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CDS Hooks: Integrating Decision Support at the Point of Care (Part 2)

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Agenda – April 18 - 10:25 - 10:50 am

● Part 2
  ○ Discussion Zone: Example Scenarios
  ○ Recommended Tools / Reading
  ○ Questions/Answers
Agenda

We will review four CDS published cases and discuss how they can be implemented using CDS-HOOKS

1) Reducing Unnecessary Tetanus Immunization in the ED
2) Increase Seasonal Influenza Vaccination Among Hospitalized Children Before Inpatient Discharge
3) Decision Support System to Identify and Manage Opioid Use Disorder
4) Artificial intelligence-assisted clinical decision support for childhood asthma management

and finally, we will discuss Da Vinci PDEX CDS-Hooks
Reduction of unnecessary Tetanus immunization

Abstract

**Study objective:** Tetanus is the most common vaccination given in the emergency department, yet, administrations of tetanus vaccine boosters in the ED may not comply with the US Centers for Disease Control and Prevention’s recommended vaccination schedule. We implemented a clinical decision support alert in the electronic health record that warned providers when ordering a tetanus vaccine if a prior one had been given within 10 years and studied its efficacy to reduce potentially unnecessary vaccines in the ED.

**Methods:** This was a retrospective, quasi-experimental, 1-group, pretest-posttest study in 3 hospital EDs in Boston, MA. We studied adult patients for whom tetanus vaccines were ordered despite a history of vaccination within the prior 10 years. We compared the number of potentially unnecessary tetanus vaccine administrations in a baseline phase (when the clinical decision support alert was not visible) versus an intervention phase.

**Results:** Of eligible patients, 22.1% (95% confidence interval [CI] 21.8% to 22.4%) had prior tetanus vaccines within 5 years, 12.8% (95% CI 12.5% to 13.0%) within 5 to 10 years, 3.6% (95% CI 3.6% to 3.9%) more than 10 years ago, and 63.1% (95% CI 60.9% to 61.7%) had no prior tetanus vaccination documentation. Of 60,983 encounters, 337 met the inclusion criteria. A tetanus vaccination was administered in 91% (95% CI 87% to 96%) of encounters in the baseline phase, compared to 65% (95% CI 47% to 62%) during the intervention. The absolute risk reduction was 36.7% (95% CI 28.0% to 45.4%), and the number of encounters needed to alert to avoid 1 potentially unnecessary tetanus vaccine (number needed to treat) was 2.7 (95% CI 2.2% to 3.6%). For patients with tetanus vaccines within the prior 5 years, the absolute risk reduction was 47.9% (95% CI 38.5% to 60.3%) and the number needed to treat was 2.1 (95% CI 1.7% to 2.8%).

**Conclusion:** A clinical decision support alert that warns ED clinicians that a patient may have an up-to-date tetanus vaccination status reduces potentially unnecessary vaccinations.

Hook?

Resources?

Cards?

- Indicator: Critical / Warning / Info
- Type:
  - Information
  - Suggestion (Action? Accepted?)
- App Link

**Clinical Decision Support Reduces Unnecessary Tetanus Vaccinations in the Emergency Department**


Department of Emergency Medicine, Massachusetts General Hospital, Boston, MA; Massachusetts General Brigham Digital Health, Boston, MA; Harvard Medical School

Dutta S, McEvoy DS, Stump T, McCabe J, Mahendra-Rajah A, McMurry R, White BA, Rubins D
2- Improve Pediatric Seasonal Influenza Vaccination

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Evaluation of a Clinical Decision Support Strategy to Increase Seasonal Influenza Vaccination Among Hospitalized Children Before Inpatient Discharge

Evan W. Orenstein, MD, corresponding author1,2,3 Omar ElSayed - Ali, MD,4 Swaminathan Kandaswamy, PhD,1 Erin Masterson, MPH,2 Reena Blanco, MD,1,5 Pareen Shah, MD,1,5 Patricia Lantis, MD,1,2 Amy Kotwalte, MS, MPH,5,6 Thomas E. Dawson, PharmD,2 Edwin Ray, RN,2 Christy Bryant, RN,2 Srikant Iyer, MD, MPH,1,5 Ani L. Shane, M D, MPH, MSc,1,7 and Stephanie Jernigan, MD1,8
A pilot study of the functionality and clinician acceptance of a clinical decision support tool to improve primary care of opioid use disorder

Rebecca C Rossom1,2, JoAnn M Speri-Hillen3, Patrick J O'Connor3, A Lauren Crain3, Laurel Nightingale3, Anne Pylkas45, Kristen V Huntley6, Gavin Bart78

Affiliations: + expand
PMID: 34130758 PMCID: PMC8207778 DOI: 10.1186/s13722-021-00245-7
Free PMC article

Abstract

Objective: Most Americans with opioid use disorder (OUD) do not receive indicated medical care. A clinical decision support (CDS) tool for primary care providers (PCPs) could address this treatment gap. Our primary objective was to build OUD-CDS tool and demonstrate its functionality and accuracy. Secondary objectives were to achieve high use and approval rates and improve PCP confidence in diagnosing and treating OUD.

Methods: A convenience sample of 55 PCPs participated. Buprenorphine-waivered PCPs (n = 8) were assigned to the intervention. Non-waivered PCPs (n = 47) were randomized to intervention (n = 24) or control (n = 23). Intervention PCPs received access to the OUD-CDS, which alerted them to patients at potentially increased risk for OUD or overdose and guided diagnosis and treatment. Control PCPs provided care as usual.

Results: The OUD-CDS was functional and accurate following extensive multi-phased testing. PCPs used the OUD-CDS in 5% of encounters with at-risk patients, far less than the goal of 60%. OUD screening confidence increased for all intervention PCPs and OUD diagnosis increased for non-waivered intervention PCPs. Most PCPs (65%) would recommend the OUD-CDS and found it helpful with screening for OUD and discussing and prescribing OUD medications.

Discussion: PCPs generally liked the OUD-CDS, but use rates were low, suggesting the need to modify CDS design, implementation strategies and integration with existing primary care workflows.

Conclusion: The OUD-CDS tool was functional and accurate, but PCP use rates were low. Despite low use, the OUD-CDS improved confidence in OUD screening, diagnosis and use of treatment.

Hook?

Resources?

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4- AI-assisted CDS for childhood asthma management

Hook?

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Artificial intelligence assisted clinical decision support for childhood asthma management: A randomized clinical trial

Hee Yun Seol 1, Pragya Shrestha 1,2, Joy Fladager Muth 1, Chung-I Wi 1,3, SungHwan Sohn 4, Euijung Ryu 5, Miguel Park 6, Kathy Ihhke 1, Sungmin Moon 4, Katherine King 5, Philip Wheeler 1, Bijan Borah 7, James Mohlarty 8, Jordan Rosedahl 8, Hongfang Liu 4, Deborah B McWilliams 3, Young J Juhn 1,3
5- Da Vinci PDEX CDS-Hooks

Hook?
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https://build.fhir.org/ig/HL7/davinci-crd/hooks.html#cds-hooks
More on CDS-Hooks

- The Standard
  - https://cds-hooks.hl7.org/2.0/
- The Classical Tutorial
- The Sandbox
  - https://sandbox.cds-hooks.org/
- Example Source Code
  - https://github.com/diegokaminker/ueho-cdshooks
Questions and Conclusions

● Questions?