Post-splenectomy Pneumococcal Vaccination

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Family Medicine

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Overview

- Background
- Methods
- Results
- Conclusion
- Limitations
- References
- Questions

Residency Scholar Activity

- Family Physicians Inquiries Network
  - Web-based resource created in response to a need to make evidence-based family medicine and clinical scholarship more accessible to family physicians in clinical practice.[1]

- Help Desk Answers
  - HDAs are tightly written research articles (450-600 words), from three to five of the most current and reliable patient-oriented citations, providing evidence-based answers to clinical questions in a defined, structured format.[1]
  - Authors also prepare a CME question for inclusion in the monthly CME test in *Evidence-Based Practice* (*EBP*), which runs alongside the published HDA.[1]

The Method

Step 1
- HDA Learning Path; select or formulate a question.
- Select a date for first draft.

Step 2
- Literature search; initial writing and editing
- Team meetings, submit, peer reviews, resubmit

Step 3
- Final writing and editing
- HDA editor-in-chief: manuscript review, do final changes

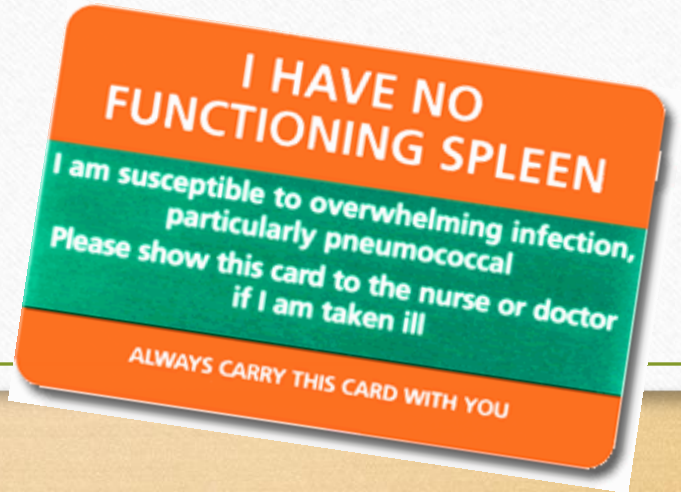
Step 4
- Approval by editor-in-chief for review of evidence-based practice
- If everything ok, manuscript approved for publication (5-7 months)

In the beginning…

- Which vaccinations are indicated post-splenectomy?
  - Lack of evidence
  - Pneumococcal vaccine most studied

Clinical Question- modified

- What is the effectiveness of pneumococcal vaccination post-splenectomy on prevention of infection and mortality?



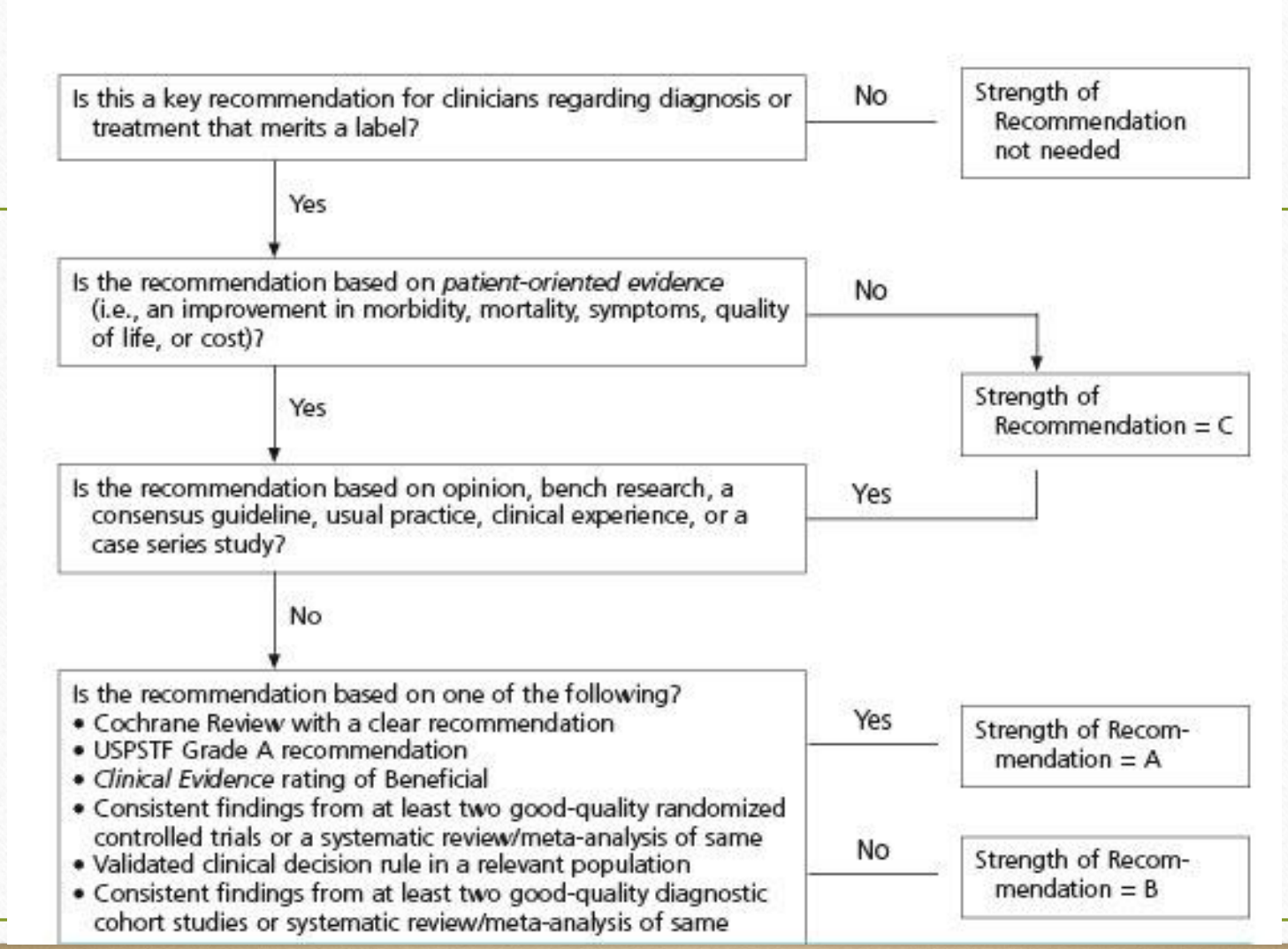
Oxford Centre of EBM 2011 LOE

Question	Step 1 (Level 1*)	Step 2 (Level 2*)	Step 3 (Level 3*)	Step 4 (Level 4*)	Step 5 (Level 5)
How common is the problem?	Local and current random sample surveys (or censuses)	Systematic review of surveys that allow matching to local circumstances**	Local non-random sample**	Case-series**	n/a
Is this diagnostic or monitoring test accurate? (Diagnosis)	Systematic review of cross sectional studies with consistently applied reference standard and blinding	Individual cross sectional studies with consistently applied reference standard and blinding	Non-consecutive studies, or studies without consistently applied reference standards**	Case-control studies, or "poor or non-independent reference standard**	Mechanism-based reasoning
What will happen if we do not add a therapy? (Prognosis)	Systematic review of inception cohort studies	Inception cohort studies	Cohort study or control arm of randomized trial*	Case-series or case-control studies, or poor quality prognostic cohort study**	n/a
Does this intervention help? (Treatment Benefits)	Systematic review of randomized trials or *n*-of-1 trials	Randomized trial or observational study with dramatic effect	Non-randomized controlled cohort/follow-up study**	Case-series, case-control studies, or historically controlled studies**	Mechanism-based reasoning
What are the COMMON harms? (Treatment Harms)	Systematic review of randomized trials, systematic review of nested case-control studies, *n*-of-1 trial with the patient you are raising the question about, or observational study with dramatic effect	Individual randomized trial or (exceptionally) observational study with dramatic effect	Non-randomized controlled cohort/follow-up study (post-marketing surveillance) provided there are sufficient numbers to rule out a common harm. (For long-term harms the duration of follow-up must be sufficient.)**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning
What are the RARE harms? (Treatment Harms)	Systematic review of randomized trials or *n*-of-1 trial	Randomized trial or (exceptionally) observational study with dramatic effect			
Is this (early detection) test worthwhile? (Screening)	Systematic review of randomized trials	Randomized trial	Non -randomized controlled cohort/follow-up study**	Case-series, case-control, or historically controlled studies**	Mechanism-based reasoning

*** Level may be graded down on the basis of study quality, imprecision, indirectness (study PICO does not match questions PICO), because of inconsistency between studies, or because the absolute effect size is very small; Level may be graded up if there is a large or very large effect size.**

**** As always, a systematic review is generally better than an individual study.**

SORT Criteria



Results

- PCV7 vaccination increases antibody levels and survival rates when administered every 5 years.
- Measuring antibody levels after vaccination with PPV23 can help determine who needs revaccination or requires alternative prophylactic methods to prevent infection.
- PPV23 does not provide adequate protection against pneumococcal infection in post-splenectomy patients who are poor responders to vaccination.
- PCV13 may restore immunity in asplenic children.

Conclusion

- Pneumococcal vaccination seems to provide protection against overwhelming post-splenectomy infections.
- Conjugated Pneumococcal vaccination may decrease mortality in post-splenectomy patients.
- Protection likely dependent on individual antigenic response to the vaccine.

Limitations

- Small group population (splenectomized patients)
- Limited studies
- No PCV13 data in adults in articles reviewed
- Lack of statistically significant data on PCV13 in articles reviewed

References

1. http://www.fpin.org
2. Forstner C, Plefka S, Tobudic S, Winkler HM, Burgmann K, Burgmann H. Effectiveness and immunogenicity of pneumococcal vaccination in splenectomized and functionally asplenic patients. Vaccine. 2012; 30(37):5449-52. **[STEP 3]**
3. Cherif H, Landgren O, Konradsen HB, Kalin M, Bjorkholm M. Poor antibody response to pneumococcal polysaccharide vaccination suggests increased susceptibility to pneumococcal infection in splenectomized patients with hematological diseases. Vaccine 2006; 24:75-81. **[STEP 3]**
4. Rosado MM, Gesualdo F, Marcellini V, et al. Preserved antibody levels and loss of memory B cells against pneumococcus and tetanus after splenectomy: tailoring better vaccination strategies. Eur J Immunol. 2013; 43(10):2659. **[STEP 4]**

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Any questions before your shot?