

A comparative study of the conformity of the documentation of drug doses administered pre and post implementation of an electronic medication record

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INTRODUCTION

- A growing need for better documentation of drug doses
 - Traceability of every steps
 - Traceability of healthcare professionals involved
- Electronic medication administration record (eMAR) is expected to increase the documentation of drug doses

OBJECTIVES

To compare the conformity of the documentation of drug doses administered pre-post implantation of an eMAR

METHODS

- Retrospective pre-post study
 - Pre phase: between October 19th and 26th, 2014
 - Post phase: between May 3rd and 14th, 2015
- All medication administration record (MAR) from both periods were extracted from the digitalized patient healthcare record (Chartmax®)
- A conform dose to the basic standard is a dose documented as administered or not with a signature of the professional involved in the act
- A conform dose to the revised standard developed with eMAR is a dose documented including the following elements:
 - Scheduled and as needed doses:
 - Number of required minimum steps to document = number of doses * 2 (preparation and administration) + number of doses not given (one single step: not given) + number of not documented doses * 2 (preparation + administration)
 - Infusions doses:
 - Number of required minimum steps to document = number of infusion doses * 3 (one documentation for each shift per day)
- We compared the proportion of conform scheduled dose pre and post (Chi²) according to the basic standard
- We compared the ratio of documented steps according to the revised standard

$$\text{Ratio of documentation} = \frac{\text{Number of documented steps}}{\text{Number of minimum steps required to document}}$$

RESULTS

Table 1. Description of the patients, drugs orders and drug doses

Variables		Pre n/N (%)	Post n/N (%)	Total
Patients	General surgery	15 (40.5%)	42 (42.9%)	57 (42.2%)
	Plastic surgery	7 (18.9%)	10 (10.2%)	17 (12.6%)
	ORL surgery	8 (21.6%)	19 (19.4%)	27 (20%)
	Orthopedics surgery	7 (18.9%)	27 (27.6%)	34 (25.2%)
	Total	37	98	135
Drug orders	Total number of scheduled drug orders	264	254	518
	Total number of infusion drug orders	16	9	25
	Total number of as needed drug orders	260	128	388
Drug doses	Total number of scheduled doses	867	904	1771
	Total number of infusion doses	19	17	36
	Total number of as needed doses	1665	685	2350

- 4157 drug doses were recorded:
 - Pre phase: 2551 vs post phase: 1606
- According to the basic standard, the proportion of conform scheduled doses increased
 - Pre phase: 79.5% (689/867) vs post phase: 88.1% (796/904) - p < 0.0001

Table 2. Ratio of the number of steps documented over the required minimum number of steps to be documented according to the Revised standard

	Pre Ratio (documented / to be documented)	Post Ratio (documented / to be documented)	Total Ratio (documented / to be documented)
Scheduled dose	0.4 (690/1718)	0.56 (996/1734)	0.48 (1656/3452)
Infusion dose	0.63 (36/57)	0.51 (26/51)	0.57 (62/108)
As needed dose	0.13 (433/3330)	0.28 (379/1370)	0.17 (812/4700)
TOTAL	0.23 (1159/5105)	0.43 (1371/3155)	0.31 (2530/8260)

- Ratio of interpretation :
 - < 0.5: Poor documentation;
 - 0.5 to 1: usual documentation;
 - > 1: good documentation ; a ratio can be higher than one considering the revised standard targets only required minimum steps
- According to the revised standard developed with eMAR, the ratio of documentation increased for schedule dose and as needed doses but not infusion doses
- For as needed doses, the proportion of doses with at least one documented steps increased
 - Pre phase: 16.3% (272/1665)
 - Post phase: 43.5% (298/685)
- For infusions doses, all doses had at least one documented step
- However, this information did not allow the identification of the specific administration steps involved

DISCUSSION AND CONCLUSION

- There is no legal explicit framework for the documentation of steps associated to the administration of drug doses in hospitals in most provinces
- With growing expectations regarding traceability (e.g. in research, in case of identified failure modes), a revision of the standard of documentation of these steps is welcomed
- Moreover, the implementation of an eMAR is an opportunity to revise the standard of documentation of these steps
- This study showed an increase in conformity of the documentation of drug doses administered pre and post implementation of an eMAR for scheduled and as needed doses
- While these results may suggest a low rate of documentation of steps associated to the administration of drug doses in a hospital, it should be noted that the revised standard of documentation associated to the implementation of an eMAR will contribute to increase significantly the number of steps being documented in the future; higher expectations for documentation will be accomplished progressively taking into account the diffusion of these new requirements and change management strategies