HOT TOPICS IN PEDI INFECTIONOUS DISEASES:
REFUGEE, IMMIGRANT HEALTH, TB AND VACCINE PREVENTABLE DISEASES

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I have nothing to disclose

DISCLOSURES

• I have nothing to disclose

OUTLINE

• Refugee and immigrant child health
• Tuberculosis screening
• Vaccine preventable diseases, refusal and catch up vaccinations
OBJECTIVES

1. Define refugee and the difference between a refugee and immigrant
2. Describe the unique health care needs of refugees and immigrant children
3. List 3 infectious diseases that should be screened for in refugee and immigrant children
4. Describe when to treat latent tuberculosis
5. Explain the indications for a TST (PPD) or IGRA test for TB
6. List 3 vaccine-preventable diseases

PRACTICE GAP

- Managing the medical, developmental and psychosocial needs of children in the resettled refugee, adoption or immigrant population is complex.
- Healthcare providers who encounter these patients after their arrival to the U.S. must be familiar with their unique customs and common illnesses as well as barriers to health-care access that these populations face.

WHAT IS A REFUGEE?

- A person outside his/her country of origin who cannot return because of persecution of the well-founded fear of persecution due to race, religion, being part of a particular societal group or political opinion.
- Refugees are recognized prior to arrival in the U.S.
- An asylum seeker seeks to be recognized as someone seeking asylum from his home country after arrival.
- An immigrant chooses to come to another country, a refugee is forced to flee his country.
- Unaccompanied refugee minor is someone younger than 18 year eligible for resettlement in the U.S. but who does not have a parent or relative available
- Usually try to settle child with relative or foster family.
HEALTH ASSESSMENT PRIOR TO ARRIVAL

- All refugees must pass the overseas medical screening examination (CDC).
- It is designed to prevent individuals with communicable diseases of public health significance, severe mental health disorders (harmful behaviors) or history of drug abuse or addiction from coming into the country.
- Documents should be reviewed upon arrival in the U.S. for the domestic screening.
  - Misses chronic illness
  - Domestic assessments are not mandated.
  - Can't assume an extensive health assessment has been done.

WHERE DO THEY COME FROM?

- Leading countries in 2012, Bhutan, Burma (Myanmar), and Iraq.
- Now: Syria, Lake Chad, Afghanistan, South Sudan and Somalia.

REFUGEE HEALTH

- High rates of infectious diseases.
- Most receive a dose of an anti-parasite prior to departure.
- Medically complex issues that go beyond infectious diseases.
- Often have poor or inconsistent access to medical care in a refugee camp.
- Medical record keeping is inconsistent.
- High rates of mental health problems including PTSD, depression, and anxiety.
- Nutritional disorders (not screened prior to arrival) that put them at risk for developmental delay and behavioral issues*.
- Not required to have immunizations prior to arrival.
- Many are limited in quantity, poor storage etc.

*Difficult to use our U.S.-based developmental screening tools.
INFECTIONOUS DISEASES

- Parasitic infections (screen everyone but usually get pre-departure therapy)
- Tuberculosis
- Hepatitis B and C
- Sexually transmitted diseases
- Malaria (usually get pre-departure therapy)

OTHER COMMON PROBLEMS

Lead
- On average usually higher rates of elevated levels than in U.S. children

Dental problems
- Limited diets, poor access to dental care
- Sometimes gets worse when they arrive in U.S. and adapt a Western diet
- Oral hygiene practices vary

Mental health
- Long journey from their origin, witness to trauma, violence, death, murder
- Interruptions in nutrition or shelter
- Some children come unaccompanied by adults
- High rates of depression, PTSD, panic attacks, behavior problems, somatization, TBI
- Alcohol and drug use, even in younger children
- Sleep and behavior patterns
- Physical signs of maltreatment (differentiate cultural practices)
- Unaccompanied minors have the "triple stigma" - refugee/asylum seeking status, mental health problems and unaccompanied status

Female Genital Mutilation
- Recognized as a human rights violation by the international community
- More than 100 million girls and women have been subjected to FGM
- May be on the overseas assessment or on examination
- Review for genito-urinary symptoms on history (often NOT reported as a surgical or medical issue by the family)
- Refer to an experienced OTR/ORTH/OGIC and psychiatric provider

Rheumatic Heart Disease
- Most common cause of acquired cardiac disease in children and young adults in developing world
- Not part of specific screening
- Any hx of RHD documented or by history should refer to Cardiology

ADDITIONAL CONSIDERATIONS
COMMON MICRONUTRIENT DEFICIENCIES

1. Iron
   - Estimated to affect 50% of children in the developing world and can be associated with both dietary and non-dietary factors, chronic infections, parasitic infections, hemoglobinopathies
   - Very common in developing countries
   - Treatment: Iron supplements or iron-enriched foods
   - Supplementation common in refugee camps

2. Vitamin A
   - Very common in developing countries
   - Treatment: Supplementation
   - Supplementation common in refugee camps

3. Vitamin D
   - Prevalent in both resource poor and rich countries, cause is multifactorial, limited sun exposure, darker skin
   - Treatment: Supplementation
   - Common in Bhutanese refugees

4. Vitamin B12
   - Bhutanese refugees at highest risk, low-poor diet (eggs, meat, milk), malabsorption
   - Treatment: Supplementation

5. Zinc
   - Plant-based diet puts people at highest risk
   - Treatment: Supplementation

6. Others may include B3/Niacin and tryptophan, Iodine, Vitamin B1/Thiamine and Vitamin C

NEW CHALLENGES

- New school
- New home and neighborhood
- Language they don’t understand
- Foods they have never had before
- Cultural practices and societal norms that are different than what they are used to
- Often see someone in healthcare soon after arrival - lots of vaccines...

SCREENING TESTS FOR REFUGEES AND IMMIGRANTS

- Hepatitis B serologic testing: HBsAg (anti-HBs and anti-HBc)
- Hep C serologic testing
- CBC with differential (look for eosinophils but not sensitive)
- Stool exam for ova and parasites
- HIV 1 and 2 testing (serology)
- TST or IGRA for TB
- Oocorhea/Chlamydia
- Syphilis screening:
  - Nontreponemal (RPR, VDRL)
  - Treponemal (MHA-TP, FTA-ABS, TPPA)
Additional Tests Depend On:

- What you find from your hx and PE, country of origin
- Schistosoma species serologic testing for children from sub-Saharan Africa, Southeast Asia, certain Latin American countries
- Lymphatic filariasis serologic testing for children over 2 in endemic areas
- Malaria
- Trypanosoma cruzi, Strongyloides

Tuberculosis (TB)

- All refugees, adoptees and immigrants should be screened for TB
- Use a TST (tuberculin skin test) OR IGRA (interferon gamma release assay)
- Ultimately may need a CXR if positive or indeterminate plus a thorough history and physical exam to determine risk of LTBI or TB

TST vs. IGRA

TST
- Cannot distinguish between TB disease, LTBI and infection due to non-TB mycobacteria
- False neg tests can occur in a variety of situations (age under 6mo, immunosuppression, overwhelming TB infection)
- Depends on skill of person placing TST and interpreting the result

IGRA
- Cannot distinguish between TB disease and LTBI
- Not affected by a prior BCG
- Not FDA approved under 5y (but we use it in ID in young children/babies or in patients with BCG)
- Requires a blood test
INTERPRETATION OF A TST

• Induration 15 mm or greater:
  • Children 4y of age or older without risk factors

• Induration 10 mm or greater:
  • Children with increased exposure to TB
  • Children born in high prevalence regions of world
  • Children who traveled to high prevalence regions
  • Children previously exposed to adults who are HIV infected, homeless, IV drug users, incarcerated or institutionalized
  • Children at increased risk of disseminated TB disease
  • Children under 4y of age
  • Children with other medical conditions (Hodgkin’s, HIV, lymphoma, renal failure, malnutrition)

• Induration 5 mm or greater:
  • Children in close contact with known or suspected contagious person with TB
  • Children receiving immunosuppressive therapy including HIV
  • Children suspected to have TB disease
  • Findings on CXR evidence
  • Clinical evidence of TB disease

WHAT ABOUT BCG VACCINATION AND TESTING FOR TUBERCULOSIS?

• How do you interpret a TST or IGRA test in a child who has received BCG?
ETHICAL CONSIDERATIONS
- Governments have a responsibility to provide free TB care
- Duty to fulfill the human right to health
- Treating individuals not only helps that one person but an entire community
- Patients need to be fully informed and counseled about their treatment
- May lead to improved adherence
- Support patients to complete therapy
- Patients should be a part of the treatment process
- Healthcare workers have obligations to provide care, but also a right to adequate protection
- Healthcare workers should not be expected to assume risk from inadequate conditions
- Government and healthcare institutions should provide goods and services to create adequate conditions
- Involuntary isolation should not be implemented
- It’s crucial to educate others in the event of counseling or support

VACCINE PREVENTABLE DISEASES
- Measles
- Mumps
- Rubella
- Varicella
- Hib
- Pneumococcus
- Polio
- Tetanus
- Pertussis
- HPV
- Meningococcus
- Rotavirus
- Hep A
- Hep B
- Influenza
- Diphtheria

PROVIDER RESOURCES
DO YOU BELIEVE THEIR VACCINE RECORDS?

- There can be variation in the response rate to vaccines, with as low as a 56% response rate to the mumps vaccine in children from China.
- Inaccurate documentation, poorly stored vaccines, stressed immune systems, and timing issues can all contribute to the lack of response.
- AAP recommends: In any age (but esp. younger than 6 mo) you can start over and fully re-immunize. Or, send titers to demonstrate immunity to proven/recognized vaccinations or illnesses reported (eg. Hep A and varicella).
- Measles/mumps/rubella (MMR), Hep A and B, polio, diphtheria/tetanus, Hib and varicella are all vaccination titers that can be verified by serology. If immunity is demonstrated to diphtheria and tetanus, pertussis immunity is assumed.

DO YOU BELIEVE THEIR VACCINE RECORDS? (CONT.)

- In general, only written documentation should be accepted for evidence of previous immunization (ideally on Dept of State health immigration form).
- Immunizations should have been given in concert with recommended US or WHO immunization schedules.
- Refugees are not required to meet immunization requirements until about 1 yr (when they apply to be permanent residents).
- Most come incompletely immunized and with poor or no records.
- Give age-appropriate vaccines as indicated. Complete any series that has been initiated. Do not restart a vaccine series. Doses are valid if given according to accepted ACIP or state schedules.
- If patient has no documentation, assume he or she is not vaccinated.
- Laboratory evidence of immunity is an acceptable alternative, as determined by the provider.

BARRIERS AND SOLUTIONS TO HEALTHCARE ACCESS

- Health insurance
- Language and communication barriers
- Complex service systems
- Each state has a coordinator of refugee resettlement
- Multiple community organizations that will help with the initial resettlement of families (Catholic Charities, IRIS)
- Health insurance was accessible for refugees in each state (Husky) for now...
- Use of qualified translators
In addition to facing discrimination and culture shock, refugees may struggle economically and in the job market.

Resettlement countries provide temporary aid to refugees; however, refugees still often struggle to make ends meet as they search for employment and acclimate to the new culture.

With job experiences and education that do not transfer to their new countries, many refugees find that the aid they receive—three to eight months of payment in the U.S.—is not enough to build economic stability.

Children, in particular, may struggle in their new schools and in building new friendships when they don’t speak the language, wear different clothing etc.

One study showed that the language barrier was the single greatest impediment to successful integration in the community and the ability to be successful in school.

"Cultural competence... is an acknowledgment and incorporation of the importance of culture, assessment of cross-cultural relations, vigilance toward the dynamics that result from cultural differences, expansion of cultural knowledge, and adaptation of services to meet culturally unique needs on the part of clinicians and health-care systems."

Being culturally competent implies that clinicians not treat patients the same, given the cultural dynamics each brings to the encounter.

Physicians should recognize the individual biases in particular situations and be aware of different social and cultural factors that influence an individual’s understanding of health and illness.

Important to recognize that we need cultural humility, maybe not competency

Flexibility, humility...

Lifelong process
MISCONCEPTIONS ABOUT VACCINES

• Natural methods of enhancing immunity are better than vaccinations
• Giving multiple vaccines at the same time causes an “overload” of the immune system
• Prior to use of vaccines, disease had begun to decline anyway because of better sanitation and hygiene
• Vaccines cause poorly understood illnesses or disorders such as autism, SIDS, immune dysfunctions, diabetes, neurologic disorders, asthma

PASSIVE VS. ACTIVE IMMUNIZATION

• Passive immunization: Administration of a preformed antibody to a recipient.
  • Includes such circumstances as use of IVIG or other specific antibodies given.
• Breastfeeding
• Palivizumab (Synagis) monoclonal antibody against RSV

ACTIVE IMMUNIZATION

• Active immunization: Administration of all or part of a microorganism or modified product (toxoid, purified antigen, etc.) to evoke an immunologic response that mimics infections, but poses little or no risk to the recipient.
• Some provide lifelong protection, others require re-administration at different intervals
INFECTIONOUS AGENTS AND VACCINE CONSTITUENTS

- Live attenuated (weakened)
- Killed (inactivated)
- Genetically engineered subunits

LIVE VS. INACTIVATED VACCINES

- LIVE
  - Natural or injection
  - Small amount
  - One dose (usually)
  - Long term immunity
  - IgG and IgA
  - Good cell-mediated
  - Rare reversion
  - Heat labile

- INACTIVATED
  - Injection
  - Ig amount
  - Multiple
  - Short term
  - IgG
  - Poor cell-mediated
  - No reversion
  - Not heat labile

VACCINE CONSTITUENTS

- Conjugating agent (carrier protein)
- Suspending fluid (sterile water, complex tissue-culture fluid)
- Preservatives, stabilizers and antimicrobial agents
- Thimerosal (now in US all are thimerosal free)
- Adjuvants (A material that boosts the immunogenicity by enhancing uptake by or stimulates dendritic cells and macrophages like aluminum salt).
**Routes of Immunization**

- Oral vaccines (OPV, rotavirus)
- Intranasal vaccines (live-attenuated influenza vaccine)
- Parenteral vaccines (injectable)
  - Intramuscular:
    - Site is based on the volume (anterolat thigh for under 1 yr, deltoid in older) Don’t use the butt!
    - Vaccines containing adjuvants (aluminum) need to go deep into muscles to avoid local irritation or tissue necrosis at 90°
  - Serious complications are rare

**Routes of Immunization Cont.**

- SC injections
  - Go in at 45°
  - Only certain vaccines can be given SC due to decreased immune responses

**Immune Responses to Vaccines**

- Optimal response depends on multiple factors, including the type of vaccine, age of the recipient, and immune status of the recipient.
- Recommendations for the age are influenced by age-specific risks for disease, age-specific risks for complications, age-specific responses to vaccination, and potential interference with the immune response by passively transferred maternal antibodies.
TIMING AND SPACING

- Simultaneous administration (vaccines given the same day, different anatomic sites and not combined in a syringe)
- Combination vaccines (equivalent components are merged into one vaccine)
  - Advantages?
  - Disadvantages?

COMBINATION VACCINES

- MMR-V
- HepA-HibB
- DTap-HepB-IPV (Pediarix)
- Hib-HibB (Convexa)
- DTaP-Hib-IPV (Pentacel)
The AAP has published a new policy statement, “Medical Versus Nonmedical Immunization Exemptions for Child Care and School Attendance.”

This policy statement recognizes the dangers of nonmedical exemptions to the health of children and to public health in general. Some important concepts conveyed in this policy statement include:

• Vaccine requirements for child care or school entry result in increased community immunization rates and decreased incidence of vaccine-preventable diseases.
• Medically indicated exemptions, when granted appropriately, typically do not compromise community immunity.
• Higher rates of immunization exemption in communities correlate with higher rates of vaccine-preventable diseases and disease outbreaks.
• The ease of requirements to obtain nonmedical exemptions, especially those of personal belief, can have a significant impact on the rate of exemptions and immunizations.
• Nonmedical exemptions to immunization requirements are problematic because of medical, public health, and ethical reasons and create unnecessary risk to both individuals and communities.

Vaccine Refusal: Documentation

- [Website](https://www.aap.org/en-us/documents/immunization_refusaltovaccinate.pdf)
- [Websites](1. AAP Childhood Immunization Support Program (CISP) Information for providers and parents. www.aap.org/immunization
2. Immunization Action Coalition (IAC) The IAC works to increase immunization rates by creating and distributing educational materials for health professionals and the public that enhance the delivery of safe and effective immunization services. The IAC “Unprotected People Reports” are case reports, personal testimonies, and newspaper and journal articles about people who have suffered or died from vaccine-preventable diseases. www.immunize.org/reports
4. National Network for Immunization Information (NNii) Includes information to help answer patient's questions and provide the facts about immunizations. http://www.immunizationinfo.org/professionals
5. Vaccine Education Center at Children's Hospital of Philadelphia Information for parents includes "Vaccine Safety FAQs" and "A Look at Each Vaccine." www.vaccine.chop.edu
6. Institute for Vaccine Safety, Johns Hopkins Bloomberg School of Public Health Provides an independent assessment of vaccines and vaccine safety to help guide decision-makers and educate physicians, the public, and the media about key issues surrounding the safety of vaccines. www.vaccinesafety.edu
7. Immunize Canada Immunize Canada aims to meet the goal of eliminating vaccine-preventable disease through education, promotion, advocacy, and media relations. It includes resources for parents and providers. www.immunize.ca/en/default.aspx
8. Sample office policy/letter to parents about refusal to vaccinate

Vaccination of a significant portion of a population provides “protection” for those who are not immunized (breaks the chain)

Parenteral refusal of vaccination has led to breakdowns in herd immunity

Better to have the unvaccinated “portion” be those who cannot medically receive the vaccine

Herd Immunity

- Vaccination of a significant portion of a population provides “protection” for those who are not immunized (breaks the chain)
- Parenteral refusal of vaccination has led to breakdowns in herd immunity
- Better to have the unvaccinated “portion” be those who cannot medically receive the vaccine
REFERENCES

- Red book 2015, 2018
- CDC website
- Unileforanie.org

QUESTIONS?

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