Chair Update

The Executive Committee welcomes two new members beginning in November 2018. Dr. Vikas Dharnidharka was elected as the Chair of the SONp. Dr. Dharnidharka is currently a Professor of Pediatrics and Director of Pediatric Nephrology at Washington University School of Medicine and St Louis Children's Hospital. Dr. Dan Feig, a Professor of Pediatrics and Director of the Division of Pediatric Nephrology at University of Alabama, Birmingham School of Medicine, was elected as a new member to the Executive Committee. Dr. Juan Kupferman is the Division Chief of Pediatric Nephrology and Hypertension at Maimonides Medical Center and Professor of Clinical Pediatrics at Albert Einstein College of Medicine and was appointed to complete Dr. Dharnidharka's term on the Executive Committee. Thank you to Dr. Teri Jo Mauch who has served for 6 years as a committee member and Dr. Larry Greenbaum who served on the committee for 10 years as a member, the chair and immediate past-chair.

There are several updates that I would like to share with you. First, congratulations to Dr. Eileen Brewer MD, FAAP who has been named Co-Chair to the Renal Management Clinical Subcommittee, one of the expert panels to develop care episode and patient condition groups for new Medicare cost measures for CMS. The panels will continue the implementation of the Merit-Based Incentive Payment System (MIPS) established under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA). The measures developed during this work will be used to calculate and compare physician resource use in the cost component of the MIPS. Dr. Brewer's work and involvement will impact pediatric nephrology patients as well as AAP work on value-based payment models.

Second, as a member of the Organ Procurement and Transplantation Network (OPTN)/United Network for Organ Sharing (UNOS), the AAP submitted comments informed by medical subspecialty and surgical sections regarding a concept paper on improving the OPTN /UNOS committee structure. Concern arose from the report that the proposed changes would diminish consideration of important issues unique to children. Based on the response from the AAP and other stakeholders, UNOS has decided not to make the proposed change to the Pediatric Committee and will explore other ways to achieve its objectives.

Third, the AAP SONp, the American Society of Pediatric Nephrology (ASPN) and the National Kidney Foundation (NKF) have established a collaborative relationship with the goal to jointly develop pediatric nephrology related articles for parents/patients. The initial writing panel is a multidisciplinary group comprised of pediatric nephrologists, social workers, nurses, advance practice providers and dieticians as well as parents of children.
with kidney disease. Thank you to all who responded to the call for volunteers. Articles will be available on each website resulting in consistent, quality information for parents and young adults with kidney disease. Three articles are currently under way and we will keep you informed when they become available.

Fourth, as part of the Choosing Wisely® campaign*, the AAP SONp and the ASPN, produced five targeted evidence-based recommendations in “Five Things Physicians and Patients Should Question”. There is a separate article in the newsletter that provides more detail, but I would like to acknowledge the time and efforts of the SONp Executive Committee and the ASPN Clinical Affairs Committee members in collaborating to develop this list.

This fall marks the end of my term as chair of the SONp. It has been my honor and privilege to serve in this capacity. The success of this committee is the product of all the committee members, our manager, Ms. Suzanne Kirkwood, and the entire AAP support staff. I look forward to two more years of collaboration with the executive committee as the immediate past chair and further progress of the SONp as we aim to meet the growing needs of pediatric nephrologists and general pediatricians.

2019 Section on Nephrology
Henry L. Barnett Award Call for Nominations

The call for nominations for the 2019 Henry L. Barnett Award is now open. The AAP Section on Nephrology will recognize one individual for lifetime achievement in the field of pediatric nephrology. Any pediatric nephrologist meeting the following qualifications can be nominated for this award:

- Dedication to teaching nephrology
- Contributions to advocacy for children
- Distinguished service to the field of pediatric nephrology

Access the nominations form here and additional information is on the website. Please submit the necessary information to Suzanne Kirkwood at skirkwood@aap.org by September 28, 2018.

Fellow Corner:
Make the Most of the Pediatric Nephrology Rotation Experience

Brian Stotter, MD, FAAP, SONp Training Fellow Liaison,
Boston Children's Hospital, Division of Nephrology

Despite the increasing burden of kidney disease in children, the pediatric nephrology workforce has struggled with addressing its need to recruit medical trainees who express interest in this field. Nearly 20% of physicians in the U.S. who went through fellowship training no longer practice pediatric nephrology, and about 50% of division chiefs report difficulty filling faculty positions in their institutions. A survey of pediatric non-nephrology fellows revealed key factors for them not pursuing pediatric nephrology. Aside from liking their chosen field better, there was a perception that the subject matter was too difficult to grasp or not taught well, and there was a lack of role models or mentors during their training to steer them towards nephrology. Most medical students and residents have limited exposure to nephrology patients during their training unless they pursue an elective rotation, which only provides a few weeks for them to assess whether to consider nephrology as a potential career path. Thus, it is paramount that we optimize their clinical experiences during this brief block of time while offering them the full spectrum of what a career in pediatric nephrology can offer.

Below are some examples of ways to enhance the education and experience that medical students and residents receive as they rotate through your institution's pediatric nephrology elective:

1. Give a tour of the dialysis unit: Even though our dialysis patients are among those children with the highest medical

Continued on Page 3
needs, most medical students and residents have minimal if any exposure to them during their training. Have them observe a patient receiving hemodialysis and show them the different components of the dialysis circuit. Review the different types of vascular access and how to examine an arteriovenous fistula or graft for patency. Take trainees through a mock circuit set-up and exchange on a peritoneal dialysis machine. There are several great simulators of renal replacement therapy available online as well, including a hemodialysis and peritoneal dialysis simulator on OPENPediatrics (https://www.openpediatrics.org/collection/simulators).

2. **Spend time at the microscope:** Show medical students and residents the diversity of findings in the urinary sediment and the renal biopsy. Many pediatric nephrologists review urine specimens from their clinic patients with trainees, but also encourage them to obtain urine samples from inpatients to review the spectrum of findings in children with glomerulonephritis, acute kidney injury, and more. If you have a collection of urine microscopy images, play “Name That Crystal” and other learning games with them. Invite trainees to form a differential diagnosis for patients who are about to undergo a renal biopsy and bring them to pathology review to confirm or rule out these diagnoses.

3. **Teach at the bedside:** Many of the physical examination skills required of nephrologists are those that medical students and residents need to know regardless of their future specialty choice. On teaching rounds, demonstrate how to assess volume status in a patient with physical signs of volume excess or volume loss. Show trainees the correct steps for obtaining a manual blood pressure measurement. In patients with elevated blood pressure, review the physical exam skills you would use to look for secondary causes of hypertension, such as listening for abdominal bruits.

4. **Observe a kidney transplantation:** Being able to improve the quality of life for a child with ESRD through kidney transplantation is one of the most rewarding and exciting parts of our job. If your institution has a kidney transplant program, have trainees spend time with the transplant surgeons as they go for organ retrieval and when they return to the OR to transplant the donor kidney into the patient. Watch their reaction at the end of the procedure when the ureter is unclamped and urine is immediately produced!

There are many ways to highlight the unique aspects of pediatric nephrology that encouraged us to pursue this great specialty. By engaging medical students and residents with these methods and other active learning experiences to get the most out of their elective time, more trainees may find their own passion for taking care of children with kidney disease and pursue pediatric nephrology for their own careers.

Further Reading:


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**Choosing Wisely: A Look at the Program and the Process to Develop a List for Pediatric Nephrology**

*Doug Silverstein, MD, FAAP* Chair,

*Section on Nephrology*

**Introduction**

The American Academy of Pediatrics Section of Nephrology (AAP SONp), in conjunction with the American Society of Pediatric Nephrology Clinical Affairs Committee (ASPN CAC) has developed a list of five items for inclusion in the national “Choosing Wisely” program. Herein, we provide background and other information about the Choosing Wisely program.
Background
In 2002, the American Board of Internal Medicine (ABIM) published a report entitled “Medical Professionalism in The New Millennium: A Physician Charter. It stated: “Changes in the health care delivery systems in countries throughout the industrialized world threaten the values of professionalism. Each physician must decide if the circumstances of practice are threatening his or her adherence to the values that the medical profession has held dear for many millennia.” The authors nevertheless encouraged physicians to take a more active role in changing the course of healthcare based on the principles of professionalism, honesty, and respect and commitment to patients. This call to action stimulated other efforts to address concerns about high cost, questionable quality, and reduced access to care based on several studies showing that changes in health care delivery could result in reduced cost without sacrificing quality, including an analysis of the National Physician's Alliance. A 2014 ABIM Foundation survey of 600 physicians funded by the Robert Wood Johnson Foundation found that almost 75% of responders felt that the frequency of which physicians order unnecessary medical tests and procedures was a serious problem. Finally, a report by the National Academy of Sciences estimated that 30% of the health care spending in the United States was wasteful.

In response to these reports, the ABIM developed the “Choosing Wisely” program to stimulate discussion among all stakeholders about implementing strategies to identify wasteful or unnecessary medical tests, treatments and procedures and avoid, if feasible, their use. The AAP joined this effort, initially by reaching out to membership, the sections, councils and committees. Those efforts will be further described below.

Goals of the “Choosing Wisely” Campaign
Emerging from these studies, the major goal of the “Choosing Wisely” campaign is to address concerns about the quality and affordability of, and access to health care. It is noteworthy that waste in health care is not limited to unnecessary tests or procedures. Since one major factor contributing to waste is poor communication between doctors and patients, one aim of “Choosing Wisely” is to “promote conversations between clinicians and patients by helping patients choose care that is supported by evidence, not duplicative of other tests or procedures already received, free from harm, [and] truly necessary”. To “help patients engage their health care provider in these conversations and empower them to ask questions about what tests and procedures are right for them, patient-friendly materials were created based on the specialty societies’ lists of recommendations of tests and treatments that may be unnecessary”. In the New England Journal in 2010 (N Engl J Med 362:283-285, 2010), Dr. Howard Brody, a medical ethicist and major proponent of the campaign who has expressed support for the efforts of organizations to participate in the program, stated: “The Top Five list would be a prescription for how, within that specialty, the most money could be saved most quickly without depriving any patient of meaningful medical benefit”.

Process
National organizations like the AAP were requested to reach out to their members and constituents and ask them to identify frequently-used tests or procedures whose utility may not be supported. Groups were asked to develop lists of “Things Providers and Patients Should Question.” Recommendations regarding other aspects of patient care (e.g., choice of antibiotics for peritonitis, when to initiate dialysis for acute kidney injury), while of worthwhile debate, are not part of the “Choosing Wisely” campaign. While it is plausible that coverage or payment changes could arise from this national effort, the program was not designed for that purpose since certain tests or procedures may be necessary under specific circumstances.

Groups such as the Section on Nephrology (SONp) within the AAP were asked to develop a list of five items and AAP groups were encouraged to collaborate with a “sister” society in the development of the list. In addition, as part of the process, proposed lists are reviewed by other groups within the AAP, the AAP Executive Committee and the other 79 partner organizations participating in the Choosing Wisely program.

Each recommendation should optimally be supported by clinical evidence, including guidelines and data, but, it was permissible to have a recommendation be supported by strong expert opinion. Transparency and the source(s) of the evidence are also essential.
The SONp Experience

The SONp Executive Committee, in collaboration with the Clinical Affairs Committee of the American Society of Pediatric Nephrology (ASPN), developed a list of five tests or procedures that should be explored as potentially being unnecessary and wasteful of medical efforts and cost. The pediatric nephrology “Five Things Physicians and Patients Should Question” are listed below and can be accessed here:

- Do not order routine screening urine analyses in healthy, asymptomatic pediatric patients as part of routine well child care.
- Do not initiate a work up for hematuria or proteinuria before repeating an abnormal urine dipstick result.
- Avoid ordering follow-up urine cultures after treatment for an uncomplicated urinary tract infection in patients that show evidence of clinical resolution of infection.
- Do not initiate an outpatient hypertension work-up in asymptomatic pediatric patients prior to repeating the blood pressure measurement.
- Do not place central lines or peripherally inserted central lines in pediatric patients with advanced (Stage 3-5) chronic kidney disease/end-stage renal disease without consultation with pediatric nephrology due to goals to avoid adverse events, preserve long-term vascular access, and avoid unnecessary and costly procedures.

Please consider promoting these five recommendations to your local pediatric colleagues:
- Place in your hospital or Department of Pediatrics newsletter
- Send to your pediatric residents
- Request that it be publicized by your local AAP chapter

As a next step, the AAP SONp and ASPN CAC will explore further opportunities to help general practitioners and pediatric nephrologists implement these initiatives as a way to positively impact physician practice.

*Disclaimer:
The chair is a medical officer of the US Food and Drug Administration (FDA) Center for Devices and Radiological Health, Renal Devices Branch. The information contained in this article and conveyed by Dr. Silverstein regarding the Choosing Wisely campaign represent Dr. Silverstein’s viewpoints as a pediatric nephrologist and not the FDA and or Dr. Silverstein’s role at the FDA.


Stuart L. Goldstein, MD, FAAP, FASN, FNKF,
Clark D. West Endowed Chair, Professor of Pediatrics, Director, Center for Acute Care Nephrology,
Division of Nephrology and Hypertension, The Heart Institute, Cincinnati Children’s Hospital Medical Center

Many of the advancements in the field of medicine have been achieved by the development of medications targeted at severe acute and chronic underlying conditions such as infection, heart disease, and cancer. Unfortunately, many of these medications are nephrotoxic, meaning that they are injurious to the kidney and can cause acute and in some cases irreparable damage to the kidneys. Nephrotoxic medication exposure is nearly ubiquitous for hospitalized patients and is one of the most common causes of acute kidney injury (AKI) in the hospital.1,2

There is the potential perception that provision of nephrotoxic medications and the associated AKI is “just the cost of doing business” and a necessary evil of tertiary health care. Such a perception ignores an opportunity to expose patients to only the nephrotoxic medications they need for the time that they need them. Furthermore, since many nephrotoxic medications are excreted by the kidneys, they or their metabolites can accumulate and cause worsening AKI or other systemic organ injury and dysfunction.

Continued on Page 6
The confluence of standardized- and validated serum creatinine-based AKI diagnostic and severity criteria and the requirement for, and adoption of, electronic health records provided us with the opportunity to expeditiously catalog nephrotoxic medication exposure and burden as well as AKI development and severity. In 2011, we initiated a single center quality improvement program called Nephrotoxic Injury Negated by Just in time Action (NINJA) which had the goal of reliably quantifying high nephrotoxic medication exposures and associated AKI rates in non-critically ill hospitalized children. It was our hope that such systematic focus on the nephrotoxic practice would decrease nephrotoxic AKI rates and severity.

**The NINJA Program Inception**

NINJA uses an automated program to extract data in near real-time from electronic health record to flag non-critically ill hospitalized children exposed to three or more nephrotoxic medications simultaneously or an intravenous aminoglycoside for 3 or more consecutive days. These exposure criteria were viewed as high risk for AKI given observations from the published literature.2,3 The NINJA intervention was to require systematic kidney function surveillance with a daily serum creatinine measurement in all exposed patients. We also developed a number of novel outcome measures to track the impact of the NINJA program on nephrotoxic medication rates, associated AKI rates and duration of AKI (Table 1).

### Table 1

<table>
<thead>
<tr>
<th>Measure Name</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Clinical Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High NTMx Exposure Prevalence Rate (per 1000 patient-days)</strong></td>
<td>Number of new patients with high NTMx exposure in the calendar week of study</td>
<td>The total number of non-critically ill patient hospital days standardized per 1000 patient-days in the calendar week of study</td>
<td>This measure generates a normalized rate of high NTMx exposure cases per study week.</td>
</tr>
<tr>
<td><strong>AKI Prevalence Rate (per 1000 patient-days)</strong></td>
<td>Number of patients with high NTMx exposure who developed AKI in the calendar week of study*</td>
<td>The total number of non-critically ill patient hospital days standardized per 1000 patient-days in the calendar week of study</td>
<td>This measure generates a normalized rate of AKI cases per study week.</td>
</tr>
<tr>
<td><strong>Rate of Patients with High NTMx Exposure who Develop AKI (%)</strong></td>
<td>Number of patients who develop AKI*</td>
<td>Number of new patients with high NTMx exposure in the calendar week of study</td>
<td>This measure generates the fraction of patients with high NTMx exposure who develop AKI</td>
</tr>
<tr>
<td><strong>AKI Intensity Rate (per 100 exposed patient-days)</strong></td>
<td>Number of days patients have AKI</td>
<td>The total number of exposed patient days standardized per 100 exposed-days</td>
<td>This measure depicts a normalized duration of AKI per exposed days</td>
</tr>
</tbody>
</table>

* AKI development factors into the numerator of the week that the patient became exposed if AKI develops in a different calendar week than when a patient became exposed.

NTMx = nephrotoxic medication

In the first year after NINJA implementation, 4 we observed that 25% of exposed patients developed AKI, with more than 50% experiencing severe AKI, defined as a doubling of serum creatinine from baseline.5 In addition, in this first year, we observed the rate of AKI per 1000 patient days was 10-fold and 3-fold higher than our hospital wide catheter associated urinary tract infection and central line associated blood stream infection rates, respectively. Finally, we observed a 42% decrease in AKI intensity (days of AKI per 100 exposure days), which yielded an avoidance of over 900 days of AKI. Many quality improvement initiatives do not sustain their initial success, so we looked at the first 3½ years of the NINJA project at our center, we observed a 38% decrease in the rate of exposures and concomitant 64% decrease in AKI rates, which was associated with avoidance of more than 600 exposures and nearly 400 AKI episodes, respectively. Given that many of the nephrotoxic medications are antimicrobials, there was a potential concern that decreasing exposure could lead to a rise

in inadequately treated bacterial or fungal infection. However, the rate of persistent infection, defined as persistence of a positive culture for 7 days remained constant for the entire 3½ years of observation.

The association with development of chronic kidney disease is another concern about nephrotoxic medication associated AKI, or any form of AKI for that matter. We have shown that patients in the NINJA program who developed AKI demonstrated a very high rate of CKD. Seventy percent of patients had evidence of residual kidney damage (reduced eGFR, hyperfiltration, proteinuria, and/or hypertension) six months after an episode of AKI, whereas none of them had any CKD signs before the AKI episode.7 We are currently conducting an analysis to determine the potential healthcare savings afforded by NINJA associated reduction in AKI and avoidance of resultant CKD.

Dissemination of NINJA

In 2014, nine US pediatric centers developed a working collaborative to disseminate NINJA to their institutions. This effort, funded by the Casey Lee Ball Foundation and the Agency for Healthcare Research Quality, aimed not only to achieve successful implementation at these centers, but also to evaluate the contextual factors that accelerated or presented barriers to implementation using a statistical method termed qualitative comparative analysis (QCA). For this reason, the institutions chosen had varying characteristics in terms of size and structure (e.g., free standing children's hospital vs. a pediatric institution within a larger healthcare system), information technology capabilities, quality improvement support, safety culture readiness and pharmacy integration into clinical workflows. The initial outcomes of the collaborative were presented at the American Society of Pediatric Nephrology/Pediatric Academic Societies’ meeting in May 2018. The collaborative achieved sustained improvements in the AKI rate per 1000 patient days (22% reduction) and AKI rate per exposure (28% reduction). These resultant rates are similar to the sustained rates seen at our pilot single center. The QCA revealed that for an individual center, active participation in the network (consistent monthly data submission and participation in monthly data and process sharing webinars) was necessary but not sufficient for AKI reduction. Of particular importance was the observation that competing priorities, especially with respect to any updates or new rollouts to the electronic health record, were sufficient for failure of NINJA implementation at an individual site. The collaborative continues to explore other aspects of nephrotoxic medication associated AKI. Different work groups are assessing AKI rates in different services lines (e.g., oncology, pulmonology etc), or the effect of specific medication combinations on AKI rates. These more detailed aspects of the nephrotoxic medication landscape will likely yield disease-specific reductions in exposure and AKI. Other centers have started to implement the NINJA program in the neonatal intensive care unit. This so-called Baby NINJA effort has led to reductions in AKI in a single center in Alabama, and submission of these data is pending.

What Does the Future Hold for NINJA?

Based upon the reproducible and sustained results noted above, Nephrotoxic Acute Kidney Injury and the NINJA methodology has been adopted as the next Hospital Acquired Condition to be disseminated by the 130 pediatric hospital Solutions for Patient Safety Collaborative (www.solutionsforpatientsafety.org/, SPS). Starting in July 2018, thirty “pioneer” hospitals in the SPS collaborative will start to implement the NINJA program in non-critically ill patient wards, and some hospitals have opted to implement NINJA in the intensive care unit setting.

In addition to the national SPS initiative, the original NINJA collaborative plans to leverage its existing reliable and robust infrastructure to conduct translational research projects aimed at further decreasing nephrotoxic medication associated AKI. Two potential strategies currently under investigation aim to optimize risk assessment for nephrotoxic medication associated AKI: 1) novel kidney injury biomarker assessment and 2) assessment of genetic predisposition to specific nephrotoxic medications associated AKI. While much of the existing biomarker work has focused on detecting sub-clinical kidney injury with known nephrotoxins,8 a recent study demonstrated that urinary neutrophil gelatinase associated lipocalin (NGAL) was associated with decreased tobramycin clearance and an increased area under the curve (AUC) in patients with cystic fibrosis.9 Since NGAL and tobramycin utilize a similar transport receptor, megalin, these results suggest that other biomarkers may also be predictive of disordered pharmacokinetics for other medications depending on their respective transport physiologies. Finally, a recent combined adult and pediatric international multicenter initiative has been aimed at assessing for genetic predisposition to medication associated AKI using genome wide associated studies.10

Continued on Page 8
In conclusion, the NINJA program has demonstrated that nephrotoxic medication associated AKI is a potentially modifiable adverse safety event and the future holds promise for further reduction via more personalized healthcare interventions.

References:


Pediatric Tele-Nephrology: Infrastructure and Financial Model

Daniel Feig, MD, PhD, MS, FAAP, Division Director, Pediatric Nephrology, Margaret Porter Professor of Pediatric Nephrology, University of Alabama, Birmingham, School of Medicine

Access to care is a common concern in pediatrics and a particular challenge in understaffed subspecialties. This issue is especially acute in pediatric nephrology where small numbers of practitioners are geographically concentrated by the need to staff and access dialysis and transplant programs integral to the management of our patients. At the University of Alabama, Birmingham, the Department of Pediatrics is housed at an independent hospital, Children's of Alabama, and serves the needs of the state's 1.2 million children, more than 296,000 of whom live below the poverty level. While there are strong pediatric programs in other major population centers of the state including Mobile, Huntsville and Dothan, all 7 practicing Pediatric Nephrologists in Alabama are located in Birmingham. Pediatric renal patients are thus obligated to seek care in North Central Alabama, regardless of distance, economic condition or payer status.

The travel distances for our patients are prodigious. Among renal transplant patients, 77% travel more than 50 miles each way for appointments, 48% travel more than 100 miles and 21% more than 200 miles. Similarly, among chronic dialysis patients, 77% live more than 50 miles, 34% live more than 100 miles and 11% more than 200 miles from the only pediatric dialysis unit in the state. In the General Renal Outpatient Clinics, nearly half of all patients travel more than 100 miles, each way, to their appointments. The burden to families of travel cost, missed work and school, as well as the logistics complicated by poverty, results in significant barriers to care.

Historically, we have tried to mitigate these challenges in a variety of ways. There is a robust system for patient transportation utilized by contracted and volunteer drivers to assist families. This works well for occasional visits, scheduled well in...
Pediatric Tele-Nephrology: Infrastructure and Financial Model

Continued from Page 8

While there has long been enthusiasm for telemedicine in pediatrics, there have been significant and varied barriers to its implementation. The first has generally been financial. Equipment, particularly those that allow remote physical exam and imaging, can be quite expensive and needs to be distributed to optimal effect. Furthermore, bandwidth requirements require extensive infrastructure upgrades in the remote areas where telemedicine is most needed. Consequently, development of a telemedicine network requires substantial capital outlay. An alternative is to use in-place teleconferencing technology, including tablets and smartphones owned by patients, however, confidentiality issues, data-security concerns and the limitations of video-chat only clinic visits can compromise its general utility. Another financial issue is that of payment for services. While many states have laws either in effect or under consideration to mandate telemedicine parity, there is tremendous inconsistency in telemedicine payments to physicians and little or no facility payments. A second group of barriers is legal. As is frequently true with emerging technology, the compliance and regulatory landscape is ill-defined. Licensure and credentialing requirements (if any) vary not only from state to state but from payer to payer, though a move toward “credentialing by proxy” by the Joint Commission on Accreditation of Healthcare Organizations may mitigate this challenge. Stakeholder resistance can delay adoption. There has been general concern that families will be resistant, though that has not been our experience, and individuals can opt out. The lack of an in-person physical exam is often cited as a concern but the combination of newer remote physical exam technology and patient selection for those evaluations less impacted by physical exam findings can reduce such concerns. Finally, physicians facing longer work hours and extensive electronic medical record fatigue, may be less enthusiastic about the “next technological advance.”

There is a long history of the use of telemedicine technology in nephrology. The first report of the use of teleconferencing for the management of patients with chronic kidney disease (CKD) was in 1996 when it was used to reach remote, often >1000 miles from the center of care, indigenous populations in Northern Australia. More recently, use of telemedicine technology was shown to improve patient satisfaction, medication adherence and improve outcomes among CKD patients in the Hudson Valley Veterans Affairs Medical Center program. George Washington University has recently been awarded a $1.9 million grant from Centers for Medicaid and Medicare Services (CMS), “Using Telemedicine in peritoneal dialysis to improve patient adherence and outcomes while reducing overall costs,” aimed at improving patient access to care, adherence to treatment, self-management, and health outcomes, while reducing cost of care for peritoneal dialysis. In pediatric nephrology, the Walter Reed National Medical Center has been providing video consultation using local and home computing technology. In Queensland, Australia, over 318 pediatric nephrology consultations were performed between 2004 and 2013 at a considerable savings to the national health system in comparison to visits performed at the central site in Brisbane.

Since January 2016, CMS has accepted telemedicine appointments as equivalent to in-center visits. At this time, in order to qualify for payment, the originating site, where the patient is receiving the telemedicine service, must be in a county outside a “Metropolitan Statistical Area” (MRA) or in a rural “Health Professional Shortage Area” (HPSA). CMS provides an online tool to determine if a location meets these requirements and establishing telemedicine origination sites that qualify allow families to access services much closer to home than tertiary care centers. Services that are approved for Medicare and Medicaid billing include outpatient office visits (CPT codes 99201-99215), kidney disease education services (HCPCS codes G0420, G0421), ESRD related services included in the monthly capitation (CPT codes 90951, 90952, 90954, 90955, 90957, 90958, 90960, and 90961), medical nutritional therapy (HCPCS code G0270 and CPT codes 97802–97804) and pediatric ESRD services (CPT codes 90964-90969). A summary the CMS rules can be found at cms.gov.

Over the last several years, the UAB Internal Medicine Division of Nephrology (IMDN), has developed a telemedicine program to care for patients who undergo home peritoneal dialysis therapy. When such patients are relatively stable, they require monthly visits for medication titration and therapy optimization, as well as to meet the regulatory requirements for

Continued on Page 10
Pediatric Tele-Nephrology: Infrastructure and Financial Model  Continued from Page 9

required by CMS. With financial support from the State of Alabama and the USDA, the IMDN arranged for telemedicine infrastructure to be placed in each of the 66 Alabama Department of Public Health (ADPH) offices. The carts include teleconferencing equipment, a remotely controlled zoom video camera, a hand-held high-resolution examination camera with peripherals for evaluation of ears, nose, throat and pore skin lesions, ultrasound and a blue-tooth stethoscope. To date, 60 offices have internet bandwidth sufficient to operate the carts, 37 offices are actively seeing telemedicine patients and 23 others are expected to be active by the end of August 2018. Use of the same model of cart in each remote location has allowed for standardization of hardware and software at UAB, as well as uniform training, certification and credentialing of physician providers. The experience of over 50 home peritoneal dialysis patients has resulted in improved medication adherence, more consistently reaching of blood pressure, anemia control and osteodystrophy control targets and improved patient satisfaction.

In pediatric nephrology we have leveraged the work of our internal medicine colleagues. We have access to the ADPH offices with the telemedicine carts and can use UAB/ADPH scheduling office to arrange the remote patient visits. To date, one third of our physicians have completed the telemedicine credentialing process which includes an informational PowerPoint and video programs, hands-on training with the equipment and passage of a skills examination. With systematic credentialing, we were able to establish payer contracts with Medicare, Medicaid, and Blue Cross Blue Shield which allows for >90% of our patient population to be eligible for paid telemedicine services. Medicare patients must be seen in areas designated as “rural” to be eligible for payment but this restriction does not apply to our other payers. The ADPH bills for, and receives, the facility fee associated with the clinic visit whereas our group is paid for physician billing at a rate equivalent to an in-person clinic visit. Currently, our payer agreements allow only established patients to be eligible for paid remote visits and in order to bill, parents/guardians must sign a specific Consent for Telemedicine Treatment that specifies that the care is expected to be equivalent to on-site visits.

As the long-term goal for our program is to be generalizable to all pediatric services, our initial forays have been with multi-disciplinary care patients in the renal transplant program. This intentionally forced us to deal with additional contractual and logistical challenges. As is often true in free standing Children's Hospitals, Children's of Alabama (COA) employs most staff but the pediatrics staff are employed by UAB. The telemedicine equipment and credentialing and payer contracts are also through UAB. Consequently, we needed to establish common use agreements to document the visits in the COA electronic medical record and fee for service agreements for the time allocated to the care of tele-nephrology patients. In general, transplant patients are seen by a physician, nurse transplant coordinator, pharmacist, and dietitian. Some patients are also seen by a counselor, child-life specialist, social worker and or financial counselor. We have a blanket contract for all ancillary services with COA which will serve as a template as other subspecialties launch their telemedicine efforts.

Thus far, the barriers to roll out of the program have been largely stemmed from negotiations with the hospital and payer agencies. Both were receptive to the launch of tele-nephrology but establishing the requisite contracts took many months. In contrast, because the State of Alabama had already committed to developing a network of broadband availability and telemedicine carts, we neither had to wrestle with technology compatibility issues nor find the funding to purchase the equipment. Each unit in an ADPH site cost approximately $10,000, so, developing the network of 66 offices required substantial financial outlay which was managed through a series of state and federal grants. For our office, we needed a compatible teleconference console, software and a Bluetooth stethoscope which cost a total of $3200 and were paid from donor funds. Now through our initial series of renal transplant patients, we are working on the efficiencies of a multi-disciplinary team in a single telemedicine suite. With improved through-put and scaling, we expect that this will become a financially self-supporting venture for nephrology and can be disseminated to other subspecialty programs at our institution over the next year. We also have plans for outcomes and health disparities mitigation research.

We have had very little resistance from families. The ease with which they have adopted the technology of tele-visits far exceeds that of the medical staff. While the families still need transportation to the ADPH offices, these visits have reduced visit commute times by 4 to 8 hours. Among families that we have approached to do remote visits, the first question has generally been, “why didn't you start doing this sooner?”

References:
1. www.census.gov/quickfacts/fact/table/al/PST045217

Continued on Page 11


**Interested in Telehealth in Pediatrics?**

**Consider Joining the AAP Section on Telehealth**

Join the Section on Telehealth Care and be on the cutting edge of pediatric telemedicine adoption! SOTC membership provides connections to a network telehealth professionals and offers members mentoring, educational activities, advocacy, links to telehealth programs, and tools to help you integrate telemedicine into pediatric practices. Visit www.aap.org/SOTC for details.

**AAP Digital Transformation Initiative**

We are well underway with the Board approved Digital Transformation Initiative (DTI) and the AAP has received helpful feedback, from many of you, about the need to consistently communicate initiative current happenings. This letter serves as our first update geared specifically towards AAP sections and councils to share important DTI updates along with details on how the initiative affects the important work you do on behalf children and your members. Please look for updates on a quarterly basis.

For those who are new to DTI, the Board of Directors approved this bold initiative in 2017 to respond to your needs and concerns regarding our digital landscape. The overarching plan is to retool, revamp and consolidate the AAP’s digital platforms to be easier to use and access. This means they will be more member-centric and highly collaborative so that you all can focus on what really matters: the health of all children.

The DTI will evaluate and improve digital platforms and products across the Academy that will result in improved user experiences across groups, including early career pediatricians, generalists, subspecialists and the public. These improvements are designed to bridge the gap between our members and their desire for learning and access to resources, so they can better care for children. The path to bridging this digital gap includes the following:

- Provide an online community that inspires knowledge-sharing and advocacy (**connect**)
- Present a unified member experience that builds trust and credibility among members and the public (**simplify**)
- Improve products and tools to facilitate learning and easy consumption of personalized and searchable content (**personalize**)

DTI is a multiyear, iterative process for the Academy. The team continues to address your feedback and is rolling out fixes, changes, and features that have been prioritized as highest value on a continuous basis. With that in mind, here are a few updates and important milestones:
The new **Search** platform has been live for just a few months. Usage is averaging 10,000 searches per weekday and 4,800 searches per day on weekends. This is significantly higher than the old search application. The new search provides users many more ways to filter and find just what they are looking for. The search app is also using machine learning and we are working to boost most relevant search results.

We also received feedback from members about the difficulty in finding Red Book content. To help improve searchability, we have created a new context dropdown for Red Book Online and added section and appendix filters to match Solutions. We have also included chapters and page numbers so that the content can be referenced to the print version.

**My Account** is your central location for member demographics, personal preferences, and purchasing/subscription history. We have analyzed the feedback on the new My Account prototype received from member leaders at the 2018 Annual Leadership Forum (ALF) and are making changes to enhance the order history and member contact information components.

**Transcripts** serve as a centralized record of all individualized Continuing Medical Education and Maintenance of Certification part 2 and 4 credits. We have analyzed feedback on the new Transcripts platform received from member leaders at the 2018 ALF and are making updates to ensure all transcripts include real-time data that reflects all individual activities. Look for a launch announcement of the new Transcripts functionality sometime this summer!

As we continue to focus on improving the user experiences for members through DTI, a related activity is occurring to the content on AAP.org. Over the last several months, section and council web pages have been refocused to highlight the work your group does and now serve as a key recruitment tool to increase awareness of and membership in AAP groups. In addition, Collaboration sites are being set up to serve as the new “home” for your group work and the place where the core content and work product of your section and council resides. It is on these **Collaboration sites** where you will have the freedom to post and share member-specific content in a wide variety of ways including via document sharing, image libraries, collective calendars, discussion boards, archives, and much more. We understand how important the work you do is and how the content you create can serve as a demonstration of member value, and are pleased to offer Collaboration sites as a platform by which you can showcase your work to your members. The Academy is committed to working with you as you build out your Collaboration sites and welcomes your feedback to learn how we can continue to meet the needs of your section or council.

To find more information and updates please visit any AAP.org webpage, scroll down to the very bottom and click on Digital Transformation Initiative in the bottom right.

**What you can do to help:**

The search platform is setup such that the more searches you do, the better it will respond over time. We encourage you to try AAP.org search and to submit feedback via the “Provide Feedback” button on the right-hand side of the screen. You can also use our **Search Quick Start Guide** to learn more about all of the new Search capabilities available to you. If you have suggestions or questions about AAP.org beyond the search functionality, please write to us at digitaltransformation@aap.org.

Thank you for your continued support and patience as we make these improvements.

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**Welcome to our New SONp Members**

If you know of others who might be interested in joining the Academy and the Section, please have them call Customer Services at: **866-843-2271** or go to the AAP website. Current Academy members may join the Section by accessing the online application (member ID and login required).
For Upcoming Newsletters...
We welcome your input and encourage you to submit ideas or information by email to Doug Silverstein, MD at dsilverstein2001@yahoo.com or Suzanne Kirkwood at skirkwood@aap.org for future issues of the newsletter.

The Section on Nephrology Executive Committee

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Executive Committee:
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(no open positions in 2019)
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