Use of a “Cough Trick” to Manage Pediatric Immunization Pain: A Pilot Study

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Basic Facts
- Pediatric immunization is the most common painful medical procedure for children (Schecter et al., 2007).
- Most children benefit from strategies to control pain and anxiety associated with injections.
- Many parents prefer medical practitioners who offer pain reduction strategies as part of their procedures.

Current Methods to Control Injection Pain
Pharmacological Strategies:
- Patches
- Creams
- Anxiolytics (uncommon)

Other Physiological Strategies:
- Cooling sprays
- Distraction:
  - Cartoons
  - Music
  - Blowing bubbles or a pinwheel
  - Party blowers

Unfortunately, most current techniques have drawbacks resulting in infrequent use:
- Require equipment (TV, toy, cream, etc)
- Expensive cost per use or for startup
- Take nurse time to set up or implement
- Involve waiting for medication to take effect

A Potential New Technique?
The “Cough Trick”
- Tested on adult volunteers during venipuncture (Usichenko et al., 2004)
- Give a “warm-up cough” and then a second cough during procedure

May be effective via a few mechanisms:
- Distraction
  - (concentrating on coughing on cue)
- Competing sensory stimuli
  - (noise and feeling of cough)
- Competing physiological stimuli
  - (increased pressure in the subarachnoid space, increased blood pressure).

Details of Pilot Study
Participants:
- 16 participants (after 2 were excluded) drawn from University Pediatric Clinic
- Eleven were age 4 to 5 and receiving DTaP & IPOL (polio) vaccines
- Five were age 11 to 13 and receiving Tdap & MCV7 (meningococcal) vaccines

Measures:
- Self-report of pain on VAS
- Parent report of pain on VAS
- Nurse report of pain on VAS
- Child preference for future use (yes or no)
- Treatment satisfaction questionnaire (given to older children only)

Design:
- Compared using a cough trick (experimental condition) to treatment as usual (control).
- Within-subjects design
- Randomized and counterbalanced for age, sex, order of shots, and treatment condition

RESULTS

- Data suggest a small treatment effect with both age groups
- Data also suggest an order effect in the younger age group
- Data indicate significant variability in:
  - report of injection pain
  - the effectiveness of the cough trick: the technique worked very well for some kids, somewhat well for some, and did not work very well for others.
- About half the children in both age groups stated that they would prefer to use the technique for future shots
- On average, older children thought that this was a reasonable way to deal with injection pain (4.8/6 across 8 items)

DISCUSSION POINTS
1. By what mechanism does the cough trick work? More than one?
   a. Distraction
   b. Competing sensory stimuli – cognitive processing limitations
   c. Gate theory – direct activation of pain-inhibitory pathways due to competing physiological stimuli
2. Why the difference in order effect by age? Implications of order effect:
   a. Experience with injections? Expectation?
   b. Are all children simply going to “grow out” of this problem?
3. Implications of cough trick as useful strategy:
   a. Easier to use than most current strategies
   b. Immunizations are prevalent and painful
   c. Will medical professionals use this technique?
4. Limitations:
   a. Small sample size – these results suggest that future research may be warranted
   b. Potentially biased sample due to data collection at the end of the immunization “season”

References