Dear Colleagues,

Physician wellness is finally receiving its well-deserved attention. Physicians are under the tremendous stress of work, debt, constant oversight, and their personal lives. Perhaps we need to go beyond physician wellness and think more holistically. What we are really talking about is individual wellness.

As individuals we need to have time for family and friends. Especially friends. As the physician workforce ages, we are going to face additional challenges and stresses. Like the rest of the population, present day physicians are often the “sandwich generation.” In addition to our professional responsibilities, we often have personal responsibilities to attend to, for example, caring for our children and our parents in some fashion. Many young people are choosing to delay forming new families to become more established in their professions, so increasingly, they are still dependent on their parents at an older age. Simultaneously, our parents are aging and facing their own health and, at times, financial challenges, relying on us for care and assistance.

Ultimately, children will grow up and leave home to make their own lives, and parents will pass away. Physician wellness at this juncture requires friendship. Friends at this stage of life are sometimes more important than family, although family remains important.

People sometimes mistake their professional colleagues for friends. While some professional colleagues will become friends, most are just acquaintances. Not enough effort is placed in trying to know our colleagues' families, in fact, sometimes we don’t even sometimes know the names of our colleagues’ significant others and children. Opportunities to get to know our colleagues’ families are becoming fewer, and many physicians often do not have many close friends outside of their professional colleagues because of a “lack of time.”

Physicians need to invest in friends and family beyond what is expected socially and culturally. Employers should focus on giving time and resources to physicians to invest in their families and friends just as they provide us with the time and resources for professional enhancement. It should be a requirement like the mandatory CME for relicensure and all the face-to-face and online trainings that physicians are required to take.

Similarly, physicians should have required training on how to cope with their own aging; caring for aging parents, and handling the grief of losing parents; and how to deal with empty nest syndrome. Guidance on how to deal with losing, due to retirement, illness, or death, our personal physicians, financial advisors, CPAs and so many other people we physicians count on in our lives is also important since these professionals are often the same age as us. Grief comes in many forms and will be a reality of life for the aging physician work force since physicians are working until much older age, so it is essential we learn how to deal with it.

There needs to be a paradigm shift in our thinking about physician wellness. It needs to go beyond the "professional burnout." Professional burnout will decrease if "personal burnout" can be prevented.

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Florida Chapter American Academy of Pediatrics
Addressing Common Environmental Health Issues in Florida’s Children

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INTRODUCTION

Children are more vulnerable to the health effects of environmental exposures due to their unique physiologic and behavioral characteristics. Preventing exposures at an early age can lead to a lifetime of health benefits for the child, and substantial healthcare cost savings for society- the annual cost of environmentally-attributable pediatric disease in the US (such as asthma, lead poisoning, some cancers) is estimated at $76 billion. Childhood can face potentially harmful exposures in pediatric EH and other resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts following section provides an overview of common EH issues, recommended screening questions, key messages for families, and a working knowledge of common EH issues. This basic knowledge would allow more physicians to screen patients for environmental risk factors, provide appropriate resources, and access additional support for clinical management. The following section provides an overview of common EH issues, recommended screening questions, key messages for families, and Florida resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts (Table 2).

COMMON ENVIRONMENTAL HEALTH ISSUES FOR FLORIDA’S CHILDREN

While it would be impossible to address the multitude of EH concerns in the clinic, it is important for pediatricians to have a working knowledge of common EH issues. This basic knowledge would allow more physicians to screen patients for environmental risk factors, provide appropriate resources, and access additional support for clinical management. The following section provides an overview of common EH issues, recommended screening questions, key messages for families, and Florida resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts in pediatric EH and other resources (Table 2).

1. Preventing exposures at an early age can lead to a lifetime of health benefits for the child, and substantial healthcare cost savings for society- the annual cost of environmentally-attributable pediatric disease in the US (such as asthma, lead poisoning, some cancers) is estimated at $76 billion. Florida’s children can face potentially harmful exposures in pediatric EH and other resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts following section provides an overview of common EH issues, recommended screening questions, key messages for families, and a working knowledge of common EH issues. This basic knowledge would allow more physicians to screen patients for environmental risk factors, provide appropriate resources, and access additional support for clinical management. The following section provides an overview of common EH issues, recommended screening questions, key messages for families, and Florida resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts following section provides an overview of common EH issues, recommended screening questions, key messages for families, and Florida resources (Table 1). For other topics, or more complicated cases, pediatricians can access a network of experts (Table 2).

2. Tobacco

The health effects of tobacco and secondhand smoke (SHS) are vast and well documented. Children exposed to SHS are at risk for respiratory disease, ear infections, and sudden infant death syndrome. Approximately 45% of Florida youth (11-18 years) were exposed to SHS or electronic vapor smoke in 2017. Children who grow up with a smoker are more likely to start using tobacco themselves. Pediatricians can play a role in identifying caretakers who are smokers, and offering referrals to cessation resources.

1. Ultraviolet Radiation

Exposure to excessive ultraviolet (UV) radiation from the sun during childhood is a risk factor for developing skin cancer (including melanoma) later in life. Florida has the second highest incidence of melanoma in the US. Each year, 600 Floridians die annually from melanoma. While fair-skinned individuals are at higher risk for developing skin cancer, all individuals are at-risk and can develop cancer. While melanoma is not often diagnosed in dark-skinned patients, when it is diagnosed, it usually is in later stages and is often malignant. Florida often has a high UV index, so it is critical to educate families about proper sun protection, including use of sunscreen with SPF of 15 to 30 on all exposed skin, protective clothing and gear (e.g., wide brimmed hats), and avoidance of peak sun hours when possible. Adolescents should avoid indoor tanning beds. If spray tanning is used, teens should also use a sunscreen while outdoors.

1. Lead

Lead-based paint continues to be the most common conduit of lead exposure. Homes built before 1978 may have lead-based paint (federal ban in 1978). In Florida, nearly 39% of homes were built prior to 1979. Young children exhibit normal hand-to-mouth behaviors, which can lead to ingestion of lead-contaminated house dust or paint chips. Children with developmental delays, such as autism, are at higher risk due to pica behavior throughout childhood. Lead can also be found in drinking water and homes and schools (as seen in a recent Tallahassee school study), alternative medicines, imported glazed pottery, imported cosmetics, toys, among others. Lead can be brought into the home on caretakers with occupations/hobbies that involve lead.

1. Radon

Radon is an odorless and colorless gas produced by the breakdown of uranium in soil and rock. It can infiltrate homes by seeping through the floors, walls, or cracks in the foundation. Radon is a human carcinogen, and is the second leading cause of lung cancer. Testing for radon is the only reliable measure to ensure a home does not have elevated levels, and is particularly important if living below the third floor of a building. Approximately one in five homes in Florida tested have elevated radon levels, but most homes in the state have not yet been tested. Homes with radon levels greater than 4 pCi/L (“action level”), must be remediated by a certified professional. Guidance on dealing with radon is provided by the US Environmental Protection Agency (EPA) and Florida Department of Health (DOH) provides state-specific guidance.

1. Mercury in Fish

Fish is an important part of a healthy diet. It is important to encourage regular fish consumption for children and pregnant women as a source of omega-3 fatty acids and other nutrients that enhance neurocognitive development. However, pediatricians should explain how to choose seafood wisely to reduce exposure to the pollutant methylmercury, a neurotoxic metal that can bioaccumulate up the food chain, with the highest levels found in large predatory fish.

It is recommended that each week, children and pregnant women consume 2 to 3 appropriately sized servings of low-mercury fish such as tilapia, salmon, and canned-light tuna. Larger predators such as shark, swordfish, king mackerel, and tilefish should be avoided. It is important to direct families to local fish advisories for safe consumption guidance because mercury contamination is a concern in Florida waters.
Common Asthma Triggers: Mold and Pests

Asthma is a common in Florida’s youth, and one in four asthmatic children miss at least one day of school annually due to their condition.14 An important part of asthma management involves identifying and reducing common asthma triggers, including SHS, mold, and pests (e.g., cockroaches, mice). Environmental control practices tailored to an individual patient’s needs can reduce asthma symptoms and exacerbations.2 For patients with pests, “integrated pest management” techniques such as eliminating food/water sources and points of entry for pests can safely and effectively reduce pests without the need for chemical pesticides.26 Fixing water leaks and moisture issues in the home can prevent mold.1 Online resources can be shared with families to assist with pest and mold (Table I).

Well Water

Almost one in five Floridians get their drinking water from private wells.21 Public/municipal water sources are mandated to routinely test their water and adhere to federal drinking water standards. However, private well owners are responsible for testing their well at least annually for a variety of contaminants, such as bacteria and nitrates (potential cause of methemoglobinemia in infants).22 Local health departments can advise residents on the appropriate testing.

Beneficial Environmental Exposures

In addition to addressing potentially harmful exposures, pediatricians should also emphasize the importance of “beneficial” environmental exposures such as healthy diet, physical activity, and cognitive stimulation, which can help buffer potentially negative impacts of toxins.1,23 For example, Miami-Dade County established Parks Rx 4Health”, allowing physicians to prescribe an evidence-based health and wellness program for overweight/obese children (Fit2Play™). Based at local parks, the program has been shown to accelerate progress in reducing childhood obesity.1 The “Reach Out and Read” literacy program in primary care has been shown to increase expressive and receptive language in young children.1 For children with lead poisoning, evidence suggests that optimizing dietary intake of iron and calcium, and cognitive stimulation in the home, are beneficial.23

ADDRESSING ENVIRONMENTAL HEALTH CONCERNS

A pediatrician is a trusted source of information for families, and is often the first person a family will turn to for information on EH concerns. Effectively assessing and responding to EH concerns is important for pediatricians, but can be a challenge in a busy clinic.24 The remainder of this article highlights available EH resources for pediatricians.

Accessing EH Information for Patient Care

Many clinical EH resources have been developed to assist pediatricians (Table 2). For example, pediatricians can access online tools like the Pediatric Environmental Health Toolkit (PEHT) during a patient encounter for succinct evidence-based information (peht.ucsf.edu). The PEHSU network has a center located in each of the 10 federal regions, staffed by interdisciplinary experts in pediatric EH, and provide consultations to physicians and families on the prevention, diagnosis, and management of environmentally-related illness.

EH Screening

Soliciting a targeted “environmental history” during a clinical visit is an essential diagnostic tool to identify the presence of potentially harmful exposures.25 Pediatricians can implement key age-appropriate environmental history questions during a well-child check, that ideally would be integrated into the electronic medical record or visit template. Topics can be selected from those in Table 1 or tools such as National Environmental Education Foundation’s (NEEF) Pediatric EH History Form (www.neefusa.org/resource/pediatric-environmental-history). The online PEHT provides age-based “Anticipatory Guidance” to help providers target key topics to address at each well-child visit. Children with developmental disabilities (DD) may be at increased risk for environmental exposures. For example, autistic children with pica are at increased risk for lead exposure at any age,13 and children with various DDs may not be able to recognize or escape from environmental hazards.26 Pediatricians should consider these unique exposure risks when caring for such patients.

For children with environmentally-related illness, such as asthma, more detailed EH screening questions should be implemented into their clinical care. Asthmatics should be regularly screened for common environmental triggers including mold, pests, dust mites, cigarette smoke, and indoor fuel-burning appliances.1 NEEF’s Asthma Environmental History Form is helpful (www.neefusa.org/resource/asthma-environmental-history-form).

Table 1: Environmental Health Screening Questions, Key Messages, and Resources for Florida Pediatricians and Families
Environmental exposures are ubiquitous and have a lasting impact on a child’s health. It is critical to build the capacity of pediatricians to address environmental concerns and provide evidence-based care for environmentally-related illness. Until EH training is better incorporated in medical training, it is important to be aware that resources exist to assist pediatricians (e.g., PEHSU). Pediatricians can also promote beneficial environmental exposures to buffer potentially harmful impacts of toxins.

This article provided suggestions on how pediatricians can address common environmental concerns in the clinic setting. However, we must be mindful not to place too much burden on the family, as many of the most effective interventions come from policy changes (e.g., banning lead in gasoline). Pediatricians play a unique role in society, serving both as physicians and trusted sources of information. Therefore, pediatricians should speak out and educate elected officials on the dangers of environmental exposures and advocate for policies that protect children.

**REFERENCES**


**CONCLUSION**

**CLINICAL CONSULTATIONS FOR PHYSICIANS**

Pediatric Environmental Health Specialty Unit (PEHSU)
www.pehsu.net
PEHSU website has a national “classroom” with online educational opportunities (CME) and factheets.
Florida covered by Region 4 PEHSU www.education.savannahga/us/index.html
Online reference tool (mobile-device friendly) for evidence-based information on environmental hazards, prevention strategies, and patient resources. Endorsed by AAP, Physicians for Social Responsibility, PEHSU.

**EVIDENCE-BASED EH INFORMATION**

Pediatric Environmental Health Toolkit
toolkit.cehn.org
Online reference tool (mobile-device friendly) for evidence-based information on environmental hazards, prevention strategies, and patient resources. Endorsed by AAP, Physicians for Social Responsibility, PEHSU.

**APAP EH Policy Statements**
AAP: Pediatric Environmental Health (“The Green Book”)
www.epa.gov/state-environmental-health-3rd-edition-ebook

**CLINICAL TOOLS: EH HISTORY FORMS AND SCRENNING QUESTIONS**

National Environmental Education Foundation (NEEF)
www.naefhs.org/healthیaddress
EH history forms (general and for asthmatics) in English and Spanish.

Florida DOH: Healthy Environments
www.myfloridahealthfluence.org
EH activities focusing on prevention, preparedness, and education: routine EH monitoring and surveillance.

Florida Environmental Public Health Tracking
www.florianet.gov
A partnership project with the CDC to track data on environmental hazards and health outcomes.

**EDUCATIONAL MODULES FOR TRAINEES**

Children’s Environmental Health Network
guide.epa.gov/childrens-healthy-environments
Powerpoint modules and user guides to incorporate pediatric EH into training.

**Table 2. Environmental Health Resources for Pediatricians**

Aside from physician screening in an already busy visit, screening questions can be administered in other methods that may work better for clininc flow: parents can complete paper surveys in the waiting room, nurses can incorporate a screening question into triage, other members of the team such as students/trainees can administer screening questions. It is important that regardless of the method, pediatricians have easy access to evidence-based information and resources to identify and respond to patient EH concerns. A pediatrician practice can generate a tailored environmental screening guide to reflect common EH issues in their community. For patients who screen positive for an EH concern, the pediatrician can provide key messages and resources such as those highlighted in Table 1.

**Training the Next Generation**

It would be unrealistic to expect every graduating medical student and practicing physician to be an expert in environmental medicine. However, by introducing key EH topics in a more substantial way during pre-clinical and clinical years, future physicians will be better equipped to identify and manage exposures. Medical institutions can offer EH electives that provide resources to assist pediatricians in providing environmental care for children. Pediatricians can also promote beneficial environmental exposures to buffer potentially harmful impacts of toxins.

This article provided suggestions on how pediatricians can address common environmental concerns in the clinic setting.
ABSTRACT

This article discusses the importance of considering disorders tested for on the Florida newborn screen when treating patients who have immigrated from other countries to Florida. Discussion focuses on the newborn screening policies and procedures for the top 10 countries of origin of immigrants to Florida and the effects of lack of screening amongst immigrant populations. Recommendations are also given for when a pediatrician should consider testing an immigrant patient for newborn screening disorders.

INTRODUCTION

The Newborn Screening Program in the U.S. began in the early 1960s with the development of Robert Guthrie’s blood spot test for phenylketonuria. Since then, newborn screening has expanded to include many other inborn errors of metabolism, hemoglobinopathies, endocrine disorders, immunodeficiencies, and more. The U.S. Department of Health and Human Services currently recommends a core screening panel of 32 disorders and a secondary screening panel of 26 disorders based upon recommendations from the American College of Medical Genetics and Genomics. Screening is performed by individual states, therefore the conditions tested for vary from state to state. Florida implemented newborn screening in 1965 and currently tests for all 32 core disorders and 22 of 26 recommended secondary disorders.

While the U.S. has a robust newborn screening program, many other countries have less comprehensive programs or no formal program at all. This discrepancy between the newborn screening programs of the U.S. and other countries means that there are many immigrant children living in the U.S. who have never been screened for the metabolic, genetic, and hemoglobinopathies tested for by newborn screen in the U.S. Immigrant children are already at a greater risk of health disparities than their U.S. born counterparts. They are less likely to have regular access to healthcare, more likely...
NEWBORN SCREENING IN THE TOP 10 COUNTRIES OF ORIGIN FOR FLORIDA IMMIGRANTS

The U.S. continues to be a popular destination for immigrants, and Florida ranks fourth out of the 50 states in the number of immigrants1. The U.S. Census Bureau's 2015 American Community Survey showed that approximately 4.1 million immigrants call Florida home, accounting for 20.2% of the state's population; 219,860 of these immigrants are children2. Based upon country of origin data from a 2016 report from the Bureau of Economic and Business Research, it is likely that the majority of immigrant children who migrate to Florida have never been tested for most disorders on the Florida newborn screen4. Table 1 summarizes the national newborn screening coverage of the top 10 countries of origin for Florida immigrants from 2010-2014. Of the top ten countries of origin for Florida immigrants, two (i.e., Haiti and India) do not have a nationalized newborn screening program in place4. Colombia and Jamaica only screen for one disorder nationally (congenital adrenal hyperplasia and sickle cell anemia, respectively). China, including Hong Kong, Macau, and the Paracel Islands, screen for congenital hypothyroidism3. The Chinese mainland also screens for phenylketonuria3. Brazil, Cuba, and Mexico have similar screening panels, with Cuba and Mexico screening for the same 5 disorders: classic phenylketonuria, congenital hypothyroidism, congenital adrenal hyperplasia, biotinidase deficiency, and classic galactosemia. Brazil screens for 4 of the aforementioned disorders (classic phenylketonuria, congenital hypothyroidism, congenital adrenal hyperplasia, and biotinidase deficiency) with the addition of sickle cell anemia, hemoglobin S-C disease, and homocystinuria. The Canadian newborn screening program is not federally regulated and is administered by each individual Canadian province. Table 1 reflects the disorders that are screened for nationally in Canada, though depending on the province as few as five and many as 30 disorders are included on the newborn screen4. Of the top 10 countries, Germany screens for the most disorders nationally. However, even Germany screens for fewer than half of the disorders included on the Florida newborn screen5. The reasoning behind variance between newborn screening protocols worldwide is multifactorial and includes considerations such as cost, public support, incidence of disorders in the country in question, and the availability of resources and education to provide follow up if testing is positive. For these reasons that congenital hypothyroidism is part of the newborn screen for the vast majority of countries that offer newborn screening, as the disorder affects all ethnicities, screening is inexpensive, and treatment for CH is easily managed6.

EFFECTS OF LACK OF SCREENING IN IMMIGRANT POPULATIONS

While a search of the literature did not reveal any studies on the rates of undetected genetic newborn screening disorders in immigrant populations, studies have suggested that childhood hearing loss in the United States is currently underestimated due to immigration and a lack of hearing loss screening in many countries7. Hearing loss is included as part of the Florida newborn screen9. Table 1 summarizes the national newborn screening protocol for the 10 countries which provided the highest number of immigrants to Florida between the years of 2010 and 20144,8,9. Note that the table only includes disorders that are screened for comprehensively and nationwide. Some countries may screen for more disorders regionally or have private programs for screening available. The table also only includes countries in the top 10 countries of origin for immigrants from Florida that have data on newborn screening. "Caribbean, not specified," and "Western Asia, not specified" ranked 3rd, 4th, and 11th in terms of numbers of immigrants in Florida4. With few exceptions, the newborn screening in the countries that comprise these regions is not nearly as comprehensive as the Florida newborn screen2.

<table>
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<tr>
<th>FLORIDA NEWBORN SCREENING DISORDER</th>
<th>CAN</th>
<th>CHINA</th>
<th>COLOMBIA</th>
<th>MEXICO</th>
<th>INDIA</th>
<th>JAMAICA</th>
<th>HAITI</th>
<th>MALI</th>
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1 Canadian-born newborn screening program is handled at a provincial level, and as such only the three disorders shown are screened province-wide. However, Canadian newborn screening is more robust than the table can display, ranging from 5 disorders to 30 disorders screened dependent upon province.

2 Chinese immigration data also included Hong Kong, Macau, and the Paracel Islands. Both China and Hong Kong screen for congenital hypothyroidism, while only China screens for phenylketonuria.
patient presented at the University of South Florida Genetics Clinic with undiagnosed phenylketonuria at age 14, whose diagnosis was discovered subsequent to the birth of a younger sibling diagnosed with phenylketonuria via the Florida newborn screening program (case report in progress).

WHEN SHOULD TESTING BE CONSIDERED?

There is a multitude of different factors to consider when testing an immigrant patient for any of the newborn screening disorders. The CDC recommends that all refugee infants undergo newborn screening16. The American Academy of Pediatrics (AAP) recommends that all immigrant children under the age of 6 months undergo newborn screening. In addition, immigrant children ages 6 months to 3 years should be screened for congenital hypothyroidism via TSH level. The AAP also recommends hemoglobin electrophoresis and G6PD activity testing be performed in older children of certain ethnicities18. Review of the newborn screening and Department of Health websites of other states did not reveal any state with a protocol to perform screening on all newborn pediatric immigrants, though several states do recommend newborn screening be done on infant immigrants and refugees. Certain ethnic populations may be at higher risk for certain disorders, such as cystic fibrosis in Caucasians19, thalassemia in Southeastern Asians20, or sickle cell disease in African or Caribbean patients21. In addition, differing cultural views on consanguinity and first-cousin marriages puts certain immigrant populations at an increased risk for genetic diseases. Presentation and severity of a patient’s condition can vary drastically depending upon the disorder, but there are presentations that should prompt screening for one of the disorders on the Florida newborn screen. Consider a full newborn screen for patients who present with: 1. Unexplained neurologic symptoms, such as developmental delay or intellectual disability, seizures, hypotonia, or regression, as neurologic disturbances are hallmark symptoms of many disorders on the Florida panel. 2. Unexplained biochemical abnormalities, such as hyperammonemia, ketonuria, hypoglycemia, or metabolic acidosis22, 3. Anemia, particularly during illness, as hemoglobinopathies may present with anemia23. If possible, a thorough family history should be taken for new immigrant patients to assess for any indications of heritable disease. Florida does not have an immigrant-specific newborn screening protocol, nor does any other state. General pediatricians who suspect a newborn screening disorder in a child who has not previously been screened should send a newborn screening filter card following the protocols outlined by the Florida Department of Health. The filter card is an ideal screening tool, as it is non-invasive and carries virtually no risk for the patient. While there is no age cut off for sending filter cards to the state laboratory, it is important to note that the reference ranges used for the filter cards are for newborns. As such, older children may have values outside of these ranges despite normal levels for their age, and some disorders (i.e. fatty acid oxidation disorders) may be missed due to the age of the child when the sample is sent. However, the vast majority of disorders will still be identified via filter cards even if testing is done outside of the newborn period and those children whose tests fall outside of the normal ranges will be referred to their regional Genetics Referral Center for further workup and confirmatory testing. General pediatricians in Florida who suspect a newborn screening disorder in an older child can also contact a regional Genetics Referral Center for assistance in diagnosis and management. The American College of Medical Genetics and Genomics provides guidelines for physicians and algorithms for next steps of diagnosis and management for all disorders included on the newborn screen. A summary of these resources and links to contact information can be found in Table 2.

REFERENCES


Table 2

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<th>AGENCY</th>
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CONCLUSION

In conclusion, every pediatrician should be aware of the presentation and epidemiology of the disorders tested for by the Florida newborn screen. Though the disorders are individually rare, when grouped together they are more common than one might think. For example, 1 in 2500 children are born each year with an inborn error of metabolism20. To assume that all children have undergone newborn screening, particularly in an area with a high immigrant population such as Florida, may result in a missed diagnosis. For the majority of these disorders early intervention will yield better patient outcomes and potentially be life-saving. To the authors’ knowledge, there are no studies which address how common undiagnosed newborn screening disorders are in immigrant populations. There are also no studies on the efficacy of universal testing of all immigrant children. Studies on the epidemiology of undiagnosed immigrants with newborn screening disorders and studies on the implications of universal screening for immigrant children need to be undertaken. In the meantime, it is our hope that every pediatrician will perform newborn screening on infants who are immigrants or refugees from countries without a comprehensive newborn screening program, and consider the disorders tested for on the newborn screen when assessing older immigrant children.
ABSTRACT

Motor vehicle crashes are the leading cause of death for teenagers in the United States, causing over 5,000 deaths annually. Distracted driving, including texting while driving, is one of the main contributing factors to the elevated crash rate among teens. There are various strategies that can be used at the local and interpersonal level to encourage safer driving habits among teens. At this point, most states have enacted a legal ban restricting driver phone use. Florida, however, has lagged behind, and the implementation of stricter policies could greatly help to reduce teen crashes. Pediatricians can also play an active role in promoting safe driving habits. By directly discussing safe driving habits with teens, encouraging parents to have similar conversations, and connecting parents to key resources such as parent-teen driving agreements, pediatricians can actively influence the driving habits of their adolescent patients. In addition, there are many free, online resources with materials for pediatricians and parents. Through a combination of direct discussion and encouragement of parent-teen driving agreements, pediatricians can become part of the solution in preventing teenage crashes and deaths.

Over 5,000 teenagers aged 12-19 die in the United States every year due to motor vehicle crashes, making it by far the leading cause of death in this age group.1 In fact, teenagers are more likely to die in a car crash than they are to die from malignancy, heart disease, congenital anomalies, and infections combined.2 Teenagers are involved in a disproportionate percentage of motor vehicle crashes and deaths. While teenage drivers represent only 6% of total drivers on the road, they account for nearly 10% of drivers involved in a fatal crash, with an overall crash rate three times the rate of drivers 20 and older per mile driven.2,3 There are many factors that contribute to these alarming statistics. Texting while driving (TWD), among other forms of distracted driving, has reached alarming levels among teenage drivers and places teenagers at an increased risk for crashes.2,4 While many parents might argue that getting their teen off the phone is nearly impossible, various evidence-based approaches have been proven to help lower the rates of TWD and other dangerous behaviors. This article outlines the current state of distracted driving and provides various recommendations on how pediatricians can take an active role in encouraging safe driving practices among their teenage patients.
A recent study by the Centers for Disease Control and Prevention (CDC) 2017 Youth Risk Behavior Surveillance Survey, in the 30 days prior to taking the survey, 39.2% of teenage drivers had texted or e-mailed while driving on at least one occasion. This prevalence increased with each successive year of high school, with reported rates of 12.9% in 9th, 24.5% in 10th, 45.5% in 11th, and as drivers who are texting present a significant public health concern as they are three times as likely to be involved in a crash as those who are not. Moreover, teenagers who engage in TWD are more likely than their non-texting counterparts to engage in other dangerous activities while driving, such as riding without a seatbelt, speeding, driving after drinking alcohol, or riding with someone who had consumed alcohol.17

TWD is a considerable problem nationally, and it is an especially important one here in Florida. Florida has the third highest number of crashes in the nation, and the Florida Motor vehicle crash death rate of 15.4 per 100,000 is significantly higher than the national average of 11.6.3 In addition, among large urban school districts, Broward and Palm Beach counties are among the two of the highest rates of teenage TWD of anywhere in the country.4 Implementing effective interventions both locally and statewide could have a significant impact on teen safety and public health overall. One strategy many states have implemented to curtail this growing trend has been the enactment of legal bans on driving while texting. For TWD laws to be successful, they should be clear in scope, target drivers of all ages, and be strongly enforced, as previous attempts focused at teenage-only restrictions have not been successful. For example, in 2006 North Carolina instituted a teenage driver cell phone use restriction law that resulted in a decrease of hand-held phone use but an increase in phone manipulation as drivers shifted from talking to texting.6 This may have been due, in part, to poor regulation: while 78% of teenage drivers were aware of the law, 71% believed that the restriction was not strongly enforced. As a result there was no observed phone use despite the increase in awareness.4 These findings have been demonstrated in other states as well, as law enforcement officers may struggle to assess a driver’s age and, therefore, be less likely to pull over a driver who is texting.7 TWD is inherently hard to detect due to its intermittent nature, and the additional barrier of discerning driver age makes enforcement even more difficult.18

The District of Columbia and 44 states have some sort of ban on driving while texting for drivers of all ages.19 In 42 of those states it is a primary offense, allowing officers to pull over drivers who are texting regardless of whether they have committed an additional driving infraction such as speeding.8 While this might seem to be a slight difference, its effect in practice is quite large. In fact, while secondarily enforced texting laws were not associated with any change in crash fatalities, primarily enforced texting laws have been associated with a 3% reduction in traffic fatalities among all age groups, with marked fatality reductions among young drivers in particular.20 Moreover, primarily enforced texting bans for young drivers exclusively were not associated with decreases in fatalities, further emphasizing the need for general laws that are not limited to teenagers.21

In addition to texting-specific laws, all states have some form of graduated driver licensing (GDL) systems that place restrictions and regulations around when and how young drivers are able to obtain permits and licenses. All 50 states and the District of Columbia currently have a three-stage GDL system, with teenage drivers moving from permit to intermediate/provisional license to the unrestricted license.22 Limitations include hours as well as age to obtain permit and license, minimum hours of supervised driving, nighttime restriction, and passenger restrictions. Similar to the TWD laws, states vary widely in the stringency of GDL policies. However, it has been shown that states with stricter GDL systems have the best outcomes and have been associated with reductions of ~20% of 16-year-old drivers’ fatal crash involvement rates.11,12 Unfortunately, Florida’s laws currently lag behind many others in the country. While Florida does have TWD laws in place, they make TWD a secondary offense. Repeated efforts to make it a primary offense, including, most recently, in March of 2018, have stalled. Yet, before getting mired in the Senate, the most recent Florida bill passed through the House with overwhelming support.13 It appears that future political attempts will eventually be successful in making TWD a primary offense in Florida.10 In addition, Florida’s GDLs are not particularly rigorous, and the Insurance Institute for Highway Safety estimates that changing the current Florida laws to match the most stringent policies from other states could result in a 45% reduction in fatal crashes.14 Continued support of and advocacy for these bills would be a significant step forward in improving teen driver safety across the state. Therefore, pediatricians may be wise to collaborate, in an interdisciplinary manner, to encourage for broad, wide-encompassing legislation.

Moving beyond the political arena, there are many additional ways for pediatricians to help with this problem. By directly discussing safe driving habits with teens, encouraging parents to have similar conversations, and connecting parents to key resources such as parent-teen driving agreements, pediatricians can actively influence the driving habits of their adolescent patients. This effort can start in the waiting room—pediatricians can utilize the time patients spend there to disseminate educational materials and promote safe driving habits.23 Many educational materials are available for free on the CDC website (www.cdc.gov/parentsaretheykey) as part of their American Academy of Pediatrics (AAP) backed “Parents are the Key” Campaign.24 Moreover, it is important for pediatricians to address directly the topic of teen driver safety during office visits. Prevalence of injury counseling has been positively associated with safer behavior in teens, and parents have reported interest in increased physician involvement in health issues surrounding teen driver safety.25 Furthermore, the Society for Adolescent Medicine and Health has outlined that anticipatory guidance should begin at least two years before the initiation of licensure in order to increase safety among these populations.26 Many pediatricians already find themselves pressed for time during office visits, and may be understandably reticent to add additional components to visits. However, most pediatricians already include discussions about healthy lifestyle choices with teenage patients, as the AAP has recommended,27 and discussions regarding driving safety can take place within that larger discussion seamlessly without adding significant time to visits. While pediatricians can actively assist in encouraging appropriate driving habits, parents will ultimately play the greatest role in helping their children become safe drivers. As a health behavior, safe driving has been connected positively with a high level of parental involvement, similar to other risky teen behaviors such as alcohol and drug usage.28 Parents exhibit significant control over teenage driving as they have the power to delay when teenagers get their permit or license, increase the amount of supervised driving teenagers complete, and set limits on the times of day their teen may use a car even beyond the limits set by the state.29 Increased discussion between parents and teens has been shown to correlate with more positive teen attitudes towards driving safety, especially if these conversations are started well before teens receive their licenses.30 Perhaps unsurprisingly, greater parental restrictions have been shown to lower levels of traffic violations and risky driving behavior such as TWD.31 Parents can also set a positive example for their children but not TWD themselves. Many free resources are available online for both parents and teenagers that can help facilitate these conversations. The Teen Driver Source (www.teendriversource.org), from the Children’s Hospital of Philadelphia Teen Driving Safety Research Team, provides web-based interventions for teen permit holders and parent supervisors, resulting in improved driver performance.32 At a more local level, the Dori Sloborg Foundation (www.dorisaveslives.org) is a Florida Not-For-Profit that promotes safe driving habits, hosts informational events at schools, organizes educational seminars, provides resources to parents and teens, and lobbying the Florida legislature for stricter driving laws.31

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Table 1: Online resources for safe driving promotion among teenagers. Resources are described in more detail in article text. Nevertheless, despite this knowledge and engagement on the part of parents, limit setting and enforcement are often reported differently between adults and teenagers.29 To overcome this shortcoming, various programs have been established to directly target parent-teen interactions in a concrete manner. For example, the Checkpoints Program, developed at the National Institute of Child Health & Human Development, has provided videos, newsletters, and testimonials to parents and teens and helped families to establish clear communication, limitations, and penalties for teenage drivers using parent-teen driving agreements.32 The Checkpoints Program illustrates that clear parental limit setting can effectively reduce risky driving behavior. The program has been expanded to a free, web-based format (www.youngedriverparenting.org) including information and interactive driver agreements.33 Similarly, the Safe Drivers Wanted Program utilizes home visits to encourage clear standards and expectations between parents and teens, culminating in written contracts.34 Students in the intervention group reported fewer risky behaviors while driving than their counterparts. Based on these results, the AAP recommends the use of parent-teen driver agreements in 2007, but as of 2009 only 10% of pediatricians recommended these agreements to patients.36 With extensive, free resources available online, the onus is on pediatricians to direct parents and teens to utilize them.

Teen driving is an inherently dangerous activity. In order to become safe drivers, teens must gain significant driving experience, yet the more they drive the greater their risk for a crash.35 Frequent teen texting, among other distractions, increases the already high risk and contributes to the disproportionately high number of teenage crashes. While there remains work to be done in the political arena, pediatricians can play a vital role in helping to reduce these rates directly by educating parents...
and teens in the office and providing resources including parent-teen driving agreements. These interventions take minimal
time and can have a significant impact in reducing teen TWD, traffic crashes, and deaths.

REFERENCES


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