



VIRGINIA • PEDIATRICS

American Academy of Pediatrics • Virginia Chapter

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Virginia Chapter

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Leaving And Reentering The Pediatric Workforce Should Be Regarded As A Normal Part Of A Physician's Career Trajectory

Dr. Bill Moskowitz, MD, FAAP, FACC, FSCAI, FAHA,
Chair, AAP Committee on Pediatric Workforce

It is becoming increasingly common for physicians to leave clinical practice for some period during their careers and then seek to reenter the workforce. The reasons are many and varied. An overwhelming percentage of pediatricians are women, who often take extended leaves from clinical practice to raise children and care for other family members. Male pediatricians, usually older, will take extended leaves for health or other reasons. The Physician Reentry into the Workforce Project believes leaving and reentering the workforce should be regarded as a normal part of a physician's career trajectory. As such, just like any other career move, it is something that should be carefully considered and strategically planned. The Physician Reentry into the Workforce Project has developed a Webinar, "Physician Reentry 101" (<http://physician-reentry.org/new-webinar-available-on-physician-reentry/>). It provides an overview of physician reentry covering everything from what physician reentry is, to key resources, data and information available for physicians. "Physician Reentry 101" is designed to help physicians understand what planning is needed before one leaves clinical practice, and what one needs to do in order to facilitate a return.

The Physician Reentry into the Workforce Project began in September 2005 and is supported by the American Academy of Pediatrics (AAP), Division of Workforce and Medical Education Policy in collaboration with the AAP Committee on Pediatric Workforce. The Project is celebrating its 10 year anniversary!

Physician Reentry, as defined by The Physician Reentry into the Workforce Project, is returning to the professional activity/clinical practice for which one has been trained, certified or licensed after an extended period. It differs in many ways from physician remediation, which the American Medical Association defines as, "the process whereby deficiencies in physician performance identified through an assessment system are corrected." Maintaining and demonstrating clinical competencies, and the measures that ensure that medicine remains a public good, are all components of the reentry process.

The Physician Reentry into the Workforce Project encourages physicians who are contemplating leaving the workforce to employ strategies that will enable them to maintain their practice skills and to engage in the practice of lifelong learning. Over time, the Physician Reentry Project has developed a number of resources, of which the most ambitious is The Physician Reentry into the Workforce Inventory which is reviewed in the Webinar and is available at the website, (www.physicianreentry.org). The Inventory provides information and tools to address the four stages of physician reentry, framed to help physicians assess and answer these four key questions:

- ❖ What should I know before I leave?
- ❖ What should I do before I leave?
- ❖ What should I do while I am out of the workforce?
- ❖ What should I do now that I have reentered?

The checklists and inventory address personal considerations, regulatory issues, medical liability coverage, funding and financial options, and a host of additional relevant information. Although every effort was made to ensure that these checklists would be as comprehensive as possible, they are by no means conclusive. State laws and regulations, medical specialty requirements, and hospital privileging processes vary greatly. In addition, each physician's situation will undoubtedly be unique. As a result, the checklists should be considered as one useful guidance document among the many resources within your reentry toolbox, as you strategically plan for your exit and return to clinical practice.



President's • MESSAGE

Barbara L. Kahler, MD, FAAP | *President Virginia Chapter | American Academy of Pediatrics*

I hope you had a relaxing summer. For your Virginia Chapter, the summer was a busy and productive season. Our first Art & Business Annual Meeting was a smashing success. The speakers were inspiring and informative. We had an afternoon update on ICD 10, a talk on office-based Peer review and the joint School Health Conference. We would like to invite all members to join us in 2016 on April 15 & 16 for our next Art & Business Conference!

We've also received a number of grants over the summer, including:

- 1) Telemedicine: Funding for this grant allows us to explore making telemedicine a part of the Medical Home.
- 2) HPV: Working with Merck, VDH and other vested parties we are looking at best practices to improve the overall HPV vaccination rates in the state.
- 3) Bright Futures: This is an opportunity to recruit 18-20 practices across the state to take AAP vetted strategies and expand them through out practices in the Commonwealth. We are excited to be partnering with Medicaid, VDH, Anthem and other partners across the Commonwealth.

We are pleased that the HPV and Bright Futures Grants will enable participants to receive MOC credits for their participation. In order to correctly handle the finances we have resurrected the Pediatric Foundation. The immediate past presidents; William (Biff) Rees, MD, William (Bill) Moskowitz, MD and Robert (Bob) Gunther, MD are serving as board members.



If you are interested in participating in the grants, we will be recruiting for the Bright Futures grant. Please let me or Jane Chappell jchappell@ramdocs.org know of your interest.

... Leaving And Reentering The Pediatric Workforce Should Be Regarded As A Normal Part Of A Physician's Career Trajectory

... continued from cover

A significant change in your practice pattern can affect a number of areas in your personal and professional life:

- ❖ Your competence, both cognitive knowledge and proficiency in procedures
- ❖ Your confidence and mental state
- ❖ Your family
- ❖ Your finances
- ❖ Your partners
- ❖ Your patients



(Dr. Moskowitz with a patient)

A physician who leaves practice completely is in a significantly different position from the physician who continues to practice on a very reduced schedule. The major differences in impact will be on competence and confidence, with implications for credentialing and privileges, as well. The extent of the effects will vary by specialty and type of specialty (cognitive versus procedural). Many of the barriers to reentry will be diminished or eliminated if the physician maintains some level of clinical practice, possibly even in a different venue.



Since most physicians are away from clinical practice for several years, it has become apparent that they would benefit from having an online tool that would enable them to maintain their network, track their activities while away from clinical practice (e.g. volunteer work), record their CME, and so forth. By so doing, they would be able to better facilitate their return to clinical practice. An online tool has been developed and will be officially launched at the NCE. Unlike other resources, this tool is pediatric specific and is called the Physician Reentry Online Portal for Pediatricians (PROPP).

I urge every pediatrician and pediatric subspecialist (medical and surgical) who is contemplating leaving practice for an extended period of time (or who has been on extended leave and wants to return to practice) to view the webinar and visit the Physician Reentry website for more information as you continue on your career trajectory.

I invite you to also visit the Committee on Pediatric Workforce website for additional information and resources

(<https://www.aap.org/en-us/about-the-aap/Committees-Councils-Sections/Pages/Committee-on-Pediatric-Workforce.aspx>).

From Hungry To Healthy

The Importance of Increasing School Breakfast Participation

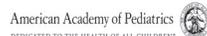


School breakfast plays a critical role in helping school children reach their full academic potential. This may be especially true for the 1 in 5¹ who live in a household faced with food insecurity.

To help our nation's children who need to move from hungry to healthy², we are committed to increasing student participation in School Breakfast Programs.

Collectively we will work together to:

- **Increase** awareness of the critical impact School Breakfast Programs have on learning, nutrition security, diet quality and student health.
- **Provide** resources to empower schools to champion school breakfast.
- **Inspire** families and communities to embrace school breakfast.
- **Empower** children to take action to help increase access to breakfast in their schools.



¹Food Insecurity in Households With Children: Prevalence, Severity, and Household Characteristics, 2010-11 by Alisha Coleman-Jensen, William McFall, and Mark Nord, Economic Information Bulletin No. (EIB-113) 59 pp, May 2013
²Approximately 1% of households experience very low food security where children are hungry, skip a meal, or don't eat for a whole day because of economic challenges at some time during the year.



Dates to Remember ...



2015 Pediatric Conferences

PEDIATRIC GENERAL ASSEMBLY DAY 2016
Thursday, January 28, 2016 | 7:30 AM – 2:00 PM

Hilton Garden Inn
501 E. Broad Street In Richmond

For more information go to www.virginiapediatrics.org after Jan 1, 2016.

MOHSEN ZIAI PEDIATRIC CONFERENCE
November 6 & 7, 2015

Ritz Carlton, Tyson's Corner | McLean, Virginia

For more information, please visit www.inova.org/pedscme or contact Marchelle D. Albertson at marchelle.albertson@inova.org

Immunizations Protect All

Sam Bartle, MD, FAAP
Vice President, VA-AAP

With the start of public school just around the corner, this is a great opportunity for you to act as physician advocates and educators for parents who might have any doubts about vaccinating their children. The attached column by Sam Bartle, MD, FAAP, vice president of the Virginia Chapter of AAP, can be sent to local newspapers, radio stations, bloggers, PTAs, day care centers, and other groups and media outlets.

As a parent of two boys, 11 and 13 years old, I have learned there are many difficult decisions to be made in raising children. How these decisions are made could affect my children for good or ill. For example, should they play a contact sport like football or even soccer considering all of the new research about the lingering effects of

concussions? I know the pros and cons of team sports, but I also worry about the potential for serious, life-changing injuries. It's one of the many gray areas where I can see both sides of the issue, and certainly respect differences of opinion among fellow parents. Adding to the discussion, there are always plenty of opinions out on the Internet – some informed, but many that are not scientifically or medically valid.

Throughout my children's lives, there will always be new decisions and choices to make about keeping them sound and healthy.

But as a pediatrician and someone who has witnessed the devastating effects and sometimes fatal results of certain childhood infectious diseases, there is one decision

that I want every parent or guardian to know they can make without hesitation: Every child should be immunized against the potentially deadly infectious diseases that immunization protects against, such as measles, mumps, pertussis or any of the other preventable diseases.

Here's why:

Immunizations work. Plain and simple. Immunizations provide protection from potentially deadly infections and

are a cornerstone of providing good health. They not only protect the individual from suffering the effects and consequences of certain infections, but also protect our families and the communities in which we live.

Routine childhood immunization is one of the crowning achievements in public health, allowing communities to grow and prosper, free from the once commonplace ravages and devastation of diseases. A 2013 study published by the *New England Journal of Medicine* estimated that childhood vaccination programs have prevented 103.1 million cases of diphtheria, hepatitis A, measles, mumps, pertussis, polio and rubella since 1924 in the U.S. alone.

The impact of immunizations is demonstrated through vaccination of small pox. The last case of small pox in the U.S. was in 1949; the last known case of small pox in the world was in 1977. In 1980, the World Health Organization declared small pox to have been eradicated. That means there is no longer a need to immunize against small pox, a viral infection considered one of the most contagious diseases in history.

Immunizations work. Vaccines trigger the body to build immunity to an infection, preventing or greatly limiting the disease symptoms when exposed. Just as important as the direct benefits that getting immunized has for an individual, there are also immeasurable benefits for the community at large.



Present

VIRGINIA • PEDIATRICS NEWSLETTER

American Academy of Pediatrics – Virginia Chapter

Continuing Medical Education

This activity has been planned and implemented in accordance with the Essential Areas and policies of Medical Society of Virginia through the joint sponsorship of Children's Hospital of The King's Daughters and the American Academy of Pediatrics – Virginia Chapter.

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Review the articles on pages 6-11. Complete the VA-AAP Newsletter Registration and Evaluation Form on page 12 and return to the Children's Hospital of The King's Daughters, CME Office, 601 Children's Lane, Norfolk, VA 23507, or 757-668-7122. You may also visit <https://www.surveymonkey.com/s/VAAAPSummer2015> and complete online. Please allow up to 8 weeks to receive your certificate.

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None.

The Learning Healthcare System Model for Children with Inflammatory Bowel Disease: One Center's Quest to Improve Patient Care

Lauren K. Willis, MD

Gastroenterology, Hepatology and Nutrition
Children's Hospital of The King's Daughters

Objective: Readers will be able to: State the tenets of the Learning Healthcare System (LHS) Identify the stakeholders in a Learning Healthcare System. Explain how the Learning Healthcare System can be used for research to improve the quality of care.

ACGME Competencies: Patient care, Practice-based Learning and Improvement, Systems-based Practice

Introduction

Like all children's hospitals, at Children's Hospital of The King's Daughters we are interested in ways to provide the best care possible. For children with Crohn Disease and Ulcerative Colitis, known collectively as Inflammatory Bowel Disease (IBD), there is a special quality improvement collaborative called ImproveCareNow (ICN). Since 2010 CHKD's pediatric gastroenterologists, care teams, patients, and families have been part of ICN. We joined ICN so that we could objectively measure the care we were providing and capitalize on the experience of the entire collaborative to improve our patients' care. Our participation has been transformative for our division and for the institution. We have been able to measure success in (1) remission rates approaching the ICN Network goals; (2) engagement of our patients and families like never before; and (3) innovation in practice that is spreading within our institution and others.

What Are Learning Healthcare Systems? - Definitions and Goals



ICN is a **Learning Healthcare System (LHS)**. Learning Healthcare Systems are dynamic care systems proposed by the Institute of Medicine (1), whose basic tenets are: (1) To generate and apply the best evidence for the collaborative choices of each patient and provider (2) To drive discovery as a natural outgrowth of patient care (3) To ensure innovation, quality, safety and value in health care.

The Institute's Goal is that "by 2020, 90 percent of clinical decisions will be supported by accurate, timely, and up-to-date clinical information, and will reflect the best available evidence." Not only is the LHS a powerful system for providing care, it is the future of medical care in America.

Learning Healthcare System Model in Pediatric Gastroenterology

The Basics. What does it mean to participate in ICN's Learning Healthcare System for children with IBD? Participation means there are many stakeholders in improving care including patients and families, host medical centers, and care teams - physicians, nurses, dietitians, social workers, psychologists, administrative staff, parent/patient representatives, and others. Working together, ICN centers' stated aims are to improve care and health of children with IBD; engage and empower patients and families to participate as true partners in all aspects of the ICN Network; transform care through innovation and discovery; achieve the best care at lower cost; and ensure the sustainability of ICN (2). ICN's stated goals align perfectly with the Institute of Medicines goals. ICN's unofficial motto is "to share seamlessly and steal shamelessly," allowing all centers to adapt helpful methods from throughout the collaborative for themselves.

ICN is the largest and fastest growing pediatric LHS and the largest IBD LHS in the world. As of July 2015, there were 77 participating care centers in 35 states plus the United Kingdom, with 620 pediatric gastroenterologists caring for 21,800 children with IBD. 79 percent of children at ICN centers are in remission, with the Network goal being 80 percent. 95 percent are not taking steroids, 94 percent have satisfactory growth and 91 percent show satisfactory nutrition.

Quality care is measurable. By joining ICN, centers gain proficiency in measuring the care they provide. In addition, each team member becomes skilled in the vocabulary

and methods for Quality Improvement (QI). After joining, centers send small groups to ICN Network meetings where each team member, including the parent representative, learns QI basics. Participants also learn the latest research in the field, planned research for the Network, and what other ICN centers are doing that works. Typically, after a center joins ICN, that center sees steady improvement in remission rates and other benchmarks that approach the Network's goals. This has certainly been our experience.

Quality care takes time, but culture changes forever.

Joining an LHS is a huge commitment. This commitment is manifest in the necessary pre-visit planning for outpatient visits, team and group meetings, webinars, and frequent introspective analysis of care outcomes. We can now continuously monitor our data in real time, allowing us to implement changes very rapidly. Because LHS encourage innovation and small scale trials of new ideas (so-called PDSAs), we have discovered a creativity and freedom for trying new ideas that did not exist before. We have had some abysmal failures and some successes along the way. We are more energized for and excited about caring for our patients. Gone are the days of "taking the chart off the door" right before walking in the room as a way to plan care for patients. We found that a rapid change in our culture occurred, leading to improved care. One example of an improvement in our care is getting labs drawn in advance of visits and reviewing those results prior to the visit to guide treatment. Another example is assigning the patients and families homework to complete as part of their participation before every visit. In addition, we now plan for transition to care in the world of adult medicine that is concerted and step-wise starting in pre-adolescence. In the spirit of "stealing shamelessly," we have adopted similar programs from other centers for initiating enteral nutrition as both supplemental and primary therapy for small intestinal Crohn

continued on page 7...

continued from page 6...

disease treatment. Our families appreciate this level of commitment by their healthcare team, and we know it has translated into better remission rates and quality of life for our patients in a measurable way. Our care results, like most centers in ICN, are comparable to the country's top-rated pediatric gastroenterology programs.

Families want engagement. More than ever before, patients and families want to help and have a say in their care. With ICN, we have learned how to better encourage participation by patients and their families in their care. For the first time, we have parent and patient representatives on our ICN teams who serve as resources for kids and families. This is especially important when a newly diagnosed child is hospitalized, offering support and reassurance. We have also developed a successful model for group medical appointments. Once a month, small groups of patients come to our center for a didactic session for children and families followed by a facilitated discussion or small group activities. Patients leave one at a time to see their doctor for a brief individual session. Sometimes, patients and their parents come just for the discussion. Most of the time, there is little facilitation needed as kids and families connect and help each other. Participating families give the group appointments rave reviews. Because of this, we are extending this group model to include collaborative group appointments in a multidisciplinary setting for other chronic illnesses in our health system. Other centers have adopted our model as well.

There is power in numbers. The LHS is a particularly necessary and powerful tool for studying therapies for IBD in children. The story of anti-TNF α biological agents' (infliximab, adalimumab, and others) use in IBD is a perfect example. Standard of care treatment for pediatric IBD for the last twenty years has included use of thiopurines Azathioprine, 6-mercaptopurine and methotrexate. Since the FDA approval of anti-TNF α biological agents, several adult trials have demonstrated benefit of these agents over the thiopurines in IBD. The largest adult trial included 508 adult subjects and the largest pediatric trial at the time included 112 pediatric subjects (3,4). Large comparative stud-

ies in children had not been done because of ethical concerns of withholding treatment known to be superiorly effective in adults, as well as the cost and time required for a large scale study. Through ICN, clinician investigators comparatively analyzed the effectiveness of the anti-TNF α biological agents on a large scale using data from regular clinical visits in the ICN Network with Crohn Disease. Data from approximately 4100 patients was analyzed, demonstrating that anti-TNF α biologics are superior to "usual care in achieving both clinical and corticosteroid-free remission" (5). This study represents forty-fold and 8 fold increases respectively over the largest adult and pediatric studies to date. That is power in numbers!

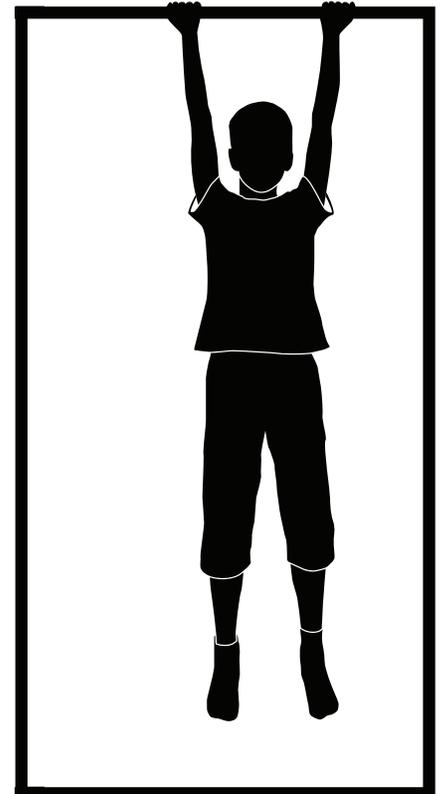
What does the future hold?

ICN and other chronic disease collaboratives, such as the Pediatric Rheumatology Care and Outcomes Improvement Network and the National Pediatric Cardiology Quality Improvement Collaborative, are recognized by the American Board of Pediatrics for their significant contributions to improving the health of children in the United States. For ICN, participating physicians receive credit for MOC Part IV participation, satisfying improved performance in practice. Of course, there are challenges for LHS models such as the cost of participation, the initial steep learning curve and the ongoing time commitment. Our future remuneration for care is expected to depend more on physician performance and clinical outcomes (6). Care collaboratives and Learning Healthcare Systems will provide physicians a measure of support for negotiating this new healthcare landscape.

Imagine what care would look like, not just for children with IBD but for all children. The treasure trove of accessible data from regular clinical care surmounts barriers to large-scale pediatric trials. The progress made through nationwide collaboration in childhood cancer, in particular, provides a hopeful beacon for the future. The sheer numbers of pediatric patients with common chronic diseases make the LHS model a practical and attractive model for future healthcare. As physicians, we can improve the care we deliver and satisfy the goals of patient engagement and evidence-based clinical decision-making more adroitly by participating.

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6. McDevitt JT. *The siren song of physician incentives: avoiding the rocks.* PM R. 2013; 5(11):970-3. From 2010 to 2013, the use of electronic nicotine delivery systems, more than doubled among US adults (CDC). Close to 20 million US adults have tried them. The 2014 National Youth Tobacco Survey shows that current e-cigarette use among high school students increased from 4.5% in 2013 to 13.4% in 2014, with current usage surpassing that of every other tobacco product. More than a quarter of a million youths who had never smoked a cigarette used e-cigarettes in 2013.



E-Cigarettes: Nothing Good in the Air

J. Francisco Chocano, MD
Pediatric Respiratory and Sleep Medicine
 CHKD/EVMS

Objective: Readers will be able to review the current facts and dangers of E-Cigarette use in the pediatric population.

ACGME Competencies: Patient Care, Medical Knowledge, Practice-based Learning and Improvement

From 2010 to 2013, the use of electronic nicotine delivery systems, more than doubled among US adults (CDC). Close to 20 million US adults have tried them. The 2014 National Youth Tobacco Survey shows that current e-cigarette use among high school students increased from 4.5% in 2013 to 13.4% in 2014, with current usage surpassing that of every other tobacco product. More than a quarter of a million youths who had never smoked a cigarette used e-cigarettes in 2013.

Electronic Nicotine Delivery Systems (ENDS) or personal vaporizers (PV), also known as e-cigarettes, are a new way for smokers to get their nicotine. E-cigarettes were first developed in China and were introduced to the U.S. market in 2007. This is a tobacco-free product. E-cigs are actually vaporizers; the mechanism heats up a liquid. The liquid turns into vapor, which is then inhaled, or “vaped.” These products are marketed toward young adults. They are described as an alternative to smoking, and as a way to either quite smoking cigarettes, or to smoke in places cigarette smoking is not allowed. The progress made in reducing youth cigarette smoking is being threatened by the surge in the use of this new modality. The device is battery-powered; some brands can be recharged via a USB port, others are disposable. The middle piece is called a vaporizer, which is the piece that heats the flavored liquid nicotine. Disposable e-cigarettes do not require charging, changing batteries or cartridges. As of September 2013, the disposable unit was \$8. At the same store, a rechargeable kit was \$35. A disposable e-cigarette last as long as two packs of traditional cigarettes and rechargeable e-cigarettes last long as a pack and a half.

Nicotine is addictive and has cardiovascular effects and detrimental effects in pregnancy. Nicotine exposure at a young age may cause lasting harm to brain development, promote addiction and lead to chronic tobacco use.

The liquid used is heavily concentrated with nicotine that may be poisonous to children, specially toddlers and infants. The number of calls to poison control centers regarding e-cigarette, nicotine-infused liquids rose sharply every month between September 2010 and February, 2014, from just one call per month to as many as 215. As many as 51.1 percent of those calls involved accidental poisoning of children under the age of 5. The fine particles of e-cigarettes may also be of concern, but not enough time has passed to be able to prove the same effects as those in cigarettes and diesel exhaust. The e-cigarette users exhale formaldehyde, benzene and other toxins. Nevertheless, these devices pollute the air and are absorbed by bystanders. E-cigarette cartridges are available in a variety of flavors like peach schnapps, java jolt, pina colada, peppermint, and chocolate. These flavors have been banned in traditional cigarettes but exist in e-cigarettes, and it’s these flavors that have been shown to entice children.

As of July 2013, the World Health Organization reported that there are no rigorous, scientific studies that have been conducted to determine if electronic cigarettes are a useful method for helping people to stop smoking.

In April 2014, the FDA proposed formal federal regulations that would regulate e-cigarettes as tobacco products. The final version of the regulations is expected later this summer. As of January 2014, a number of states (ND, NJ, and UT) and cities (Chicago, New York City) have enacted legislation to specifically prohibit e-cigarette use in 100% smoke-free venues. Several others (AR, CO, DE, KS, MD, NH, OK, OR, SD) have passed laws regulating e-cigarette use in various venues. However, e-cigarettes continue to be marketed as a way to smoke in places where it is not allowed to smoke. The desire to get around smoke-free laws has led to the creation of vaping lounges similar to cigar bars and hookah lounges.

Access to e-cigarettes by minors is also a concern. Only a number of states have passed laws prohibiting sales of these devices to minors (AL, AR, CA, CO, HI, ID, IL, IN, KS, MD, MN, MS, NH, NJ, NY, SC, TN, UT, VT, WA, WI, WY).

Due to a lack of regulation in e-cigarette marketing, children, who are impressionable and model the behavior of adults, are at risk. This is also a concern due to the increased number of e-cigarette users; these devices mimic conventional cigarette use and help to normalize smoking behaviors. Medical providers that work with children should be aware of the dangers and concerns, and have open discussions with patients and families about e-cigarettes.



Oral Immunotherapy for Food Allergy: Is it Ready for Clinical Practice?

Kelly Maples, MD, FAAAAI, FAAAAI
 Assistant Professor of Pediatrics and Internal Medicine
 Department of Allergy and Immunology
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Objective: Readers will be able to review the risks and benefits of oral immunotherapy to food. Summarize the current literature on oral immunotherapy to food.

ACGME Competencies: Patient Care, Medical Knowledge

Food allergy is very common and can have a significant impact on the quality of life of patients and their families. It is estimated that 28% of children have food allergy. Currently the only approved treatment for food allergy is allergen avoidance with preparation for accidental exposures. Although accidental exposures are common (1.6% to 12% per year), severe reactions are not. Fatalities are very rare and occur at a rate of about 2 per million person years in food allergic individuals. Before such treatments are approved and initiated, the risks of disease must be compared to the risks of treatment.

Oral immunotherapy (OIT) consists of repeated regular exposure to increasing doses of a food allergen until a patient is less reactive to the food allergen. OIT has been shown to decrease food specific IgE and Th2 cytokines and to increase food specific IgG4 and Th1 cytokines.¹

It is imperative to understand the distinction between desensitization and permanent or Longterm oral tolerance. Desensitization requires continuous exposure to the allergen and is not permanent. If treatment or allergen exposure is discontinued or interrupted, the beneficial effect may be lost or significantly decreased. For example, if a penicillin-allergic individual is desensitized to penicillin, she may be treated with penicillin immediately following the desensitization, but would need to be desensitized again for subsequent infections. Many studies of OIT have shown desensitization, but have not proven long-term oral tolerance. Egg OIT studies have shown desensitization rates of 50-90% with ongoing exposure.¹ However, greater than 70% of children initially desensitized to egg did not pass an oral food challenge performed 46 weeks after cessation of treatment.²

When interpreting studies which do evaluate for long-term oral tolerance, one must

consider the natural history of food allergy. Some children who appear to have achieved long-term oral tolerance may have simply outgrown an allergy. Children may outgrow food allergy at rates which depend on the particular allergen. Approximately 85% of children will outgrow egg allergy and 20% or more will outgrow peanut allergy. Half of infants outgrow milk allergy by age five.³

Another important distinction is that between sensitization, or positive allergy testing and true allergy, or clinical reactivity during an oral food challenge or with accidental exposure. OIT studies and centers performing OIT should always administer an oral food challenge prior to initiation of OIT to ensure patients are truly allergic and not just sensitized.

Long-term studies of OIT are limited. The type, frequency and severity of adverse reactions are similar for egg, milk and peanut OIT. A study evaluating 32 patients 35 years after study completion from the two original milk OIT trials showed that 25% consume milk without symptoms: 6 (19%) of the children were consuming milk in an unrestricted fashion; others tolerated limited milk. Of these 32 patients, 12 (38%) reported frequent symptoms and 7 (22%) reported occasional symptoms during treatment. Ten (31%) had a systemic reaction during treatment and 3 (9%) required epinephrine at least once. Some subjects became more reactive while on OIT than they had been at baseline as demonstrated by oral challenges.⁴

Although the per dose risk of anaphylaxis with OIT is small, OIT is administered daily over a period of months to years and the cumulative risk of anaphylaxis during OIT is higher than the risk of anaphylaxis in a child on allergen avoidance. Ninetyfive (27%) of 352 patients treated with 240,351 doses of peanut OIT had reactions treated with epinephrine 5 and 4 (20%) of 20 subjects

treated with 10, 497 doses of milk OIT required epinephrine at least once and lower respiratory symptoms were reported in 1.5% of doses.⁴ The rate of anaphylaxis in children on OIT is 10-20 times more common than would be expected with strict avoidance.⁶ In addition to acute reactions, chronic, nondose related symptoms are also observed in OIT trials.

Gastrointestinal complaints are the most common reason for discontinuation of therapy (10-20% in most studies). Eosinophilic esophagitis (EoE) has been diagnosed in 12% of OIT study subjects. Undiagnosed EoE is also a concern given the high rate of chronic gastrointestinal complaints. Exacerbations of atopic dermatitis have also been reported.⁶ A trial of 4,049 peanut OIT doses found that 100% of subjects had some dosing symptoms. Sixty-four percent of subjects had moderate reactions and 37% of subjects had reactions requiring epinephrine.⁷

When foods are used for OIT, they are being used as drugs and, as a result, centers performing OIT trials must file an investigational new drug application with the FDA. The cumulative data available for OIT place it somewhere in Phase 2 of 3 in the drug development process.⁶ OIT is clearly not without risk and the typical steps required for new drug development should be followed before it is used in routine clinical practice. Robert Wood, Director of the Division of Allergy at Johns Hopkins University and world expert on food allergy, has called OIT "clearly the most dangerous drug we use in our specialty."⁶ Currently the American Academy of Allergy, Asthma, and Immunology and the American College of Allergy, Asthma and Immunology do not recommend the use of OIT in routine clinical practice outside of established research protocols.

OIT is an exciting new treatment for food allergy, which in the future may offer significant benefit to many patients and families.

... continued from page 9

However, the risk of anaphylaxis with OIT is higher than with allergen avoidance, almost all patients experience some adverse reaction, and it is not clear if it is possible to achieve longterm oral tolerance in all individuals. Until OIT has been standardized and has gone through the standard process of drug development and approval it should not be used in clinical practice. Discuss with your patients' families the importance of not bypassing these safety channels before using a treatment with significant risk.

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Update on Choking Emergencies: Foreign Bodies of the Respiratory Tract

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Objective: Readers will be able to discuss the current principles in the management of children and infants with foreign bodies in their respiratory tracts.
ACGME Competencies: Patient Care, Medical Knowledge



Abstract:

Aspirated foreign bodies, whether in the upper airway or the lower airway, continue to present challenges to physicians who care for children in the acute setting. Appropriate maneuvers to relieve foreign body upper airway obstruction are age dependent. With children and infants who have foreign bodies in their lower airway, a high index of suspicion is required in order to make a timely diagnosis. Often the initial choking events are not witnessed, and the delayed symptoms may mimic other common conditions. Proper anticipatory guidance and education is the optimal way of reducing the tragic outcomes of choking events. This article reviews the current principles in the management of children and infants with foreign bodies in their respiratory tracts.

Introduction:

Upper airway foreign body obstruction and aspirated foreign bodies are a major cause of childhood mortality and morbidity and continue to present challenges to physicians who care for children. These events are not new occurrences. In 1633, the London

physician, Stephen Bradwell, wrote, "Of things that endanger stopping of the breath in swallowing, some are sharp and some blunt... I have heard of a child in Woodstreet strangled with a grape."⁽¹⁾ Then, as now, bystanders often perform prompt, effective life-saving maneuvers to children with foreign bodies in their upper airway. These life-saving maneuvers are age dependent and are usually performed in the field prior to arrival at a health care facility. Additionally, the diagnosis of a foreign body in the lower airway has added difficulty because these choking events are unwitnessed and the delayed symptoms may mimic other common conditions such as asthma, recurrent pneumonia or upper respiratory tract infections. This article reviews the clinical presentation, diagnostic work-up and appropriate management of children and infants with foreign bodies in their respiratory tract.

Background:

Hundreds of pediatric choking deaths occur every year in the United States.⁽²⁻¹¹⁾ Between 1999 and 2013, 2103 children under 15 years of age died due to foreign body airway

obstruction.⁽¹²⁾ Studies show that ninety percent of deaths occur in infants and children less than 5 years of age and 65% in those less than 2 years of age. Approximately 80% of pediatric foreign body aspirations occur in children less than three years of age, and those young patients are also at greatest risk of death.^(4,13) These deaths are usually attributable to aspiration of foods, toys or other small objects. Organic debris is commonly retrieved from the upper airway by appropriate first aid maneuvers in children who have acute upper airway obstruction and by bronchoscopy in the lower airway. Hot dogs, candy, grapes and peanuts are the most common foods recovered.^(5-11, 14-16) The shape and smoothness of these foods is thought to enable them to pass easily into the upper airway.

The description of the "café coronary" in 1963, heightened the awareness of the causes, prevention and emergency treatment of food-related choking events in adults.⁽¹⁷⁾ This paper reported nine cases of sudden death in adult restaurant patrons that occurred when a piece of meat acutely

... (cont.) Update on Choking Emergencies: Foreign Bodies of the Respiratory Tract

obstructed the victim's upper airway. The authors suggested an association in adults between choking on food, excessive alcohol intake and poorly fitted dentures. A 1984 report focused increased attention on food-related choking episodes in children.⁽¹⁶⁾ Analyzing national data on all identified food-related asphyxiation events in infants and children up to 9 years of age from 1979 to 1981, one such death occurred every five days. More than 90% took place in infants and children younger than 5 years of age and 65% in infants younger than 2 years of age. Round or cylindrical foods were the most common culprits in these events. Foods are the most common cause of choking events in toddlers. The natural curiosity of the toddler, the ubiquitous presence of small foods in the home and the lack of an efficient grinding surface before the eruption of the back molars could explain the high propensity for choking in this age group.⁽¹⁸⁾

In 1979, the US Consumer Product Safety Commission passed regulations to control marketing of nonfood items that are threats to cause choking in infants and children.⁽¹⁹⁾ Since that time, additional legislations here increased the requirements for the display of choking-hazard labels on products containing small parts.^(20, 21) Small toys, rubber balloons, nails, tacks and bolts are the main offenders.⁽²²⁾ Other dangerous objects include earrings, straight pins, aluminium foil, rocks and other small metal objects.⁽²³⁻²⁷⁾ Especially worrisome are rubber balloons, now the leading cause of pediatric choking deaths from children's toy products.⁽²⁸⁾ Several features of balloons explain why they are so dangerous. Their collapsibility allows them to pass through the vocal cords and lodge in the carina. In addition, their inflatability prevents any air passing through to the lungs. Many communities have directed efforts to prevent childhood deaths from choking on balloons by banning rubber balloons in daycares, schools and hospitals. Other communities are proponents of safer non-rubber balloon alternatives.

Foreign Objects In the Nose:

Foreign objects are commonly placed by young children into their nose. The classic presentation of an unexplained foul smelling nasal discharge which is unilateral and persistent is common in unwitnessed events. Other less specific symptoms include chronic sinusitis, recurrent epistaxis and halitosis.⁽²⁹⁻³²⁾ Frequently the presenting complaint is that the parent witnessed the young child place the object in the nose. The removal of these nasal foreign bodies is generally straightforward with adequate visualization and appropriate instruments necessary for a successful removal. Visualization may be improved with applying a topical vasoconstrictor to the nasal mucosa, using a high intensity light source and using suction to remove any nasal secretions. Complications include trauma to the nasal mucosa, potential fracture to the cribriform plate and potentiating aspiration of the foreign body into the proximal airway.^(29, 30)

Maneuvers To Remove Upper Airway Foreign Bodies:

Certain assumptions underlie the current recommendations for treatment of airway obstruction in children and infants. Although cardiac arrest with secondary airway obstruction is often seen in adults, in infants and children airway obstruction with secondary cardiac arrest is much more common. A foreign body that completely obstructs the upper airway is an immediate threat to life and must be removed immediately. However, if the child can speak or breathe or is coughing, the foreign object may dislodge spontaneously, making any first aid maneuvers potentially detrimental by converting a partial airway obstruction into a complete airway obstruction. Partial airway obstruction with very poor air exchange, or complete airway obstruction with cyanosis requires immediate interventions to avoid permanent disability or death.

Which maneuver is used to relieve an upper airway obstruction depends on the age of the child. The pediatric and emergency

medicine community, including the Committee on Pediatric Emergency Medicine of the American Academy of Pediatrics (AAP), the American Heart Association (AHA), and the Red Cross, consider the abdominal thrust maneuver the most effective method of relieving complete airway obstruction in children older than 1 year of age.^(33, 34) The utility of this maneuver based in the following principles: eighty percent of respiratory effort is from diaphragmatic contraction, abdominal inward pressure compresses the diaphragm upwards thus raising intrathoracic pressure, and a sudden rapid increase in intrathoracic pressure may expel the obstructing object.⁽³⁴⁾ As the victim becomes hypoxic from obstruction, muscle tone diminishes thus making the abdominal thrust maneuver more effective.

The AAP and AHA recommend the head-down back-blow maneuver followed by the chest-thrust maneuver for relieving airway obstruction in the child younger than 1 year of age. Some experts prefer the abdominal thrust maneuver for this age group as well as the older child and no studies deny its effectiveness. However, critics of using this maneuver in the child less than 1 year of age, cite cases of ruptured abdominal organs, pneumomediastinum and even a thrombosed aorta.⁽³⁵⁻³⁷⁾ Possible explanations for these complications in children less than one year of age is that 70% of abdominal thrust maneuver in infants were performed by untrained individuals and 50% of the time these maneuvers were performed by people who learn of this technique by reading newspapers and lay magazines. Additionally infants have relatively large stomachs, livers and spleens as compared to older children. This anatomical difference could contribute to the higher complication rate of the abdominal



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Epididymitis Due to Bilateral Ectopic Vas Deferens and Anorectal Malformation

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Abstract

Recurrent epididymitis and a history of anorectal malformation (ARM) may be secondary to an ectopic vas deferens to ureter described as persistent mesonephric duct syndrome. This is a case of a child with ARM found to have bilateral ectopic ureter to vas connection. The histopathology specimen here would suggest this is an ectopic ureter to vas. In a child with ARM that is undergoing nephrectomy, one should consider thorough exploration of the distal ureter to identify possible ectopic segments which may predispose him to epididymitis. This ectopia could explain the increased infertility rates of adults with a history of ARM.

Introduction

The acute scrotum, often secondary to testicular torsion, torsion of an appendix testis or epididymis, hernia, epididymo-orchitis, hydrocele, idiopathic scrotal edema, varicocele, and Henoch-Schonlein purpura, continues to be a diagnostic dilemma in emergency rooms as delayed or missed diagnosis can result in loss of gonadal tissue¹. Epididymitis is a common cause of acute scrotum, though one that typically can be managed with medical therapy alone. Uncommon structural anomalies such as rectourethral fistula, or ectopic vas deferens seen

with persistent mesonephric duct syndrome, increases the risk of epididymitis and may warrant surgical correction. We present a case of recurrent bilateral epididymitis in a child with anorectal malformation (ARM) and discuss the embryological origin, associated defects, as well as management considerations.

Case Report

This is a case of a 3 year old male with history of high imperforate anus and bilateral high grade ureteral reflux disease identified at 2 days old. He was started on clean intermittent catheterization, nocturnal indwelling catheterization, and prophylactic antibiotics. He did well for two months, but then developed severe bilateral pyelonephritis with right sided renal abscess requiring left loop ureterostomy and right nephroureterectomy with preservation of the distal ureteral stump for possible future use as catheterizable stoma. He remained free of genitourinary infections. By 2 years of age, his imperforate anus was repaired, the ureterostomy was taken down, and he was found to have resolved left sided ureteral reflux on voiding cystourethrography (Figure 1). While waiting to undergo urodynamic testing, he developed four episodes of right sided epididymo-orchitis. He was

subsequently taken for right ureteral stump excision and found to have an ectopic vas deferens exiting 2-3cm from the ureterovesical junction. Six months later, following an episode of now left epididymo-orchitis, his video urodynamics demonstrated a left sided ectopic vas deferens

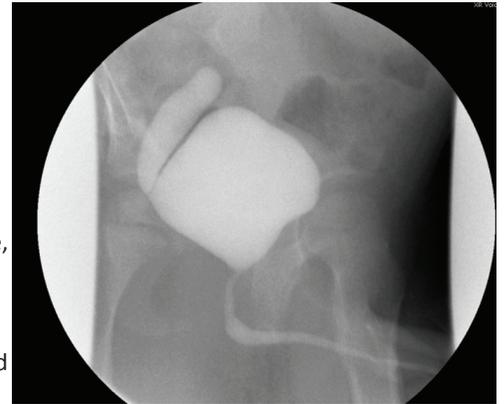


Figure 1: Initial voiding cystourethrography without evidence of bilateral ectopic vas deferens.

to the distal ureter and recurrence of his vesicoureteroreflux (Figure 2). He was again taken to the operating room and underwent left ureteroscopy and placement of a ureteral catheter into this ectopic segment, followed by a left inguinal exploration where the ureteral catheter was isolated and the ectopic segment was ligated and excised. Since then, he has been free of any recurrent epididymo-orchitis episodes.

Discussion

Epididymitis is associated with anorectal malformation in 1.2-6.1%.² This uncommon urologic condition is more often associated with existing rectourethral fistula leading to chronic urinary tract infections or anatomic alterations due to fistula insertion into the posterior urethra³. Despite repair of the fistula tract, episodes of epididymitis may recur in more than one third of cases. Ectopic vas deferens is a rare cause of epididymitis, though it is often associated with anorectal malformation. Upwards of 30 cases of vasa ectopia have been described since 1895, with only 6 previously described with bilateral ectopia.^{4,5,6} In addition to the association with anorectal malformation, this is frequently associated with ipsilateral renal anomalies to include dysplasia and agenesis, as well as ipsilateral ureteral obstruction or reflux.⁵

Ectopic vas deferens has been attributed to persistent mesonephric duct syndrome (PMDS), which is defined by a common distal ureteral segment, or common mesonephric duct, that drains both a proximal

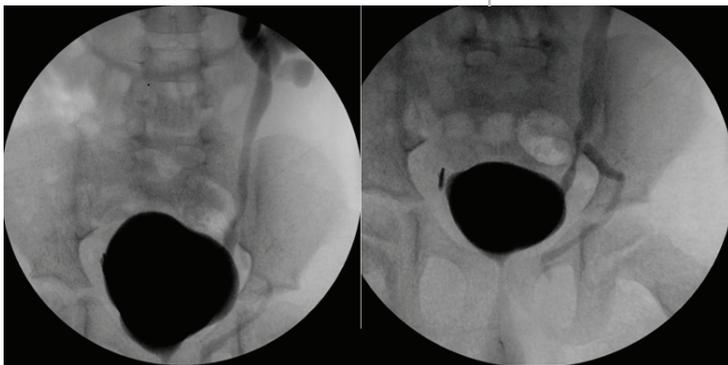


Figure 2: Left sided ectopic vas deferens to left ureter on voiding cystourethrography.

... (cont.) Epididymitis Due to Bilateral Ectopic Vas Deferens and Anorectal Malformation

ureter, as well as an ectopic vas deferens.^{4,6} This common excretory duct may be connected along any length of the collecting system, from the renal pelvis to the bladder.⁵ The embryological origin of PMDS and

occurs due to abnormal signaling during the differentiation of the mesonephric duct into the vas deferens. As such, it is arguable whether this truly represents an ectopic ureter to vas connection as is seen histologi-

performed. This same algorithm attempts to address the situation of bilateral epididymitis though attributes this to a more distal urinary abnormality such as neurovesical dysfunction, urethra-ejaculatory duct reflux, urethral stricture, or valves (Raveenthiran).²

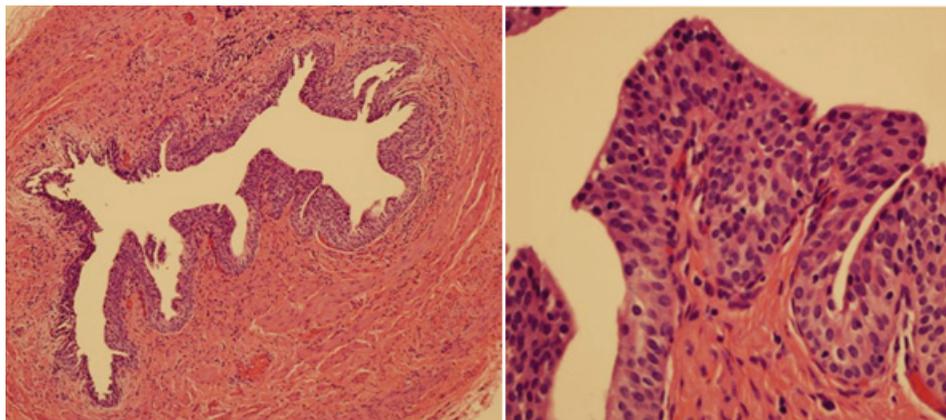


Figure 3: (Left) 10x Microscope view showing Ectopic Ureter/Vas, (Right) 40x microscope view showing transitional cell epithelium similar confirming a ureteral histologic appearance of ectopic vas segment.

its association with ARM is likely secondary to its temporally associated maldevelopment. As the ureteric bud grows cranially, the common mesonephric duct is resorbed caudally into the cloaca to form the trigone. Meanwhile, the cloaca begins dividing during the fourth week of gestation into the anterior urogenital sinus and the posterior rectum. The now resorbed common mesonephric duct has two separate openings, the distal ureter into the trigone, and the vas deferens as it migrates and fuses with the posterior urethra.^{4,5,7} It is the incomplete fusion of the common mesonephric duct with the cloaca which is believed to result in the ectopic location of the vas deferens to the urinary collecting system.

As was described by Schwartz and Stephens in 1978, the ectopic vasal segment seen in PMDS histologically resembles ureteral tissue, which was found in this case as seen in Figure 3.

Histological cross sections of the ectopic vas segment appears to have an transitional cell epithelial lining as would be expected with ureteral tissue, rather than the pseudostratified epithelium seen with normal vas deferens. Additionally, the three muscle layers of an inner longitudinal, middle circular and outer longitudinal muscle fibers typically seen in the normal vas deferens, is absent in the ectopic vas segment. This histological finding may represent a heteroplasia that

occurs here and in previous published cases^{6,7}, versus an ectopic vas to ureter connection which is described embryologically by Vordermark and Schwartz^{4,6}. Another possibility is that the urothelial appearance of this ectopic vas may be secondary to a metaplasia which develops due to the continued exposure of the vasal tissue to refluxing urine either perinatal or postnatal.

With the reflux of urine through the common excretory duct and into the ectopic vas deferens, acute and recurrent epididymitis may occur. The chronic inflammation within the ejaculatory system and testis, leads to irreversible scarring and may account for the 20% of associated infertility in boys with anorectal malformation.⁸ While attempts have been made to endoscopically treat this reflux of urine by the injection of UROCOL into the common distal excretory segment to reduce UTI, epididymitis and infertility, long term results of such treatment is unknown.⁹ In the largest case series of epididymitis associated with anorectal malformation, a therapeutic algorithm was proposed. In a child with recurrent unilateral epididymitis and good bilateral renal function, one could consider ipsilateral ureteral reimplant to allow for the investigation of an ectopic vas segment into either the bladder or ureter, or to reduce reflux urine into a potential common mesonephric duct segment. If a child has poor ipsilateral renal function, then a nephroureterovasectomy should be

performed. Although seemingly rare, our case of bilateral persistent mesonephric duct syndrome causing ectopic vaso-ureter connection eventually had successful treatment with bilateral vasectomies as would have been recommended by the previously described algorithm. There are some technical lessons to be gained from this case. First, occult ectopic vas-ureter connection as was found on the left side in this case may be more prevalent than previously believed, thus contributing to the 20% infertility rate in boys with ARM. Second, applying the previously described algorithm to any boy with ARM and dysplastic kidney requiring nephrectomy, even in the absence of epididymitis, one should consider complete ureterectomy with concomitant exploration for possible ectopic vas-ureter segment. Third, a voiding cystourethrogram that does not show reflux into an ectopic segment does not rule out the absence of an ectopic vas. High clinical suspicion is needed in cases of recurrent epididymitis. Finally, in the setting of bilateral epididymitis and ARM, evaluation should not only be limited to cystoscopy, but also include bilateral retrograde ureterograms looking for occult vasal ectopia.

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Canadian Journal of Urology: Residents Corner

Resident’s Corner. This section is a forum for Trainees to publish their articles. Total number of authors should not exceed 5 authors and a Resident must be the first author. When submitting to the Resident’s Corner, the manuscript must be accompanied by a letter from the Residency Program Director and should identify the Resident and their level. Please note that Case Reports are no longer accepted unless it is being submitted to the Resident’s Corner section of the journal. The format of the Case Report differs from a standard submission as follows:

- Total page length must not exceed 10 pages.
- “Abstract” Narrative form, less than 100 words total with 3-5 key words.
- “Introduction” Section.
- “Case Report” Section describing the clinical presentation and management.
- “Discussion” Section.
- References limited to less than 10 references.
- Images should be limited to no more than three high quality photos, imaging studies or photomicrographs.

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In listed references, the names of all the authors should be given unless there are more than 6, in which case the names of the first 3 authors are used, followed by et al.

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New Online Learning Resource for SCID Screening:
Just in Time for Newborn Screening Month

Today, newborns in most states, the District of Columbia and Puerto Rico are screened for at least 29 conditions within the first few days after birth. Using a few drops of blood, newborn screening detects a treatable condition in about 1 in 300 babies born each year.

The Newborn Screening Education project (www.newbornscreeningeducation.org), a joint venture between the Virginia Department of Health (VDH), the University of Virginia Office of Continuing Medical Education and the University of Virginia Children’s Hospital, has expanded its current online Newborn Dried-Blood Spot training module to include content on Severe Combined Immunodeficiency Syndrome (SCID).

SCID is characterized by an inability to resist infections and is a life-threatening syndrome. Without definitive treatment, SCID is usually fatal by two years of age.

The new SCID content within the Newborn Dried Blood-Spot Screening module reviews:

- Why and how to screen,
- How to proceed when presented with abnormal or critical screens, and
- How to communicate with family members.

In addition to Dried Blood-Spot Screening education, the site also offers training in Critical Congenital Heart Disease (CCHD) screening. The CCHD online training provides evidence-based content on the identification and implications of CCHD, assistance in establishing a screening program and resources for helping parents understand the testing process and results. CME credit and contact hours are offered, and there is a Maintenance of Certification (MOC) version of the module offered specifically for physicians.

Part of the CCHD training experience is a free parent resource guide that helps healthcare providers explain the importance of CCHD screening to parents, what the results say about their baby’s risk of having CCHD, the primary care provider’s role in follow-up testing, information about critical heart defects and transport to a specialty facility when necessary. The module includes a printable handout about CCHD screening for parents, as well as access to the PedHeart Community Web (developed by a grant from the Cove Point Foundation in conjunction with the University of Virginia’s Children’s Hospital) and an extensive discussion of heart defects, diagnostic testing and treatment.

Newborn Screening Month is a great reason to make sure newborn and pediatric staff are trained on the latest screening protocols and best practices. Learn more about this newborn screening resource at www.newbornscreeningeducation.org.

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The community benefit is derived from having as many members of a community immunized as possible – or what’s called “herd immunity.” The more people immunized for an infectious disease means there is less spread of the disease among those who can’t be immunized, such as those who are too sick for the shots (called “immuno-compromised”), or for the very young who are not old enough to be immunized. When only a few are susceptible to an outbreak of

boat becomes full of water, or continually bailing small amounts of water to keep things dry. The greatest impact of immunization is when enough people are vaccinated to provide herd immunity to protect those who cannot be vaccinated. The more unimmunized people there are makes it easier for an infection to spread to those who cannot be immunized. Every child that is not immunized makes it easier and more likely for infections like the measles

face. Dr. Paul Offit describes this phenomenon very well in his book, *Deadly Choices*. In tragic story after story, he points out that starting with a single person, the infectious diseases that were once thought to be well controlled can resurface, and bring with them awful complications and deaths. The measles outbreak last spring along the West Coast vividly showed what can quickly happen. Although this outbreak was well-publicized, every year medical professionals

encounter similar, but lesser-known, events that don’t receive much media coverage. In the measles outbreak, the media often failed to highlight the array of complications that can come in the aftermath of the infection.

Because measles are one of the most contagious infections, it can be expected that one in ten children will have ear infections with residual hearing deficits, possibly permanent hearing loss. As many as one out of every 20 children with measles will have pneumonia, which is the most common cause of death from measles in young children. About one child out of every 1,000 who get measles will develop encephalitis (swelling of the brain), often resulting in convulsions that can leave the

child with severe intellectual disability, or frequently lead to death.

And make no mistake, the measles **are** deadly: For every 1,000 children who contract the disease, one or two will die from it. These are all preventable conditions when the child is immunized against the measles. These statistics are particularly cruel and very real for babies who are too young to be immunized, yet are exposed to the disease through other children whose parents made a deliberate choice to not immunize and protect their own children.

As a society and as parents, it should not be a question of whether to vaccinate or not vaccinate our children. Rather, the question to ask is this: Why are not **all** children immunized?

an infection, herd immunity will limit or halt the infection from spreading.

But herd immunity can only occur if a substantial percentage of people are immunized. Imagine bailing out a boat with a slow leak. As long as you keep bailing out the water, the boat will stay pretty dry. You may even get to the point when the boat has been kept dry long enough that it may seem that there is no leak at all, so it may appear to no longer be necessary to continue your hard work to bail out the boat. Similarly, a disease can be so well controlled, with its occurrence so infrequent, that it seems to no longer exist. But like the boat with a leak, the water level can again rise. Likewise, a disease that has seemingly ceased to exist can once again reappear as outbreaks of infection. Imagine which takes less effort - bailing large volumes when a

to spread at school, in church or anywhere they may go. So getting vaccinated, in its own way, “bails out” society from these dangerous diseases.

Immunizations work. How well immunizations work may not be very apparent. It is difficult to see what is not there. Where are all those patients who had polio from our grandparents’ era? How many days of school did you miss when you had chicken pox? How many days did your parents take off work, when you came down with the measles? Do you recall how sick you or your family became last winter when you caught the flu? Are you more concerned about taking care of a cut, or the tetanus that once was a common result? Unfortunately, the impact of vaccinations can best be seen when people stop immunizing and outbreaks of once-forgotten infections resur-

