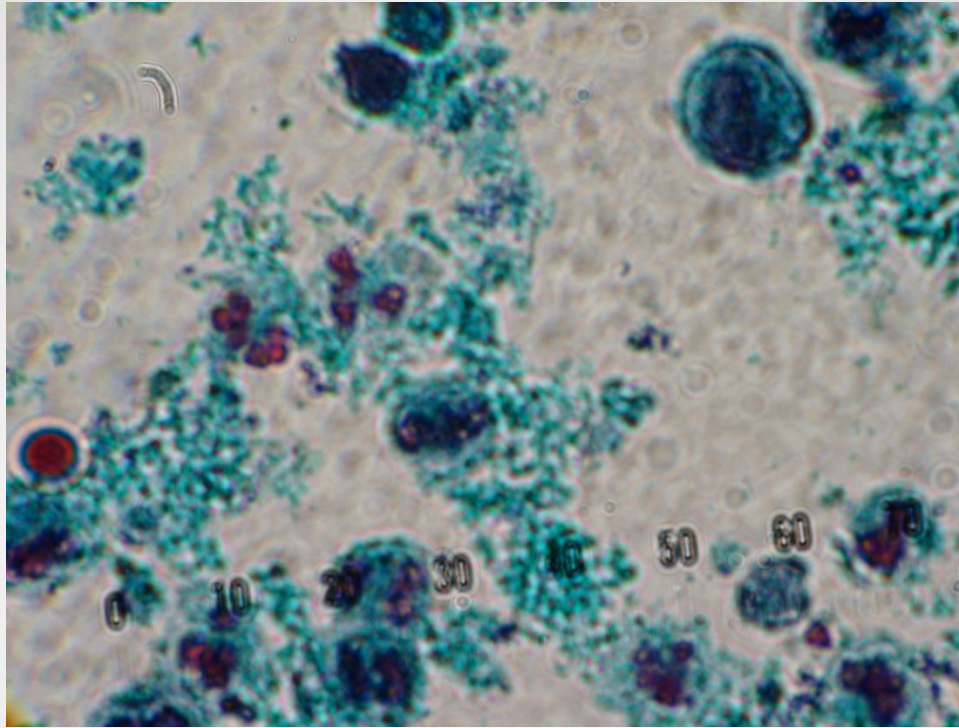
**WHAT SIMPLE
LAB TESTS
CAN NARROW
THE
POTENTIAL
CAUSES?**



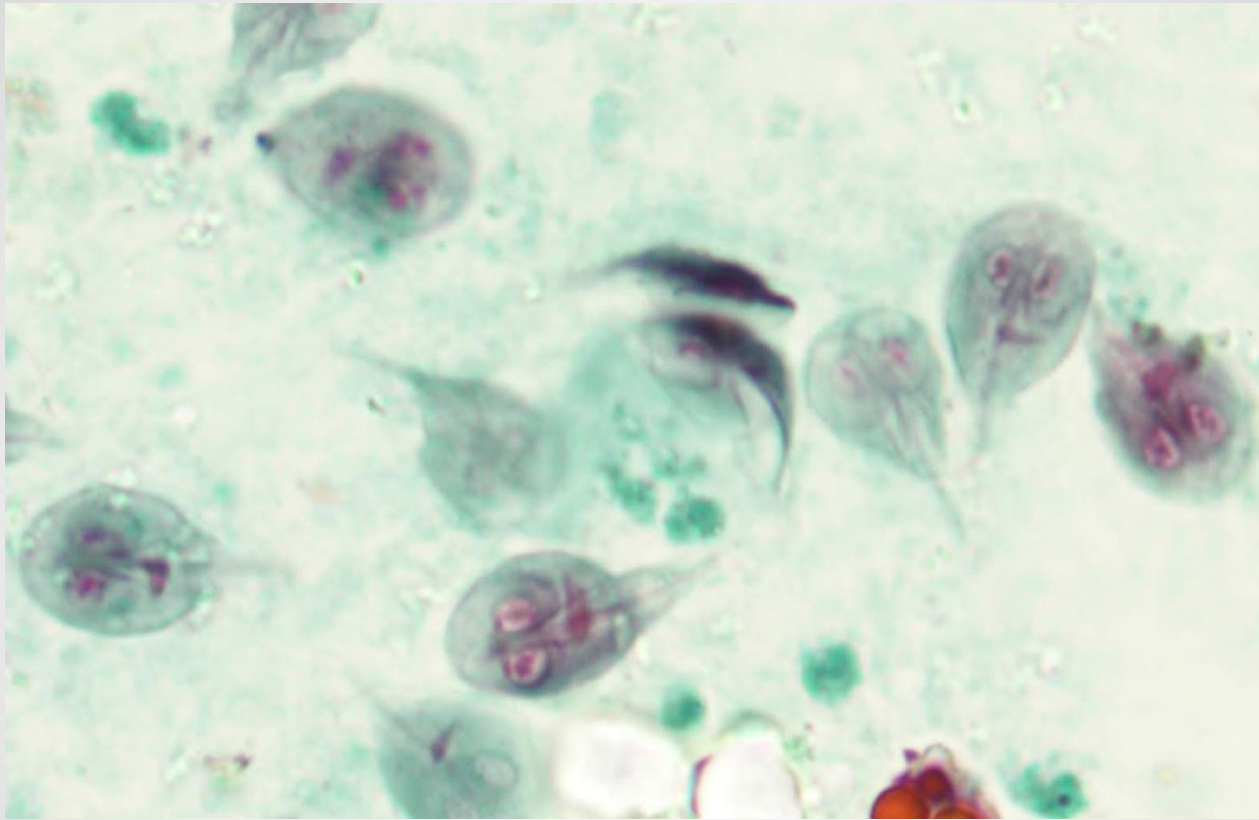
LABORATORY TESTS



Examination of a fresh stool for gross character (watery, mucoid, bloody) and presence of fecal leukocytes, ova and parasites may help to identify both the category of enteritis and the particular cause.



**WHITE BLOOD CELLS IN STOOL
STAINED WITH METHYLENE BLUE**



***GIARDIA LAMBLIA* IN STOOL STAINED
WITH METHYLENE BLUE OR IODINE**

**HOW TO
DIAGNOSE IF
YOU HAVE NO
ACCESS TO
LABORATORY?**



WHAT IS HER DIARRRHEAL SYNDROME?



HOW WILL YOU TREAT HER GASTROENTERITIS?



GASTROENTERITIS TREATMENT

- This illness is usually self-limited.
- The main goal of treatment is prevention of dehydration.
- Oral rehydration therapy is almost always sufficient, if started early in the course of the illness.

ORAL REHYDRATION THERAPY

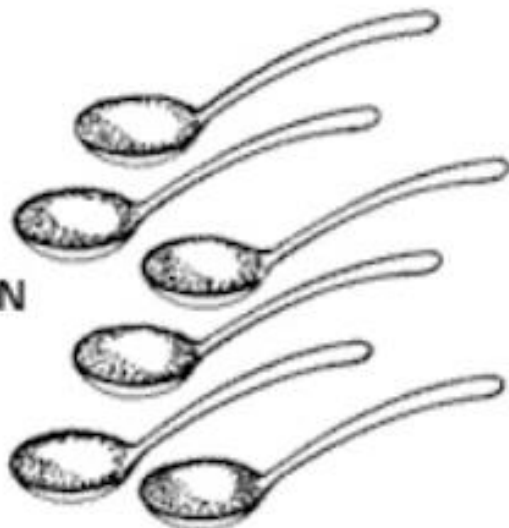
The key to managing most enteric infections is early home therapy with oral rehydration solution. ORS is easy make from products available in most markets. It is also commercially produced in ready-to-mix packets.

WHAT ARE THE COMPONENTS OF ORAL REHYDRATION THERAPY?

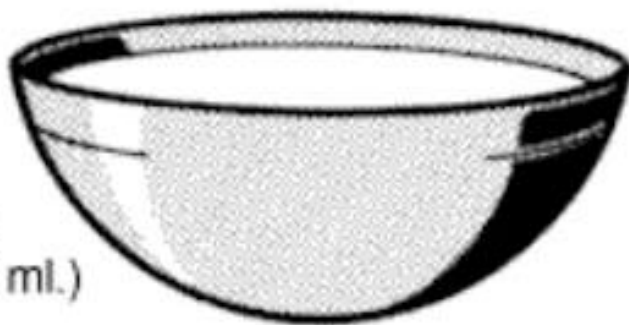


**6 LEVEL TEASPOONS
of SUGAR**

**HALF LEVEL TEASPOON
of SALT**



**1 LITRE
OF WATER**
5 cupfuls
(each cup
about 200 ml.)



ORAL REHYDRATION SOLUTION (ORS) FORMULA

Add to 1 liter of potable water:

- 1. Sugar - 30 ml (6 level teaspoons)**
- 2. Salt - 2.5 ml (1/2 level teaspoon)**

Mix carefully. Too much sugar can worsen diarrhea. Too much salt can worsen dehydration.

**WHAT ARE SOME SIGNS
THAT HYDRATION IS
NOT ADEQUATE?**

HOW TO ASSESS THE DEGREE OF A CHILD'S DEHYDRATION?

DEHYDRATION ASSESSMENT

Dehydration	Mild 3-5%	Mod 6-10%	Severe >10%
Mental Status	Normal	Listless, irritable	Altered
Heart Rate	Normal	Increased	Increased
Pulses	Normal	Decreased	Thready
Cap Refill	Normal	Increased	Increased
BP	Normal	Normal	Decreased
Urine Output	Normal	Decreased	Oligouric

**WHAT IS THE NATURAL
HISTORY OF
CHILDHOOD DIARRHEA?**

DIARRHEAL DISEASES

PROGNOSIS

Although most enteric infections are mild and self-limited, diarrhea may become severe and life-threatening as a result of lost fluids and electrolytes. Persistent diarrhea can also result in malabsorption of nutrients and failure to thrive, particularly among younger children.

**WHAT IS THE LEADING
RISK FACTORS FOR
CHILDHOOD DIARRHEA?**

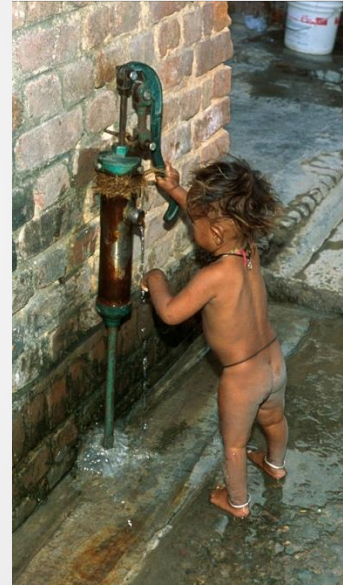
INTERVENTION AGAINST DIARRHEAL DISEASES

What are
today's leading
interventions
against diarrheal
diseases?



INTERVENTIONS AGAINST DIARRRHEAL DISEASES

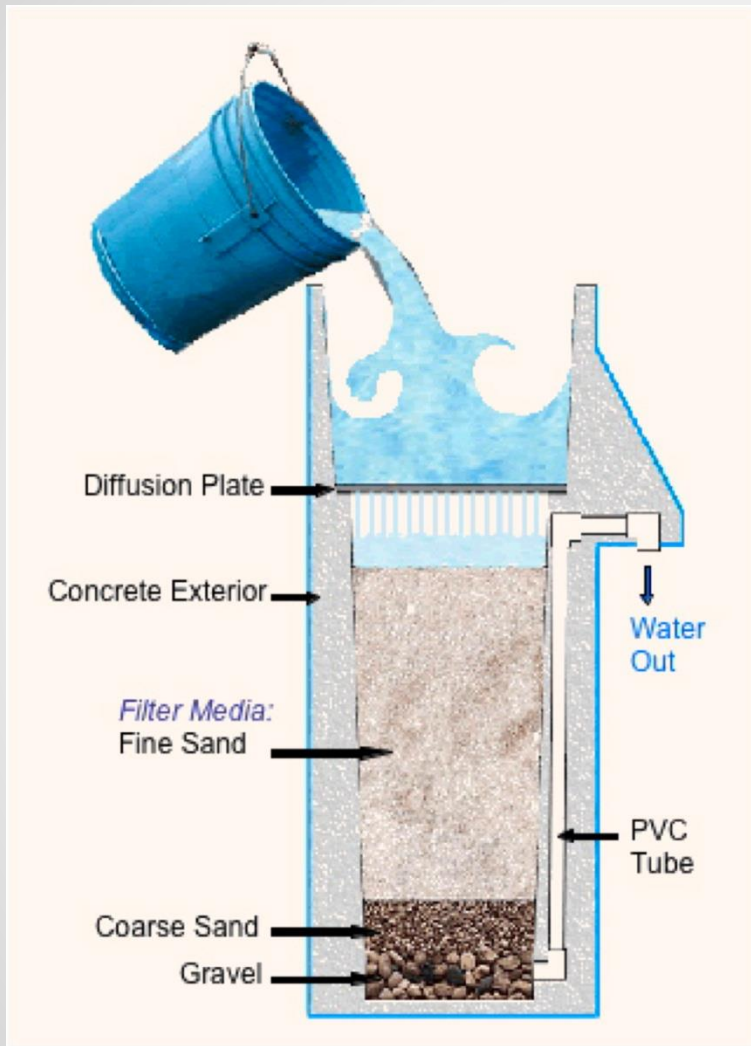
- Hand washing and hygiene
- Reduce fly population
- Promote breastfeeding and proper weaning
- Improve sanitation via latrines and sewers
- Assure safe drinking water



**WHAT ARE SOME OF
THE WAYS WATER BE
MADE SAFE TO DRINK?**

ASSURE SAFE DRINKING WATER

- Protected wells
- Protected springs
- Sand dams
- Bio-sand filters
- Portable water treatment systems
- Disinfection systems that utilize filtration, UV light, chlorine



BIO-SAND FILTER FOR LOW-COST SAFE DRINKING WATER

**WHAT IS THE
ROLE OF
SANITATION IN
DIARRHEA
DISEASE
PREVENTION?**



LOW-COST SANITATION SYSTEMS

- Buried pit
- Unimproved pit latrine
- Ventilated improved pit latrine
- EcoSan system
- Pour flush latrine
- Septic system
- Sewer system and treatment ponds

***EVERY PERSON
CARED FOR
IS ALSO AN
OPPORTUNITY
TO IMPROVE
YOUR SKILLS***





Forgotten People



Syrians seeking refuge



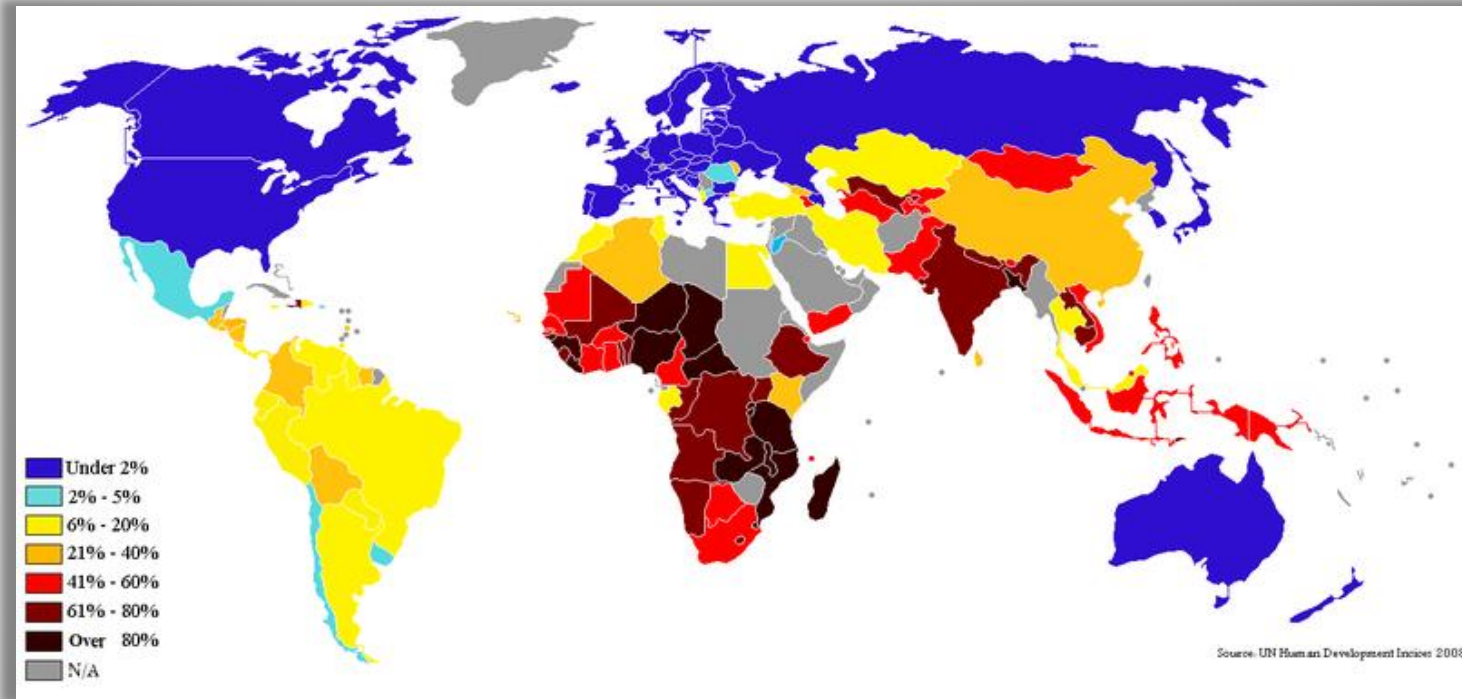
Turkey-Syria Earthquake



©JOHN MOORE/AGENCY IMAGES EUROPE/AGENCY IMAGES

Ebola in Congo

OUR NEEDY WORLD



Nations of Poverty



Forgotten People in the United States



“WE WANT TO DO THE SAME!”



Record Interest
Among
Healthcare
Students &
Professionals

“BUT WE HAVE QUESTIONS LIKE...”



- Where to serve?
- What organization to choose?
- How to prepare?
- What skills are needed?
- How to pay for this?
- Where does family fit in?
- What about language?
- Isn't all this dangerous?



INSTITUTE FOR
INTERNATIONAL
MEDICINE

*A graduate school equipping healthcare
professionals & students to serve the
forgotten since 2003*

**May
28-29,
2026
Kansas
City,
MO**



**The 21st
Annual!
*Students:
Register
for just
\$20 using
“Connect20”***



MEDIA

MEDICINE

COMMUNITY DEVELOPMENT

DISCIPLESHIP

REACH BEYOND

SO THAT THE WORLD CAN
HEAR ABOUT JESUS,
SEE HIM

AND

HANDS



Despite Free Medication, Socioeconomic and COVID-19 Pandemic-Related Barriers Limit HIV Care in Rural Western Kenya



Juliana Essle, OMS 3
Kansas City University

Nicholas Essle, OMS 3
Kansas City University

Gaufam J. Desai, DO, FACP
Kansas City University

Cameron L. Smith, DO, FACP
Kansas City University

Abstract

Western Kenya has a relatively high burden of HIV (14.4% in 2017) and a rural Western Kenyan community identified significant socioeconomic barriers to receiving HIV-related care (1). The current 18-item Kenyan patients in this community to assess levels of socioeconomic barriers identified in the 2017 study, and to assess what COVID-19 pandemic-related barrier patients experienced. We found that food insecurity, social stigma, medication side effects, and transportation issues were common barriers. Also, most respondents reported they had increased difficulty receiving HIV care during the COVID-19 pandemic, with the majority experiencing multiple barriers to care.

Objectives

This study aimed to identify trends in socioeconomic barriers that contribute to ART adherence in a community-based setting. Assessment is compared to data collected in a 2017 study of the same HIV-positive community (1). This study also aimed to identify any new barriers that occurred during the COVID-19 pandemic which contributed to ART non-adherence. The hypothesis was that the socioeconomic barriers identified in the 2017 study persist and that the COVID-19 pandemic has exacerbated existing barriers and created new barriers to ART adherence in this community.

Introduction

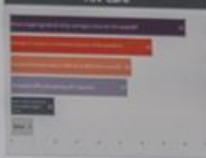
A previous study performed by KCU students in 2017 at the Mwanji Medical Health Center in Mwanji, Kenya, found that socioeconomic factors, including financial factors, weather/transport problems, and food insecurity were the largest barriers to ART adherence for HIV-positive patients in the community (1). Additionally, a 2020 study of HIV-positive patients living in an urban informal settlement within Nairobi, Kenya, found that patients experienced decreased ability to access and take their ART and sometimes avoided healthcare facilities due to fear of contracting COVID-19 (2). The Mwanji community, a rural community with high prevalence of HIV, HIV patients living in this community are an ideal population to study for trends in patient-perceived socioeconomic barriers to ART adherence and impacts of the COVID-19 pandemic on care.

Data and Methods

After obtaining KCU IRB approval, we developed a voluntary, anonymous patient survey to identify reasons for ART non-adherence including transportation, financial, social stigma, and work/family responsibilities. The survey also contained questions regarding impacts of the COVID-19 pandemic on ART adherence. Surveys were offered to patients presenting to Mwanji Health for either HIV clinic or normal sick clinic who were between 18 and at least 18 years of age. Surveys were conducted in English or in Kiswahili on depending on participants' preferred language.



COVID-19 Pandemic-Related Barriers to HIV Care



Results

We asked participants which challenges they have had in obtaining and taking their ART, and the 5 most common challenges were: lack of food (50.0%, n=12), concerns for social stigma (30.0%, n=7), and concerns for medication side effects (18.0%, n=4). Although ART itself is offered for free in Kenya (3), only 70.7% (n=17) of respondents reported they did not pay for treatment, and 34.1% (n=8) of respondents had their treatment stop for a period.

When asked about transportation that made it difficult to get HIV-related care, 80.3% (n=20) of respondents reported they had issues with transportation or weather. 20.7% (n=5) reported this could not leave work to come to clinic, and 36.3% (n=9) reported they could not leave children. The most common transportation method reported were walking (71.4%, n=18), using a bike (36.3%, n=9), and taking a taxi (21.4%, n=5). 47.3% (n=12) of respondents reported being 1 hour from the clinic, 34.3% (n=9) reported being 1.5 hours from clinic, 35.3% (n=9) reported being 12 miles from clinic, and 11.7% (n=3) reported being more than 24 miles from clinic.

We asked several questions in relation to the impact of the COVID-19 pandemic on ability to receive HIV care and ART. 84.3% (n=22) reported that the COVID-19 pandemic made it more difficult to receive care/medications. 71.4% (n=18) reported they felt afraid to seek HIV care or ART at clinic because of concerns for falling sick with COVID-19. The most common reasons cited by participants that made accessing HIV care and ART medications more difficult during the COVID-19 pandemic were: afraid of becoming ill with COVID-19 by coming to clinic (29.7%, n=7), feeling isolated or alone during the pandemic (26.9%, n=7), financial difficulty making it hard to afford care/ART medications (26.9%, n=7), and difficulty obtaining ART medications (regardless of cost) (18.4%, n=5).

Main Requirements: 18
People Responding: 26
Gendered or Non-binary: 5

87.1% (n=22) had at least one child
12.9% (n=3) had no children



Discussion and Conclusions

Consistent to the 2017 results of the same community, we study had some regional results and some major differences. In the 2017 study, the three largest socioeconomic barriers identified were food security, falling sick (related to both side medication, and transportation/weather concerns). That community has enhanced their medication adherence program. Our study staff reported that although Mwanji Health has a medication clinic with patient follow-up, most HIV patients do not qualify. The Kenyan Ministry of Health's National AIDS & STI Control Programme includes a national medicine office (4), but it seems that the rural Mwanji community has not received follow-up for medicine support for HIV patients.

A significant difference between our study and the 2017 study was with reporting of stigma related to both COVID-19 pandemic and HIV. We see that study seemed to suggest that stigma was a barrier to HIV care, but the 2017 study did not. We see that with our study, we see that stigma was a barrier to HIV care. We see that with our study, we see that stigma was a barrier to HIV care. We see that with our study, we see that stigma was a barrier to HIV care.

1. Juliana E. Essle, et al. "Socioeconomic Barriers to HIV-Related Care in a Rural Western Kenyan Community." *Journal of Community Health*. 2017; 42(5): 843-850. doi:10.1007/s10995-017-2333-1. 2. Mwanji Medical Health Center. "Mwanji Medical Health Center." <http://www.mwanjihealthcenter.org/>. 3. Kenya National Bureau of Statistics. "Kenya Demographic and Health Survey 2015." <http://www.kepsa.or.ke/>. 4. Kenya National Bureau of Statistics. "Kenya Demographic and Health Survey 2015." <http://www.kepsa.or.ke/>.

8-WEEK GRADUATE CERTIFICATE IN INTERNATIONAL HEALTH

- Diseases Of Poverty
- Maternal-Newborn Health
- International Public Health
- Cross-Cultural Skills
- Disaster management
- Health Leadership
- Health Professions Education

INMED GRADUATE CERTIFICATE IN

International Medicine & Public Health

By the authority vested in the Institute for International Medicine and upon recommendation
of the faculty of the institute, be it known to all whom these letters may come that

Sean Mark

MD, DIMPH

In recognition of knowledge and skills achieved in diseases of poverty, maternal-newborn care,
international public health, disaster management, cross-cultural skills, health leadership, and
healthcare education, has completed and is awarded the INMED professional certificate in
international medicine & public health. Witness the signatures hereto affixed this 15 day of July 2023.

Nicholas Commellis

NICHOLAS COMMINELLIS MD, MPH, DIMPH
PRESIDENT



Donald Philgreen

DONALD PHILGREEN, MD
VICE PRESIDENT

HANDS-ON SKILLS COURSES





Wound Care



Newborn Resuscitation



Fracture and injury care

***How can you best increase your
practical healthcare skills for
the world's forgotten?***

SUPERVISED SERVICE-LEARNING IN MEDICINE, NURSING AND PUBLIC HEALTH

Africa

- Angola
- Cameroon
- Ethiopia
- Ghana
- Kenya
- South Africa
- Tanzania
- Uganda
- Zambia

Asia

- Bangladesh
- China
- India
- Macau
- Pakistan
- Philippines
- Russia
- Papua New Guinea



**Kudjip Nazarene
Hospital**

Papua New Guinea

SUPERVISED SERVICE-LEARNING IN MEDICINE, NURSING AND PUBLIC HEALTH

The Americas

- Dominican Rep.
- Ecuador
- Guatemala
- Haiti
- Honduras
- USA

Middle East

- Jordan
- United Arab Emirates



Clinica Evangelica
Morava, Honduras



Northeast China



Angola, Africa



Northeast India



Philippines

A blue and white globe icon showing continents and oceans, positioned behind the text 'INMED'.

INMED

MIH

Master's in International Health

INMED PROFESSIONAL

Master's Degree in International Health

By the authority vested in the Institute for International Medicine and upon recommendation
of the faculty of the institute, be it known to all whom these letters may come that

Susan Aycock

MD

In recognition of knowledge and skills achieved in epidemiology, diseases of poverty, international HIV
medicine, maternal-newborn care, international public health, disaster management, cross-cultural
skills, health leadership, healthcare professions education, and research methodologies, has completed
and is awarded the INMED Professional Master's Degree in International Health (MIH).

Witness the signatures hereto affixed this 10th day of June 2022.

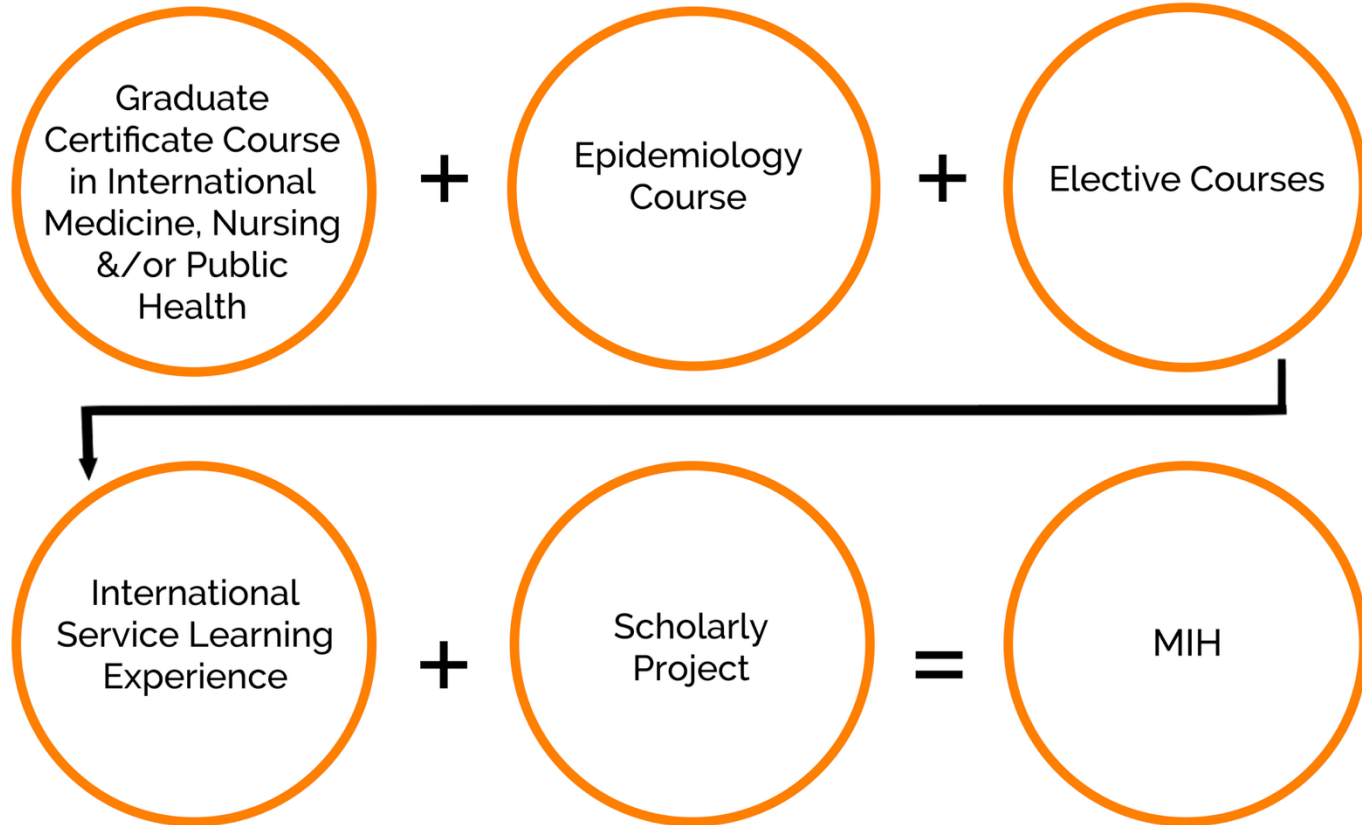


NICHOLAS COMNINELLIS MD, MPH, DIMPH
PRESIDENT



DONALD PHILGREEN, MD
VICE PRESIDENT

Master's Degree in International Health



PREPARED TO SERVE WITH DISTINCTION

- International government agencies
- National health agencies
- Global charitable foundations
- Faith-based health organizations
- Universities and research institutions
- Banking and industry
- Disaster relief and refugee care agencies



**INTERNATIONAL
HEALTH
ROTATIONS &
LEARNING
OPPORTUNITIES**

BRINGING OUT PEOPLE'S BEST



- Serving for forgotten people is a powerful means of personal development - cultivating humility, gratitude, and kindness
- A cure for vanity, pride, and selfishness

***EQUIP YOURSELF TO BETTER
SERVE FORGOTTEN PEOPLE***



INSTITUTE FOR
INTERNATIONAL
MEDICINE

Nicholas Comninellis, MD, MPH, DIMPH
+1 816-444-6400, ncomninellis@inmed.us

www.inmed.us