

Towards characterization of acute pain transfusion reactions (APTR)

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Act of 4th January 1993

➤ Purpose of haemovigilance

- To prevent the occurrence of adverse reactions (AR) in the use of blood components (BC intended for transfusion).

➤ Requirements

- Notification, to the competent authorities, of all AR occurring in the recipients of BC, regardless the levels of severity and imputability.
- High level of traceability : ability to trace each individual unit of blood or blood component from the donor to its final destination, whether they have been used or not.

➤ Definition

- Haemovigilance is a national system of surveillance and alert, from blood collection to the follow-up of the recipients, gathering and analysing all untoward reactions of blood transfusion in order to identify their causes and to prevent their recurrences.

French haemovigilance network

Ministry of Health

National

ANSM (National agency for medicines and health products safety)

ANSP *

EFS (National Blood Service)

CTSA (Military Blood Transfusion Centre)

Donors epidemiology

RHC (Regional haemovigilance coordinators)

Regional

HvC (Regional blood establishments)

Local

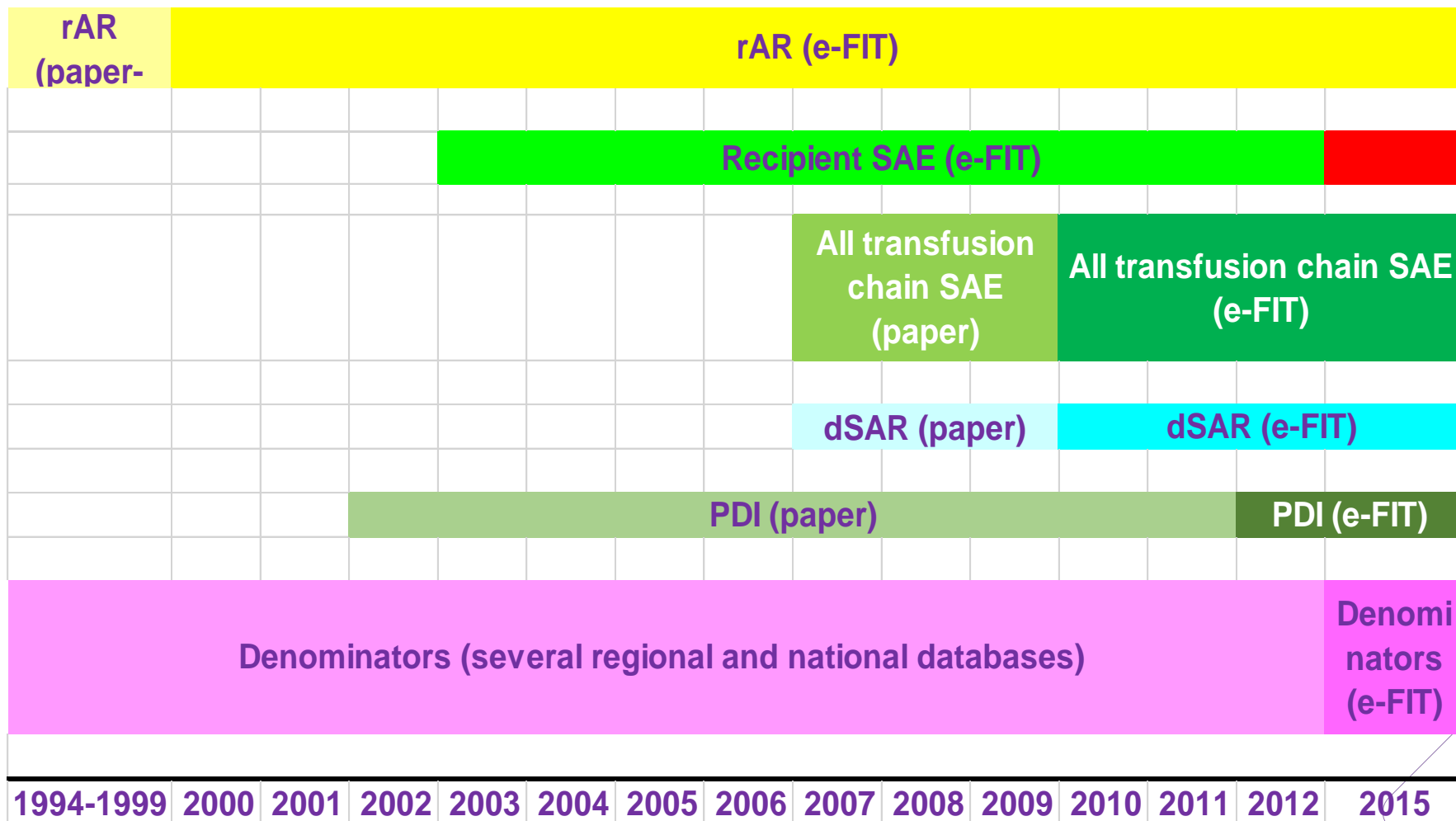
Local blood centers

Hospitals, clinics and hospital blood banks

Healthcare professionals

ANSP*: French National Agency for Public Health Surveillance

Time table of the implementation of the French Haemovigilance in e-FIT IT system



rAR: recipient Adverse Reaction; e-FIT: electronic Format Incident Transfusion; SAE: Serious Adverse events; dSAR: donor Serious Adverse Reaction; PDI: Post Donation Informations

French recipients data 2016

- **520,591** patients have been transfused: 51% are women and 49% are men.
- The rate of transfused patients was 7.8 per 1000 inhabitants.
- Each patient received an average of 5.6 blood components.
- **3,107,106** Blood Components have been issued:
 - ✓ 80% of RBC.
 - ✓ 10% of platelets.
 - ✓ 10% of plasma.
- Traceability of blood components issued: 99.2%
- Wastage of blood components issued: < 1%

Adverse reaction classification

- Febrile Non-hemolytic Transfusion Reaction (FNHTR)
- Delayed Serologic Transfusion Reaction (DSTR)
- Allergic reaction
- Acute Hemolytic Transfusion Reaction (AHTR)
- Delayed Hemolytic Transfusion Reaction (DHTR)
- Transfusion-Transmitted Bacterial Infection (TTBI)
- Transfusion Related Acute Lung Injury (TRALI)
- Transfusion Associated Circulatory Overload (TACO)
- Transfusion Associated Dyspnea (TAD)
- Hypotensive Transfusion Reaction (hTR)
- Hypertensive Transfusion Reaction (HTR)
- Hemosiderosis reactions
- Transfusion-Transmitted Viral Infection (TTVI): HBV, HCV, HIV-1/2, HTLV I/II, CMV, HEV, WNV, dengue, chikungunya, etc.
- Transfusion-Transmitted Parasitical Infection (TTPI): Malaria, Trypanosomiasis
- Post transfusion purpura (PTP)
- Transfusion Associated Graft-Versus-Host Disease (TA-GVHD)
- Unclassifiable Complication of Transfusion (UCT)

Background (1)

- In the French haemovigilance system, all transfusion reactions, whatever their severity and imputability, must be reported.
- In such a comprehensive context, nearly 3% are not identified as one of the many standard diagnoses. They are called “Unclassifiable complications of transfusion (UCT)”.
- More rare or less characterized diagnoses can contribute to these UCT.
- We were interested in **acute pain transfusion reactions (APTR)**, a new diagnosis described in 2001 that is not part of the French classification.

Background (2)

- This category of APTR has not been widely published. However, it has been described:
 - Orton and all. Acute pain transfusion reactions: An under recognized adverse transfusion event associated with leukoreduced components (abstract). *Blood* 2001; 98;
 - Davenport and all. Acute pain transfusion reaction associated with transfusion of HLA class II antibodies. *Transfusion* 2003; 43:111A;
 - Robertson D and Davenport. Acute pain transfusion reactions. *Popovsky MA; transfusion reactions* 2007, 2012;
 - Hardwick J, and all. Acute pain transfusion reaction. *Oncology Nursing* 2013; 40: 543–5. (case report);
 - Jennane S and all. Acute pain transfusion reaction. *Transfusion Clinique et Biologique* 21 (2014) 330–331 (case report);
 - J. Py, K. Boudjedir, A. Gautier, B. Cabezon, I. Sandid. Abstract of our team at the ISBT in Copenhagen: Pain epidemiology in immediate transfusion reactions; *Vox sanguinis* (2017) 112 (supplement 1), 5-295; poster referenced P-677.
- Some reports have also been notified in France describing this type of APTR occurring during procedures of therapeutic plasma apheresis (plasma exchange).

Methods

2000-2016

- Retrospective analysis of all completed notifications of ARs reported in France in these years (year of initial report) including the follow criteria:
 - Imputability 1 (possible), 2 (probable) and 3 (certain);
 - Severity 1 (non-severe), 2 (severe), 3 (life-threatening) and 4 (death);
 - Symptom "pain" present in the notification reports;
 - Delayed ARs are not included: alloimmunization, Sickle cell hemolysis, hemosiderosis, TTVI, PTP, TA-GVHD.
- To be sure to capture pure APTR, we only analyzed cases without any clinical or biological registered sign other than pain, and classified as UCT.

Results

Total ARs, confirmed reports, imputability 1-3, severity 1-4,
excluding delayed ARs , reported between 2000 and 2016
N = 70,082



Immediate transfusion reactions with pain
N = 5,032 (7.2%)



Immediate transfusion reactions with **ONLY pain**
N = 715 (1,0%)



Immediate transfusion reactions with **ONLY pain** classified
as UCT
N = 430 (0.6%)

Distribution by category of blood components

Immediate transfusion reactions with ONLY pain
classified as UCT
N = 430

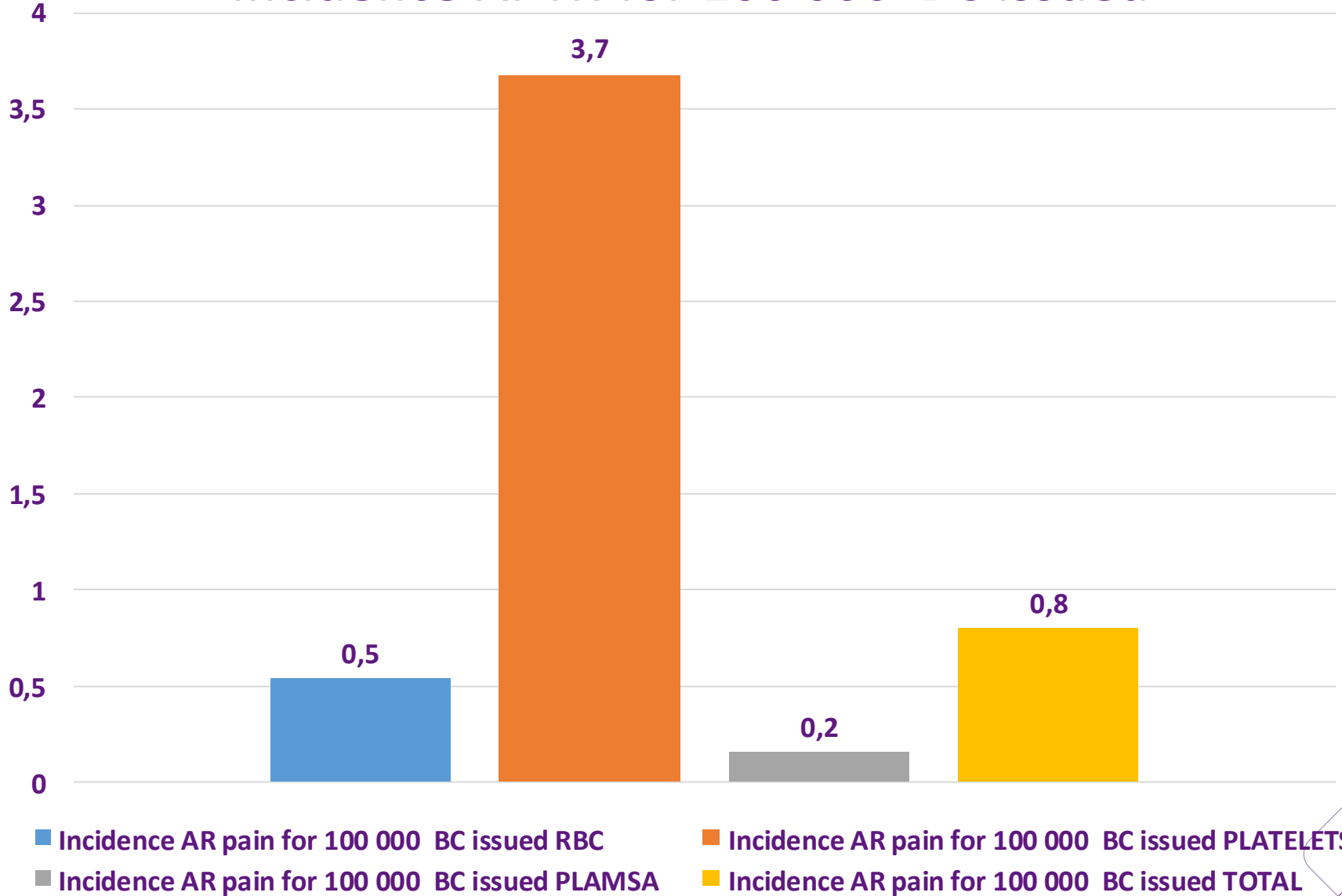
AR
attributed to
RBC
N = 227

AR attributed
to platelets
concentrates
N = 194

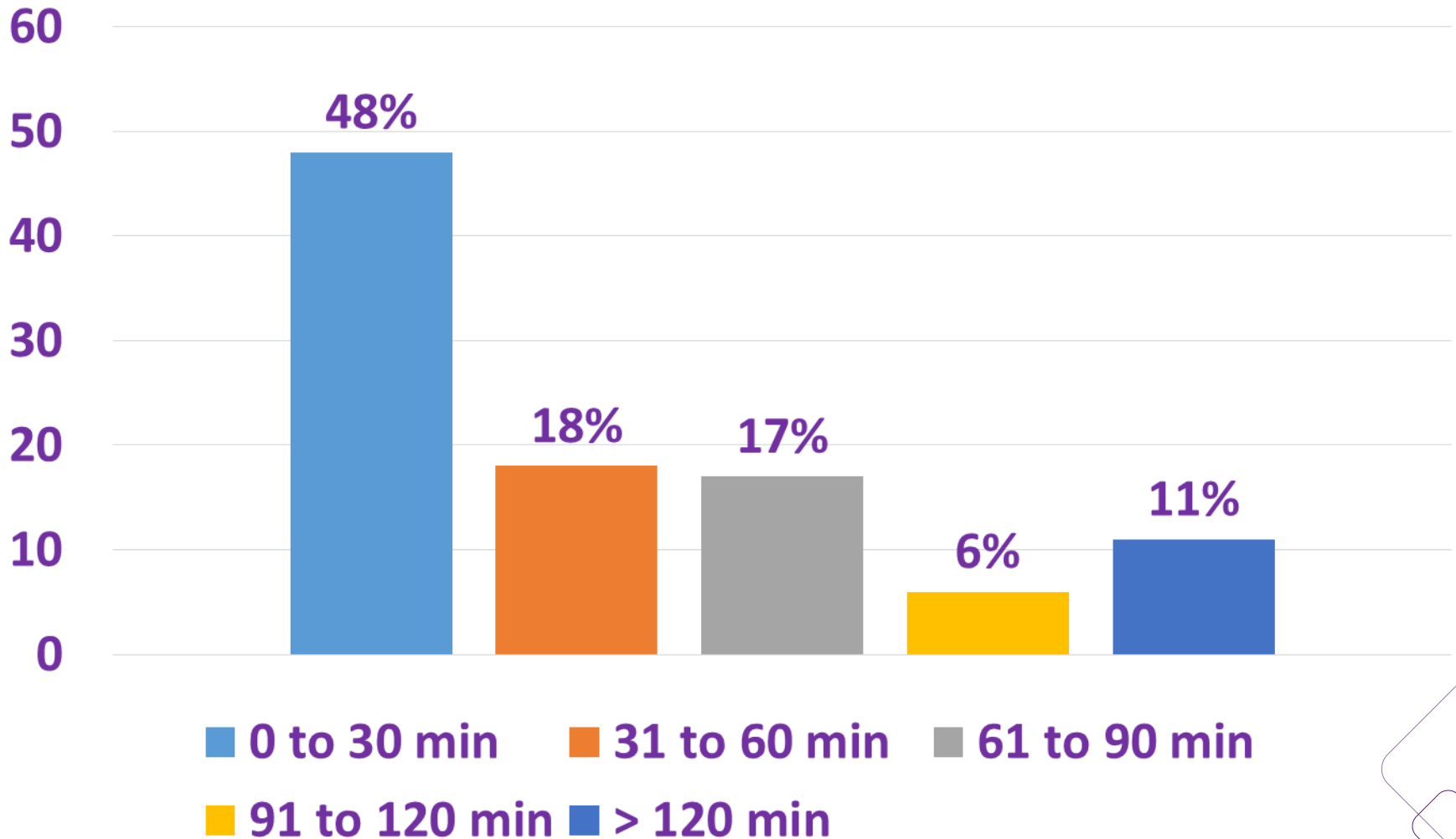
AR attributed
to plasma
N = 9

All blood components were leukocyte depleted

Incidence APTR for 100 000 BC issued



Interval between pain onset and beginning of transfusion



Pain location

Immediate transfusion reactions with ONLY pain
classified as UCT

N = 430

AR with
multiple
location
16%

AR with
abdominal
location
16%

AR with thoracic
location
13%

AR with lumbar
location
55%

Distribution of APTRs by levels of severity and imputability

		Imputability			TOTAL
		1	2	3	
Severity	1	328	81	16	425
	2	4	0	0	4
	3	0	1*	0	1
	TOTAL	332	82	16	430

* The case of severity 3 will be reassessed later

There is no APTR of severity 4 (death)

Conclusion (1)

- In an exhaustive haemovigilance reporting, it appears that **at least 0.6%** of transfusion reactions are only described with pain.

And

- May be seen as acute pain transfusion reactions.
- As previously described, pain location is mainly reported in the trunk and its time of occurrence is mostly during the first 30 mn of transfusion (48% between 0 and 30 mn).

Conclusion (2)

- The next step will be to build on this work to:
 - Elaborate a factsheet to harmonize the reporting;
 - Retrospective review of the previous reports of this APTR in “UCT” in view of their reclassification;
 - For this review, we propose to use the method already tested in the revision of the TRALI reports (See poster IHS Manchester: Evaluation of a new approach of expertise of the adverse reactions: Application to TRALI).



Acknowledgements

To all the actors of the national
haemovigilance network

THANK YOU

Avertissement

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