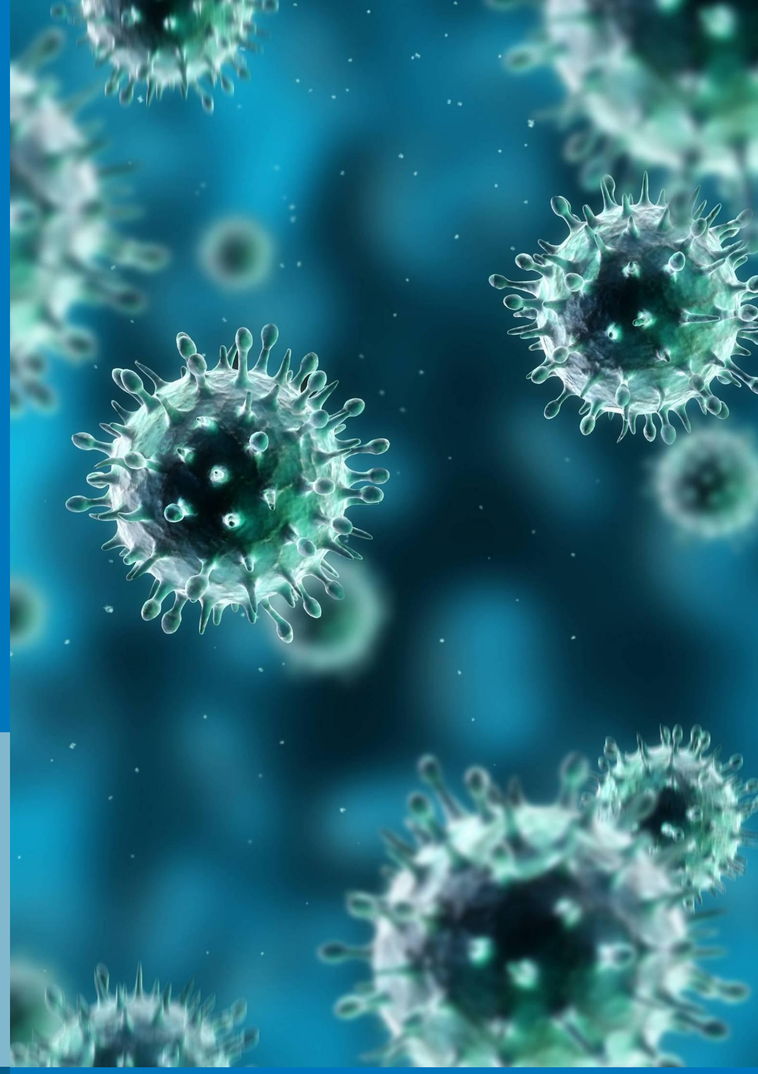
Medication administration documentation: better traceability in eMAR ?



Geneviève Mercier, RN, MSN
Informatics clinical nurse specialist, CHU Sainte-Justine

Denis Lebel, B.Pharm., M.Sc., FCSHP
Pharmacist, CHU Sainte-Justine

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CHU Sainte-Justine
Le centre hospitalier universitaire mère-enfant

Université de Montréal

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Conflict of interest

I have read and understood e-Health 2016 conference policy on declaration of interests and declare that I have no competing interests.

1. Learning objectives
2. CHU Sainte-Justine
3. Electronic medication administration record (eMAR) background
4. Flexible workflow manager for medication administration
5. eMAR deployment
6. Audit / Results
7. Discussion
8. Conclusion

1. Learning objectives

1. Understand the traceability concept in the process of drug administration
2. Understand how designing eMAR can support best documentation practice for drug administration
3. Analyze traceability data after eMAR deployment in a specific clinical context and see how it can be replicated in other context

2. CHU Sainte-Justine

CHU Sainte-Justine is one of the top ten mother-child hospital centres in the world

484-bed teaching and research facility

1 500 nurses

1 100 health care professionals

550 doctors and pharmacists

400 researchers and assistants

450 volunteers

3500 interns and students

3. Electronic medication administration (eMAR) background

Medication administration process

- Up to 11 steps grouped into 4 administration sub-processes

Initiation	Preparation	Application	Post-processing
Removal from secondary packaging	Preparation of medical aid or device	Harmonization with co-medication and context	Post-processing of device
Opening of and removal from immediate packaging	Preparation of drug	Application / intake	Monitoring
	Dose individualization	Termination of application	
	Drug disposition		

(Seidling, H.,& al., 2013)

3. Electronic medication administration (eMAR) background

Documentation of drug administration

- Inadequate documentation may lead to medication errors
- Nurses must write required information at the right place

(Free translation. OIIQ, Truchon, S., 2004)

Drug administration **traceability**

- Each step of the medication circuit should be identifiable and traceable, including medication administration steps

(Free translation. OPQ, 2013)

Traceability **definition**: The ability to find or follow something

3. Electronic medication administration (eMAR) background

Requirements for our eMAR

- Capacity to document more than if the medication was given or not
- Flexibility to adapt the documentation of drug administration based on medication characteristics and best practice
- Necessity to trace which user performed each step of administration (who, what, when)

3. Electronic medication administration (eMAR) background

2013
- Creation of the project team
- Evaluation of software functionalities

2014
- Identification of mandatory and optional steps to be documented in eMAR
- Collaboration with the software vendor:
  - Adaptation of eMAR software to nurses' clinical needs
  - Creation of a flexible medication administration workflow manager

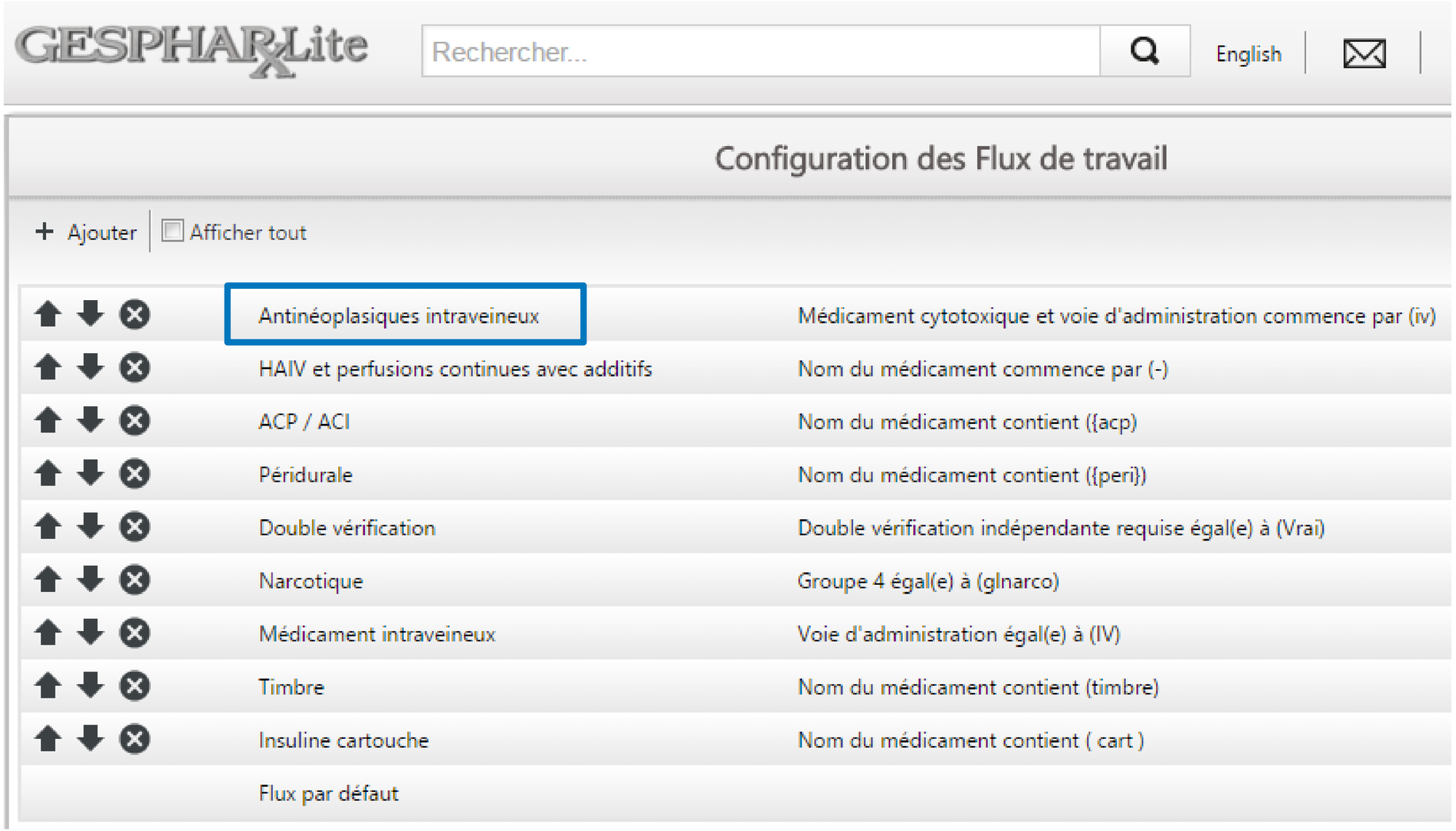
…

4. Flexible workflow manager for medication administration

Development of an innovative strategy giving us the following opportunities:

- Creation of unique workflows with full autonomy
  - ✓ Type of workflows
  - ✓ Specific steps
- Configuration of custom behaviour of each variable included in a specific step

4. Flexible workflow manager for medication administration



4. Flexible workflow manager for medication administration

Étape		
Vérifié	Disponible si patient scanné:	Hérité
	Disponible si patient non scanné:	Hérité
	Scan médicament obligatoire:	Hérité
	Action sur le scan de médicament:	Hérité
	Date et heure de l'opération modifiable:	✓
	Valeur initiale de la date de l'opération	Date et heure système
	Site d'injection disponible:	Hérité
	Site d'injection obligatoire:	Hérité
	Commentaire disponible:	✓
	Commentaire obligatoire	✗
	Valeur initiale du commentaire:	Hérité
	Commentaire par défaut:	
	Quantité / Dose visible:	✓
	Quantité / Dose obligatoire:	✓
	Valeur initiale de la quantité	Quantité maximum
	Double vérification disponible	✓
	Seulement si non vérifiée	Hérité
	Double vérification obligatoire	✓
	Valeur initiale de la double vérification	Hérité
	Donnée supplémentaire disponible	✗
	Donnée supplémentaire obligatoire	✗
	Valeur initiale de la donnée	Hérité

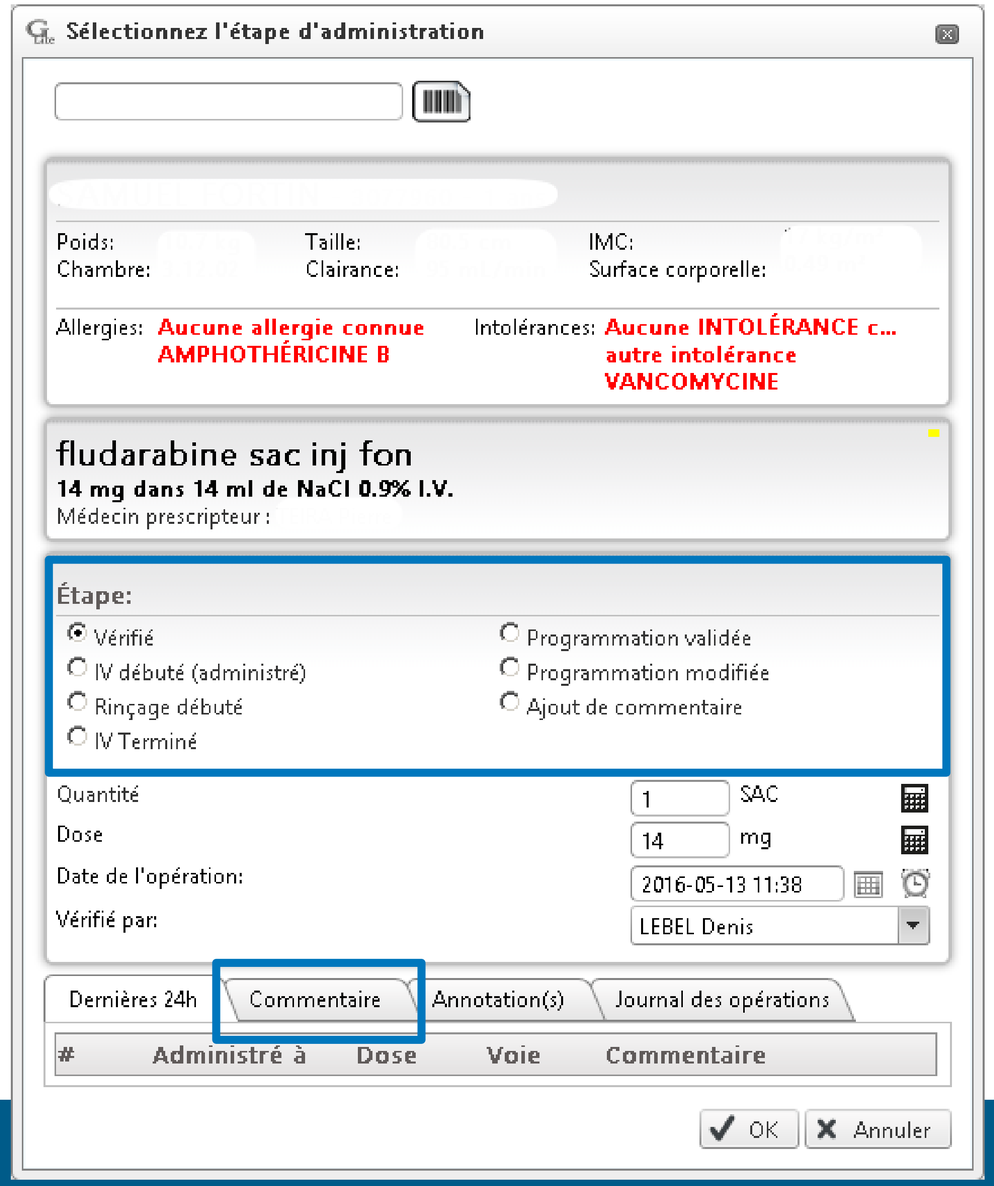
4. Flexible workflow manager for medication administration

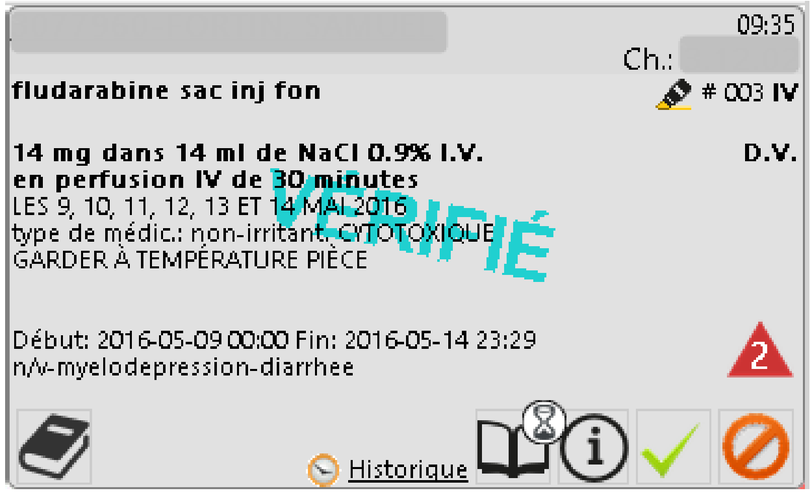
- Building of a specific workflow for oncology medication supporting documentation best practice for chemotherapy administration, including the following steps:

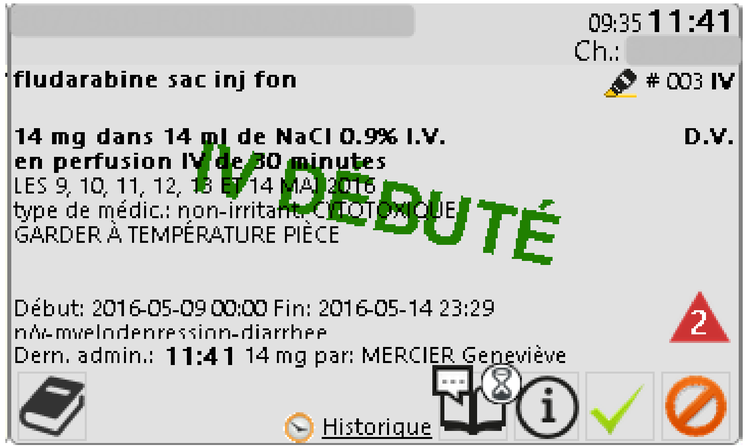
Dose verification	Pump setting modification validation
Pump setting validation	Rinsing time
Beginning of perfusion	Ending of perfusion

- For each step, documentation of independent double check can be possible or mandatory depending on configuration.

4. Flexible workflow manager for medication administration







5. eMAR deployment

2014

- Training of 100 nurses
- Pilot project on 45-bed surgery unit
- User satisfaction evaluation

2015-2016

- Progressive hospital-wide deployment
  - Psychiatry (12 beds)
  - Pediatric units (75 beds)
  - Bone marrow transplant unit (12 beds)
- Quality insurance and audits

5. eMAR deployment

- June 11th 2015 on bone marrow transplant unit
- eMAR including a documentation workflow for intravenous chemotherapy
- Training of 71 nurses
- No change in documentation practice asked to nurses

6. Audit / Results

Documentation audit of short intravenous infusion chemotherapy administration

Pre-post study

- Authorization from the ethic board of CHU Sainte-Justine

Selection criteria

- Patient receiving a bone marrow transplant
- Patient hospitalized on bone marrow transplant unit

6. Audit / Results

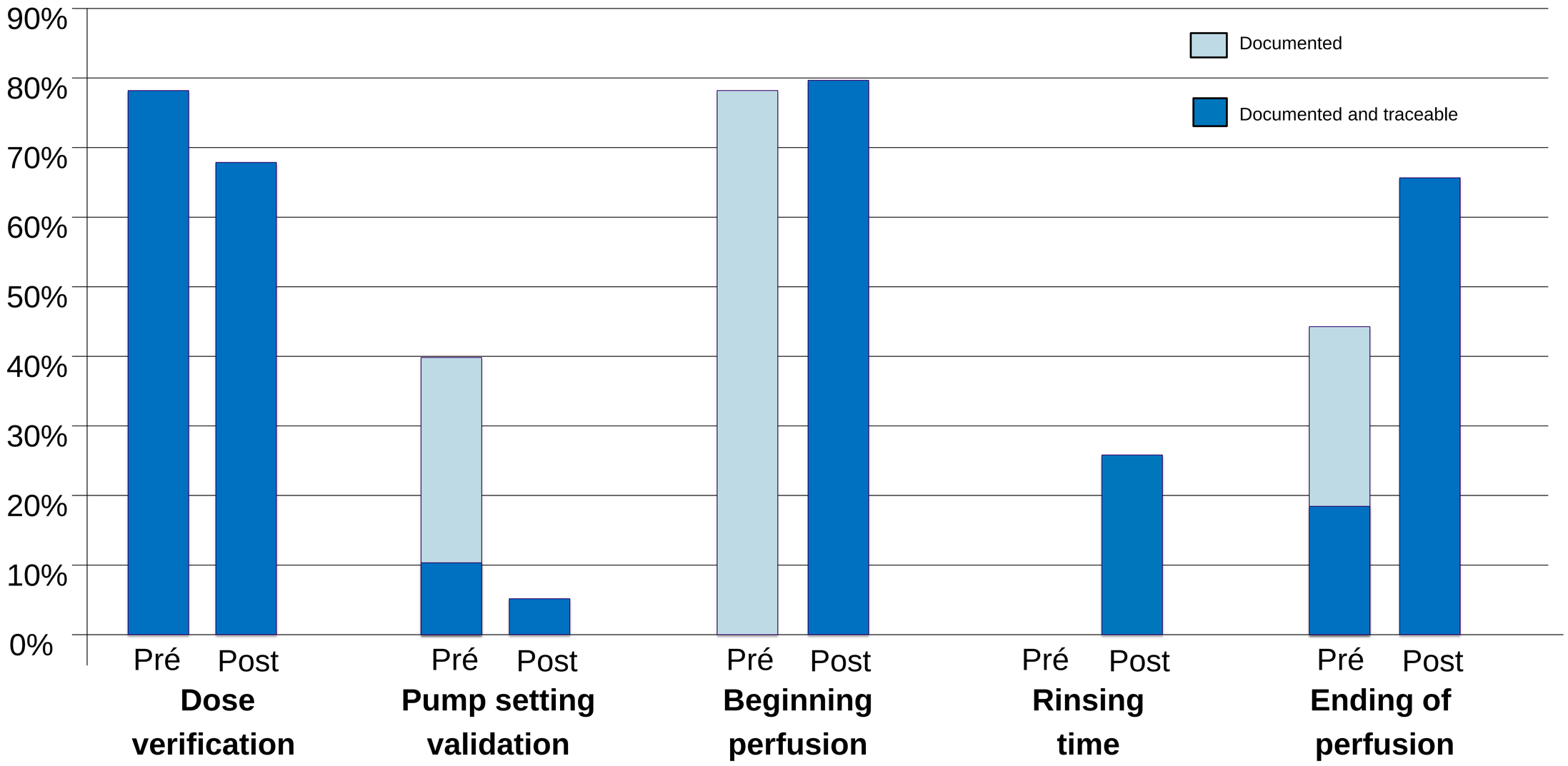
Analysis of 160 documentation of short intravenous infusion chemotherapy administration in 2015

6. Audit / Results

Chemotherapy repartition and infusion time

Chemotherapy	N pre	N post	Infusion time (minutes)
Fludarabine	32	15	30
Busulfan	22	20	180
Cyclophosphamide	16	32	60-120
Methotrexate	10	12	15
Melphalan	0	1	30
Total	80	80	

6. Audit / Results



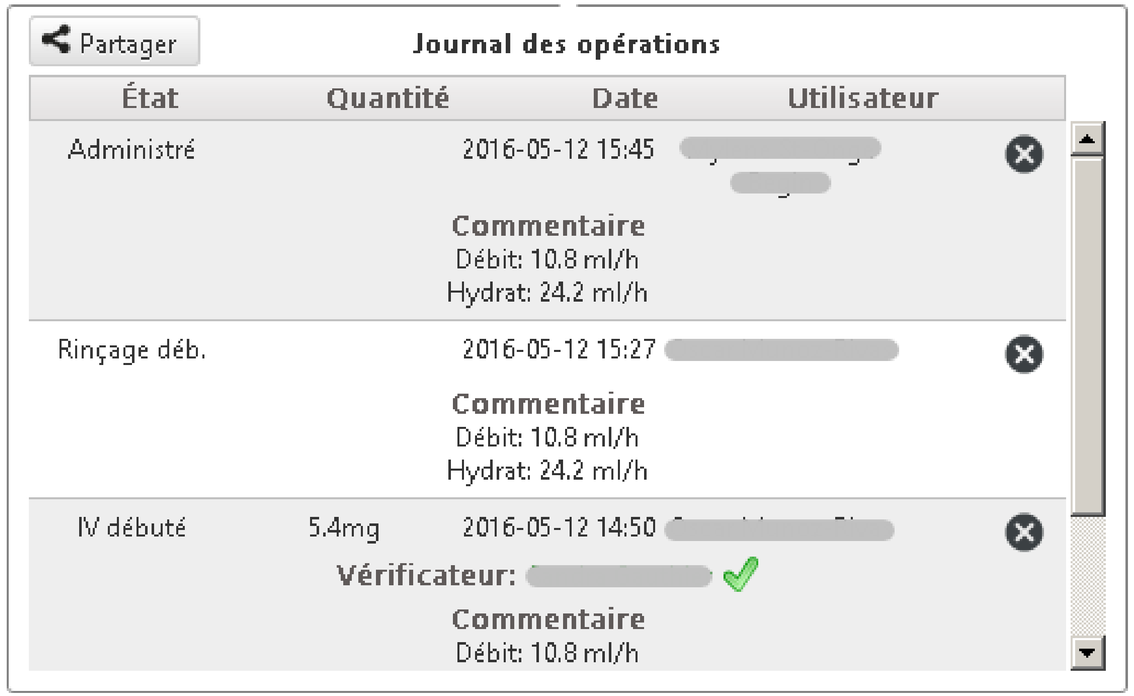
6. Audit / Results

Specific comments related to administration steps

- n pre: 4
- n post : 69

Subject of comments:

- Infusion rate of chemotherapy
- IV line used for chemotherapy infusion
- Infusion rate of hydration IV during chemotherapy



7. Discussion

Requirements for paper documentation were:

- Time of chemotherapy administration with double signature
- Time of ending infusion

Audit results post eMAR show that without asking nurses to change their documentation practice:

- Quality
- Quantity
- Tractability

Had improved !!!

7. Discussion

The software design had an impact on documentation and traceability

- While documentation of some steps decreased, it improved for other steps.
- Overall, the rate of documentation is the same
- The number of traceable steps increased

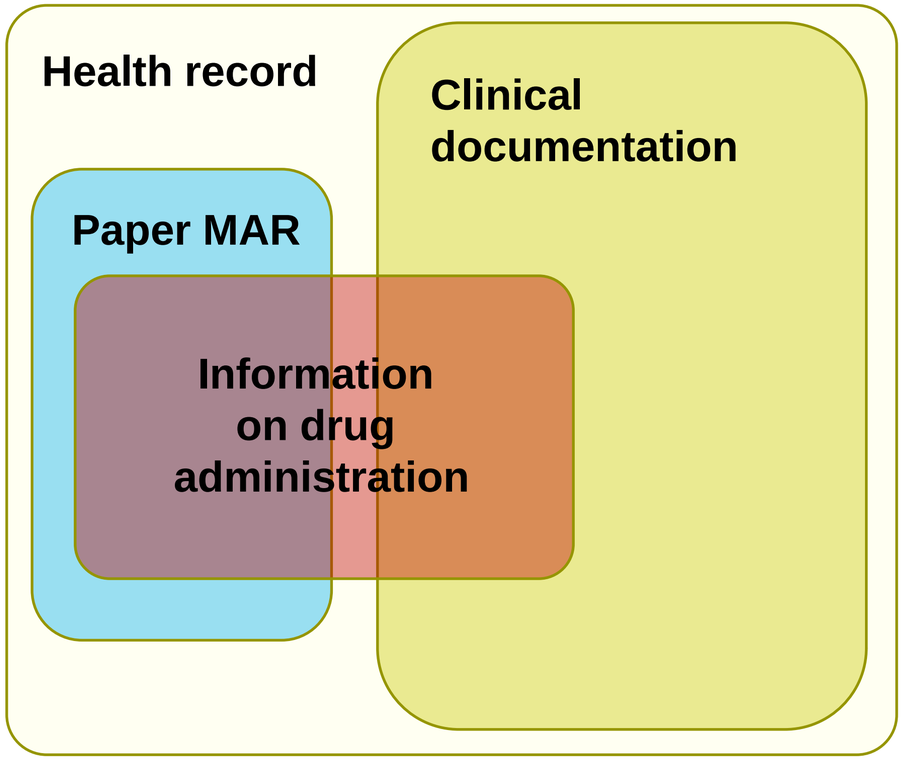
Increased documentation of “Beginning infusion”, “Rinsing time” and “Ending of infusion” help nurses and doctors to:

- Better schedule the next dose
- Better time antiemetic administration
- Time more precisely blood sample collection
- Obtain precise information for clinical research purpose

Training needs to be provided to improve documentation and traceability

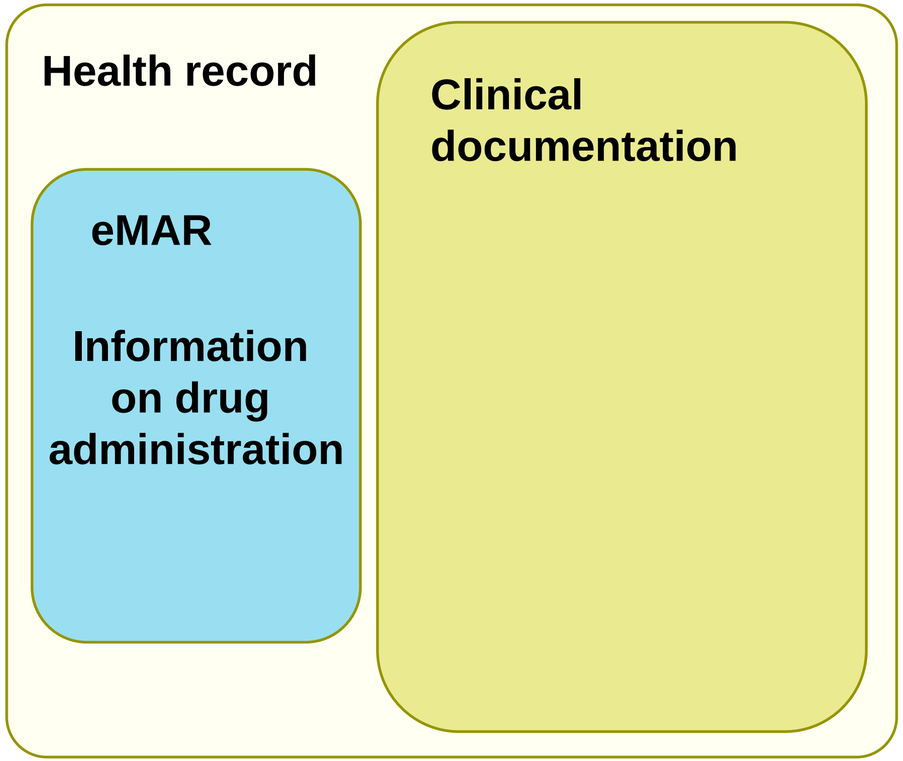
7. Discussion

Before



Documented | Traceable

Goal



Documented and traceable

8. Conclusion

Implementation of eMAR without making change in nursing documentation practice shows the real impact of informatics and the importance of how a system is configured.

Specific workflow for documentation of intravenous chemotherapy in our eMAR seems to:

- Contribute to best nursing practice
- Allow for traceability of important steps of chemotherapy administration

The flexibility of our eMAR system gives us the opportunity to build other specific workflows to document and track all the steps of drug administration, especially high alert medications.

Contact

Geneviève Mercier

Clinical Nurse Specialist in Informatics

CHU Sainte-Justine

3175, Chemin de la Côte-Sainte-Catherine
Montréal (Québec) H3T 1C5

genevieve.mercier.hsj@ssss.gouv.qc.ca

chusj.org

Denis Lebel

Pharmacist

CHU Sainte-Justine

3175, Chemin de la Côte-Sainte-Catherine
Montréal (Québec) H3T 1C5

denis.lebel.hsj@ssss.gouv.qc.ca

chusj.org

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