INTERNATIONAL JOURNAL OF CURRENT ADVANCED RESEARCH
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 12; Issue 11; November 2023; Page No.2653-2656
DOI: http://dx.doi.org/10.24327/ijcar.2023.2656.1580

Research Article

STUDY OF THE PERTINENCE OF THE PRESCRIPTION OF LABILE BLOOD PRODUCTS AT THE BLOOD TRANSFUSION CENTER OF THE MOHAMED V MILITARY TRAINING HOSPITAL/FACULTY

Enneffah Lamyaa, Tarbi Mohamed, Cherkaoui Naoufal, Brahmi Achraf, Belmekki Abdelkader

Mohammed V Military Teaching Hospital Faculty of Medicine and Pharmacy (University Mohammed V), Rabat, Morocco

ARTICLE INFO

Article History:
Received 28th October, 2023
Received in revised form 5th November 2023
Accepted 15th November, 2023
Published online 28th November, 2023

Key words:
Non-conformity-Pertinence-Labile blood product-Prescription

ABSTRACT

The prescription of labile blood products (LBP) is a crucial step in the transfusion chain. It is subject to numerous insufficiencies which make it a weak link. Our objectives are, on the one hand, to detect and analyze these deficiencies, and on the other hand, to propose measures to reinforce transfusion safety by improving the relevance of the prescriptions of LBP. This work is an observational cross-sectional analytical non-interventional study conducted over 12 months between January and December 2021. It evaluated 5456 LBP orders received at the Blood Transfusion Center of the Mohammed V Military Training Hospital in Rabat. A total of 204 (4%) prescriptions were compliant. Non-compliance was found in all sections of the order, represented mainly by lack of accuracy of biological data (98%), lack of clinical information (95%), and failure to indicate the degree of urgency (93%). No prescription had all seven headings completed and no headings were compliant on 92 prescriptions. Despite the importance of these data, we have established a negative finding concerning their ratio during prescriptions. The control of this worrying result represents a real challenge and requires the implementation of corrective measures refining the act of prescription.

INTRODUCTION

Transfusion safety and hemvigilance are ensured by controlling all stages of the transfusion chain, where prescribing is crucial, but it is subject to numerous shortcomings that make it a weak link. Our objectives are to detect and analyze these insufficiencies, and to propose measures to reinforce transfusion safety by improving the relevance of LBP prescriptions.

MATERIALS & METHODS

This is an observational cross-sectional analytical non-interventional study of the appropriateness of LBP prescriptions received at the blood transfusion center (BTC) of the Mohammed V military training hospital (MVMTH) in Rabat. Sampling was of the comprehensive type covering all LBP prescriptions received in the BTC during the study period between 01-01-2021 and 31-12-2021. For purposes of precision and accuracy, we decided to assess compliance of each of the items individually, as well as compliance of the prescriptions as a whole before considering the actual appropriateness of the prescriptions found to be compliant.

- The patient identity section is considered correctly completed if the full name, gender, date of birth, and PPI are present whether it is a handwritten identity or a label.
- The "origin of the prescription" section is considered to be correctly completed if the service, stamp and signature of the prescribing physician are present.
- The clinical information section is considered to be correctly completed when the following two criteria are met:
  - The mention of a diagnosis or reason for transfusion
  - The mention of weight or at least one medical history
- The biological information section is considered to be properly completed when the following two criteria are met:
  - The mention of ABO-Rh blood grouping or a request for grouping
  - The mention of the haemoglobin or platelet level
- The "LBP characteristics" section is considered to be correctly completed if the type of LBP, the number of units, and the processing and/or qualifications applied are present.
- The degree of urgency must be indicated.
  - The "general parameters" section must contain at least two of the following three criteria:
  - Prescription date
  - Sampling date
  - Scheduled transfusion date

Corresponding author:* **Enneffah Lamyaa
Mohammed V Military Teaching Hospital/Faculty of Medicine and Pharmacy (University Mohammed V), Rabat, Morocco

An order is said to be compliant when:

- The 12 main criteria are present (first and last name, PPI, gender, date of birth, diagnosis, Hb or platelet count, type of LBP, number of units, processing and/or qualifications, stamp, requesting department, prescription date) AND
- At least 3 secondary criteria are present (at least one history, mention of absence of history, weight, ABO rhesus blood grouping, request for grouping, degree of urgency, collection date, scheduled transfusion date, signature).

5456 orders corresponding to the delivery of 10064 bags of RGCs, 872 bags of APCs, 504 mixtures of SPCs and 2244 bags of FFPs were received at the BTC during the study period. All of our results are shown in Table I. The mean age of the recipients of these LBPs is 51.9 years with age extremes ranging from 3 days to 98 years. Men are the most transfused with a sex ratio of 1.65. 47% of the prescriptions came from medical services dominated by the clinical hematology service (53%), 28% from surgical services dominated by the cardiovascular surgery service (36%), and 25% from so-called "hot" services, 71% of which came from the medical-surgical emergency service.

Table1

	Frequency (nb)	**Percentage (%)**
First and last name	5452	99,9%
PPI	5228	95,8%
Date of birth	4824	88,4%
Sex	4824	88,4%
Label	4664	85,5%
Patient identity	**4664**	**85,5%**
Requesting department	5426	99,5%
Identity of the prescribing physician	5312	97,4%
Signature of the prescribing physician	5432	99,6%
Origin of the request	**5302**	**97,2%**
Diagnosis or reason for transfusion	1108	20,3%
Weight	6	0,1%
Background	202	3,7%
Clinical Information	**254**	**4,7%**
Blood count data	1026	18,8%
- Hemoglobin (Hb) level	708	13,0%
- Platelet rate (PLR)	248	4,5%
- Hb rate + PLR rate	70	1,3%
Grouping	746	13,7%
- Grouping request	470	8,6%
- 1st determination	150	2,7%
- 2nd determination	126	2,3%
Biological information	**112**	**2,0%**
Type of LBP	5240	96,0%
- RGC	3522	64,6%
- CP	968	17,7%
- PFC	106	1,9%
- RGC + CP	166	3,0%
- RGC + PFC	310	5,7%
- CP + PFC	34	0,6%
- RGC + CP + PFC	134	2,5%
Number of units	5180	94,9%
Transformations and/or qualifications	1104	20,2%
- Standards	54	1,0%
- Phenotyped+leukoreduced	944	17,3%
- Irradiated	42	0,8%
- Phenotyped	42	0,8%
- leukoreduced	8	0,1%
- Compatibility	8	0,1%
- Deplasticized	6	0,1%
Characteristics of the LBP	**1102**	**20,2%**
Degree of urgency	**390**	**7,1%**
- Urgent	378	6,9%
- Vital emergency	10	0,2%
- Discharge	2	0,0%

Date of prescription	4420	81,0%
Collection date	528	9,7%
Expected date of transfusion	462	8,5%
General parameters	**726**	**13,3%**
Conforming Orders	**204**	**3,7%**

When the reason for transfusion was mentioned, it was anemia in 22.9% of cases, hemorrhagic syndrome in 17.6%, acute leukemia in 11.5%, and surgery in 9.9% of cases. The reported history was transfusion-related in 42 prescriptions, whereas the number of previous pregnancies was not mentioned in any prescription. Regarding the ABO rhesus grouping of recipients, group O+ was the most frequent (47.5%), followed by group A+ (29.5%). While recipients with group AB- represented only 0.4%. The distribution of groups O-, A-, B+, B- and AB+ was 6.8%, 1.6%, 10.3%, 1.0% and 1.1%, respectively. The indication for transfusion and the Hb or PLR level were mentioned together on 542 prescriptions. The average RGC consumption was 2.13 units per patient. The average transfusion of APCs and MCPS was 1.02 bags and 8.29 CPS respectively. While the average transfusion of FFP was 5.35 bags.

Table II

Number of compliant items per order	Frequency (nb)	Percentage (%)
0	92	1,7%
1	580	10,6%
2	2846	52,2%
3	1508	27,6%
4	382	7,0%
5	44	0,8%
6	4	0,1%
7	0	0,0%

DISCUSSION

Despite the importance of the data in our study, we found a negative relationship between the data and prescriptions by identifying only 204 compliant prescriptions. Furthermore, the prescription compliance on the writing level alone does not determine its relevance. Omissions occurred in all sections, and compliance varied by section. The origin of request and patient identity sections were the most compliant. The high compliance rate for the patient identity section can be explained by compliance with prescription labeling, a practice that is mandatory within MVMTH and that prescribers are accustomed to performing. It is crucial to note that in the absence of a label, no prescriber correctly completed this section. This reinforces our hypothesis. In addition to the usefulness of the parameters of this section during the delivery of LBP, as they allow the identification of patients and the control of the adequacy between the prescription and the patient, especially in the context of Morocco where homonyms are not so rare, they intervene in the choice of the LBP to transfuse.

A real problem of traceability is generated by the omission of the requesting service, which constitutes an obstacle to the delivery of LBP, however, the absence of the prescriber's identity poses a problem of professional, legal, civil and penal responsibility. Clinical-biological information is one of the of the type and quantity of LBP to be transfused and in the prevention of transfusion events. Nevertheless, these two items represented the highest rates of non-compliance. The omission of ABO rhesus blood grouping could be explained by the presumption of prescribing physicians that it is routinely performed at the BTC, and that its absence on prescriptions will hardly affect the usual transfusion process.
The adequacy between the need and the demand for LBP in terms of type and quantity makes it possible to divert the destiny of the surplus, especially in our context of shortage, from incineration to a more judicious use. Hence the importance of accurate LBP characteristics.

Depending on the degree of urgency of the request, traditional transfusion rules can be adapted, while respecting the logic of transfusion safety. For example, the time required to obtain LBP may take precedence over the time required to obtain immunohematological test results. The mention of the date of prescription is essential because it gives an idea of the period of validity of the request, as well as the follow-up of the evolution of certain pathologies. The precision of the date of sampling allows the BTC biologist to foresee a bad conservation of the sample. The appropriateness of a LBP prescription is established when the anticipated benefit of a transfusion outweighs the potential negative consequences. This means that a prescription is relevant when it is both editorially compliant and justified according to the indications for transfusion determined by the latest national and international recommendations.

Examples of irrelevance in compliant prescriptions include: the prescription of non-phenotyped LBPs in patients who have undergone multiple transfusions or are likely to receive iterative transfusions, or in female patients before the end of the reproductive period, the prescription of standard LBPs in a patient with a positive RAI, the prescription of 8 RGCs in the same patient outside the context of a massive transfusion, and the prescription of LBPs for reasons that do not, in and of themselves, justify the transfusion decision.

These situations can place patients at risk in an unwarranted way that compromises transfusion safety. In order to determine the causes of these irrelevancies, the Ishikawa method was used as a basis for reflection. Lack of training or awareness, lack of time, laziness or prescribing habits that may depend on the prescriber's grade and the latter's confidence that the BTC will send the most suitable LBP may explain the shortcomings highlighted. All these causes are directly linked to the "prescriber" entity, which is probably the most important branch of the diagram. The act of writing may be affected by the absence or non-dissemination of decision-making procedures or algorithms, the lack of guidance for young prescribers and the trivialization of the importance of this act in the transfusion chain. The lack of a form specifically designed for LBP orders in our hospital may be responsible for the high rates of irrelevance identified. The

requesting department and its operating habits combined with a lack of management commitment may be decisive. The quality of the editorial content can be a cause of irrelevance. This content can be unreadable, insufficient or even erroneous. The set of failures that we were able to identify during our study led us to develop several proposals that, we hope, will help to overcome these shortcomings:

- Raising prescribers' awareness of the problem by strengthening communication between the BTC and the functional units and by periodically reminding them of the importance of filling out the form correctly and complying with the recommendations in order to combat the considerable turnover of doctors.
- Continuous training of prescribing physicians through the establishment of interdisciplinary staffs without forgetting the medical students who must benefit from both theoretical and practical initial training.
- The diffusion and harmonization of procedures, guidelines and protocols specific to the BTC in the various functional units.
- The design of a form adapted to the needs of the BTC and practical for the prescribers.
- The use of the computer tool can be carried out at three levels: computerized formulary, prescription assistance software and computer-assisted prescription adding intelligence to the other two levels.
- The improvement of the Moroccan legislation and regulation deficits.
- The use of a transfusion record.

At the end of our study and in the light of our results, we emphasize that without a real willingness on the part of prescribers to change their habits, there can be no palpable improvement despite the corrective measures proposed. This leaves us with a final injunctive solution represented by the refusal of delivery in the face of any prescription deemed irrelevant.

CONCLUSION

The high rate of irrelevance of LBP prescriptions identified in our work could have negative repercussions on patient transfusion safety and on the optimization of LBP use in the medium and long term.

The control of this worrying result represents a real challenge and requires the implementation of corrective measures to refine the prescribing act. Prescribing omissions and errors are not limited to LBP prescriptions. Prescriptions for drugs and biological and radiological paraclinical tests are also affected by this problem.

References

Al-Riyami, A.Z. and Daar, S. (2018) 'Transfusion in Haemoglobinopathies: Review and recommendations for local blood banks and transfusion services in Oman', Sultan Qaboos University Medical Journal [SQUMJ], 18(1), p. 3. Available at: https://doi.org/10.18295/squmj.2018.18.01.002

Biais, M. et al. (2012) 'Stratégie transfusionnelle'.

Conseil de l'Europe. Guide pour la préparation, l'utilisation et l'assurance de la qualité des composants sanguins (Recommandation N° R (95) 15) 19ième édition. Strasbourg : Edition du conseil de l'Europe. 2017 ; pp 290-291'.

Conseil supérieur de la santé. « Bonnes pratiques de transfusion à l'usage des hôpitaux » Bruxelles ; 2010'.

Djoudi, R. (2013) 'Transfusion de plasma : produits-indications', Transfusion Clinique et Biologique, 20(2), pp. 47-54. Available at: https://doi.org/10.1016/j.tracli.2013.02.005.

Édouard, B. (2009) 'Pratique nouvelle de la transfusion sanguine, J.-J. Lefrère, P. Rouger. Elsevier Masson, Issy-les-Moulineaux (2009). 160 pp.', Le Pharmacien Hospitalier, 44(4), p. 207. Available at: https://doi.org/10.1016/j.phhp.2009.09.003.

Romdhane, A.R.B., Ayoub, W.B. and Gouider, E. (2015) 'evaluation des non-conformités des demandes de transfusion des concentres de globules rouges evaluation of non-compliance of transfusion requests of packed red blood cells'.

Sapey, T. et al. (2017) 'Évaluation des pratiques de prescriptions des établissements de santé du Berry lors de la délivrance de produits sanguins labiles', Transfusion Clinique et Biologique, 24(1), pp. 28-29. Available at: https://doi.org/10.1016/j.tracli.2016.08.006.

How to cite this article:

Enneffah Lamyaa, Tarbi Mohamed, Cherkaoui Naoufal, Brahmi Achraf and Belmekki Abdelkader., 2023, Study of the Pertinence of the Prescription of Labile Blood Products at The Blood Transfusion Center of the Mohamed V Military Training Hospital. *International Journal of Current Advanced Research.*12 (11), pp.2653-2656.

****