

Leveraging the Electronic Health Record for Antimicrobial Stewardship: Assessing the Impact of a Required Indication and Duration Intervention on Length of Antibiotic Therapy



ESKENAZI HEALTH

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INTRODUCTION

- Despite programmatic efforts of antimicrobial stewardship programs to guide antimicrobial use, optimization often occurs post factum. In a typical health system, discordant antimicrobial selections are often caught or flagged for review several doses/days after initiation. In an ideal state, the stewardship of antimicrobial agents would happen at the point of order entry.
- Additionally, The Joint Commission established an antimicrobial stewardship standard, 09.01.01, outlining recommended actions for antimicrobial orders, including systemic evaluation of ongoing treatment need after a set period of initial treatment.
- To address these issues and practice standards, Eskenazi Health implemented a series of clinical decision support tools in the electronic health record (EHR) in June 2018. The goal was to improve antimicrobial selection, shorten time to de-escalation, and improve appropriate duration of therapy.

OBJECTIVE

- To determine the impact of the antimicrobial ordering clinical decision support tools in the EHR for community acquired pneumonia (CAP) and urinary tract infection (UTI)

ESKENAZI HEALTH EHR BUILD

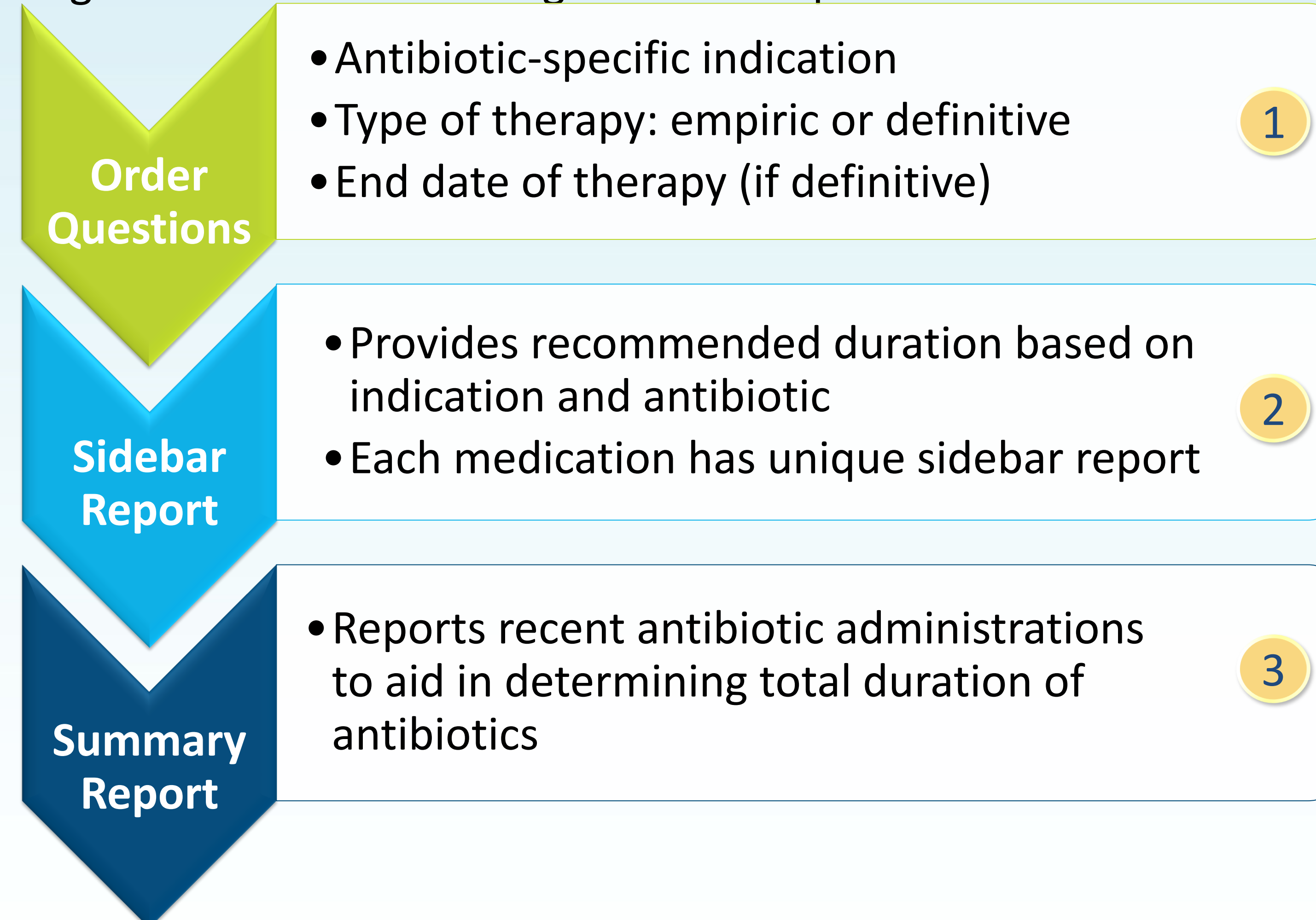
Figure 1. EHR Order Composer Screen

ESKENAZI HEALTH EHR BUILD (cont.)

EHR Order Configuration

- 3 main enhancements: order questions, side bar report, summary report

Figure 2. EHR Order Configuration Components



Best Practice Advisory (BPA)

- Alerts providers of empiric antimicrobial orders that are >48 hours old to prompt update to “definitive” therapy and selection of specific end date

Figure 3. 48-hour BPA

METHODS

- Single-center, retrospective, observational study
- Inclusion: adult patients (≥ 18 years), hospitalized, and prescribed antibiotics for the treatment of CAP or UTI

Pre-intervention

July-Dec 2017

Implementation
June 2018

Post-intervention

July-Dec 2018

RESULTS

Baseline Demographics

Demographic	PRE (n=28 pts) n (%)	POST (n=57 pts) n (%)	P value
Age (years)*	67 ± 17	60 ± 15	0.094
Sex, Female	19 (67.8%)	28 (49.1%)	0.090
Race, White	12 (42.8%)	35 (61.4%)	0.103
Ethnicity, Not Hispanic/Latino	27 (96.4%)	54 (94.7%)	1.000
Admitting Team, Non-ICU	26 (92.9%)	38 (66.7%)	0.002
Admitting Team, ICU	2 (7.1%)	19 (33.3%)	
Admitting Source, Home	28 (100%)	52 (91.2%)	0.166

*Reported as mean (± SD)

Outcomes

Primary Endpoint	PRE (n=144 orders)	POST (n=397 orders)	P value
Overall duration of therapy*	7 (3, 10)	5 (3, 7)	<0.001
Duration of therapy: CAP*	5 (3, 8)	5 (3, 6)	<0.001
Duration of therapy: UTI*	11 (8, 14)	7 (5, 7)	<0.001

Secondary Endpoint	PRE (n=144 orders)	POST (n=397 orders)	P value
Duration of empiric therapy*	3 (2, 4)	2 (2, 3)	<0.001
Duration of definitive therapy*	4 (0, 7)	3 (0, 4)	<0.001
Length of stay*	5 (3, 6)	6 (4, 10)	0.038
<i>C. diff</i> infection	0 (0%)	0 (0%)	1.000
30-day readmission	5/28 (17.9%)	0 (0%)	0.003

*Reported as median (IQR)

CONCLUSIONS AND IMPLICATIONS

- Incorporating antimicrobial stewardship principles at the point of order entry can result in fewer days of therapy
- Gained insight into relationship between EHR tools, antimicrobial prescribing, and clinical outcomes
- Potential to utilize similar EHR build at other institutions

REFERENCES

- “Core Elements of Hospital Antibiotic Stewardship Programs.” Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 28 Apr. 2021, <https://www.cdc.gov/antibiotic-use/core-elements/hospital.html>.
- Geik K, Jasiak K, Klueber S (2019). *Getting to the Core Elements of Antibiotic Ordering* [PowerPoint slides]. Eskenazi Health

DISCLOSURES

Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of the presentation.

