The size of the Pediatric Nephrology workforce remains an important issue. With increasing demand for pediatric nephrology services, concerns exist whether there will be sufficient pediatric nephrology fellowship graduates to meet these growing needs.

The ASPN has been considering this in a number of ways, including means to reduce attrition rates from our field. Another effort will be to encourage future pediatricians to consider pediatric nephrology as an option. Emphasizing our role in both medical student and resident education will be at the forefront of this effort to prevent doors from closing too soon.

In this light, the ASPN workforce committee has created the following Tool Kit to maximize contact between students and pediatric nephrologists. Such contact will help students to understand the intellectual satisfaction and other positive experiences involved in a career in pediatric nephrology. Ideally, this should increase the number of incoming pediatric residents thinking of pediatric nephrology as a possibility for their future career. Since career decisions are made quite early during residency, having pediatric nephrology on this "differential" of career options from the start will be increasingly important to maintain our workforce.

Adam Weinstein, MD (for the workforce committee)

**Workforce Medical Student Initiative**

**General Principles**

1) Increase and maximize contact between students and pediatric nephrologists
   - Ensure this contact is positive and demonstrates (an appropriate level of) enthusiasm.
     - The more the better--let them know we're here!
     - This may include lectures and/or small group participation in the 1st two years
     - Equally important, lectures/small group participation during the 3rd year clerkship
   - Mentorship
     - Consider being a faculty advisor for students thinking of general pediatrics, and can certainly offer advice for students interested in pursuing pediatric nephrology and other pediatric subspecialties
     - At the very least, make sure your section has a "Pediatric Nephrology" contact person to help advise/guide students with possible interest in pediatric nephrology
     - If applicable offer, mentor, and develop longitudinal research experiences with potentially interested students

2) Offer an elective in pediatric nephrology for 4th year students (and for 3rd year students if that is an option)
   - Advertise this elective experience when you have contact with students (during lectures, small groups, etc.)

3) Clinical Involvement in the 3rd year clerkship
   - Wards
     - When students are following/caring for your patients, be sure to take time out to introduce yourself, teach, advise, mentor, thank them, and answer their questions
     - Encourage residents/hospitalists that you are welcoming of students to follow and care for your patients, and demonstrate this through example
   - Clinics
     - Invite students to your clinic--any year is fine, but in particular be available for 3rd year students to augment their outpatient pediatrics experience.
Satellite Clinics—don't forget satellite clinics in this regard. Especially as some medical students’ (e.g. at smaller schools) only potential direct interaction with a pediatric nephrologist would be at such a satellite clinic.

4) Meetings
   - National Meetings--invite students to join you, especially at ASPN!
   - Local Meetings--Volunteer to participate in Pediatric Career nights and Info sessions, etc. sponsored by the medical school.

5) Volunteer Experiences
   - Invite students to “kidney camp” and mentor them during this experience
   - Develop a program for students to volunteer in your hemodialysis unit

TOOL KIT FOR ENGAGING MEDICAL STUDENTS IN PEDIATRIC NEPHROLOGY

1. 1st Year Renal Physiology Course
   a. Determine your school’s 1st Year Renal Physiology course director
      i. If unsure, Dean of Academic Affairs office can tell you
      ii. Any 3rd year student could probably tell you as well
   b. Contact them and volunteer to participate
      i. Volunteer for Small Group Sessions and Problem based learning (PBLs)
      ii. Small Group Sessions may typically involve renal physiology problem sets
      iii. You help students work through cases/problems based on classic physiologic principles
      iv. These course directors are very typically looking for more small group instructors
         1. So if you want to be involved and have not been, it’s most likely the course director doesn’t know you are out there.
         2. If you have an interested fellow, perhaps they could get involved in these as well.
      v. Lectures may be a great opportunity to build familiarity with students as well.
   c. As you get to know students, encourage them/invite them to consider an elective with you in their later training
      i. Also, depending on their interest and your availability, consider inviting them to clinical experiences
      ii. Invitations to summer kidney camps
      iii. Invitations to participate on research projects/teams
      iv. 1st year students are the ones with the most time to both consider and follow through on these invitations

2. 2nd Year Renal Pathophysiology Course
   a. Same as the above—everything said about participation in the 1st year above applies to the 2nd year.
   b. In particular, participate in small groups and/or PBL’s with 2nd year students, and see if any of your fellows would like to participate here as well
c. Also even more so, speak with the 2\textsuperscript{nd} year course director to involve pediatric nephrologists in the lecture series
   i. Important that students receive our take on primary glomerular diseases, hereditary diseases, congenital anomalies, etc...(rather than internist take on these)
   ii. Important that students recognize the striking difference in our patient demographics and populations
      1. Our patients do amazingly well and many more cases have satisfying outcomes than dissatisfying ones.
      2. Without us, students may associate nephrology only with the last stages of diabetes, hypertension, or congestive heart failure and that there’s not much more we can do for these patients

3. **History and Physical Diagnosis Course**
   a. This is a means to work one-on-one with a student.
   b. Dean of Academic Affairs office, or students themselves can help you identify course director
   c. This course director, in particular, is always looking for more/new preceptor volunteers

4. **3\textsuperscript{rd} Year Pediatrics Clerkship**
   a. Contact your school’s Clerkship Director to be sure your pediatric nephrology section can get involved.
      i. If unsure who this is, 3\textsuperscript{rd} year students, residency program director, and most pediatric residents can send you in the right direction.
   b. Inpatients
      i. Encourage residents/hospitalists that you are welcoming of students to follow and care for your patients, and demonstrate this through example
      ii. When students are following/caring for your patients, be sure to take time out to introduce yourself, teach, advise, mentor, thank them, and answer their questions
   c. Outpatients
      i. Invite students to your clinic
         1. Offer a clinic session per week to augment their outpatient pediatrics experience.
         2. Most clerkship directors need more outpatient sites to send students, so the majority will take you up on this.
      ii. Satellite Clinics
         1. Some medical schools don’t have pediatric nephrologists
         2. If you go to satellite clinics affiliated with others schools, invite medical students from these schools to join you for some direct experiences.
   d. Lectures
      i. Get involved in the clerkships lecture/didactics and/or small group session series
1. Many topics may be fair game (and may not be getting done, and/or are being given by general pediatricians instead)
   a. Fluids/Electrolytes/Dehydration
   b. Hematuria/Proteinuria
   c. Pediatric Hypertension
   d. UTI/Congenital Anomalies
   e. Renal Failure

2. Students really enjoy case based discussions and we can fill up a session for these just by reviewing our recent patients!

   ii. Sites without pediatric nephrology
      1. Offer to give lectures and share experiences with students at these sites
      2. All of the above applies to these sites as well

5. Pediatric Nephrology Elective
   a. Contact your school’s clinical educators if an elective for students is not yet available
      i. Can also likely get this started by contacting the 3rd year pediatrics clerkship director.
      ii. Alternatively, most pediatric departments have a “director” of medical student education or a Vice-Chair for education. They can also lead you in the correct direction as here.
   b. Ideally make this elective available to both local and visiting students
   c. Consider allowing shorter (e.g. 2 week) experiences rather than limiting it to only a full (e.g. 4 week) elective.
      i. 2 weeks may be difficult for you to get a complete assessment on the student to evaluate their ability and progress, but it is still long enough for them to glimpse what pediatric nephrology is about and may influence their decisions in residency
         1. Likewise, it’s a starting point to develop a mentorship type relationship
         2. Many students are looking for good quality 2 week experiences to round out other short rotations or gaps in their schedule—so more students may sign up than you’d think!

6. Career Mentor
   a. Contact your school’s medical student educators and volunteer someone from your section to be a pediatrics career advisor, in particular for students interested in pediatric subspecialty careers
   b. Identify a Pediatric Nephrology career mentoring “contact” person
      i. Advertise this contact person so people like the Clerkship Directors, Program Directors, etc...know who to go to
      ii. They would be aware of helpful opportunities and experiences
         1. for clinical work—kidney camps, joining you in clinic
         2. for research projects, local and/or national grants students might qualify for
3. National and Local Meetings (see below)

7. **Meetings**
   a. Get involved in Student Meetings
      i. E.g. “Career planning” Meetings/Panels
      ii. Most schools have Pediatric interest nights or events; or other specialty interest events
          1. Be sure pediatric nephrologists are participants, on a panel with other pediatric subspecialists
          2. If your school doesn’t have such a meeting, then consider speaking with your school’s clerkship director and assisting in its development.
      iii. Invite students to National Meetings
      iv. The **ASPN Meeting** is ideal for the student
          1. Most students are at a phase where they are deciding between Pediatrics and Internal Medicine (or some other very large specialty)
             a. They are usually not thinking specifically about subspecialties yet, but we believe it’s important that potentially interested students go into residency with pediatric nephrology at least on their radar, even if it’s not their “choice” (yet)
          2. The ASPN Meeting provides them terrific exposure to Pediatric-specific material (what they are looking for)
             a. They can explore some other pediatric fields if they choose
             b. They are not “committing” but rather experiencing and informing their future decisions
      v. ASN is great too, but practically may be more difficult
         1. 4th year students are interviewing for residencies, so less likely to take time out
         2. 3rd year students are just starting their rotations
         3. Also may risk losing “sight” of pediatrics per se...and not getting the same sense of Pediatric Nephrology that they’d get at the ASPN meeting.
      vi. Dialysis meetings may be “too” specialized for the student’s frame of mind, though meetings directed towards the Pediatric Nephrology Fellow would likely still be a good choice for the relationships and the mentorship connections that are more easily developed amongst peers.

8. **Curriculum for Students**
   a. Have a curriculum for all students to experience
      i. This can be individualized from institution to institution based on local resources
   b. Overview of Pediatric Nephrology careers
      i. Options
      ii. Joys and Benefits
c. Lectures
   i. Fluid and Electrolytes, Dehydration
   ii. Hematuria
   iii. Proteinuria
   iv. Acute Kidney Injury
   v. Hypertension
   vi. Congenital Genitourinary anomalies
   vii. Urinary Tract Infection
   viii. Hereditary Kidney Disease

d. Cases

e. Questions