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# RHODE ISLAND MEDICAL JOURNAL

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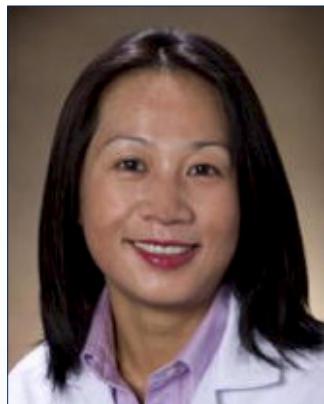


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## The Pulse of Pediatrics in Rhode Island

SHARON W. SU, MD, FAAP  
GUEST EDITOR

Sharon W. Su, MD, served as assistant professor of pediatrics in the Division of Pediatric Nephrology, Department of Pediatrics at The Warren Alpert Medical School of Brown University. She recently relocated to Portland, Oregon, to become medical director in pediatric nephrology at Randall Children's Hospital and affiliate assistant professor of pediatrics at Oregon Health and Science University.



I was invited to introduce hot topics in pediatrics presenting in Rhode Island. Many exciting and innovative projects and services are currently underway in the Department of Pediatrics at Hasbro Children's Hospital, a major teaching hospital for the Warren Alpert Medical School of Brown University. Below is a sampling of local issues that are being addressed by its pediatric faculty.

Articles at a glance:

### **Health Care for Gender Variant or Gender Non-Conforming Children**

Dr. Michelle Forcier and Emily Haddad, LCSW, aim to educate healthcare providers regarding a very high-risk and vulnerable population – children who exhibit gender non-conforming behaviors persisting into adolescence. They argue that early recognition, collaboration among medical providers, and supportive family interventions may improve social and mental health outcomes for these children.

### **Preschool-aged Wheezing**

Dr. Nico Vehse re-addresses a common but often misinterpreted physical finding – wheezing. He reiterates the old adage, "all that wheezes is not asthma," by delineating the difference between bronchiolitis and pre-school asthma.

### **Health Care Transition in Rhode Island for Adolescents with Special Health Care Needs: A report on the development and use of a clinical transition service**

As children with chronic illnesses survive into adulthood, pediatricians are faced with the challenge of transitioning these patients over to adult medical care. Dr. Sue McLaughlin and colleagues tackle this emerging problem by developing a pilot program that offers multidisciplinary transition services to healthcare providers in Rhode Island.

### **Health Screening of Newly Resettled Refugees in a Primary Care Setting**

The federal Refugee Act of 1980 has resulted in more than 4300 refugees resettling in Rhode Island. Dr. Sylvia LaCourse and her colleagues discuss the success of the Medicine/Pediatrics Primary Care Center (MPPCC), an outpatient residency clinic at Rhode Island Hospital, in providing medical care to newly resettled adult and adolescent refugees since October 2008.

### **Building International Collaborations from the Ground Up: Brown University Partnership in Haiti and Ukraine**

Global health is one of the fastest growing fields in medicine, particularly in the area of medical education. For over a decade, the Warren Alpert Medical School of Brown University has been a leader in global health. Dr. Natasha Rybak and her colleagues continue Brown's legacy in global health by discussing the development of 2 international medical programs – Haiti and Ukraine – and sharing the lessons they learned during the process.

# Health Care for Gender Variant or Gender Non-Conforming Children

MICHELLE M. FORCIER, MD, MPH; EMILY HADDAD, LCSW

## ABSTRACT

Most children explore various aspects of gender and sexuality as children. Youth with consistent, persistent, and insistent gender non-conformity or gender dysphoria are important to identify in the pre- and early-pubertal years as early intervention and support may be lifesaving. Those whose gender non-conformity persists into puberty and adolescence are most likely to identify as transgender. Blocking pubertal development at Tanner stage 2 for pre-pubertal, gender non-conforming children is a relatively new but reversible and highly beneficial strategy to delay puberty, giving patients and families time to come up with a transition plan. Early identification, collaborative support from healthcare providers and mental health clinicians, and supportive interventions for both children and families grappling with gender variance may improve social and mental health outcomes for what has traditionally been considered a high-risk, vulnerable population.

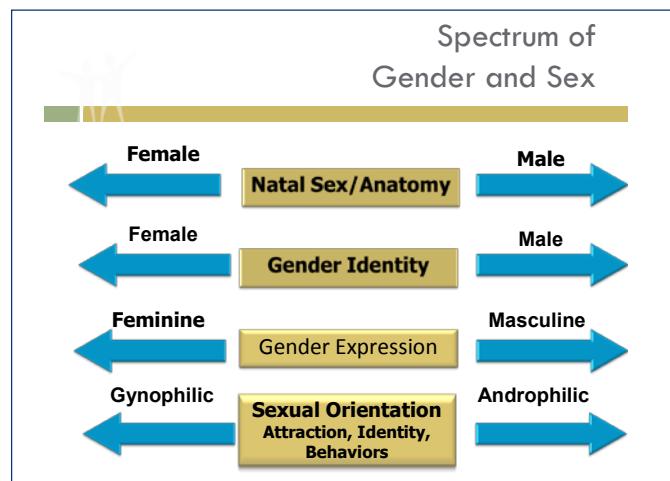
**KEYWORDS:** transgender, LGBTQ youth, child gender play

## INTRODUCTION

Typically children are assigned their sex or gender at birth based on chromosomes, gonads and hormones, as well as visible genital anatomy. For most people the assignment of gender at birth is congruent with their gender identity, their innate sense of their own maleness or femaleness, as well as their social gender expression (appearance and behavior). However, there are some individuals whose internal gender identity does not correlate with natal or assigned gender. Gender-variant or non-conforming children may challenge parents, health care providers and society with issues and needs that extend beyond our typical binary approach to sex

**CASE 1: Patient J. is an 8-year-old genetic and anatomic male who has a long history of playing with dolls, dressing up in female clothing, and using make-up. He would like to grow his hair long and wear more feminine clothing at school. Most of his friends are girls. His mother comes to your clinic concerned about what his behavior means and asks, "Is he gay?"**

Figure 1. Spectrum of Gender and Sex



and gender. This article will provide a brief introduction to paradigms, terminology, and issues common to pre-pubertal gender variant children, as well as why early identification is important for those who have gender non-conforming behaviors persistent into adolescence.

Current western society views gender in a binary manner – male/man and female/woman – often with rigid internal and external expectations that people adhere to as hetero-normative gender and sexual conformity. Recent paradigms incorporate a more fluid or spectrum approach to gender and sexuality. These more fluid paradigms allow persons to define where they might fall and move along a spectrum of gender and sexuality (Figure 1).

Gender, sex, and sexuality are often confused (Table 1). Persons who have long standing incongruity between their natal gender assigned at birth and the gender they identify with are often called transgender, an umbrella term for individuals and communities whose identities do not conform unambiguously to conventional notions of male or female gender roles, but blend or move between them. While gender play and experimentation is common in all children, most children who play or explore outside the gender norms do not become transgender adults. Gender-variant youth make up a smaller but important subset of children, who consistently identify or express differently than their natal assigned gender. This subset of children benefits from early identification and support as they negotiate developmental milestones and the tasks of adolescence.

**Table 1.** Terminology and definition

Terms related to Gender Identity and Expression	Terms related to Sexual Identity and Expression
<p><b>Gender</b> - characteristics culturally associated with femaleness or maleness</p> <p><b>Gender Expression</b> - how a person expresses one's gender identity; external characteristics and behaviors</p> <p><b>Gender Identity</b> - how a person perceives and feels gender; internal self-perception as masculine, feminine or other</p> <p><b>Gender Binary</b> - concept of only two genders - male/female or man/woman, with persons strictly gendered as either/or</p> <p><b>Gender Non-conforming, Variant, or Diverse</b> - person who does not conform to cultural or normative gender expectations</p>	<p><b>Biologic, anatomical or natal sex</b> - usually determined at birth by external genitalia, but also includes chromosomes, hormones, internal and external reproductive organs</p> <p><b>Sexual Attraction</b> - gender that a person is attracted to; attraction may be gynophilic, androphilic, both or neither</p> <p><b>Sexual Behavior</b> - what one does for sexual intercourse and sexual satisfaction</p> <p><b>Sexual Identity or Orientation</b> - how one labels his/her emotional, physical, and/or sexual attraction to others</p> <p><b>Straight</b> - used to refer to people whose sexual orientation is heterosexual</p>
<p><b>Transgender (Trans, Transsexual)</b> - person's gender identity and natal gender are incongruent; umbrella term referring to a group of people whose gender identity and/or expression does not conform to cultural norms</p> <p><b>Cisgender</b> - person's natal gender matches asserted gender identity</p> <p><b>Transman (Female to Male, FTM)</b> - identity label for natal females who transition to male identity and expression</p> <p><b>Boi</b> - natal female who does not identify as, or partially identifies as female or feminine</p> <p><b>Butch</b> - having what are conventionally considered masculine traits (physical, mental or emotional)</p> <p><b>Transwoman - (Male to Female, MTF)</b> - identity label for natal males who transition to female identity and expression</p> <p><b>Femme</b> - Feminine traits or identified person of any gender/sex</p> <p><b>Intersex</b> - umbrella term for a variety of congenital conditions in which chromosomal, gonadal, genitals and internal sex organ development is atypical. Also known as Disorders of Sex Development (DSD)</p> <p><b>Androgynous</b> - person appearing and/or identifying as neither male nor female</p>	<p><b>Homosexual</b> - person primarily emotionally, physically, sexually attracted to same sex</p> <p><b>Heterosexual</b> - person primarily emotionally, physically, sexually attracted to opposite sex</p> <p><b>Bisexual</b> - person attracted to and has sexual relationships with both female- and male-identified persons</p> <p><b>Gay</b> - a homosexual male or female</p> <p><b>Lesbian</b> - a homosexual female</p> <p><b>Pansexual</b> - someone who is sexually attracted to all or many gender expressions</p>

## GENDER DEVELOPMENT

Understanding gender development from infancy through adolescence provides a framework and holistic perspective that can promote person-centered approaches to gender-variant and sexually-diverse patients. Early on, infants begin to learn about masculinity versus femininity through cues such as dress, hairstyle and even scents of caregivers. Gender identity begins to shape in the second year of life and can be relatively stable as early as 3–4 years old. Children

unconsciously perform gender-stereotyped activities based on social cues promoting socially acceptable behaviors. Most preschool children play with toys and games that are in alignment with their assigned birth gender.<sup>1</sup> A gender non-conforming child preferentially and consistently chooses non-sex-typed toys, games, activities, and appearance. Early gender nonconformity does not necessarily cause the child distress in and of itself, but can be challenging for some parents and families.

**CASE 2:** Patient M. is an 11-year-old genetic and anatomic female whose father says "was always a tom boy." Her father says, "In the last year, she has become moody, and seems depressed. She is having more trouble at school." Patient M. says, "I hate having a period." On further questioning without her dad present, M. wonders if she is a lesbian, but also thinks she might be transgender after seeing a show on TV recently.

As children move into grade school, they understand and embrace more static concepts of established gender roles and sex differences.<sup>2,3</sup> Most children, however, will explore some gender non-conforming behaviors in childhood as passing short-lived phases lasting several weeks to several years. Gender non-conforming children more typically engage in *consistent, persistent, and insistent*<sup>4,5</sup> cross-gender play, activities, appearance and even body modification. Gender non-conforming children can also be differentiated from children experiencing a passing phase or experimentation by an expressed or unexpressed desire for alternative genitals or by expressing that they feel they are in the wrong bodies. In these school-age years, both parents and children may try to reshape and redirect gender non-conforming interests and expression into more socially acceptable norms for the child's natal gender.<sup>6</sup> Youth who feel pressure to conform to a gender that they do not feel is their own may experience negative developmental outcomes such as low self-esteem, internalizing and externalizing symptoms, and isolation from peers and family.<sup>7</sup>

As childhood may be a more "gender neutral" time, for most gender-variant youth, puberty is a time of new and additional stressors such as the development of unfamiliar and unwanted secondary sex characteristics.<sup>8</sup> The additional stress of negotiating the physical, social and emotional changes of adolescence in a body that does not fit with one's gender identity can contribute to poorer health outcomes. Gender dysphoria and variation is linked to isolation, anxiety, depression and suicidality. In addition, this dissonance and stress can lead to self-injurious behaviors such as cutting, burning, drug use and unprotected sexual activity. Many gender non-conforming adolescents have difficulty functioning academically and socially as puberty ensues. The prevalence of suicide attempts among transgender adolescents has been reported in some studies to be as high as 40%.<sup>9</sup> It is important for health care providers to associate these health-risk behaviors and mental health concerns with gender nonconformity, as they may trigger providers to assess gender identity and sexual orientation.

## EARLY DIAGNOSIS AND INTERVENTION

It is important that all healthcare providers have some understanding of gender variance and can recognize children who are struggling with non-conforming gender identity. Primary care providers, especially advanced nurse practitioners, pediatricians, and family doctors are often the first stop for parents with questions or concerns about gender non-conforming behaviors. As many gender-variant children exhibit mental health sequelae of experiencing this dissonance in natal versus identified gender, school nurses and counselors, social service professionals, and psychiatrists should also have a familiarity with features of gender non-conformity for early identification, early intervention, and support services.<sup>10</sup>

Evaluation of gender non-conformity has traditionally taken place within the discipline of mental health, with a focus on body and gender dysphoria. Currently gender non-conformity is captured in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), as "gender identity disorder (GID)". At present, core components necessary for the diagnosis of GID in children include: "A strong and persistent cross-gender identification...persistent discomfort with his or her sex or sense of inappropriateness in the gender role of that sex, the disturbance is not concurrent with a physical intersex condition, the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning."<sup>11</sup> While these criteria may offer some insight into the experience of some gender non-conforming persons, there are many reasons why a pathologic approach does not suffice, nor does it promote understanding or acceptance to a range of diversity and expression of gender and sexuality.

It is important to make clear to parents and families that there are currently no accurate ways to "diagnose" which gender non-conforming pre-pubertal children will consider themselves transgender in adolescence. Studies report continuation rates range from 15% to 40%, with most gender non-conforming natal males going on to become homosexual identified men in adulthood.<sup>12</sup> While some gender non-conformity in prepubertal years is linked to later homosexual orientation, other studies show that as many as one third to one half of children referred to a gender clinic continued in adolescence with their gender non-conformity.<sup>13</sup> The more

long standing the non-conformity, the more intense the body dysphoria, and the more assertive patients are about identity as opposed to activities, the more likely they will be to continue into adolescence as transgender.<sup>13</sup>

When working with families with prepubertal children who are non-conforming, the primary focus is to support the parents and recommend that children be supported for who and how they are.<sup>18,20</sup> It is critical that parents



**VIDEO** Dr. Michelle M. Forcier recently appeared on the Katie Couric show to speak on transgender issues.

work through their own concerns and processes of confusion, loss, shame, guilt and fear with a mental health provider. Children who are not supported by their parents risk increased distress, trauma, anxiety, isolation, and other psychosocial challenges.<sup>14</sup> Data from the California Family Acceptance Project demonstrates all sexual minority youth enjoy protective benefits with parental love and support. Even if parents do not understand or fully accept their child's gender identity or sexual orientation, family support offers tremendous protective effects in terms of depression, suicidality, and substance use.<sup>15</sup>

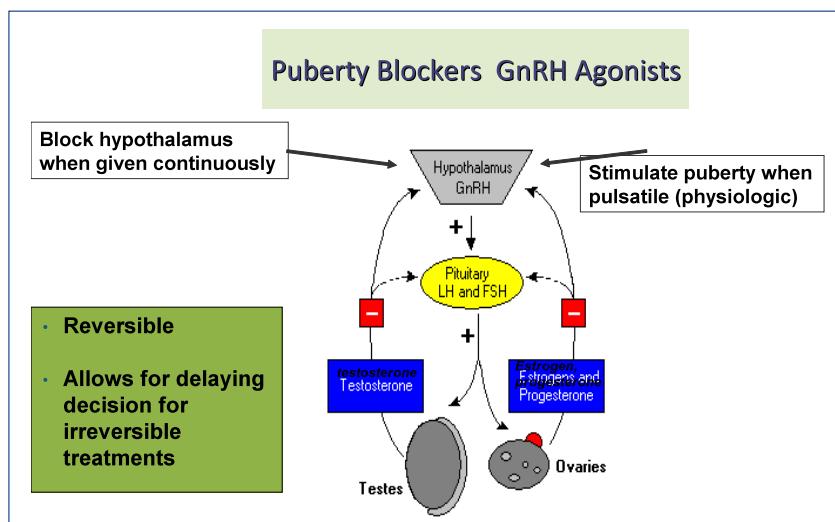
Mental health clinicians have an important role in the assessment and treatment planning for transgender youth. Mental health personnel can assess and differentiate between cross-gender interests and play versus transgender identification and gender dysphoria; evaluate identity in the context of the child's family and psychosocial environment; educate children and parents about gender identity and sexual health; model acceptance of gender non-conformity; evaluate and treat coexisting mental health concerns; and help children and families create safe, healthy and supported transition plans.<sup>16,5</sup> Moreover, mental health clinicians can act as a liaison and advocate for children by working with schools, the legal system and medical providers.<sup>10</sup>

Creating a positive and successful transition plan includes: helping children and parents plan for disclosure to family, friends, school or playmates and other social contacts; educating staff and students within the school system; providing supportive documentation for name and gender change. Many families request a "safe letter" to provide to social and legal entities that explains their child is in the process of transitioning and under the care of health professionals. Most importantly, if there are any concerns about persons and environment as potentially harmful to a child and her/his disclosure, or social transition, guardians may want to consider containing gender non-conforming expression to the home until a safer plan is developed. Finally, medical and mental health providers should communicate frequently, especially if there are mental health concerns such as depression, anxiety, suicidal ideation, eating disorder, and/or substance abuse.<sup>16</sup>

## MEDICAL INTERVENTIONS

During early childhood and up until pre-puberty, children who exhibit gender non-conformity should be encouraged to be themselves and explore a variety of gender interests and expressions. Parents should be reassured that the trajectory and outcome for gender non-conforming children is unpredictable. Many gender non-conforming children will become adults who are heterosexual (cisgender – when a per-

**Figure 2. Puberty Blockers for Transgender Youth**



son's anatomical gender matches a person's expressed gender identity) or homosexual (cisgender). Persistent, insistent and consistent non-conforming gender behaviors and expression may be more likely to lead to a future transgender identity.<sup>1</sup> When gender non-conformity continues unabated or newly emerges during puberty, these youth are more likely to identify as transgender.

Early identification allows medical providers to offer anticipatory guidance and proactive medical care. Most guidelines now recommend the use of gonadotropin releasing hormone agonists (leuprolide, triptorelin, goserelin, or histrelin) as puberty blockers for gender non-conforming youth starting puberty, and addition of cross sex hormones later in adolescence (Figure 2). Blocking the progression of endogenous puberty allows youth to avoid developing unwanted secondary sexual characteristics and provides time and opportunity to more fully explore gender identity.<sup>10,17</sup> Additional time allows parents and families to adjust their understanding of their child and their imagined future life; support parents and child in developing resiliency and social skills to better navigate successfully through adolescence; and to create a plan for transition that is safe and healthy for that teen.

Puberty blockers are completely reversible, allowing children to return and develop in the puberty of the natal gender without known adverse sequelae. Puberty blockers started at the very beginning of puberty, with the start of breast budding or testicular enlargement as well as initial pubic hair growth (Tanner 2 sexual maturity staging) maintain adolescents in temporary and reversible prepubertal state, with no further development of secondary sexual characteristics. Puberty suppression for transgender adolescence may reduce symptoms of depression and other emotional problems, in turn enhancing overall functioning.<sup>18</sup> Eliminating development of secondary sex characteristics of the adolescent's natal, but not identified gender, allows for more congruent development of identified secondary sex characteristics when

cross-gender hormones are started and eliminates the need for many future cosmetic surgeries. Puberty blockers can make it easier for persons to "pass" in their identified gender as they mature into adulthood. Most continuing gender non-conforming adolescents desperately want to go through puberty in their identified gender and are both relieved and excited when they start puberty blockers and/or cross-gender hormones.

It is important to remember that some gender non-conforming youth do not desire complete phenotypic transition, and are content with their endogenous hormones, hormone-only treatment, partial surgical gender confirmation surgeries (i.e. mastectomy but not phalloplasty, breast implants but not penis or orchietomy). Youth who identify as gender queer or androgynous may or may not want to take cross-gender hormones or take low doses that do not fully suppress their own endogenous hormones. Youth who can provide informed consent do not have to choose one binary end of the gender continuum over another. Furthermore, gender non-conforming persons may experience a more fluid identity and may change their transition goals and requests for treatment over time.

## CONCLUSION

While most children explore various aspects of gender and sexuality as children, consistent, persistent, and insistent gender non-conformity or gender dysphoria is important to screen for and identify in the pre- and early pubertal years. Most gender non-conforming prepubertal children do not identify as transgender later in life but rather may identify as homosexual. Those whose gender non-conformity persists into adolescence are most likely to identify as transgender. Blocking pubertal development at Tanner stage 2 for prepubertal transgender children is a relatively new but highly beneficial strategy to delay puberty and decrease unwanted and distressing secondary sexual characteristics while supporting chosen puberty development. Early identification, collaborative support from healthcare providers and mental health clinicians, and supportive interventions for both children and families grappling with gender variance may improve social and mental health outcomes for what has traditionally been considered a high-risk, vulnerable population.

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## Authors

Michelle M. Forcier, MD, MPH, is assistant professor of pediatrics, Division of Adolescent Medicine, Department of Pediatrics at The Warren Alpert Medical School, and is affiliated with Hasbro Children's Hospital. She established and runs the Transgender Clinic at Hasbro Children's Hospital.

Emily Haddad, LCSW, is a social worker in the Department of Psychiatry, and is affiliated with Hasbro Children's Hospital and Rhode Island Hospital.

## Disclosures

The authors have no disclosures.

## Correspondence

Michelle M. Forcier, MD, MPH  
Division of Adolescent Medicine  
Department of Pediatrics  
Hasbro Children's Hospital  
593 Eddy Street, Providence RI 02903  
[mforcier@lifespan.org](mailto:mforcier@lifespan.org)

# Preschool-Aged Wheezing

NICO W. VEHSE, MD

## ABSTRACT

Wheezing is a common physical finding in the pediatric age group 0-4 years and can have multiple diverse causes. Infectious causes are the most common culprit and lead to bronchiolitis or preschool asthma. The identification and understanding of these causes is fundamental in the appropriate treatment of our patients. The differentiation and underlying pathologies of these 2 conditions can be confusing and complicated. A systemic review of these conditions attempts to alleviate some of this confusion and tries to provide some clinical guidance for the treatment of these patients.

**KEYWORDS:** wheezing, bronchiolitis, asthma, airway inflammation

## INTRODUCTION

Infants and children younger than 6 years of age have frequent healthcare needs related to respiratory symptoms. The primary reason for seeking help is related to respiratory viral infections, as some children may present with lower airway obstruction and severe symptoms.<sup>1</sup> These symptoms may be difficult to treat due to multiple mechanisms causing lower airway obstruction in children ages newborn to preschool years. Airway malformations have been excluded as it necessitates a separate discussion.

### Bronchiolitis

The first time an infant presents with wheezing – defined as a high-pitched expiratory chest auscultation sound – can be challenging. The differential diagnoses are extensive and objective data are very limited. The most common reason for these symptoms is bronchiolitis, but the use of the diagnostic term is variable. Some providers consider any patient with wheezing and an age younger than 2 years as bronchiolitis, whereas other providers may diagnose only infants younger than 6 months of age presenting with a first-time occurrence of wheezing. On review of the published research on bronchiolitis since 2005, most authors defined bronchiolitis by ICD-9 code, clinical diagnosis or included only first episodes of wheezing in various age ranges. Some authors included recurrent wheezing patients and some did not give any clear definition of bronchiolitis at all.



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The use of a positive respiratory syncytial virus (RSV) test was also used as part of the definitions. Therefore, bronchiolitis patients are a very diverse population in research and clinical practice.

Bronchiolitis is defined by the American Academy of Pediatrics (AAP) as: "a disorder most commonly caused in infants by viral lower respiratory tract infection (LRTI); it is the most common LRTI in this age group and is characterized

by acute inflammation, edema and necrosis of epithelial cells lining small airways, increased mucus production, and bronchospasm."<sup>2</sup> Bronchiolitis is initiated by an upper respiratory viral infection and numerous viruses cause bronchiolitis in infants, with RSV being the most common. Bronchiolitis is a self-limiting disease with 12 days as the median duration of illness for children <24 months, although 20% of children have a continuation of respiratory symptoms after 21 days. Hospital admission or emergency department assessment for respiratory and nutritional support is sometimes necessary.

Unfortunately the term bronchospasm polluted the definition of bronchiolitis and almost all studies assessing the treatment of bronchiolitis. In cases where patients suffer from bronchospasms due to reversible lower airway obstruction, the inhalation of short-acting-beta-agonist (SABA) bronchodilators will relieve these spasms, and therefore this type of bronchospasm should not be regarded as bronchiolitis. Assessing response to therapy is challenging in the absence of infant spirometry; nonetheless, respiratory scoring systems such as the one used at Hasbro Children's Hospital provide the best practical clinical assessment tool. A response to inhaled SABA on more than one occasion is very unlikely a false positive test and indicates reversible lower airway obstruction and not bronchiolitis. Thus, the respiratory scoring system can help exclude infants with reversible lower airway obstruction from the bronchiolitis population. This tool might help guide providers in clinical practice to more appropriate therapies.

## REVERSIBLE LOWER AIRWAY OBSTRUCTION

Another very common reason for first-time wheezing in young infants and toddlers is reversible lower airway obstruction during respiratory viral infections.<sup>3</sup> This can only be diagnosed by albuterol trials and clinical impression, as mentioned above. It is challenging to decide which infant might benefit from such a trial and no clear guidelines exist on how this trial should be performed. A trial of albuterol – three consecutive albuterol doses (2.5 mg/3ml) via nebulizer or four separate doses of 100 µg with a metered-dose inhaler (MDI) and a valved-holding chamber (VHC) – may be indicated.<sup>4</sup> A good candidate for such a trial, but not exclusively, might be an infant with a family history of allergy, atopy, asthma or exposure to tobacco smoke. Many physicians are reluctant to diagnose an infant with recurrent and reversible airway obstructions as asthma and many other names are used to express the child's diagnosis, i.e. reactive airways disease, twitchy airways and others. This reluctance stems from the uncertainty regarding the chronicity of the child's respiratory condition.

Reactive airways disease, asthma, viral wheezing and all other used terms for these patients describe the same physiology of reversible lower airway obstruction from smooth, small-airway muscle spasticity. The etiology of these reversible airway obstructions is very diverse in the discussed age group and increasing diversity continues to be elucidated.<sup>5</sup> As a result, long-term management of exacerbation prevention becomes complicated and requires very individualized approaches. All these children should be treated with inhaled SABA for symptom relief and the MDI with VHC-delivered method is the most effective and safest way to deliver inhaled medications to the lower small airways.

The prognosis for infants through preschool-aged children presenting with respiratory viral infections and reversible lower airway obstruction remains unknown. The best epidemiological study to date is the Tucson Children's Respiratory Study.<sup>6</sup> This was a prospective cohort study identifying three distinct groups of children with different natural history of diseases: transient-early wheezers, late-onset wheezers and persistent wheezers. Patients with allergic sensitization had a later onset of symptoms and were most likely to continue with chronic asthma symptoms. Ongoing analyses of the data lead to the development of an "Asthma prediction index" for children with reversible lower airway obstruction during respiratory viral infections. Children with a first-degree relative suffering from asthma, atopy or allergies will have a 75% chance of having asthma symptoms past the age of 6 years. The same holds true for infants and toddlers with atopy or allergies themselves. It is important to remain mindful that nobody can prospectively decide if the patient in question is part of this 75% population or the 25% who will have resolution of symptoms.

The best evidence-based management for children with atopy and recurrent reversible lower airway obstruction is delineated in the 2007 NHLBI asthma guidelines<sup>7</sup> used in the

United States or the PRACTALL Asthma European Consensus.<sup>8</sup> These children can be confidently diagnosed with asthma around age 5 years when they can produce repeatable and reliable spirometry results. Prior to this, the provider has to rely on subjective impression of symptom relief from inhaled SABA. This population will be well cared for by their pediatrician or family practitioner by using the 2007 NHLBI guidelines, but might require specialist care if more than mild to moderate asthma control medications are needed.

Non-atopic children with acute, intermittent airway inflammation and recurrent, reversible lower airway obstruction will have respiratory symptoms during the respiratory viral season.<sup>9</sup> Their exacerbations seem limited to episodes of respiratory viral infections and the season is traditionally from September through April. September and April are also the 2 months of the year with increased hospital admission for children with reversible lower airway symptoms.<sup>10</sup> Therefore, therapy and guidance needs to be focused on this time period.

## LOWER AIRWAY INFLAMMATION

Children without chronic lower airway inflammation seem to have very questionable benefits from daily, inhaled corticosteroids (ICS) alone. This can be explained by their acute intermittent lower airway inflammation during respiratory viral infections and the difference in their inflammatory cell profile. The cell profile during acute exacerbations is very different from those of mild, well-controlled asthmatics who derive great benefit from low-dose ICS on a daily basis. Neutrophils, not eosinophils or lymphocytes, are the major culprits during acute symptoms. Basic research has revealed that neutrophils and eosinophils respond very differently to low-dose corticosteroids. Eosinophils become readily apoptotic when exposed to low-dose corticosteroids and are readily taken up by macrophages in the airways. This uptake by macrophages is the essential step towards resolution of inflammation.<sup>11</sup> Apoptosis is less likely in neutrophils due to many environmental factors, including IL-8, G-CSF, local tissue hypoxia, low-dose corticosteroids and low extracellular pH.<sup>12, 13</sup> Unfortunately, all these conditions are prevalent during lower airway obstruction.<sup>14</sup> The prolonged activation of neutrophils results in release of their toxic substances into the airways, causing further acute and chronic inflammation. It is unknown why some children have a tendency to respond to this inflammatory process by developing bronchospasm and prolonged inflammation. Fortunately, treating these children with high-dose pulse systemic corticosteroids (2mg/kg/day) seems to provide acute relief and resolution of the neutrophil-induced airway inflammation.

No evidence exists for effective symptom control of children with intermittent, acute, viral-induced neutrophilic lower airway inflammation and reversible airway obstruction. Many personalized and empirically-derived treatments have been used in the past, but none of these

are evidence-based therapies. Some providers might use intermittent high-dose inhaled steroids, others might hold daily medications and use intermittent systemic steroids plus inhaled SABA. Others use both a moderate-dose ICS and a leukotriene-receptor antagonist (LTRAs) during the critical period or for the high-risk patient.

It has been my practice to use the latter plus the addition of a very aggressive inhaled SABA schedule during upper respiratory infections. The rationale is to suppress the acute inflammation with ICS and to block the leukotriene-mediated pathway responsible for lower-airway neutrophil recruitment with LTRAs. In vitro studies have also demonstrated that the combination of corticosteroids and long-acting beta-receptor agonists might be beneficial in decreasing inflammatory markers during viral infections.<sup>15</sup> It is unclear whether the regimens or the frequent close follow-ups are responsible for the provider's perception of efficacy of therapy. More likely, it is a combination of multiple factors.

Few novel anti-inflammatory medications have reached the market since the invention of ICS. LTRAs are one example; however, they are not effective when used as single agents to manage lower airway inflammation. ICS attenuates eosinophilic airway inflammation in asthma and remodeling of airway structures. LTRAs block leukotriene-mediated pathways of asthma. Despite the variety of medications available today, there is still no single safe therapy to manage neutrophilic inflammation in pediatric airways. The discovery of such a therapy would have far reaching impact on the treatment of cystic fibrosis, bronchopulmonary dysplasia, acute asthma exacerbations and viral-induced respiratory symptoms.

## CONCLUSION

My practice in caring for the newborn through preschool population with recurrent respiratory problems is based on the physiology, immunology and chemistry of each individual patient. It has come to my realization that asthma is a poor diagnosis and more of a symptom description occurring during a respiratory syndrome. Unfortunately, none of the mentioned conditions have a cure. Preventative treatments are very limited and only symptom-relieving therapies are available for managing acute symptom exacerbations.

Patients younger than 6 years of age will continue to produce the highest healthcare cost and require frequent healthcare utilization until we are able to identify objectively the underlying mechanisms and control the causes of their respiratory symptoms safely and consistently. For now, we are best served by maintaining a keen clinical eye, providing good patient education and limiting environmental exposures through better infection and allergen avoidance. We should use our diagnostic terms wisely to avoid confounding the true underlying physiology, biochemistry, and biological factors causing our patients' suffering and to also help guide us to appropriate effective therapies for relieving their symptoms.

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## Author

Nico W. Vehse, MD, is assistant professor of pediatrics, Division of Pediatric Pulmonology, Department of Pediatrics at The Warren Alpert Medical School of Brown University, and is affiliated with Hasbro Children's Hospital.

## Disclosures

The author has no financial disclosures to report.

## Correspondence

Nico W. Vehse, MD  
Hasbro Children's Hospital  
Department of Pediatrics  
593 Eddy Street  
Providence RI 02903  
401-444-6540  
Fax 401-444-6543  
nvehse@lifespan.org

# Health Care Transition for Adolescents with Special Health Care Needs: A Report on the Development and Use of a Clinical Transition Service

SUZANNE MC LAUGHLIN, MD; NANCY BOWERING, RN; BARBARA CROSBY, RN; JODIE NEUKIRCH, MS;  
ELIZA GOLLUB, BA, RN; DEBORAH GARNEAU, MA

## ABSTRACT

**Background:** A growing population of adolescents with special healthcare needs is aging into adulthood. These emerging adults face the transition challenges of their healthy peers but also potentially heightened risks and challenges related to their conditions. We describe the process of developing a pilot program to support healthcare services for emerging adults with chronic conditions and present preliminary data on utilization.

**Results:** An outpatient multidisciplinary consult model was developed based on patient, family and physician feedback. Patients with diverse conditions were equally referred from primary care, subspecialists and families and community agencies. Services provided included needs assessments (100%), referral to adult physicians (77%), care coordination (52%) and referrals to adult community services (10%). Clinical billing did not fully support the cost of providing services.

**Conclusion:** The pilot program offered multidisciplinary transition services that were utilized by a diverse patient population. Local and national resources for health care transition are provided.

**KEYWORDS:** transition to adult care; adolescent; young adult

## INTRODUCTION

Medical advances have dramatically improved survival rates for many conditions that had once been fatal in childhood. Survival rates in excess of 90% are now realities for children with conditions such as spina bifida, sickle cell disease, cystic fibrosis and cancer. Our success has created a new challenge: How will we care for these emerging adults with chronic conditions?

This article will review current data on transition in Rhode Island and provide results of a pilot program to support healthcare services for emerging adults with chronic conditions. Local and national resources for health care transition are provided.

Although all adolescents need to transition to adult roles in personal, social, educational/vocational and health domains, those with chronic conditions or disabilities can anticipate heightened risks and challenges in this process. Emerging adults with chronic conditions are a significant subset of any primary care practice. In Rhode Island, 1 in



LIFESPAN

Children in the transition clinic created this mural.

5 children between the ages of 12-17 are reported to have a special healthcare need,<sup>1</sup> defined by the U.S. Department of Health and Human Services as those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by required by children generally.<sup>2,3</sup> Pediatricians and family practitioners need to prepare patients and families to transition to adult care models (even if continuing care within their practices) and internists need to be aware of issues common in transitioning this group.

Health care transition is defined as "a deliberate shift from pediatric to adult-oriented providers, settings and content of visits to provide comprehensive, age-appropriate care."<sup>4</sup> It is a key element of the patient-centered medical home and a core outcome measure for healthcare systems. However, national surveys indicate only 40% of eligible children report transition care. Rhode Island slightly surpassed the national average, but significant gaps included patients who reported a lack of discussions about transition to adult providers, changing health needs and insurance, and a lack of encouragement to assume increased responsibility for care. Adolescents with special healthcare needs (ASHCN) who lacked a medical home, were uninsured or of racial/ethnic minorities were less likely to receive transition services.<sup>5</sup>

Rhode Island Department of Health (RIDOH) surveys have reported a marked lack of comfort among adult primary care providers in caring for ASHCN and reported gaps in care during periods of transfer. Specific needs cited included written

transfer summaries and communication with pediatric care providers.<sup>6</sup> Fewer than 1 in 5 pediatric practices had a coordinated process for transferring ASHCN.<sup>7</sup> A survey of pediatric subspecialists practicing within Rhode Island identified availability of adult subspecialists, primary care providers and time within visits to address transition issues as the issues most frequently affecting their adolescent patients. Among options for adding services, the provision of a step-wise process of transition for providers and families, a written medical summary, written transition information and information on non-medical transition resources were priorities.<sup>8</sup>

## MATERIAL AND METHODS

The Rhode Island and Hasbro Children's Hospitals Transition Consult Clinic was developed as a resource for health care transition of ASHCN. The structure and content was developed with input from key stakeholders, including RIDOH's Office of Special Healthcare Needs, the Rhode Island Parent Information Network (a family and patient advocacy network), CEDARRS (a pediatric community care coordination program), the Adolescent Leadership Council, adult community services providers, clinical managers (nursing) and subspecialty and primary care physicians. Preliminary needs assessments incorporated state-specific data from the 2009-10 Survey of Children with Special Health Care Needs, RIDOH data, pediatric and adult provider surveys<sup>8</sup> and the input of patients and families at state forums and as represented by advocacy groups. An outpatient consultation model was proposed and included a multidisciplinary team supported by the hospitals and RIDOH. Interim goals for patient referrals, assessments and interventions were established. Data was collected on referrals, patient needs and interim outcomes, provider hours, services, and billing. Data collection on patient satisfaction and longer-term outcomes is ongoing.

Pre-visit contacts were conducted by the clinical coordinator or physician and sought brief information on condition and anticipated needs and goals from the referral source. Available medical records were reviewed. New patient visits incorporate a broad needs assessment, including a structured transition readiness tool, a review of the medical history and a physical exam. A post-session team meeting reviews the needs assessment and drafts a transition plan. Subsequent visits are scheduled as needed to allow review of emergency plans, medical summaries and written transition plans as well as follow-up of active medical issues and referrals. Summaries are provided to patients, families and primary and subspecialty providers in written and, if preferred, electronic versions. During the pilot period, our clinics adopted an outpatient electronic medical record (EMR). In-house technical support assisted in creating within the EMR a transition template, flowsheet and order set with patient handouts.

**Table 1.** Prevalence of conditions seen in transition consult clinic:

	N	%
<b>Cognitive disability</b>	9	29
<b>Cerebral palsy</b>	5	16
<b>Metabolic disorder</b>	5	16
<b>Sickle cell disease</b>	5	16
<b>Wheelchair-reliant</b>	5	16
<b>Autism spectrum disorder</b>	4	13
<b>Rheumatologic (lupus, idiopathic arthritis)</b>	3	10
<b>Muscular dystrophy</b>	3	10
<b>Survivor of childhood cancer</b>	2	6
<b>Chronic kidney disease</b>	2	6
<b>Crohn's Disease, Down syndrome, seizure disorder, congenital heart disease</b>	1 each	3

## RESULTS

The outpatient consultation model was trialed over a two-year period. Due to limitations of provider availability, 21 sessions were scheduled. Fifty-five patients were referred, 31 patients were seen for a total of 40 patient visits and 11 did not keep appointments or rescheduled. Primary-care pediatricians, subspecialists and families and community agencies each represented ~1/3 of referral sources. One-third of patients not seen following referrals did transition their care to a primary care site providing services to pediatric and adult patients, but did not schedule specific transition consultation visits. Several other families requested specific service referrals but declined on-site consultation visits when contacted by telephone.

### Patient characteristics

Patients ranged in age from 16-24 years (mean 19.6). Medical conditions varied, with more than half of patients carrying multiple diagnoses (Table 1).

### Needs assessments and transition readiness

Parents identified more needs than adolescents. Adolescents often responded, "I don't know but want to learn to" regarding learning to contact their doctors and arrange visits independently, managing their money and budget, applying for jobs and obtaining financial assistance. Self-management skill needs most often reported included: describing medical condition, identifying risk signs/symptoms for condition, reporting medications and allergies, talking independently with a physician and knowledge of changes in insurance and benefit eligibility with change in age. All patients noted at least 1 skill they performed independently. Of 29 assessed self-care skills, slightly over half (52%) reported: "I am learning to do this"; or, "I have started doing this;" or, "I always do this when I need to." Almost half of families reported earlier discussions with primary or subspecialty physicians regarding a need to change providers as the ASCHN aged into adulthood. All families reported receiving at least one new care or service option when meeting with the advocate/adult services specialist.

**Table 2.** Transition Services Provided

	#	% of eligible*
<b>Referrals:</b>		
Care coordination	16	52%
Adult community services	3	10%
Adult subspecialist(s)	7	58%
Adult Primary Care	10	77%
Adolescent Peer Group (TALC)	11	84%
<b>Medical Summary:</b>		
Emergency Care Plan:	9	29%
<b>Transition Plan:</b>		
Transition flowsheet	7	22%
<b>Transition needs assessment</b>		
	31	100%

\*Some patients were already enrolled in care coordination programs, had adult primary or subspecialists or other pieces of transition in place.

## Patient outcomes

An electronic medical record recording services and recommendations was created for all patients. Discrete elements of services are detailed in Table 2.

## Time, effort and charges

Visits ranged from 45-120 minutes. All patients saw the physician, nurse coordinator and advocate/adult service specialist in their initial visit. Interactions with the adolescent peer group coordinator and family therapist were determined by needs assessments and patient and family's willingness. Pre-visit preparation averaged 20 minutes for the nurse coordinator and 20 minutes for the physician. Post-visit follow-up ranged from 15–45 minutes for the physician and 15–120 minutes for the nurse coordinator. The advocate/adult service specialist provided from 15 minutes-5 ½ hours of follow-up. Follow-up efforts ranged from summarizing visits and transition plans to direct contacts with schools, subspecialists and other agencies to home visits for additional needs assessment. Billing ranged from \$107-\$462.

An assessment of patient and family satisfaction with services and longer-term follow-up, including tracking progress through the EMR flowsheet, is ongoing. It remains to be established whether the services are financially sustainable on clinical billing. Transition clinics in other states are often additionally supported by institutional and grant funding.

## CONCLUSION

Addressing transition issues in a busy primary or specialty practice is a significant challenge. Minor adaptations of our electronic health record to include flowsheets, timelines and easy-to-access screening tools support incorporating transition discussion into brief visits and monitoring progress on self-management skill development. The introduction of the concept of transition at an early age can allow for gradual introduction of necessary skills and empower patients and families to chart pathways to independence or condition-appropriate supports with guidance from their physicians. Explicit transition policies for practices cue patients and families to expectations and their responsibilities in this process.

(Note: Patients with significant issues or seeking added supports can be referred to the Transition Consultation Clinic at 444-6118.)

## Useful online resources

- RI DOH transition materials <http://www.health.ri.gov/special-healthcareneeds/about/adolescenttransition/index.php>
- RI Parent Information Network <http://www.startingpointsforparents.org/transitions>
- National transition website: <http://gotransition.org>

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## Authors

Suzanne McLaughlin, MD, is the program director for the medicine-pediatrics residency at Rhode Island and Hasbro Children's Hospitals and assistant professor of medicine and pediatrics, The Alpert Medical School of Brown University .

Nancy Bowering, RN, was a nurse-coordinator in the Children's Neurodevelopmental Center of Hasbro Children's Hospital during portions of the projects.

Barbara Crosby, RN, is a nurse-coordinator in the Children's Neurodevelopmental Center of Hasbro Children's Hospital .

Jodie Neukirch, MS, is the program director of The Adolescent Leadership Council at Hasbro Children's Hospital.

Eliza Gollub, BA, RN, is a master's in nursing candidate at Northeastern University.

Deborah Garneau, MA, is the director of the Office of Special Healthcare Needs at the Rhode Island Department of Health .

## Disclosures

The authors have no relevant financial disclosures.

## Correspondence

Suzanne McLaughlin, MD  
Medicine Pediatrics Primary Care Center  
110 Lockwood Street, Physicians Office Building, Suite #224  
Providence RI 02903  
401-444-4393  
[smclaughlin1@lifespan.org](mailto:smclaughlin1@lifespan.org)

# Health Screening of Newly Resettled Refugees in a Primary Care Setting

SYLVIA LACOURSE, MD; NATASHA RYBAK, MD; CAROL LEWIS, MD; JENNIFER GARTMAN, MD; JEROME LARKIN, MD;  
SUZANNE MC LAUGHLIN, MD, MSC; ELIZABETH T. TOLL, MD

## ABSTRACT

Since October 2008, the Medicine/Pediatrics Primary Care Center (MPPCC) has been working with Rhode Island's refugee resettlement agency to coordinate medical care for newly resettled adults and adolescent refugees. The process includes obtaining extensive screening labs and providing immunizations. This review discusses the results of selected screening tests for latent TB, stool parasites, vitamin D, and vaccine-preventable diseases, such as hepatitis, performed as part of the initial intake exam during the first two years of operation of the MPPCC Refugee Clinic.

**KEYWORDS:** Refugee clinic, TB, hepatitis, Medicine/Pediatrics Primary Care Center

## INTRODUCTION

The federal Refugee Act of 1980 provides for a fixed number of individuals seeking political asylum to relocate to the United States each year, and mandates specific health screenings and evaluations as part of the naturalization process. Since its enactment, more than 4300 refugees have resettled in Rhode Island, including 409 individuals in 2009–2010.<sup>1,2</sup> Refugees are at increased risk of both infectious and non-infectious diseases, which often are not previously addressed, and their vaccination status is typically unknown.<sup>3</sup> An intake exam is required within 30 days of arrival in the United States, or within 7 days for refugees who are HIV positive. Refugees are guaranteed Medicaid insurance coverage for only the first 8 months. Disease burden, limited insurance coverage, and vaccination requirements for naturalization increase the importance of timely diagnosis of conditions, initiation of treatment and referrals, and completion of immunizations.

The Medicine/Pediatrics Primary Care Center (MPPCC), an outpatient residency clinic at Rhode Island Hospital, has worked with the International Institute of Rhode Island (the state's primary refugee resettlement agency), to coordinate the medical care of newly resettled adult and adolescent

refugees since October 2008. Most pediatric refugees are seen at the Pediatric Refugee Intake Clinic at Hasbro Children's Hospital. The intake process occurs monthly in two structured clinic visits. The initial patient encounter is a nurse visit: the patient is oriented to the clinic, a tuberculin skin test (TST) is placed, a brief medical history is obtained and a standardized set of labs is drawn. The list of screening labs is comprehensive and includes: complete blood count with differential, malaria blood smear, urinalysis, vitamin D, glucose and cholesterol, lead (for children ages 6 months to 16 years), urine pregnancy test, HIV, rapid plasma reagins for syphilis, as well as urine for gonorrhea and chlamydia. Titers for hepatitis (A, B, and C), varicella, measles, mumps, and rubella are also obtained. Stool collection containers for the ova and parasite exam are provided to patients at this time and are returned at the intake physical examination two days later. At the intake physical, TSTs are read, stool samples are processed, and lab results are addressed by the resident who will become the patient's primary care provider, thus ensuring continuity of care. Immunizations are initiated at this visit as well.

This review discusses the results of selected screening tests for latent TB, stool parasites, vitamin D, and vaccine-preventable diseases performed as part of the initial intake exam during the first two years of operation of the MPPCC Refugee Clinic.



## METHODS

### Setting/Participants

We performed a retrospective medical record review of all patients who underwent intake exams at the MPPCC Refugee Clinic from October 2008–October 2010.

### Analysis

Demographic data and results of screening tests were collected from electronic medical records using a structured abstraction tool. Descriptive statistics were generated with SPSS software (version 17.0; SPSS Inc, Chicago, Illinois). This study was reviewed and approved by the Lifespan Rhode Island Hospital Institutional Review Board.

## RESULTS

During the course of the 23-month study period, 77 patients were seen for care at the MPPCC.

### Demographics

Fifty three percent of the patients were female. Median age was 31 years (range: 4 months to 87 years), with 55% of patients between the ages of 20–39 years (Table 1). Country of origin was similar to national trends of refugee resettlement, with the majority of refugees emigrating from Bhutan, Iraq, Eritrea, Burundi, and Myanmar (formerly Burma) (Table 2).

### Latent Tuberculosis

TST results were available for 95% of patients. Two patients had a history of pulmonary TB and therefore TST was not placed. Latent tuberculosis (TB) infection was diagnosed by TST > 10 mm in 64% of patients. Chest x-ray results were available in the electronic medical record for all but one of the patients with positive TSTs and were all negative for active pulmonary TB. Due to an increased suspicion for TB, two patients were diagnosed with latent TB infection using QuantiFERON (1 with a negative TST, 1 who did not have a TST placed) (Table 3). The latter test was performed at the RISE Clinic, a tuberculosis clinic sponsored by the Rhode Island Department of Health.

### Stool Parasites

Most patients (92%) had their stool examined for ova and parasites. Forty percent of patients had stool samples that were positive for parasites, approximately 2/3 of which were potentially pathogenic. Fourteen patients (18%) had more than one parasite identified (Tables 3 and 4).

**Table 1.** Sex and Age of Patients

Sex	n=77
Female	41 (53%)
Male	36 (47%)
<b>Age range (years)</b>	
0-19	11 (14%)
20-39	42 (55%)
40-59	16 (21%)
≥ 60	8 (10%)

**Table 2.** Region and Country of Origin of Patients at the MPPCC Refugee Clinic (October 2008 to October 2010)

Region (Total No.)	Country	No. of Patients n=77
Central Africa (12)	Burundi	10
	Democratic Republic of Congo (DRC)	2
East Africa (13)	Eritrea	11
	Somalia	2
West Africa (8)	Gambia	1
	Liberia	7
Middle East (13)	Iran	1
	Iraq	12
Southeast Asia (31)	Bhutan	22
	Myanmar (Burma)	9

### Vitamin D

Ninety-five percent of refugees had their vitamin D levels checked. Vitamin D insufficiency (< 30 ng/ml) was detected in 71% of refugees. A striking 88% of refugees from the Middle East had vitamin D deficiency (< 10 ng/ml) (Table 3).

**Table 3.** Results of Selected Screening Tests Among Patients by Region of Origin

Screening Test	Region of Origin					No. of Patients
	Central Africa n=12	East Africa n=13	West Africa n=8	Middle East n=13	Southeast Asia n=31	
<b>TST</b>						
≥ 10mm	6	6	7	7	23	49 (64%)
Not performed	1	1 <sup>a</sup>	0	0	2 <sup>a,b</sup>	4 (5%)
<b>Vitamin D 25 OH</b>						
Insufficient <sup>c</sup>	6	11	3	9 <sup>d</sup>	26 <sup>e</sup>	55 (71%)
Not performed	0	0	0	3	1	4 (5%)
<b>Stool parasites</b>						
Positive	6	8	4	5	8	31 (40%)
Not performed	0	2	1	2	1	6 (8%)

<sup>a</sup> 1 patient with history of pulmonary tuberculosis previously treated

<sup>b</sup> 1 patient with positive QuantiFERON

<sup>c</sup> vitamin D 25 OH < 30 ng/ml

<sup>d</sup> 7 patients with vitamin D 25 OH deficiency w/ levels < 10 ng/ml

<sup>e</sup> 1 patient with vitamin D 25 OH deficiency w/ levels < 10 ng/ml

**Table 4.** Parasites Found in Screening Stool Specimens<sup>a</sup>

Potentially pathogenic	No. of Patients
Blastocystis hominis <sup>b</sup>	17
Giardia lamblia	8
Dientamoeba fragilis <sup>b</sup>	4
Hymenolepis nana	2
Hookworm	2
Trichuris trichiura	1
Iodamoeba butschlii	1
Entamoeba histolytica	1
Total	36
<b>Nonpathogenic</b>	
Entamoeba coli	9
Endolimax nana	5
Chilomastix mesnili	3
Entamoeba hartmanni	3
Entamoeba dispar	1
Total	21

<sup>a</sup> 14 patients had > than 1 parasite

<sup>b</sup> pathogenesis is controversial

**Table 5.** Results of Hepatitis B Screening

Hepatitis B immune status <sup>a</sup>	Region of Origin					No. of Patients
	Central Africa n=12	East Africa n=13	West Africa n=8	Middle East n=13	Southeast Asia n=31	
<b>Immune</b>						
sAb +, cAb -	4	2	0	0	4	10 (13%)
sAb +, cAb+	1	1	4 <sup>b</sup>	0	5	11 (14%)
<b>Non immune</b>						
sAb -, cAb -	6	8	2	12	17	45 (58%)
sAb -, cAb+	1 <sup>c</sup>	2 <sup>b,c</sup>	1	1	4	9 (12%)
<b>Active infection</b>						
sAg +, detectable viral load	0	0	1 <sup>d</sup>	0	1 <sup>d</sup>	2 (3%)

<sup>a</sup> sAB = surface antibody, cAB = core antibody, sAg = surface antigen<sup>b</sup> 1 patient with Hep B core IgM consistent with recent infection<sup>c</sup> 1 patient with Hep BeAb positive<sup>d</sup> patient with Hep B core Ab positive, BeAb positive, with detectable viral load**Table 6.** Immune Status and Vaccine Documentation of Measles, Mumps, Rubella and Varicella at Intake<sup>a</sup>

	Region of Origin					Total No. of Patients
	Central Africa n=12	East Africa n=13	West Africa n=8	Middle East n=13	Southeast Asia n=31	
<b>MMR</b>						
Immune	5	12	6	10	22	55 (71%)
Non-immune	1 <sup>b</sup>	0	0	1 <sup>c</sup>	1 <sup>d</sup>	3 (4%)
Not performed	6 <sup>e</sup>	1	2 <sup>f</sup>	2 <sup>g</sup>	8	19 (25%)
<b>Documented MMR Vaccine at Intake</b>						
Immune	5	1	0	0	8	14 (18%)
<b>Varicella</b>						
Immune	9	8	8	10	30	65 (84%)
Equivocal	0	1	0	2	1	4 (5%)
Non-immune	2	4	0	1	0	7 (9%)
Not performed	1 <sup>e</sup>	0	0	0	0	1 (1%)

<sup>a</sup> immunity defined per Lifespan laboratory guidelines<sup>b</sup> patient not immune to measles, but immune to mumps and rubella<sup>c</sup> patient not immune to measles and mumps, but immune to rubella<sup>d</sup> patient not immune to mumps, but immune to measles and rubella<sup>e</sup> 1 patient's age less than recommended for MMR vaccine<sup>f</sup> both patients empirically given MMR and varicella vaccine on day of intake, without drawing titers<sup>g</sup> 1 patient empirically given MMR and varicella vaccine on day of intake, without drawing titers

### Vaccine Preventable Diseases

Seventy percent of patients lacked immunity to the hepatitis B virus (HBV) as demonstrated by negative antibody to hepatitis B surface antigen (anti-HBs). Twelve percent had isolated anti-hepatitis B core antibody (anti-HBc) positivity. Two patients had active HBV infection, (anti-HBsAg positivity) with detectable viral loads and were monitored and referred for additional treatment (Table 5). In addition, patients were screened for hepatitis A and C. No patients had active hepatitis A. Two patients had hepatitis C antibodies, but their viral load was undetectable.

Serologic immunity to measles, mumps and rubella was found in 71% of patients. An additional 18% of patients

had documentation of previously administered MMR vaccine. Immunity was assumed in these patients and thus corresponding serologic titers were not drawn. Serologic immunity to varicella was found in 84% of our patients (Table 6).

### DISCUSSION

Refugee health care is challenging because of issues including diverse cultures and languages, burden of infectious and chronic diseases, naturalization requirements, and limited insurance coverage. The CDC provides guidelines for recommended screening for resettled refugees, which has been further expanded by large refugee health programs.<sup>4,5</sup>

Refugees are often at risk for both the acquisition and secondary transmission of HBV, reflecting the often high prevalence of and under-vaccination for HBV in their country of origin as well as in refugee camps where many have spent years before arriving in the United States. Interestingly, our rates of HBV infection (3%) were lower than those found among refugees resettled in Atlanta (11%) and Minnesota (7%).<sup>6,7</sup> Our results demonstrate that although many of our patients come from endemic HBV regions, definitive immunity as demonstrated by positive surface antibody was low at 27%. Isolated anti-HBc positivity may indicate occult hepatitis infection (with HBsAg below the detectable limits), loss of acquired anti-HBs, or false positivity. Isolated anti-HBc was found in 12% of our sample and exceeds rates previously documented at 7% among resettled refugees in Minnesota.<sup>8</sup> However, when specifically looking among sub-Saharan refugees, our rate of 9% isolated anti-HBc was lower than that found in sub-Saharan African refugees resettled in Australia.<sup>9</sup> Global hepatitis B immunization efforts have focused primarily on infants, therefore adult refugees are still likely to remain unvaccinated and unprotected upon their arrival to the United States. In our clinic, patients lacking anti-HBs-antibody were vaccinated.

Despite high rates of immunity to measles, mumps, rubella and varicella, not all refugees were immune and thus, could serve as source patients or be susceptible in future outbreaks. Susceptibility to a single disease protected by the MMR vaccine was much lower in our clinic (3%) compared to resettled adult refugees in Canada (34%), but similar to measles and rubella susceptibility in refugee children in Boston. Not surprisingly, our adult population had much higher rates of varicella immunity (84%) when compared to this same Boston pediatric refugee population, who showed only a 64% protection rate.<sup>10,11</sup> Given recent outbreaks of

vaccine preventable diseases both domestically and internationally, it is crucial that refugees and other high risk populations are screened appropriately and receive timely immunization.<sup>12</sup> Some refugee clinics have moved to empiric vaccination without checking serologic titers, however the high rates of immunity to measles, mumps, rubella, and varicella among our patients support our current strategy of checking titers prior to immunization.

Over the past 15 years the rates of TB in the United States have been steadily declining with greater than 60% of cases occurring in people who were foreign-born.<sup>13</sup> Seventy-eight percent of active TB cases identified in Rhode Island in 2008 were in foreign-born persons.<sup>14</sup> The importance of proper screening and appropriate treatment of latent, active pulmonary, and non-pulmonary TB is critical to curbing the spread of TB within the United States, especially with increasing rates of multi-drug resistant (MDR) TB worldwide. In our sample, almost all of the refugees diagnosed with latent TB by TST, had documentation of subsequent chest x-rays and proceeded to receive latent TB prophylaxis. This not only decreases individual rates of reactivation TB but also decreases potential secondary transmission to vulnerable communities.

Many of our refugee patients had potentially pathogenic stool parasites and received parasite-specific treatments. Current CDC guidelines recommend that refugees receive presumptive treatment of intestinal parasites prior to arrival in the United States based on their country of origin. These guidelines were recently changed to include treatment to cover the risks of *Strongyloides* and *Schistosoma* species, which have been shown to be among the most important pathogens with the potential to cause latent and severe infections. However, most of our patients lacked documentation of having received presumptive therapy, and therefore it is unknown whether our



**VIDEO Hasbro Children's Hospital Refugee Health Clinic**

patients benefitted from this intervention. Microbiological examination for ova and parasites has not been shown to be sensitive for *strongyloides* due to varied and intermittent shedding.<sup>15</sup> Serology for *strongyloides* is now recommended by the CDC for all refugees regardless of origin and serology for schistosomiasis for refugees from sub-Saharan Africa.<sup>16</sup> At the time of this review, serology for intestinal parasites was not routinely performed in our clinic but has now been a recommended change.

Low levels of vitamin D have been described in resettled refugee populations, especially among children and women of childbearing age. Similarly low rates of low vitamin D were noted among Iraqis resettled in both Australia and Massachusetts.<sup>17,18</sup> The high prevalence of vitamin D insufficiency in our Refugee Clinic supports the continued screening and treatment of this condition.

Establishing a structured refugee clinic enabled us to develop a standardized method to identify and treat infections, immunize against vaccine-preventable diseases, and correct nutritional deficiencies. Additionally we provided documentation of immunizations and/or of immunity which is necessary to access education, employment, and naturalization. This structured refugee clinic also benefited from consistent direct communication between health care providers, patients and resettlement agency staff, all of which facilitate our ultimate goal of providing a medical home. Our study was not designed to look specifically at the impact of a structured clinic on the provision of recommended screening; however, its design likely contributed to the high rates of screening coverage.

Recent refugee research in Rhode Island has focused on immunization status, importance of establishing a medical home, and healthcare utilization among pediatric refugees.<sup>19,20</sup> This is the first study to document the results of initial screening in adult and adolescent refugee patients in a primary care setting in Rhode Island. Our refugee population is diverse and will continue to change, reflecting larger international trends of conflict and migration as well as the policies of the federal government. Areas of future investigation suggested by our study include an evaluation of the timeliness of delivery of required vaccines and a cost-benefit analysis of empiric immunization as compared to serologic testing prior to vaccination in adult refugee patients.

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**Authors**

Sylvia LaCourse, MD, is a Infectious Disease Fellow at the University of Washington, Seattle. Previously she was a Fogarty International Clinical Research Fellow with the UNC Project in Lilongwe, Malawi, and a former Medicine/Pediatrics Resident at Rhode Island Hospital.

Natasha Rybak, MD, is a Medicine and Pediatrics Infectious Disease Fellow at the Warren Alpert School of Medicine at Brown University. Previously she was a T32 Fellow for the Lifespan/Tufts/Brown Center for AIDS Research, and a former Medicine/Pediatrics Resident at Rhode Island Hospital .

Carol Lewis, MD, is Director of the Hasbro Children's Hospital Refugee Health Clinic and Associate Professor of Pediatrics (Clinical) at the Warren Alpert School of Medicine at Brown University.

Jennifer Gartman, MD was an Assistant Professor of Pediatrics at the Alpert Medical School of Brown University.

Jerome Larkin, MD, is Assistant Professor of Medicine and Pediatrics at the Alpert Medical School of Brown University.

Suzanne McLaughlin, MD, MSc, is the Medicine/Pediatric Residency Program Director, and Assistant Professor of Medicine and Pediatrics at the Alpert Medical School of Brown University.

Elizabeth T. Toll, MD, is the Director of the Refugee Clinic at The Medicine/Pediatrics Primary Care Center, and a Clinical Assistant Professor of Medicine and Pediatrics at the Warren Alpert Medical School of Brown University.

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**Correspondence**

Sylvia LaCourse, MD  
smlacourse@gmail.com

# Building International Collaborations from the Ground Up: Brown University Partnerships in Haiti and Ukraine

NATASHA RYBAK, MD; MICHAEL KOSTER, MD; ELIZABETH GILBERT, TIMOTHY FLANIGAN, MD

## ABSTRACT

The world is becoming more interconnected with a need for a global approach to healthcare. Brown University has remained a leader in global health through clinical service, education, cutting edge research and dedication to the development of sustainable global partnerships. We describe two programs from the ground up in Haiti and Ukraine, and the important lessons learned in their development.

The path towards the development of global health programs in Ukraine and Haiti both illustrate that although circumstances may vary between global health programs, the recipe for successful collaboration is the same: identifying specific needs, developing strong and sustained partnerships, and addressing barriers by crafting effective solutions to ongoing challenges.

**KEYWORDS:** Haiti, Ukraine, Global Health, international collaboration, internationalization

## INTRODUCTION

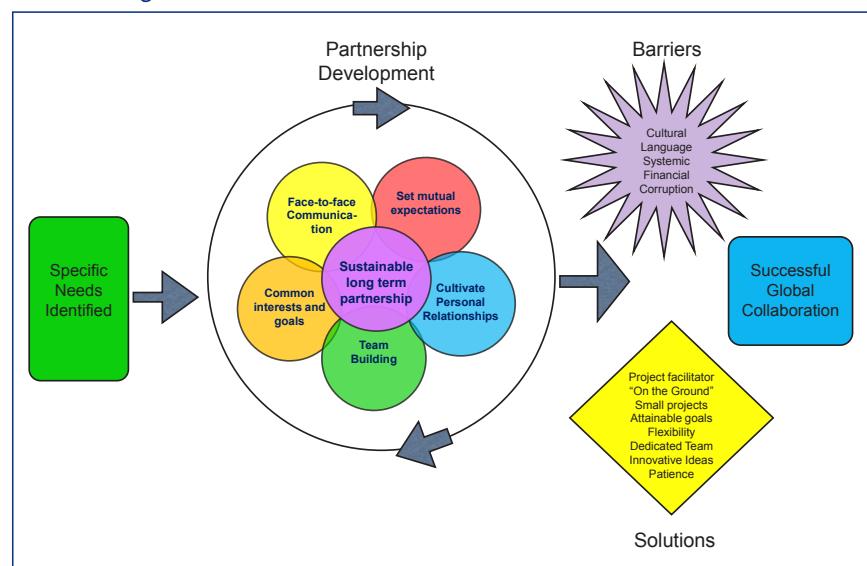
Many academic institutions have increased their focus on global health over the past few years. Migration and increasing foreign travel have mitigated geographic barriers of disease transmission. SARS, drug-resistant tuberculosis, and the 2009 H1N1 influenza epidemic are prime examples of global dissemination of diseases. Global health seeks interconnected solutions to problems of economic development, access to quality health care, and barriers to care. Addressing these issues through a multi-disciplinary approach involving economic, environmental, political, and global cooperation is reflected in the priorities set forth by university global health programs.

Brown University remains engaged in global health through clinical service, medical education, and cutting edge research. Brown faculty and trainees of all levels continue to respond to global inequalities of health and access to care. The most successful interdisciplinary program at Brown is the Academic Model Providing Access to Healthcare (AMPATH) program with Moi University in Eldoret, Kenya. AMPATH has set the standard for long-term sustainable

inter-institutional collaboration by promoting health through high-quality patient care, improving capacity through medical education, and mutually strengthening research programs both in the United States and Kenya.<sup>1-2</sup>

The creation of new programs in global health begins with identifiable needs and develops through bilateral partnerships aimed at addressing those needs in an equitable collaboration. The goal of this article is to describe two new programs, developed from the ground up, in Haiti and Ukraine and the lessons learned in developing new collaborations (Figure 1).

Figure 1.



## DEFINING NEEDS

### Haiti

Prior to the earthquake that devastated Haiti in 2010, its health statistics were the most dismal of any country in the Americas. Poverty, malnutrition, pregnancy-related mortality, and mortality of children under five only begin to frame the health issues facing the country.<sup>3</sup> Despite the outpouring of international efforts after the earthquake, Haiti's health system remains fractured and failing.<sup>4</sup> One critical factor is the lack of trained professionals. The target physician density set by the World Health Organization (WHO) is 2.3 per 1000, and in Haiti the density is only 0.25 physicians per 1000 Haitians, compared to 2.67 in the United States, or



BROWN

Drs. Sybil Cineas, Susan Cu-Uvin, and Timothy P. Flanigan navigate the ruins in Haiti after the January 2010 earthquake.

1.8 in the neighboring Dominican Republic.<sup>3</sup> Overwhelmed with the patient load of the hospital and private practices to run on the side, academic physicians have limited time to spend training medical students and residents. The paucity of clinical training opportunities leads to under-investment in trainees who are ill-equipped and unprepared to see patients on their own. Without adequate in-country experiences, many trainees seek international settings to learn, and often do not return.

Drs. Susan Cu-Uvin, Timothy Flanigan, Michael Koster, and Sybil Cineas (Brown clinical faculty) with the support of Patrick Moynihan (president of The Haitian Project), toured several hospitals in the Port-au-Prince area during March of 2010. It was clear that St. Damien, a children's hospital in Tabarre, distinguished itself as a stable institution among the chaos of post-earthquake Haiti. We pursued a long-term partnership with key stakeholders at St. Damien to address the expressed need of providing in-country clinical education through bedside teaching to the medical students rotating from the Université Notre Dame d'Haïti (UNDH).

#### **Ukraine**

In 1991, Ukraine gained its independence from the former Soviet Union, but the health system remains a relic of vertically designed systems that are now barriers to quality care, especially for patients with HIV and/or tuberculosis (TB). At the same time, Ukraine has the highest rate of HIV infections in Europe and some of the highest rates of multi-drug resistant TB in the world. The incidence of TB has

increased from 32 per 100,000 in 1991 to 102 per 100,000 in 2009.<sup>5-6</sup> This is a marker for not only a high rate of HIV, which has fueled the tripling of TB cases, but also a failure to appropriately address the epidemic on a national level.

Limited resources due to a transitioning health care system have caused intermittent drug supplies and contributed to multiple drug resistance (MDR). In some areas, the level of MDR has surpassed 20% of those patients treated for primary TB and is higher than 40% in those with previous treatment.<sup>6</sup> Reimbursements and pay are very low for physicians, especially in the treatment of TB, resulting in an aging cohort of doctors all trained in an outdated and nonfunctional system. A patient with a diagnosis of TB and/or HIV may additionally be facing social stigma, economic hardships, and co-morbidities with other illnesses. A strong system of multidisciplinary care within a functional health care system is needed to address these issues. Although change in a system takes time, it also takes motivation and often support from global collaborators to encourage perseverance.

Key physician mentors from Brown, including Dr. Flanigan and Dr. Boris Skurkovich, have been able to work with Ukrainian collaborators to identify specific needs a partnership could address in Ukraine. These needs include improved clinical education for HIV/TB care for women and children and the creation of working multidisciplinary models of care. Some of the factors related to the success and implementation of these models of care are affected by societal perceptions influenced by the media as well as economic feasibility. Therefore our collaboration in Ukraine has

identified needs to include broad topics such as: 1) education to improve accurate and informative media coverage of HIV- and TB-related topics, and 2) research on the economic impact of HIV and TB epidemics on the economy of Ukraine.

## DEVELOPING PARTNERSHIPS

Partnerships are the keystone of successful collaboration. They must be mutually beneficial, trustworthy and long-standing to sustain collaboration. Creating partnerships also takes significant investment, being on-the-ground with face-to-face time is essential to establish relationships, mutual trust and confidence.

### Haiti

Our first partner in Haiti was with Louverture Cleary School (LCS), a free boarding school for disadvantaged Haitian children. LCS is run by The Haitian Project, a Providence-based nonprofit organization, which supported our logistics (security, transportation, room and board) during the first several visits in 2010, when strained medical institutions could not support volunteers.

During our first meeting with the St. Damien Hospital for Children's administration, there was significant distrust and resistance to involving another partner into a system that was already taxed. Recognizing that foreign aid can be distracting and draining to current systems, we first listened to the needs of the hospital and community. Most of the concern centered around past experiences of groups trying to change operations in one visit, without understanding the context of the economic, political, and cultural milieu. One critical issue identified was health-force shortage, especially well-trained pediatricians. Even within St. Damien's, most physicians lack pediatric residency training. There are barely enough doctors to cover the clinical service, and only a few are able to dedicate the time to teach students. We committed to a long-term partnership, offering to augment rather than change current practices. Repeat visits with the same core faculty demonstrated our dedication to the partnership and strengthened the working relationship both with physician colleagues as well as with administration.

In parallel, we continued to meet with the dean and key administrators at UNDH, including a visit in October 2010, where Dean Edward Wing of Alpert Medical School and Robert Klein, MD, chair of the Department of Pediatrics, traveled to Haiti to negotiate a memorandum of understanding between the universities and hospitals. This support was essential to achieving and maintaining successful negotiations. An LCS graduate attending UNDH medical school, with significant experience at St. Damien after the earthquake, operated as the on-the-ground liaison. This liaison was critical in facilitating communications and coordinating efforts of all partners. Next, during a month-long visit in March of 2011, we worked side by side with our Haitian colleagues and created an academic environment for students,

which was well received from the perspective of the students, as well as key stakeholders at St. Damien and UNDH.

Building on the success of supporting medical student education through lectures, bedside-teaching, and clinical education, we also pursued small research projects with Haitian collaborators at their request. Brown hosted a talented UNDH student, committed to pediatrics in Haiti, for a month-long elective in pediatric infectious diseases during the summer of 2011. At the same time, a faculty physician and social worker from St. Damien also attended the Brown University's Advanced Research Institute (BIARI) for HIV care. These activities again allow for significant relationship building and with their success have solidified the partnership. We continue to pursue further co-partnerships with larger institutions such as the American Academy of Pediatrics (AAP, Section of International Child Health), the Haitian Pediatric Society, and discussions with other U.S. academic institutions now becoming involved with St. Damien.



Dr. Ludmila Berojna and Dr. Natasha Rybak in Ukraine Lviv AIDS Center.

### Ukraine

The development of partnerships in Ukraine evolved over a period of years starting as early as 2006. The partnerships began with several small unrelated medical trips by people related to Brown over a period of 5–7 years. Slowly the realization of an interest in the same region of the world was recognized and a group of interested partners coalesced. A collaborator on previous medical projects in Ukraine served as a cohesive source and facilitated several trips to seek out potential collaborators in the field of HIV/AIDS and TB. In parallel, an opportunity arose to fund improved care among women and children affected by HIV/AIDS in Ukraine and Brown University received the first grant to support work in Ukraine in September 2011. This created an opportunity to address many of the issues facing the barriers to care among HIV and TB patients in Ukraine.

The following year was spent making multiple trips to



Touring a TB hospital in Kyiv, Ukraine.

Ukraine to meet with potential collaborators. The goal of these meetings was to create a multidisciplinary approach to care that addressed not only the medical care for patients, but also economic and social barriers to excellent care. These factors include the media perception and coverage of HIV and TB, health economics and how health of individuals affects the economy of Ukraine, and how social support and innovative technologies including cell phones can be adapted to make a difference in supporting patients through challenging treatment regimens. By identifying collaborators in these areas we were able to encourage dedicated people to present proposals to address these issues. We then were able to work with them to optimize and finance their proposals through the generous support of the ANTI AIDS Foundation. We are currently in the stages of financing projects and aiding in their implementation in Ukraine.

### BARRIERS AND SOLUTIONS

Lack of time to spend on committed projects is the major barrier of collaboration. Usually both parties are working on these projects in "spare time" as these projects are in addition to their full-time responsibilities. Additional barriers include language, cultural differences, financial, social and historical constraints, assessment of benefit, and lack of commitment. Very often there can be a different approach to the normal work day or the standard form of communication from the norms in the United States and recognizing these differences can be critical in maintaining a working collaboration.

Many of these barriers can be alleviated with strong relationships that have weathered multiple projects together

over time. The key is identifying partners that are willing to work towards a common goal, maintain communication with frequent face-to-face visits, and flexibility to address barriers as they arise. The ability to address issues as they appear also greatly improves when a person who serves as a project manager/ facilitator is able to be "on the ground." Creating a team of dedicated partners, especially a multidisciplinary team also helps solve problems. Consistent and diligent efforts are needed to continue the collaboration. With consistency over time the approach is more like walking a smooth road rather than climbing a hill. Starting with small projects and attainable goals, and building on success are critical to creating a long-lasting and productive partnership.

One example of a small project with the potential of success is the creation of a journal club. Journal clubs are a common occurrence in U.S. medical education, but unheard of in Ukraine. The introduction of a Skype journal club between collaborators opened the doors of communication and discussion for new ideas and views of research and allows a safe forum for questions and brainstorming to foster clinical research.

This interactive process will be the cornerstone of a robust partnership, and has the capacity to blossom into a program like AMPATH that provides comprehensive care, improved education, and relevant research through an academic medical model.

### CONCLUSIONS

The world is becoming more interconnected with a need for a global approach to not only health care but the multitude of issues affecting health. Understanding the contributing elements to successful collaborations on global health creates building blocks for future implementation of multidisciplinary solutions to global issues. The time and effort that is spent understanding and implementing joint global health projects among nations will enhance medical training and lay the foundation to successfully address any future array of problems such as economic development, cultural barriers and political instability, among many others.

The two programs described here illustrate that although circumstances may vary between global health programs, the recipe for successful collaboration is the same: identifying specific needs, developing strong and sustained partnerships, and addressing barriers by crafting effective solutions to ongoing challenges. Only through this mutually dedicated process can we hope to successfully build capacity and strengthen health care on a global level.

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**Authors**

Natasha Rybak, MD, is currently a medicine and pediatrics infectious disease fellow at The Alpert Medical School of Brown University. Previously she received support as a T32 Fellow for the Lifespan/Tufts/Brown Center for AIDS Research; 5T32AI007438.

Michael Koster, MD, is an assistant professor of pediatrics at The Alpert Medical School of Brown University.

Elizabeth B. Gilbert is a fourth-year medical student at The Alpert Medical School of Brown University.

Timothy Flanigan, MD, is a dean's professor of medicine and health services, policy, and practices at The Alpert Medical School of Brown University and scientific director of HIV Care at the Immunology Center at The Miriam Hospital.

**Disclosures**

All authors have no relevant financial disclosures.

**Correspondence**

Natasha Rybak, MD  
Medicine and Pediatric Infectious Disease  
Rhode Island Hospital  
593 Eddy St., POB Suite 018  
Providence RI 02903  
401-444-8360  
Fax 401-444-5650  
[nrybak@lifespan.org](mailto:nrybak@lifespan.org)