Housekeeping

- **Upcoming Dates:**
  - Sept 1st – Baseline (pre-intervention) chart audit due
  - Sept 5th – Monthly chart audits (10 pts./August) submitted into REDCap
  - Sept 5th – PDSA Self-Assessments submitted into REDCap
  - Sept 28th – 1st offering of Learning Collaborative Webinar
  - Sept 29th – 2nd offering of Learning Collaborative Webinar

- **NIPA Contact**
  - Data & QI Questions: Rachel Wallace-Brodeur  
    - rachel.wallace-brodeur@med.uvm.edu
  - General Questions: Chealsea Hunter  
    - chealsea.hunter@med.uvm.edu

- **NIPA Listserv:** NIPA@list.uvm.edu
- **NIPA Virtual Toolkit** http://www.academicpeds.org/NIPA/
QI Protocols Overview

- Strong Provider Recommendation (July webinar)
- Strategies to reduce missed opportunities
  - Provider Prompts Intervention
  - Standing Orders Intervention
  - Reminder Recall Intervention
- NIPA Menu of additional practice changes to improving HPV immunization delivery
  - Reducing missed opportunities
  - Maintaining active immunization tracking
  - Communicating with patients and parents
  - Ensuring adolescent-friendly practice policies
- Guidelines available on NIPA Virtual Toolkit

QI Resource Reminder

- Tools & Resources on the NIPA Virtual Toolkit
  - Articles
  - QI 101 Recording
  - IHI Whiteboard Videos
  - AAP EQIPP QI Module (free to AAP members)
  - NIPA Training Modules
- QI Questions: Rachel Wallace-Brodeur
  - rachel.wallace-brodeur@med.uvm.edu
Reducing Missed Opportunities for HPV Vaccination

Cynthia Rand, MD, MPH
Monday, August 24th
1-2 pm ET / 12-1 pm CT
Access Webinar Recording Here

Paul Darden, MD
Tuesday, August 25th
12-1 pm ET / 11-12 pm CT
Access Webinar Recording Here

Missed Opportunity for HPV Vaccination

- Due for HPV Vaccine
  - Available HPV vaccine supply
  - Accurate and timely HPV vaccination history
  - Clear HPV immunization schedule
    - Prompts or Standing Orders
  - Recognition that HPV vaccine is due
- HPV vaccine delivered
Missed Opportunity for HPV Vaccination

Outline

- HPV Vaccine Missed Opportunities
- Provider Reminders
  - Paper
  - Electronic
- Standing Orders
- Reminder Recall
- Strategies and Barriers
Missed Opportunity

- Missed opportunity: when patient is eligible for a vaccine, has a visit, and the vaccine is not given
- In a large national health claims database, 96% of unvaccinated adolescent girls had at least 1 missed opportunity for HPV vaccine between 2006-2012
- Occur more often at acute-care visits


Impact of Eliminating Missed Opportunities by Age 13 Years in Girls Born in 2000

- Missed opportunity: Healthcare encounter when some, but not all ACIP-recommended vaccines are given.
- HPV-1: Receipt of at least one dose of HPV.

Missed opportunity: Healthcare encounter when some, but not all ACIP-recommended vaccines are given. HPV-1: Receipt of at least one dose of HPV.
Provider Reminder Definition

- Reminders are ‘patient or encounter specific information provided verbally, on paper or on a computer screen, which is designed or intended to prompt a health professional to recall information’

Cochrane Effective Practice and Organization of Care (EPOC) group

Reasons for Reminders

- ‘The amount of data presented to the physician per unit time is more than he can process without error’
  
  --Clement J. McDonald, NEJM, 1976

- Visits are often brief
- The immunization schedule is becoming increasingly complex

Paper Reminders

- Chart prompts:
  - Colorful sticker to remind physicians to review vaccines
  - Stamp in for preventive services due
  - Can be aimed at clinician or nurse (the immunization provider)
  - Most effective if they require response (simple check mark)
Electronic Prompt

- Electronic health record (EHR) uses decision support to determine which vaccines are due for a patient
- Based on information already in the EHR
- Pop-up screen, flag in header or on side of screen
- Tells provider which immunizations are due
  - May be linked to ability to order vaccine
- Rarely a hard stop

EHR Prompt Example: 11 yr old male
Education Needed Prior to Prompts

Education for nurses and providers about:

- Minimal intervals between HPV doses – Routine 0, 1-2, 6 months
  - Minimum - of 4 weeks from dose 1 to 2, 12 weeks from dose 2 to 3, and 24 weeks from dose 1 to 3
- Contraindications and precautions to HPV vaccine
  - Contraindications
    - Life-threatening allergic reaction to HPV vaccine or to any component of HPV vaccine
  - Precautions
    - Pregnant female
    - Moderate or severe illness
- Strong provider recommendation

Planning Needed Prior to Prompts

Identify what provider prompt will be used

- Manual – staff assess immunization status and set prompts
  - Paper-based: memos, stickers, VIS statement, etc
  - EMR-based: vaccines needed written in visit note
- Computer-based – computerized algorithms to identify eligible patients
  - Staff initiated: EHR or state registry, staff place generated prompt in the patient chart
  - Computerized, entirely electronic: computerized algorithms identify eligible patients, and prompts are provided upon access to the EHR
More Planning…

- Map out the process of prompting from the determination of vaccine eligibility through giving the vaccine
- Pay particular attention to communication between providers, nurses and staff
- Including:
  - Identify who will determine HPV vaccine eligibility and who will place prompt (nurse, MA, administrative staff, other)
  - Verbal reminder from clinic/practice staff
  - Visual cues (exam room flag, exam room light, other)

Sample Process for Provider Prompt

- Nurse or other identified staff reviews medical chart before or at every adolescent visit to determine HPV vaccine eligibility. Recommended that this review occur the day before visit for planned visits and prior to visit for sick visits.
- Nurse decides if adolescent is due for HPV vaccine (see above intervals): can use EHR prompt if available
- Nurse places prompt in agreed upon location
- Nurse documents placement of prompt in patient chart
- Health care provider documents status of HPV vaccine in patient chart (refused/declined, deferred, given, etc)
**Paper Prompt Example:**

**Childhood Immunization**

Nurse puts ‘missed opportunity card’ indicating vaccines due and reason if vaccine not given

- 7794 visits due for vaccines, reminder card put in 1276 (16%)
- Immunization delivery increased from 55% to 78% in charts with cards
- Rates increased at:
  - WCC: from 88% to 94%
  - Acute visits: from 33% to 62%
- UTD rates increased overall from 74% to 75%


**Computer-generated paper reminders**

Cochrane review of 32 studies

- Computer-generated reminders delivered on paper to healthcare professionals
- Median improvement of processes of care of 7%; 13% for vaccination reminders
- 2 specific factors had larger effect:
  - Providing space for provider to enter response
  - Providing an explanation of the reminder content

Point of Care Prompts

- ‘Real-time’ clinical tools
- Assist in decision making, warn of potential problems, suggestions for clinical consideration
- ‘Clinical decision support (CDS) should be designed to provide the right information to the right person in the right format through the right channel at the right time’


EHR Alert for <24 month olds

Immunization rates 81-90%

90%
32%

©2007 by American Academy of Pediatrics

EHR Prompts for Adolescent Vaccines

- Design: RCT in 10 primary care practices, 12 resident clinics
- Subjects: 11-17 year olds with visits
- Intervention: EHR prompt indicating vaccines due (9 practices), paper prompt (2 practices)
- Results: no difference in vaccination rates
  - HPV vaccine 51% vs. 53% (control vs. intervention, not significant)


It Takes More Than a Reminder

- The reminder should include the entire office
  - All providers must be in agreement about the schedule, strength of recommendation, and vaccinating at acute visits
- It must be accurate and clear
  - Data used to trigger alert must be accurate
  - The alert needs to be present at the right time, to the right person
- Too many alerts leads to ‘alert fatigue’
Barriers to Electronic Reminders

- Coordination between nurses and providers (also in removing prompt once complete)
- Addressing reminders while not with patient (documentation completed after patient gone)
- Workload (too time consuming)
- Lack of flexibility (not applicable)
- Poor usability (not enough options)


Facilitators to Use of Electronic Prompts

- Limit the number of reminders
- Integrate reminder into the workflow
- Have a feedback mechanism to fix concerns

Standing Orders

Definition:

- Standing orders authorize nurses, pharmacists, and other healthcare personnel where allowed by state law, to assess a client’s immunization status and administer vaccinations according to a protocol approved by an institution, physician, or other authorized practitioner.

- The protocol enables assessment and vaccination without the need for examination or direct order from the attending provider at the time of the interaction.

http://www.thecommunityguide.org/vaccines/standingorders.html
Standing Orders Efficacy

- Standing orders are more effective than reminders when it is possible to implement them
- 2004 study compared computerized standing order to prompts for flu vaccine at hospital d/c
  - placed an order at hospital d/c to nurse to approve vs. reminder to provider to order vaccine
  - 42% in standing orders received flu vaccine compared to 30% in reminder group


Systematic Review of Standing Orders

- 1980-1997 Review, 11 studies
  - Vaccination coverage: mean increase of 27%
- 1997-2009, 29 studies
  - Vaccination rates: increased 17% with SO, 28% in children
  - Effective in multiple clinical settings, various providers and populations

Underuse of Standing Orders (SO)

2009 survey of family physicians and internists

- 23% used SO for flu and pneumococcal vaccine
- 20% for flu vaccination only
- Office factors that made it more likely to use SO:
  - perceived practice openness to change
  - strong practice teamwork
  - access to an EMR
  - presence of an immunization champion in the practice
  - access to nurse/PA staff as opposed to medical assistants alone


Standing Orders Protocol – HPV

Standing Orders for Administering Human Papillomavirus Vaccine to Children and Teens

Purpose: To reduce morbidity and mortality from human papillomavirus (HPV) infection by vaccinating all children and teens who meet the criteria established by the Centers for Disease Control and Prevention’s Advisory Committee on Immunization Practices.

Policy: Under these standing orders, eligible nurses and other healthcare professionals (e.g., pharmacists), where allowed by state law, may vaccinate children and teens who meet the criteria below.

Procedure
1. Identify all children and teens ages 11 years and older who have not completed the HPV vaccination series.
2. Screen all patients for contraindications and precautions to HPV vaccine:
   a. Contraindication: a history of a serious allergic reaction (e.g., anaphylaxis) after a previous dose of HPV vaccine or to a HPV vaccine component (e.g., yeast for quadrivalent or 9-valent HPV vaccine [4vHPV or 9vHPV: Gardasil, Merck] or latex for bivalent HPV vaccine [2vHPV: Cervarix, GSK]). For information on vaccine components, refer to the manufacturers’ package insert (www.immunize.org/packageinserts) or go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.
   b. Precautions:
      • Moderate or severe acute illness with or without fever
      • Pregnancy; delay vaccination until after completion of the pregnancy

Standing Order Protocol

- Nurse or other identified staff reviews medical chart before or at every adolescent visit to determine HPV vaccine eligibility. Recommended that this review occur the day before visit for planned visits and prior to visit for sick visits.
- Nurse decides if adolescent is due for HPV vaccine (see above intervals): can use EHR prompt if available
- Nurse or MA gives the HPV VIS to parent/guardian and answers any questions and obtains consent.
- Nurse administers HPV vaccine
- Nurse documents vaccine (and order if needed) in chart.

Administration/authorization

Who can administer vaccines under standing orders?
- Each state regulates the practice of medicine, nursing and pharmacy
- For further information, contact your state immunization program or the state board of nursing practice

Who can authorize a standing order?
- Usually approved by an institution, physician or authorized practitioner
Summary: Standing Orders

- Can be very effective to increase rates
- They build upon prompts
- Some challenges involved in implementing
  - State or facility regulations
  - Provider resistance
  - Lack of nurse self-efficacy
- Like prompts, rely on strong practice teamwork, openness to change

Immunizations and Reminder/Recall

- Reminder: due for a vaccine on a future date
- Recall: past due for a vaccination

- Effective for:
  - Childhood and adult immunizations
  - In all settings: private practice, academic medical centers, public health clinics
  - For universally recommended vaccines (childhood vaccines) and targeted vaccines (influenza vaccine)

Effectiveness of Different Types of Patient Reminder/Recall Systems

<table>
<thead>
<tr>
<th>Reminder/Recall System</th>
<th>No. of Studies</th>
<th>OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postcard</td>
<td>8</td>
<td>1.91 (1.27-2.86)</td>
</tr>
<tr>
<td>Letter</td>
<td>23</td>
<td>2.57 (1.83-3.59)</td>
</tr>
<tr>
<td>Telephone</td>
<td>8</td>
<td>5.52 (3.90-7.79)</td>
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<tr>
<td>Autodialer</td>
<td>4</td>
<td>1.51 (1.18-1.99)</td>
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<tr>
<td>Postcard and Telephone</td>
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<td>1.81 (1.11-2.95)</td>
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<tr>
<td>Tracking and Outreach</td>
<td>2</td>
<td>3.42 (1.88-6.30)</td>
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<tr>
<td>All Systems</td>
<td>38</td>
<td>2.50 (2.00-3.13)</td>
</tr>
<tr>
<td>Patient and Practitioner Prompts</td>
<td>6</td>
<td>3.16 (2.10-4.75)</td>
</tr>
</tbody>
</table>

Increase in Rates of Immunization

- Routine childhood immunizations: 6-34%
- Childhood influenza vaccination: 20%
- Routine adult immunizations: 4-27%
- Adult influenza immunization: >20%
Not All Reminders Are Effective

Reminder-Recall for Adolescent Care

- **Objective:** Use telephone auto-dialer to increase rates of adolescent immunizations and preventive visits (WCC) over 18 months
- **Setting:** 4 urban primary care settings in Rochester
- **Results:**
  - No change in WCC rates: 53% vs. 54%
  - Slightly increased Hepatitis B vaccination rates: 62% vs. 58% (no effect on Td rates)
  - In those with constant telephone numbers (31% over 18 mo)
    - 71% had WCC vs. 25% of those without
    - 54% of controls had WCC


Electronic Mechanisms for Reminder-Recall

**Data sources**
- Electronic billing systems
- Immunization Information System (immunization registry)
- Scheduling systems
- EHRs

**Electronic reminders**
- E-mail
- Text message
- Social network sites
**IIS Reminder-recall**

- **Participants:** Adolescents lacking >1 immunization in San Diego registry
- **Method:** Parents of adolescents contacted by phone for consent and preference
- Received either mail, e-mail or text reminders based on preference
- Sent up to 3 reminders
- Those receiving reminder: UTD 25% vs. 12%
- UTD: 32% text, 23% postcard, 21% email

**Parent Preferences for Reminders**

- 2014 study, parents of 19-35 mo in Colorado
- Preference for reminder:
  - Mail (58%)
  - telephone (17%)
  - email (13%)
  - text (11%)
- Acceptable:
  - 60% e-mail,
  - 46% text message

Reminders may not be sufficient

- RCT of 10 reproductive health centers
- Enrolled women aged 19-26
- Randomized to control or intervention for HPV vaccine reminders: intervention chose text (50%), email (23%), phone (24%), private Facebook message (1%) or mail (2%) reminder
- Reminder did not increase completion: completion was 17% in intervention 19% in control after 32 weeks


Summary of Reminder/Recall for Immunizations

Barriers:
- 20% of studies found no improvement of rates
- Reaching inner-city patients by mail or phone can be difficult
- Reach ceiling effect if rates are high
- Cost of labor/mailing

Strategies:
- Numerous reminders more effective than single reminders
- Consider using IIS to generate reminders
- Ask patients what method they prefer to be reached
- Text reminders may be more effective for some populations
- Recall a smaller proportion each month, see what works
Questions?

- Mute/unmute
  - Mute - press *6
  - Unmute – press #6
  - You may use the mute feature on your phone

- Click the hand icon to “raise hand”
  - If using VoIP you MUST have a microphone to speak.

- Use “Chat” to type questions, comments, feedback, etc... (address to “everyone”)