

Accuracy of antibacterial indication documentation in an Electronic Medical Record

Wendy Yao¹, Kelly A Cairns¹, Trisha N Peel²

1. Pharmacy Department, Alfred Health, Victoria 2. Department of Infectious Diseases, Alfred Health, Victoria

Background

Documentation of antimicrobial indication is an essential component of prescribing. As of 2020, 30% of Australian public hospitals use an electronic medication management solution.¹ Alfred Health implemented an EMR in late 2018, with mandatory documentation of antimicrobial indication at time of prescribing (see Figure 1).

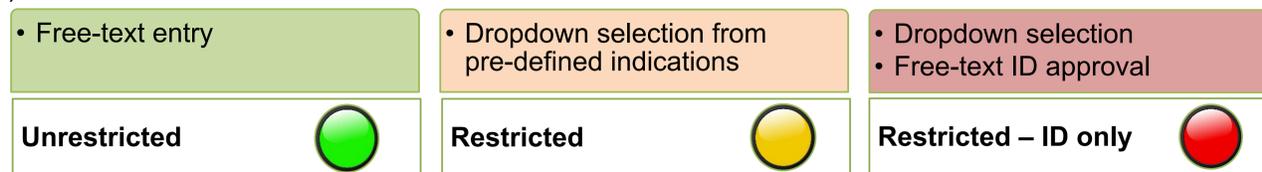


Figure 1. Mandated documentation for each level of antimicrobial restriction

Aim

To determine accuracy of antibacterial indication documentation on the medication administration record (MAR) when prescribing and to evaluate factors influencing accuracy of documentation.

Methods

A retrospective review of 400 randomly selected antibacterial prescriptions between Mar and Sep 2019. Antibacterial restriction was condensed, with 'ID only' combined with 'Restricted'. Statistical analysis compared factors associated with accuracy of indication using Chi-square and Fischer's exact tests.

Prescription identification

- Adult inpatient admitted ≥ 24 hours
- New oral or intravenous antibacterial prescription for treatment of an active infection or prophylaxis
- *Excluded:* prescriptions for other antimicrobials, non-bacterial indication or commenced prior to the specific encounter

Indication accuracy assessment

- Compared MAR documentation to the medical notes written within 24 hours of prescribing (gold standard)
- Free-text entry on the MAR was considered accurate if sufficiently detailed and correlated with clinical presentation

Results

Overall accuracy of antibacterial indication documentation on the MAR was 86%. Only 13 of the 225 unrestricted prescriptions had no indication documented in the medical notes. Higher accuracy rates were observed for unrestricted antibacterial prescriptions and those written by surgical teams (Table 2). Other factors were also found to be significantly associated with the rate of documentation accuracy (Table 2).

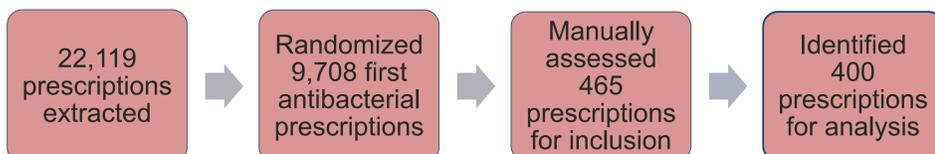


Figure 2. Sample identification and inclusion flow diagram

Table 1. Demographic data

Median age, years (IQR)	60 (40-73)
Male, %	60%
Unrestricted antibacterial, n (%)	225 (56.2%)
Restricted antibacterial, n (%)	175 (43.8%)
Treating team	
Emergency, n (%)	118 (29.5%)
Surgical, n (%)	178 (44.5%)
Medical, n (%)	104 (26.0%)

Table 2. Accuracy of MAR documentation compared to medical note documentation

Factors n=400	Accurate n (%) n=344 (86%)	Inaccurate n (%) n=56 (14%)	P value
Antibacterial restriction			
Unrestricted/free-text (n=225)	212 (94.2%)	13 (5.8%)	<0.0001
Restricted/dropdown (n=175)	132 (75.4%)	43 (24.6%)	
Prescriber			
Medical (n=387)	332 (85.8%)	55 (14.2%)	1.0
Non-medical (n=13)	12 (92.3%)	1 (7.7%)	
Treating team			
Emergency (n=118)	94 (79.7%)	24 (20.3%)	<0.0001
Surgical (n=178)	168 (94.4%)	10 (5.6%)	
Medical (n=104)	82 (78.8%)	22 (21.2%)	
Type of prescription			
Directed (n=30)	24 (80.0%)	6 (20.0%)	0.0032
Empiric (n=242)	199 (82.2%)	43 (17.8%)	
Prophylaxis (n=128)	121 (94.5%)	7 (5.5%)	
Day of the week			
Weekday (n=316)	266 (84.2%)	50 (15.8%)	0.0504
Weekend (n=84)	78 (92.9%)	6 (7.1%)	
Time of day			
Working hours (n=229)	204 (89.1%)	25 (10.9%)	0.0425
After hours (n=171)	140 (81.9%)	31 (18.1%)	

Discussion

The high accuracy (86%) from this study is similar to the accuracy rates reported by studies conducted in United States (90% and 89%).^{2,3} Differences between each study include the documentation type and the method of evaluating accuracy. In this study, the majority of prophylactic prescriptions involved an unrestricted antibacterial, whereby sufficient free-text documentation on the MAR was deemed accurate.

Accurate indication documentation can assist with ensuring judicious antibacterial prescribing. The results from this study align with work conducted at another Australian hospital which demonstrated that mandated indication documentation on the EMR improved documentation rates.⁴

Limitations of this study include the retrospective study design and the small sample size. Further research is required to determine the impact of each factor and guide improvement in future EMR builds.

Conclusion

This study demonstrated a high rate of accuracy for antibacterial indication documentation on the MAR within Alfred Health. These results may assist other health organisations with developing EMR builds.

References

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