Webinar overview

• Presentation by Elizabeth Barnett (50 minutes)
• Q&A via Chat Window (20 minutes)
• Slides, webinar recording, Question and Answers, and additional resources will be posted to http://refugeehealthta.org after the webinar
• Email refugeehealthta@jsi.com if you have any questions after the webinar
US Immigrant Arrivals 1999-2010

Refugee Admissions 1999-2011

Source: Department of State, Bureau of Population, Refugees and Migration
Worldwide Refugee Admissions Processing System [www.wrapsnet.org]
# US Medical Screening Checklist

- **General medical examination**
  - History and physical examination
  - Nutrition and Growth
- **Preventive health interventions**
  - Immunizations
- **General testing (not disease specific)**
  - Recommended for all refugees
  - Recommended for specific groups of refugees
- **Mental health screening** (encouraged, depending on available)
- **Disease-specific testing**
  - Tuberculosis
  - Lead
  - Malaria
  - Intestinal Parasites (IP)
  - Sexually transmitted diseases
    - Syphilis
    - Chlamydia
    - Gonococcus
- **HIV**
- **All refugees should be screened for hepatitis B**

http://www.cdc.gov/immigrantrefugeehealth/guidelines/domestic/checklist.html
Infectious Disease Challenges

• Identifying acute illnesses of importance to the patient and public health
• Diagnosing unfamiliar conditions with subtle or non-specific signs and symptoms
• Screening initially and across the lifespan for diseases of long latency associated with route of migration
Infectious Disease Challenges

- Communicable infections (public health focus)
- Symptomatic infections (patient focus)
  - Dental caries
- Vaccine preventable infections (measles, varicella, influenza, etc)
- Eosinophilia and Parasitic Infections
- Infections of long latency
  - Hepatitis B
  - Latent tuberculosis infection (LTBI)
  - Human papillomavirus (HPV)
  - H pylori
  - EBV
Objectives

- Discuss several cases relevant to the challenges we face in caring for refugees and immigrants
- Convince you of the value of taking a migration and travel history for every patient at every encounter
Anemia in an African Refugee

- 22 month old toddler seen 2 weeks after arrival from a refugee camp in Guinea
- Mother concerned about fever, cough, and occasional abdominal pain
- On exam child appears pale, sad, and cries easily. T-100.2 (ax), runny nose, clear chest, 2-3/6 systolic ejection murmur, normal abdominal exam, neuro exam non-focal
Differential Diagnosis for Newly Arrived Toddler with Fever

• Locally acquired infection: viral infection (influenza, etc), bacterial infection (what is the baby’s immunization status?)

• Migration-associated infection: malaria, dengue, etc.

• Narrowing in on appropriate differential:
  – Timing related to migration
  – Incubation periods of possible infections
  – Epidemiology of possible infections (infections circulating locally, etc)
Anemia in an African Refugee

• CBC and blood culture obtained

• Results of the CBC include:
  – Hgb 5.3, Hct 18.8, MCV 68
  – WBC 11,100 with 32 polys, 50 lymphs, 16 monos, 1 eos, 1 baso
  – Smear: marked anisocytosis; moderate polychromasia, hypochromia, and poikilocytosis; and target cells
Anemia in an African Refugee

Specific diagnosis and therapy is most urgent for which possible cause of anemia in this toddler:

1. RSV bronchiolitis
2. Pulmonary tuberculosis
3. Malaria
4. Iron deficiency anemia
5. Sickle cell disease
6. G6PD deficiency
Anemia in a Refugee

- Blood smear shows multiple ring forms plus banana-shaped gametocytes
- Hemoglobin electrophoresis: 96% HgbA, 1% HgbF, 3% HgbA2
- Pb 13, ZnPP 217 (nl 0-34)
Blood smear: Banana-shaped gametocyte of P. falciparum
Anemia in a Refugee

• Treated with atovaquone-proguanil for 3 days in hospital
• G6PD normal; prescribed primaquine upon discharge; mother reports he took all the doses
• Reticulocyte count 12.3% 3 days later
• One month later Hct-26
Should all African refugees be screened for malaria?

• Pre-departure therapy given to many refugees
• Screen those with compatible signs and symptoms: fever, severe anemia, unexplained thrombocytopenia, splenomegaly (may need additional testing to identify hyper-reactive malarial splenomegaly, an abnormal immune response to chronic or repeated malaria infection)
• Be aware that CDC recommendations suggest treating and/or screening all refugees from sub-Saharan Africa that were not treated pre-departure
Multiple Medical Conditions

• Elevated lead level and iron deficiency anemia also present and need to be addressed
• Look for multiple conditions in refugees and immigrants
• Address lack of immunizations
• Consider diseases of long latency (LTBI, hepatitis B) once acute issues addressed
Eosinophilia in a Recent Arrival from Haiti

- 8 year old boy seen to receive shots for school after arrival from Haiti
- CBC shows WBC 29,800 with 11% polys, 22% lymphs, 3% monos, 64% eos (absolute eosinophil count (AEC) 18,800)
- Asymptomatic; no skin lesions, itching, adenopathy, fevers, pulmonary symptoms, diarrhea, headaches, abdominal problems
Evaluation of Eosinophilia in Refugees

• What is eosinophilia?
  – Absolute eosinophilia count (AEC) > 450/mm³

• Assume parasitic infections (but don’t forget completely other causes of eosinophilia)
  – NAACP: neoplasm, allergy/asthma, Addison’s disease, collagen vascular diseases, parasitic diseases

• Stool testing for ova and parasites is not sufficient
  – Assesses only luminal parasites
  – Must pursue other modes of diagnosis

Evaluation of Refugees with Eosinophilia for Parasitic Diseases

• Consider epidemiology of the possible infections
  – Must know complete migration route
  – Must have access to up-to-date information about disease epidemiology

• Look for specific signs and symptoms
  – Skin findings (itching, nodules, rashes, etc)
  – Hematuria
  – Neurologic findings
Eosinophilia in a Recent Arrival from Haiti

- Stool for ova and parasites negative
- Eosinophilia persists; no atopic disease, evidence of neoplasm, drug ingestions
- Consider parasite serologic tests
  - Filaria (lymphatic filariasis is common in Haiti)
  - Strongyloides (present globally)
  - No schistosomiasis known in Haiti
  - Consider additional parasites if these unrevealing (toxocara, etc)
Global Distribution of Filarial Infections

- Red = endemic, Pink = uncertain, Green = non-endemic
Types of Filaria Infection

• Lymphatic filariasis (*Wuchereria bancrofti* (90%), *Brugia malayi* (Asia), *Brugia timori* (southeastern Indonesia only))
• Onchocerciasis (river blindness, caused by *Onchocerca volvulus*)
• Loiasis (*Loa loa*)
• Mansonella perstans (sub-Saharan Africa)
Lymphatic Filariasis in Haiti

• 2001 prevalence in 6-11 year old children: 7.3%
• Program to Eliminate Lymphatic Filariasis on-going

Microfilaria of *Wuchereria bancrofti*
Treatment of Lymphatic Filariasis

• Diethylcarbamide (DEC) available from CDC
• If leg swelling is present, must counsel patient about foot and leg care
• Consider evaluation of family members
Eosinophilia in a Liberian Refugee from Ghana

• 26 year old man seen for health assessment 6 weeks after arrival from Ghana
• Healthy except for toothache; treated for scabies and tinea capitis in Ghana
• WBC 10,400 with 28 polys, 1 band, 34 lymphs, 6 monos, 31 eos (AEC 3,200)
• Denies skin lesions, itching, adenopathy
A refugee from Liberia

The most urgent medical issue to address in this young man is:

1. Eosinophilia
2. Screening for latent TB infection
3. Screening for hepatitis B infection
4. Toothache
5. Screening for HIV infection
What is different about this situation?

- Epidemiology
  - LF is present in West Africa, but so is onchocerciasis
Eosinophilia in West Africa

• And so is schistosomiasis:
Eosinophilia in a Liberian Refugee from Ghana

- Strongyloides antibody positive
- Schistosomiasis antibody negative
- Filaria antibody strongly positive
  - Circulating antigen negative
  - Onchocerca card test positive, eye exam ok
  - Treated with ivermectin (will treat both strongyloides and onchocerciasis)
Onchocerciasis
Wet preparation of skin snip showing microfilaria of *Onchocerca volvulus*
Evaluation and treatment of onchocerciasis

- Slit lamp exam (after sitting head down for about 20 minutes) can identify microfilariae in the anterior chamber
- Treatment with ivermectin may need to be titrated to itching- every several months for the first few years, then less frequently
- Alternative treatment: doxycycline treats symbiotic bacterium *Wolbachia*
- Be cautious about use of ivermectin when patient is from areas with *Loa loa* due to risk of encephalopathy
Eosinophilia in West Africa

- Loiasis and onchocerciasis distribution:
Hematuria in a Refugee from Somalia

- An 11-year-old boy from Somalia who lived in Kenya for the past 7 years presents with abdominal pain and history of hematuria
- CBC shows WBC 8,200 with 44 polys, 24 lymphs, 8 monos and 24 eos (AEC 2000);
- Trichiuris is identified in the stool
- PPD is 10 mm
Hematuria in a Somali refugee

What is the test most likely to identify the cause of the hematuria in this child?
1. Urine calcium/creatinine ratio
2. Urine culture
3. ASO titre
4. BUN/Cr
5. Urine for ova and parasites
Schistosoma hematobium eggs in urine
Urinary Schistosomiasis

- Schistosomiasis antibody positive
- Renal ultrasound revealed moderate left hydronephrosis with calyceal dilatation
- Treated with praziquantel and mebendazole
- 3 months later hydronephrosis resolved, but urine still positive for S. hematobium eggs
- Retreated with praziquantel
Leg Pain and Swelling in a Recent Arrival from Haiti

- 17 year old female with several weeks of leg pain and intermittent swelling
- Came to Boston from Haiti in 2000
- Denies fever, headache, diarrhea; states she does have cough, sweats, fatigue
- CBC: WBC 4,800 with 44 polys, 37 lymphs, 8 monos, 10 eos; platelets 269,000
Which is the most likely cause of her leg symptoms?

1. Deep vein thrombosis
2. Methicillin resistant Staphylococcus aureus infection
3. Lymphatic filariasis
4. Complex regional pain syndrome
Leg Pain and Swelling in a Recent Arrival

• PPD positive, CXR negative: INH
• Given a diagnosis of complex regional pain syndrome; given nerve block; minimal relief
• Are you content with this diagnosis?
• What would you do next?
Diagnosis Does not Explain Eosinophilia

- AEC = 480/mm³
- Filaria antibody positive, with positive circulating antigen and IgG4
- Treated with DEC; symptoms improved prior to starting medication
- Educated about foot care
Summary Points from Eosinophil Cases

• Most refugees have multiple diagnoses: keep looking until ALL unexplained findings are explained
• Parasitic infections are common
• Even minor degrees of eosinophilia should be addressed
Seizures in a Refugee from Burma

• A 9-year-old boy who arrived recently from Burma has a first seizure
• No fever, neck stiffness; lumbar puncture is normal without sign of infection
• CBC has no eosinophilia; stool for ova and parasites is negative
The next most appropriate step in making a diagnosis would be:

1. Toxoplasmosis serology
2. Head CT scan or MRI
3. HIV serology
4. Japanese encephalitis serology
5. Tuberculin skin test
Neurocysticercosis

• Caused by the larvae of Taenia solium; may occur after exposure to Taenia solium eggs which are present in human feces (thus ingestion of pork is not required)

• Serologic test is available; sensitivity is higher with multiple CNS lesions

• Treatment options include anticonvulsants (mainstay of therapy) and antiparasitic drugs
Management of Neurocysticercosis

• Assessment of status of lesions is helpful; if inactive (calcified) seizure management is the first (and perhaps only) step
• Treatment of parasite is controversial (albendazole/(praziquantel) +/- steroids)
• Recent discussion of pre-departure treatment with albendazole and seizures in individuals with neurocysticercosis*

Cysticercosis, 2009 (WHO)
Migrants as Sentinels for Infectious Diseases

- Burma not thought to be high risk area for neurocysticercosis
- Consider known epidemiology but be prepared for surprises
- T solium seroprevalence in refugees (ELISA)*
  - Burma (23.2%)
  - Laos (18.3%)
  - Bhutan (22.8%)
  - Burundi (25.8%)

Diseases of Long Latency: Examples

- Strongyloides (hyperinfection syndrome)
- HPV (cervical and other cancers)
- Chagas disease (heart and GI diseases)
- Lymphatic filariasis
- Exposures to environmental toxins
- Exposures to malnutrition and micronutrient deficiencies
- Many others…
A Recent Arrival from Bolivia

• You see a 42 year old woman who just received asylum; born and raised in Bolivia
• She presents with dyspnea on exertion, poor exercise tolerance, and some vague GI complaints
• Cardiac evaluation reveals heart failure
Heart Disease in Young Recent Arrivals

- Rheumatic heart disease
- Chagas disease
  - Global distribution:
Chagas Disease in the US

• Leading cause of mortality and cardiac disease among young adults in Latin America

• About 50,000-120,000 individuals living in the US are infected with Chagas disease

• US Blood supply screened since 2006
Consequences of Infection with Chagas Disease

• 20-30% will develop chronic disease years after infection
  – Progressive cardiomyopathy
  – Motility disorders of esophagus and colon
  – Reactivation in those who become immunocompromised

• Can be transmitted vertically
Management of Chagas Disease

• Confirm the diagnosis (high quality testing done at CDC)
• Treatment is recommended for all infected children and those with acute, congenital, or reactivated disease
• Two drugs are effective, neither available in the US except through CDC: benznidazole and nifurtimox
• Long-term follow-up needed
Summary Points from These Cases

• Parasitic infections are not all associated with eosinophilia

• Common conditions may have uncommon causes once a migration/travel history is known
  – Seizures: not epilepsy but neurocysticercosis
  – Leg swelling: not a DVT but lymphatic filariasis
Common Cancers in More and Less Developed Countries

Comparison of the Most Common Cancers in More and Less Developed Countries in 2000 for Females

- Breast: 579 (More developed) vs. 471 (Less developed)
- Cervix uteri: 91 vs. 379
- Colorectal: 291 vs. 154
- Lung: 175 vs. 161
- Stomach: 125 vs. 192
- Ovary: 91 vs. 101
- Corpus uteri: 13 vs. 75
- Liver: 33 vs. 132
- Oesophagus: 16 vs. 117
- NHL: 66 vs. 54
- Leukemia: 47 vs. 65
- Pancreas: 61 vs. 39
- Oral cavity: 24 vs. 72
- Thyroid: 35 vs. 53
- Bladder: 48 vs. 27

Cervical Cancer Rates Worldwide
(Cases per 100,000 population)

Cervical Cancer Screening

Proportion of women > 65 who had a Pap smear in the preceding 3 years

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<thead>
<tr>
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<th>Cambodian, Lowell, MA</th>
<th>Vietnamese, Southern CA</th>
<th>Asians, National aggregate</th>
<th>US general population</th>
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<tbody>
<tr>
<td>Proportion</td>
<td>64.2%</td>
<td>65.5%</td>
<td>74.5%</td>
<td>85.8%</td>
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*MMWR 2004;53:760-767*
Health Disparities: *H. pylori*

Prevalence of *H. pylori* in Developed vs. Developing Countries

Areas of Active Investigation

- Association between H pylori and diabetes?
- Association between malaria, EBV infection, and EBV associated cancers?
- Interaction between parasitic diseases and HIV and TB
Summary Points

• Ask all patients: “Where were you born and where have you traveled?”
• Evaluate for parasitic infections all immigrants/refugees with unexplained eosinophilia (stool O and P is not enough)
• Consider uncommon causes for common signs and symptoms
• Consider multiple diagnoses
• Consider and evaluate for diseases of long latency
Resources

• Immigrant Medicine  Walker and Barnett, Elsevier, 2007
2012 North American Refugee Healthcare Conference
June 28-30 | Radisson Hotel | Rochester, New York

June 28th - 30th, 2012

Rochester, New York

Discover what's most effective...

Connect with like minded professionals...

Reflect on how your work has changed your community...

Join us for this 3 day event focusing on best practices in refugee health.

Lectures include contemporary issues in refugee health, mental health, OB/GYN, pediatrics, and primary care. Come take a look at what we have to offer and register now for this important event.

Keynote Speakers

Eskinder Negash
Director, U.S. Office of Refugee Resettlement

Martin Cetron, M.D.
Director, Division of Global Migration and Quarantine, U.S. Centers for Disease Control and Prevention

Register now!

www.refugeehealthcareconference.com
Thank you!

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