



3:45 – 4:45 pm

**Pediatric Updates from the Medical Literature for the PCP**

**SPEAKER**

Harvey P. Katz, MD



**Presenter Disclosure Information**

The following relationships exist related to this presentation:

- Harvey P. Katz, MD: No financial relationships to disclose.

**Off-Label/Investigational Discussion**

- In accordance with pmcME policy, faculty have been asked to disclose discussion of unlabeled or unapproved use(s) of drugs or devices during the course of their presentations.

**Pediatric Updates from the Medical Literature for the Primary Care Clinician**

Harvey P. Katz, MD

*Pri-Med East 2015*

**Criteria for Selection**

Impact on Patient Care

Relevance of Articles to Primary Care Practice

Quality and Significance of Article Content

Trends to Keep an Eye On

**Case History: Neonatal Jaundice**

This 3 mo. infant has transferred to your practice. All is going well. Birth, delivery, past and family history are unremarkable. Stool and urine color are normal.

He is breast fed and thriving. On exam you notice mild jaundice of the sclera and face, extending to his upper chest.

**Breast Milk Hyperbilirubinemia**

**The Natural History of Jaundice in Breastfed Infants**

*Maisels, MJ. Pediatrics 2014; 134:e340-5*

- 1044 predominantly breastfed infants >35 wks gestation
- White, North American population
- Transcutaneous bili measured during first mo.
- Cephalo – caudal zone score at time of measurement
- Utility of Kramer tool as screen  
in office-based practice

**Breast Milk Hyperbilirubinemia**

- **Prevalence:**
  - 20-30% of infants jaundiced at 3-4 wks.
  - 30-40% have bilirubin levels of = or > 5 mg/dl
- **Cause:** Inhibition of glucuronidation & excretion
- **Jaundice score zone not an accurate measure of bilirubin level, but also can be reassuring:**
  - Score of 0 (no jaundice): level unlikely to be >12.9
  - Score of = or >4: level likely to be => 10 mg/dl

## Breast Milk Hyperbilirubinemia

### Take Home

- ❖ You can't trust your eyes
- ❖ Breast milk jaundice can last for months
- ❖ Totally benign
- ❖ Easiest way to be sure it's the breast milk-  
...try one formula supplement a day and watch bili drop  
& avoid unnecessary testing

## Case History: Telemedicine-is there evidence it can work?

A parent calls you for advice on a skin lesion that she thinks is impetigo on her 8 year old daughter's chin. She is in a bind and can't make it to the office, and wants to email you a picture. She is willing to pay you as if it is for an office visit. What would you do?

## Tele....health

Tele dermatology  
Tele psychology  
Tele pathology  
Tele pharmacology  
Tele radiology  
Tele infections disease  
Tele ICU  
Tele stroke  
Tele dentistry  
Tele ophthalmology

Now, something new.....

## Tele-Health

Telemedicine  
Advanced  
telephone  
technologies

Telephone  
medicine  
Telephone Care-  
direct clinical  
practice

Both synch & asynchronous

Usually synchronous

## Patient Evaluation of an Acute Care Pediatric Telemedicine Service in Urban Neighborhoods

*McIntosh, S. et al. Telemedicine & e-Health 2014; 20:1121-26*

**Prior study:** "school telemedicine" & "neighborhood telemedicine"- potential to replace 85% office illness visits.

**Descriptive/survey study** to define health problems prompting telemedicine use & parents' view of its value.

**N=3,871** acute care visits over 29 mo. survey Period.

## Patient Evaluation of an Acute Care Pediatric Telemedicine Service in Urban Neighborhoods

\*Telemedicine units: portable & wherever there's broadband internet

\*Units located in home, school, child care, neighborhood svc centers

\*Hi definition resolution for ear drums, throat & eye exams, breath sounds

- Set ups for store-forward data, rapid strep test, video conferencing
- Asked: If this telemedicine svc. was not available what would you have done?

\*\*40% Wait for 1<sup>st</sup> available appt.

\*\*30% Go to the ED

\*\*17% Go to Urgent Care

\*\*13% Wait to see if child better

### **Patient Evaluation of an Acute Care Pediatric Telemedicine Service in Urban Neighborhoods**

Take Home-Telemedicine rapidly expanding

- AAP Policy reviews use of telemedicine to boost access to care, improve doctor shortages  
<http://aapnews.aappublications.org/content/36/7/29.1.full>
- Potential to meet demands for costly acute care now done outside of medical home or in call centers. Quality of care key issue.
- Patient values are the driver—convenience and cost can trump allegiance. Food for thought.
- Who will pay? Cost feasible though bundled payment financing. 29 states require health insurance companies to pay for telemedicine at the same rate for in-person services.

### **Case History: Is Back-Up Throat Culture Standard in Your Practice?**

A 9 yr. old girl presents to your practice with a sore throat for the past 2 days. Temp is 102°. No cough, other symptoms, or known exposure to strep. On exam, she does not appear ill. Throat is erythematous-no exudate, enlarged or tender anterior cervical nodes. You do a rapid antigen (RADT) strep test which is negative.

Would you do a back-up throat culture in view of the negative RADT?

### **Rapid Diagnostic Tests for Group A Streptococcal Pharyngitis: A Meta Analysis**

*Lean et al. Pediatrics 2014; 134:771-781*

A new look at the diagnostic accuracy of rapid diagnostic tests for Group A strep pharyngitis

Results of a carefully done systematic meta-analysis of 48 studies that met strict criteria involving 23,934 patients.

....and 4 types of rapid strep test kits.

### **Rapid Diagnostic Tests for Group A Streptococcal Pharyngitis: A Meta Analysis of 4 test types**

Overall sensitivity = 0.86  
Overall specificity = 0.96  
Positive predictive value = 0.96  
Negative predictive value = 0.99

Possibility of missing GAS = 14%

Newer molecular tests have the highest sensitivity but are not true point of care yet (results take 1-3hrs)

### **Do We Need To Do a Back-up Culture?**

Take Home

RADTs are accurate and streamline management.

Limitation of study-variability in technique, no. & type of throat swabs. Prospective study next step.

Authors suggest, do not recommend, that back-up culture may not be needed in settings of low incidence rheumatic fever. An individual call.

Best RADTs have highest sensitivity.

### **Case History: 11 Yr. Old Boy Wants To Be a Girl**

Parents of an 11 yr. old boy, your patient since birth, with anguish on their faces say that Jimmy told them he wants to be a girl. Could he really mean it?

A story unfolds where they describe Jimmy, ever since he could walk-preferred to be with girls, avoided boy games, and dressed up in his older sister Susan's clothes. Last week, he said Mom and Dad, I want to be a girl like Susan.

What would you say or do? Are you comfortable giving advice? Would you refer...and to whom? What is the long term outcome of transgenders.

### Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

*I.C. de Vries, A. et al. Pediatrics 2014; 134: 1-9*

#### Research Questions:

- Do transgender youth improve with medical interventions, i.e. pubertal suppression with GnRHa, cross sex hormones, & gender reassignment surgery?
- How satisfied are they with treatment and psychological functioning, and their quality of life as well functioning adults?

### Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

- **Setting:** VU University Medical Ctr. Amsterdam, NE  
One clinic, but 1<sup>st</sup> long term outcome study
- **Sample:** 55 young transgender adults-22 transwomen, 33 transmen all with pubertal suppression in teens
- **Assessed at 3 times:**
  - \* Before starting suppression: age, X=13.6 yrs. (T0)
  - \* When crossed hormones were started: age, X=16.7 yrs. (T1)
  - \* One year+ post gender reassignment surgery: age, X=26.7 yrs. (T3)
- **For:** body image; depression; anxiety; emotional probs; social, educational, sexual, professional, happiness & quality of life

### Outcomes After Puberty Suppression and Gender Reassignment : Time the Major Independent Variable

- Gender dysphoria/body image: improved after cross sex hormones & surgery ( pre vs. post, T0 to T3;  $p<.001$ )
- Objective well-being: family support - mo. 95%; fa. 80%; sybs. 87%; 71% reported transition “easy”
- Subjective well-being: none reported regrets; all very or fairly satisfied with surgical results
- Psychological functioning: % clinical probs. 30% to 7%; improved satisfaction with life scale ( $p<.001$ )

### Take Home

#### Key to best outcomes for gender dysphoric youth:

- Early diagnosis and referral for evaluation
- “Dutch model”: comprehensive psych evaluation - multiple visits over long period of time before final decision
- Early medical intervention, i.e. pubertal suppression
- Multidisciplinary team is critical: PCP, mental health professionals, endocrinologists, & surgeons

### Case History: Concussion

A month ago during the annual Thanksgiving day high school football game, Tim was injured. There was hard helmet to helmet contact. He was groggy, taken out of the game with a “mild concussion”.

For the past month, Tim has had intermittent mild headaches and his school work suffered: missed homework and lower performance on tests and class discussion.

Mom asks for advice. What would you say?

### Academic Effects of Concussion in Children and Adolescents

*Ransom, D. et al. 2015;135: 1043-50*

- N=349; age 5-18; evaluated at 4 wks. post concussion
  - School levels: elementary, middle, high school (9-12)
  - Structured questionnaire of parent-reported academic concerns
- Results based on post concussive symptoms & recovery status in 2 groups
- Group 1: recovered
  - Group 2: actively symptomatic
  - (headache, fatigue, poor concentration)

### Academic Effects of Concussion: Results

- The more symptomatic students (Group 2) were when returning to school, the greater the concern voiced by parents over academic performance ( $p < .05$ ) and school related problems ( $p < .001$ ) vs. their recovered peers (Group 1).
- Symptomatic high school students not yet recovered had worse academic effects than symptomatic younger grades ( $p < .001$ )
- The greater the severity of symptoms the worse the adverse academic effects regardless of time since the concussion ( $p < .001$ )

### Academic Effects of Concussion Take Home

- Share this study with local schools along with the AAPs 2013 report "Returning to Learning Following a Concussion"

(<http://pediatrics.aappublications.org/content/early/2013/10/23/peds.2013-2867.full.pdf+html>)

- Partner with school in a targeted recommendations informed by the post concussion symptoms for a "unified evidence-based approach to reducing post concussion academic problems."

### Case History: e-Cigs and Teens

We were parking our car at the lake and couldn't help noticing the strong aroma of apricots, and the smoke coming from a teenager puffing away. An older woman had engaged him and we overheard the conversation that went like this"

-What are you smoking?

-I'm vaping, not smoking. It's an e-cig.

-Why?

-It's supposed to help me quit smoking.

..and I like the flavor.

### E-Cigarettes & Conventional Cigarette Use Among US Adolescents-A Cross Sectional Study

*Dutra, L et al. JAMA Pediatr. 2014; 168:610-17*

**Background:** E-cig use is rapidly increasing among adolescents- tripled from 2013 to 2014. 75% of teenagers who smoke continue as adults

**Study design:** Cross sectional analyses of National Youth Tobacco Survey of 40,000 US middle and high school students.

**Exposure:** Ever used and current e-cig use

**Measure:** Experimentation with ever, and current smoking and smoking abstinence.

### E-Cigs: How They Work?

- Cost-range \$12-200 to start
- 1 disposable e-cig = to 1 pack
- Annual cost depends on use
- Flavors aimed at teens
- Issue-still nicotine
- Liquid nicotine hazardous to young children

### E-Cigarettes & Conventional Cigarette Use Among US Adolescents-A Cross Sectional Study Results

Ever e-cig users 6X ( $CI < 5.39-7.39 >$ ) more likely to end up smoking cigarettes

Current e-cig users are 7.4 X ( $< 5.63-9.79 >$ ) more likely to end up smoking cigarettes

Current e-cig users have lower odds ratio (negatively associated OR) of abstinence at 30 days., 6 mo. and 1 yr

OR=0.11 ( $< .08-.15 >$ ) 30 days

OR=0.11 ( $< .08-.15 >$ ) 6 mo.

OR= 0.12 ( $< .07-.18 >$ ) 1 year

### **E-Cigarettes & Conventional Cigarette Use Among US Adolescents - A Cross Sectional Study**

#### **Take Home**

- E-Cig use may not discourage, and may encourage conventional cigarette use among US adolescents.
- FDA regulation is essential-déjà vu all over again
- Stress risk of nicotine addiction and harmful effects of nicotine & other toxins to patients
- Strongly discourage e-cigs in teenagers

### **APA Statement on FDA's Announcement on Protecting Children from Liquid Nicotine (Partial)**

*Sandra Hassink, M.D. , President*

#### **Take Home**

“Because liquid nicotine comes in a variety of bright colors and in flavors like cotton candy and gummy bear, it is no surprise that it has found its way into the hands of children, with tragic results; late last year a one-year old boy died after accidentally swallowing the highly toxic substance. Liquid nicotine poisoning is a public health crisis that is preventable and warrants immediate action from our federal government.”

### **Case History: Endocrine Disruptors**

One of your patients calls you. She has a 12 mo. infant girl who is having a tough time teething. She just read an article in the health section of the newspaper about something in teething rings that can cause early puberty. “I have been giving her teethingers and I am worried.”

What do you say to her?

### **Effect-directed Identification of Endocrine Disruptors in Plastic Baby Teethingers**

*Berger, E. et al. Journal of Applied Technology 18.5.2015 DOI:1002*

- Since infants are especially vulnerable to endocrine disruptors, these researchers decided to investigate the possibility of exposure to EDCs in teethingers
- 10 teethingers were selected
- Bioassays were used to measure endocrine activity
- Chemical analysis were used to identify the compounds causing the endocrine activity.

### **Endocrine Disruptors in Plastic Baby Teethingers Results**

Good news: while 8/10 clear of EDCs....

\*2/10 showed significant endocrine activity-

\*One ring leached both estrogenic & anti-androgenic activity and contained Parabens, widely present in cosmetics and antiperspirants.

\*One ring contained 6 different anti-androgenic compounds yet to be identified

### **What is an Endocrine Disruptor?**

“Any exogenous chemical, or mixture of chemicals that interferes with any aspect of hormone action.”

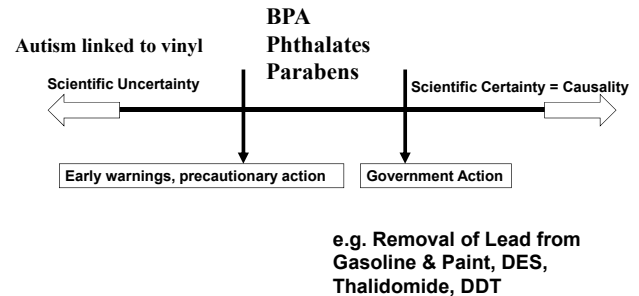
*Endocrine Society Definition of EDC and Statement  
JAMA 2012; 308 (6):556-557*

## EDCs: INTERRUPTING CHILDHOOD

*Endocrine News, 2014*

- \*1000 EDCs on the EDC exchange list as of 10/2013
- \*Most of 2000 new chemicals/yr no testing for toxicity
- \*Cause and effect evidence is growing
- \*Err on side of caution recommended by endocrine society

## When is Enough Science, Enough to Take Action?



## Tips to Avoid Common EDCs Take Home

- \*Fresh is best: *avoid cans or plastic packaging*
- \*Eat in: *more meals at home/ fresh ingredients*
- \*Store it safe: *glass or stainless steel vs. plastic*
- \*Don't microwave in plastic

## Endocrine Disruptors in Plastic Baby Teethers

### Take Home

Keep an eye open to evolving cause-effect studies of EDCs

Be informed so can discuss with patients

Err on the side of caution

## Case History: Resistance to Human Papillomavirus Vaccination

You recommend HPV for your patients. A mother and her 11 year old are seeing you for their annual visit. Mom says, "isn't she too young for this? You know what I am saying. I can't believe she is at risk for cervical cancer and other things at this age". Is there proof?

What can you tell her?

## The Early Benefits of Human Papillomavirus Vaccination on Cervical Dysplasia (CD) and Anogenital Warts (AGW)

*Smith, LM et al. Pediatrics 2015; 135:1131-40*

- Objective: Impact of the qHPV vaccine and program on the incidence of cervical dysplasia and AGW
- Population based, retrospective cohort study design  
n=260,493 (131,781 ineligible & 128,493 eligible girls)
- All 8<sup>th</sup> grade girls, Ontario, Canada before, and after an 8<sup>th</sup> grade vaccination program was implemented
- Girls re-examined in grades 10-12 for CD & AGW: vaccinated vs. the unvaccinated group at ages 14 to 17 years.

**The Early Benefits of Human Papillomavirus  
Vaccination on Cervical Dysplasia (CD) and Anogenital  
Warts (AGW)  
Results**

- Authors used absolute risk difference (RD); relative risk (RR); & 95% confidence limits (CL) attributable to vaccination & eligibility (intention-to-treat analysis)

\*Vaccination reduced CD by 5.70/1000 girls (cl<-9.91 to -1.50>)

\*Relative reduction of 44% (RR 0.56 <0.36 to 0.87>)

\*Program eligibility significant protection for CD (RD -2.32/1000)

\*Possible decrease in AGW attributable to vaccination (RD - .83/1000 (<-2.54 to .88) RR 0.57 (<.20 to 1.58>) and program eligibility (RD -0.34/1000 girls <-1.03 to 0.36>)

**The Early Benefits of Human Papillomavirus  
Vaccination on Cervical Dysplasia (CD) and  
Anogenital Warts (AGW)**

**Take Home**

- Study gives new & strong evidence for benefits of qHPV vaccination among adolescent girls in reducing cervical dysplasia and possibly AGW in girls 14 to 17 years.
- Study strengthens current recommendations to start vaccination at an early age.
- Provides additional justification for not delaying qHPV until girls are older.

**Case History: Vaccine Safety**

Your patient, a mother and member of a group named DPT - Dissatisfied Parents Together - tells you that she does not want her 4 yr. old son to get the recommended MMR. She believes it will cause autism. The school principal told her he must have it or not be enrolled. She asks you for a letter to support her and be used to gain admittance to the school.

What would you do?

**Safety of Vaccines Used for Routine Immunization  
of US Children: A Systematic Review  
Maglione, MA et al. Pediatrics. 2014;134:1-13**

\*Update to 2011 IOM report with expanded scope: HiB, Hep A, pneumococcal conjugate 13, rotavirus, inactivated polio.

\*Of 20,478 articles on vaccine safety, 67 met rigid criteria

\*AEs and strength of evidence carefully evaluated

**Adverse Events (Aes) Conclusions**

**No serious AEs**

\**High quality EBM:* No association with leukemia; no association of autism with MMR

\**Moderate quality EBM:* No association HepB & MS; no AEs with HiB

**AEs present**

\**High quality EBM:* MMR & febrile seizures; varicella & complications in immune compromised

\**Moderate quality EBM:* Purpura associated with Hep A & MMR. Febrile seizures & pneumococcal conjugate 13; intussusception & rotavirus (extremely rare:1-5/100,000 doses)

**CDC Analogy: Herd Immunity**

**Q.** If my child's friends are vaccinated, won't he be protected by herd immunity. Why should I put my child at risk for vaccine reactions if all the other children are already immunized.

**A.** This is like riding in a carpool where everyone each month pays for gas, repairs, and parking. On morning, a new neighbor shows up and says, " I think I'll ride along with you, but I'm not going to pay. Since you are going downtown anyway & you have an empty seat."

*If enough people choose to take a free ride on other children's immunity, herd immunity will soon disappear.*



### **Vaccine Safety Review Take Home**

**\*AEs are rare and resolve completely after the event, i.e. febrile seizures.**

**\*Serious adverse events are rare-need to be weighed against protective benefits.**

**\*Findings should be reassuring to parents and PCPs.**

**\*Report should increase provider confidence which can be relayed to their patients.**