

7[^]

Conferenza Nazionale dei Servizi Trasfusionali

Vicenza | 24-26 maggio 2023



COSA ABBIAMO IMPARATO?

Ivo Beverina

ASST Ovest Milanese

Il sottoscritto, in qualità di Relatore
dichiara che

nell'esercizio della Sua funzione e per l'evento in oggetto, NON È in alcun modo portatore di interessi commerciali propri o di terzi; e che gli eventuali rapporti avuti negli ultimi due anni con soggetti portatori di interessi commerciali non sono tali da permettere a tali soggetti di influenzare le sue funzioni al fine di trarne vantaggio.



Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



Una considerazione...

IL TRASFUSIONISTA NON RIVESTE UN RUOLO MARGINALE, MA NEL CONTEMPO NON E' LA SOLA FIGURA PROFESSIONALE COIVOLTA NEL PBM



Quali i nostri ruoli chiave, quindi?

- *Impostare*, in accordo con gli altri specialisti coinvolti, *il programma multidisciplinare di interventi coordinati, finalizzato alla gestione peri-operatoria della risorsa “sangue del paziente”* (CNS. Raccomandazioni per l’implementazione del programma di Patient Blood Management. 1^a Ed.)
- *Valutare l’appropriatezza trasfusionale* in accordo con i criteri stabiliti dal COBUS (DM 2 Novembre 2015)
- Svolgere attività di **consulenza**
- **Promuovere la cultura** del PBM
- **Coordinare programmi** di PBM

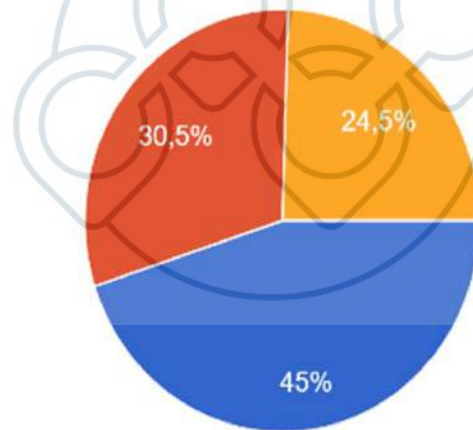




Survey multisocietaria (ACOI, SIAARTI, SIMTI, SidEM)

La correzione dell'anemia preoperatoria, ove possibile, viene effettuata:

318 risposte



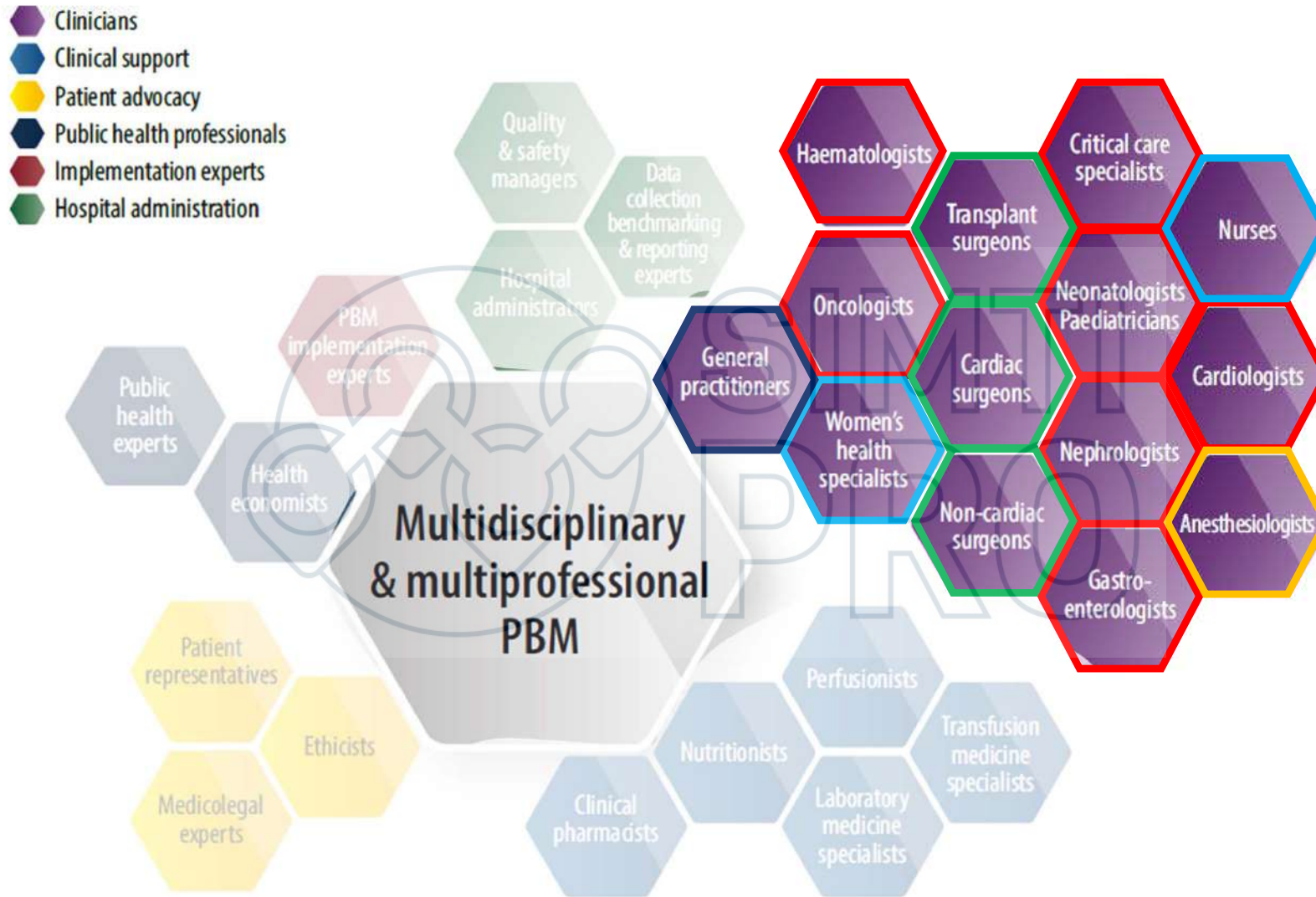
- In tutti i pazienti anemici (criteri WHO)
- In tutti i pazienti anemici, ma soltanto sotto un valore soglia inferiore ai criteri WHO (i.e. Hb < 100 g/L)
- In modo occasionale, su segnalazione del chirurgo/anestesista

Di quali mezzi abbiamo bisogno?

- Adeguata preparazione
- Personale commisurato all'attività
- Strutture adeguate
- *Endorsment* da parte dei gestori della *Clinical Governance*



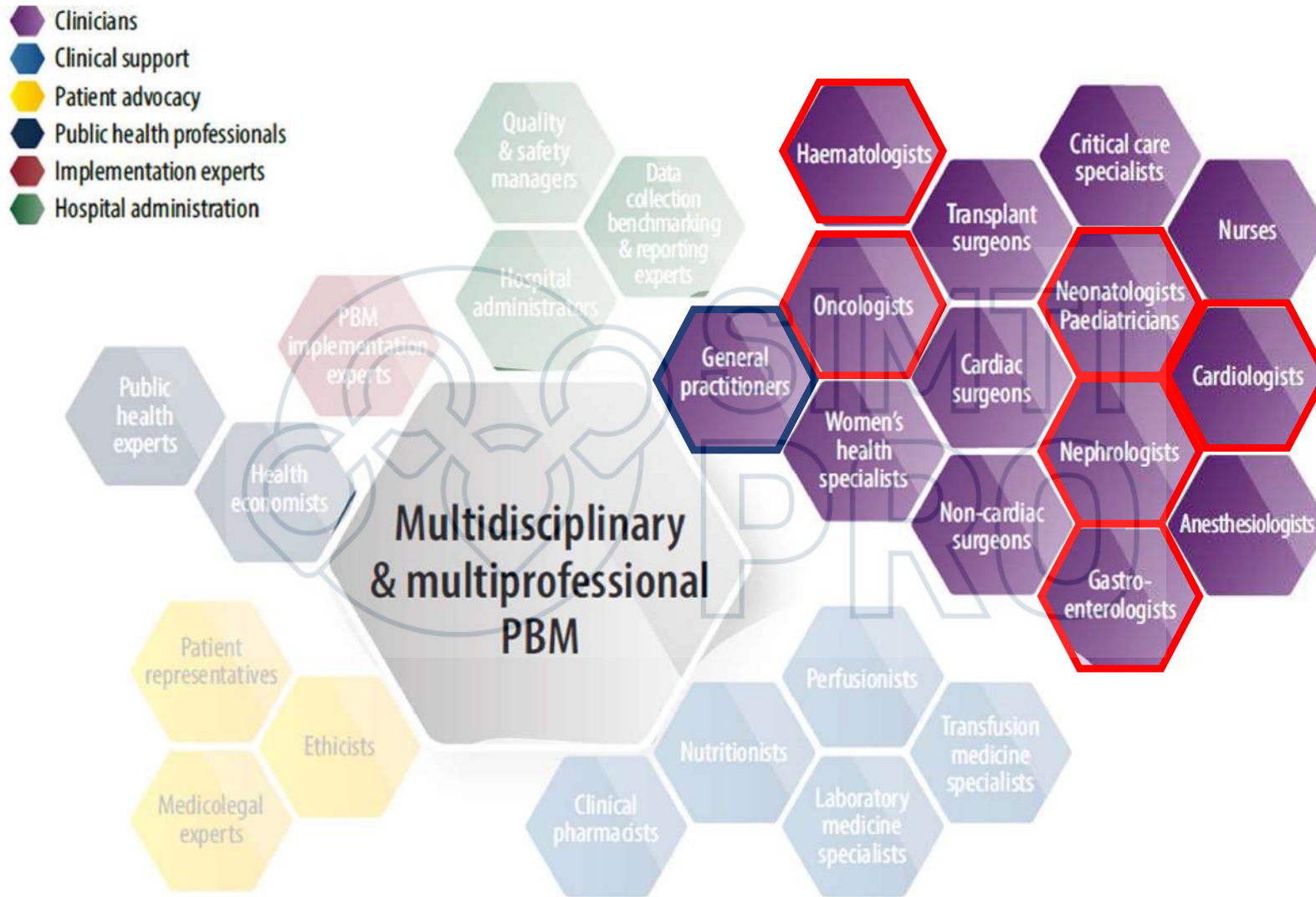
Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM





La torre di Babele - Pieter Brueghel il Vecchio - 1536

Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM





L'APPROCCIO PBM-BASED **PUO' E DEVE ESSERE**
APPLICATO ANCHE AD AMBITI DIFFERENTI DA
QUELLO CHIRURGICO

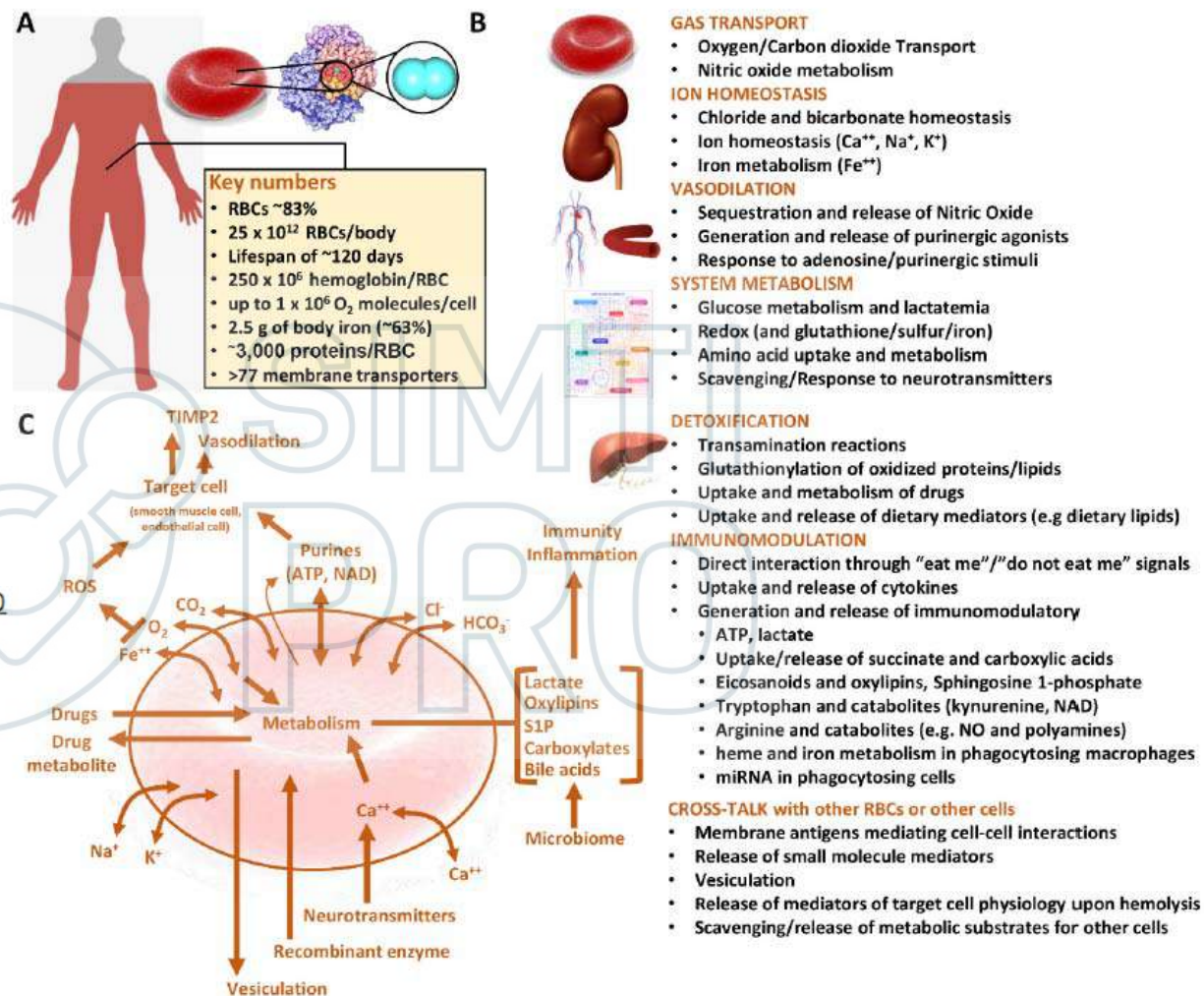
PROMOZIONE DELLA «BLOOD HEALTH»



Red blood cells as an organ? How deep omics characterization of the most abundant cell in the human body highlights other systemic metabolic functions beyond oxygen transport

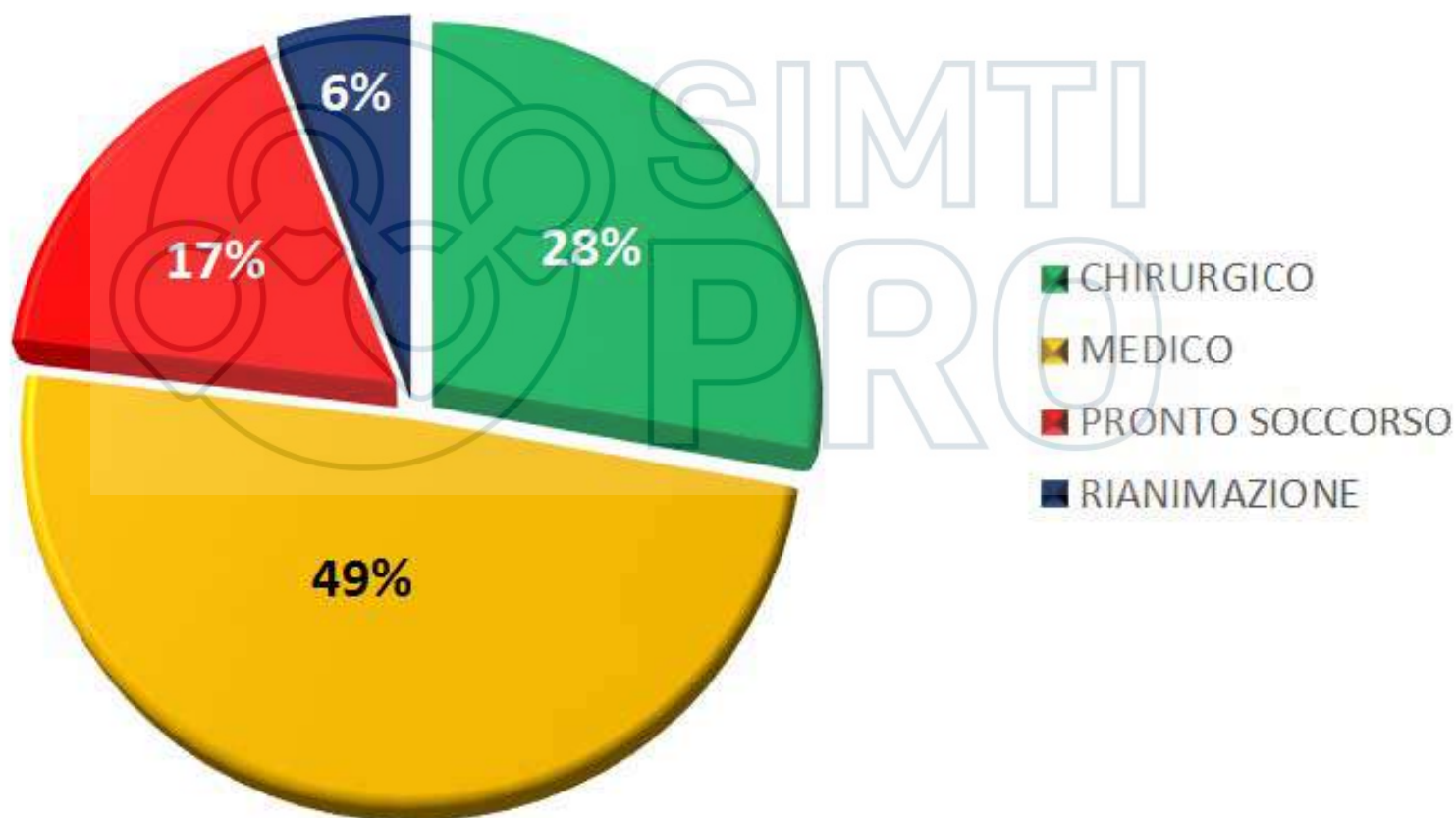
Travis Nemkov, Julie A. Reisz, Yang Xia, James C. Zimring & Angelo D'Alessandro

Expert Review of Proteomics, DOI: [10.1080/14789450.2018.1531710](https://doi.org/10.1080/14789450.2018.1531710)



Tipologia reparto di ricovero dei pazienti sottoposti a trasfusione di GRC

DMTE Milano Nord Ovest - 2022



Implementation of patient blood management strategies in an Israeli hospital: caught between hope and despair


Andrei Braester MD^{1,2} and Masad Barhoum MD^{1,2}



MARCH 2021

«In all six internal medicine departments a dramatic 56% reduction was achieved. In one department a 75% reduction was noted»

Appropriateness of packed red blood cells transfusions in chronic anemic patients in the emergency department: the TRANSFUS-ED retrospective analysis

Matteo Paganini¹  · Fabio Rigon² · Federico Rebusello³ · Vito Cianci³ · Irene Bertozzi⁴ · Maria Luigia Randi⁴

Internal and Emergency Medicine




Accepted: 11 April 2023

chronic anemic patients were classified as inappropriate if having the following characteristics:

- Asymptomatic patients without known cardiovascular ischemic disease (e.g., previous acute coronary syndrome, coronary artery bypass graft, percutaneous coronary intervention) and a Hb > 7 g/dL and ≤ 8 g/dL;
- Asymptomatic patients with Hb > 8 g/dL and < 10 g/dL;
- Patients with Hb ≥ 10 g/dL.

According to the criteria, 59.6% of the transfusions (205) were appropriately administered, mostly to patients with a Hb of less than 7 g/dL. Conversely, all the 139 inappropriate transfusions (except 1) happened at Hb levels between 7 and 10 g/dL, in asymptomatic patients

Appropriateness of Allogeneic Red Blood Cell Transfusions in Non-Bleeding Patients in a Large Teaching Hospital: A Retrospective Study

Piotr F. Czempik ^{1,2,*} , Dawid Wilczek ³, Jan Herzyk ³  and Łukasz J. Krzych ¹ 

J. Clin. Med. 2023

used. All RBC transfusions with pre-transfusion Hb concentration < 60 g/L were classified as appropriate irrespective of anemia signs and/or symptoms. When pre-transfusion

Studio multicentrico Italia - Spagna

(Barcellona - Legnano - Madrid - Bolzano - Udine - Roma - Saragozza - Navarra)

Efficacy and safety of high-dose intravenous iron as the first-choice therapy in outpatients with severe iron deficiency anemia

*Carlos Jericó ^{1,2,3}, Ivo Beverina ⁴, Manuel Quintana-Diaz ^{2,3,5}, Ugo Salvadori ⁶, Cristina Melli ⁷,
Maria Beatrice Rondinelli ⁸, Valle Recasens ⁹, Bruno Brando ⁴ and José Antonio Garcia-Erce ^{3,10,11}*

TRANSFUSION 2020;9999;1-7

**303 pazienti con Hb < 7.0 g/dL trattati
con terapia marziale endovena e non trasfusi
(età > 65 aa: 33.3%)**

58 pazienti (14,1%) con Hb < 6.0 g/dL

Pazienti con Hb < 7.0 g/dL trattati con ferro e.v.

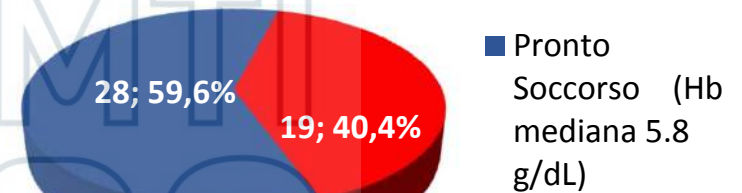
(Ospedale di Legnano - 47 pazienti - Periodo: giugno 2019 - maggio 2021)

A synchronized approach between Emergency Department and Anemia Clinic to intravenous iron treatment for very severe (Hb <7.0 g/dL) and extreme (<5.0 g/dL) iron-deficiency anemia: short-, medium- and long-term efficacy and safety analysis

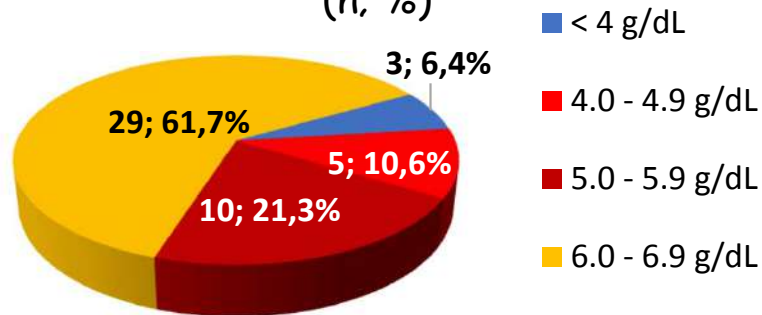
Ivo Beverina¹, Monica Ranzini²

Blood Transfus 2023; DOI 10.2450/2023.0199-22

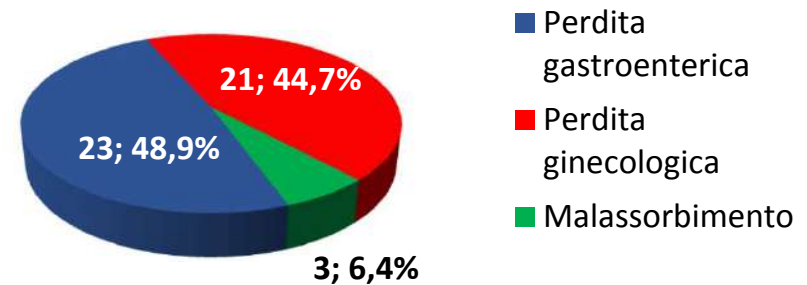
Sede del primo trattamento



Categorie di emoglobina (n; %)



Cause dell'anemia



A synchronized approach between Emergency Department and Anemia Clinic to intravenous iron treatment for very severe (Hb <7.0 g/dL) and extreme (<5.0 g/dL) iron-deficiency anemia: short-, medium- and long-term efficacy and safety analysis

Ivo Beverina¹, Monica Ranzini²

Blood Transfus 2023; DOI 10.2450/2023.0199-22

Table II - Comparisons between pre-, intermediate, and post-therapy parameters

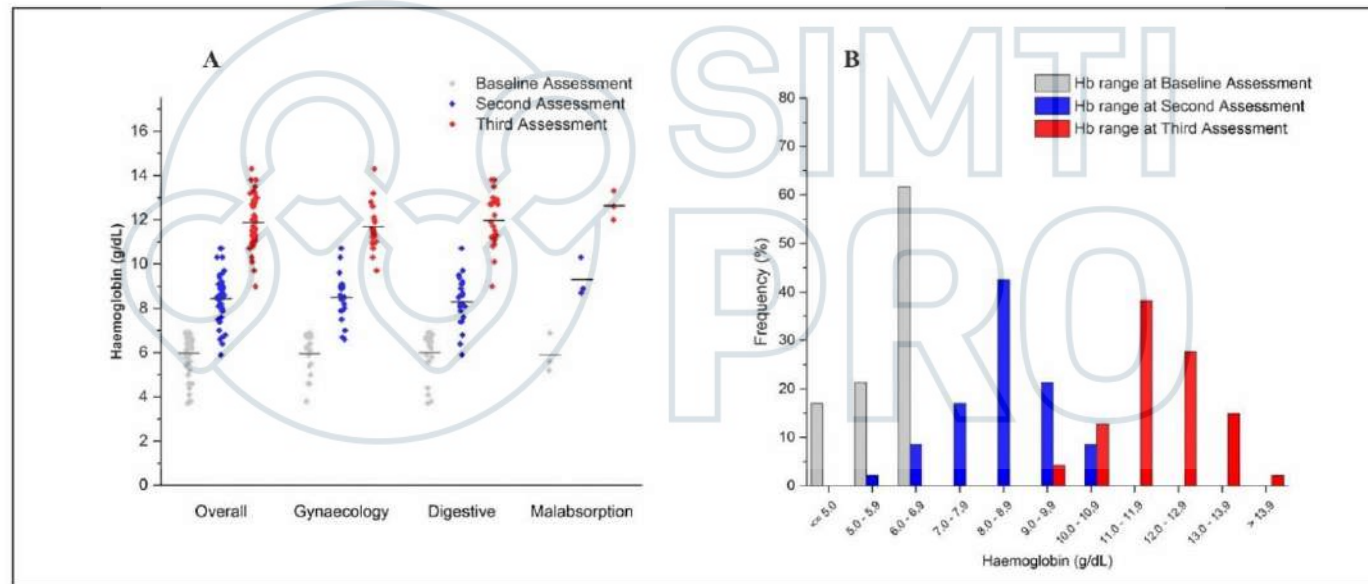
Parameter	Visits			p
	Baseline assessment	Second assessment	Third assessment	
FCM dose (g)	1.0 [1.0-1.0]	0.5 [0.5-1.0]	--	<0.001
Days from first infusion	--	10 (3)	35 (12)	--
Hemoglobin (g/dL)	6.4 [5.5-6.7]	8.5 [7.9-9.0]	11.7 [11.2-12.8]	<0.001
Δ Hb (g/dL)	--	2.3 [1.8-3.1]	5.8 [4.9-6.4]	--
MCV (fL)	61.7 [57.3-68.3]	73.2 [68.9-81.4]	83.1 [79.1-90.1]	<0.001
Reticulocytes (%)	n.a.	5.2 [3.9-8.6]	1.0 [0.6-1.5]	<0.001
Platelets (x 10 ³ /μL)	332 (111)	282 (105)	245 (77)	<0.001
TSat (%)	3 [2-4]	n.a.	21 [15-25]	<0.001
Ferritin (ng/mL)	4 [2-8]	n.a.	161 [80-335]	<0.001

A synchronized approach between Emergency Department and Anemia Clinic to intravenous iron treatment for very severe (Hb <7.0 g/dL) and extreme (<5.0 g/dL) iron-deficiency anemia: short-, medium- and long-term efficacy and safety analysis

Ivo Beverina¹, Monica Ranzini²

Blood Transfus 2023; DOI 10.2450/2023.0199-22

Figure 1. Haemoglobin recovery (A) and changes in haemoglobin range (B) from Baseline to First and Second Assessment



	Overall n.=47	ED n.=28	AC n.=19	p
Follow-up (days)	658 [444-751]	589 [383-766]	680 [514-749]	0.474
Patients transfused at follow-up	0 (0)	0 (0)	0 (0)	1.000

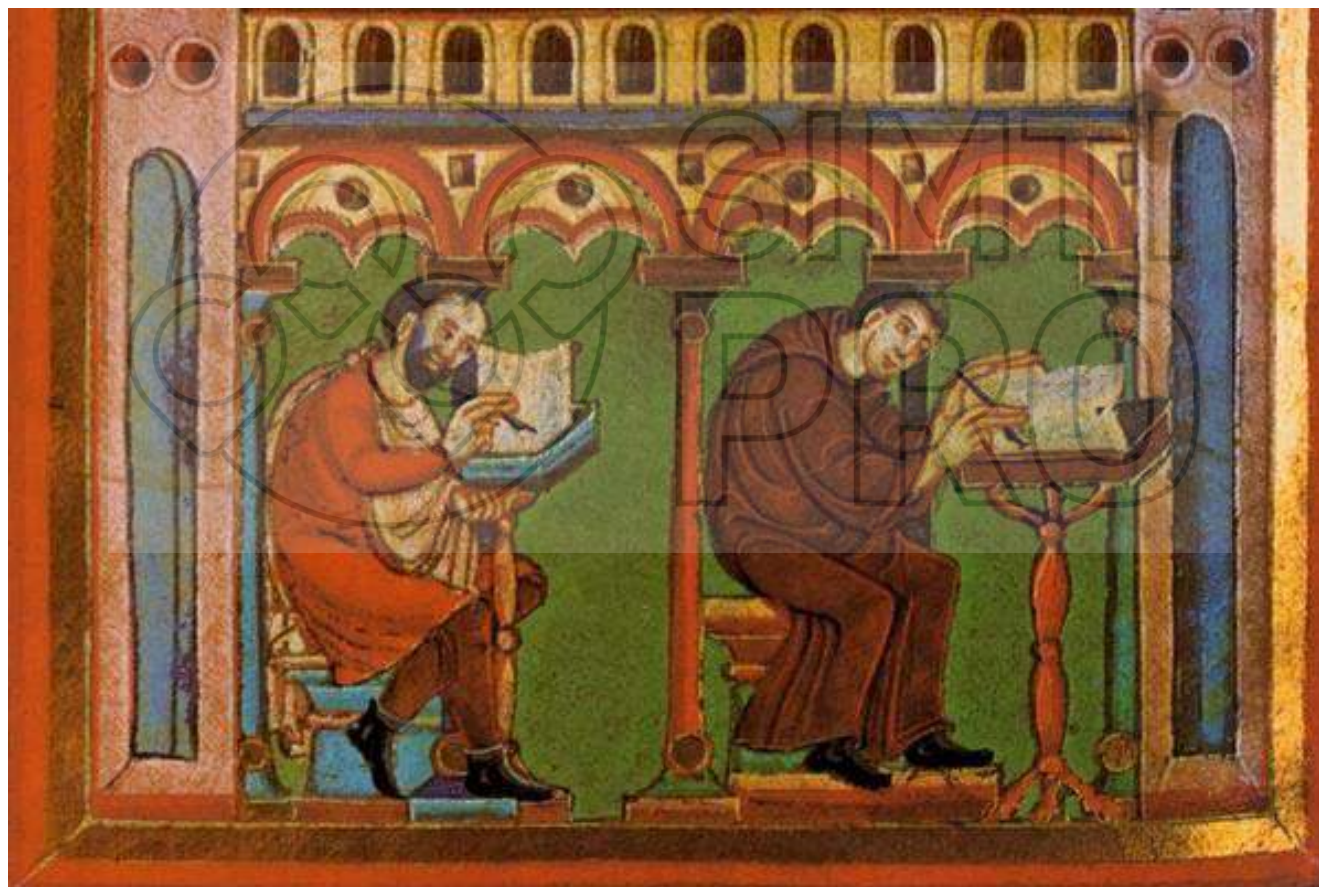
Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM

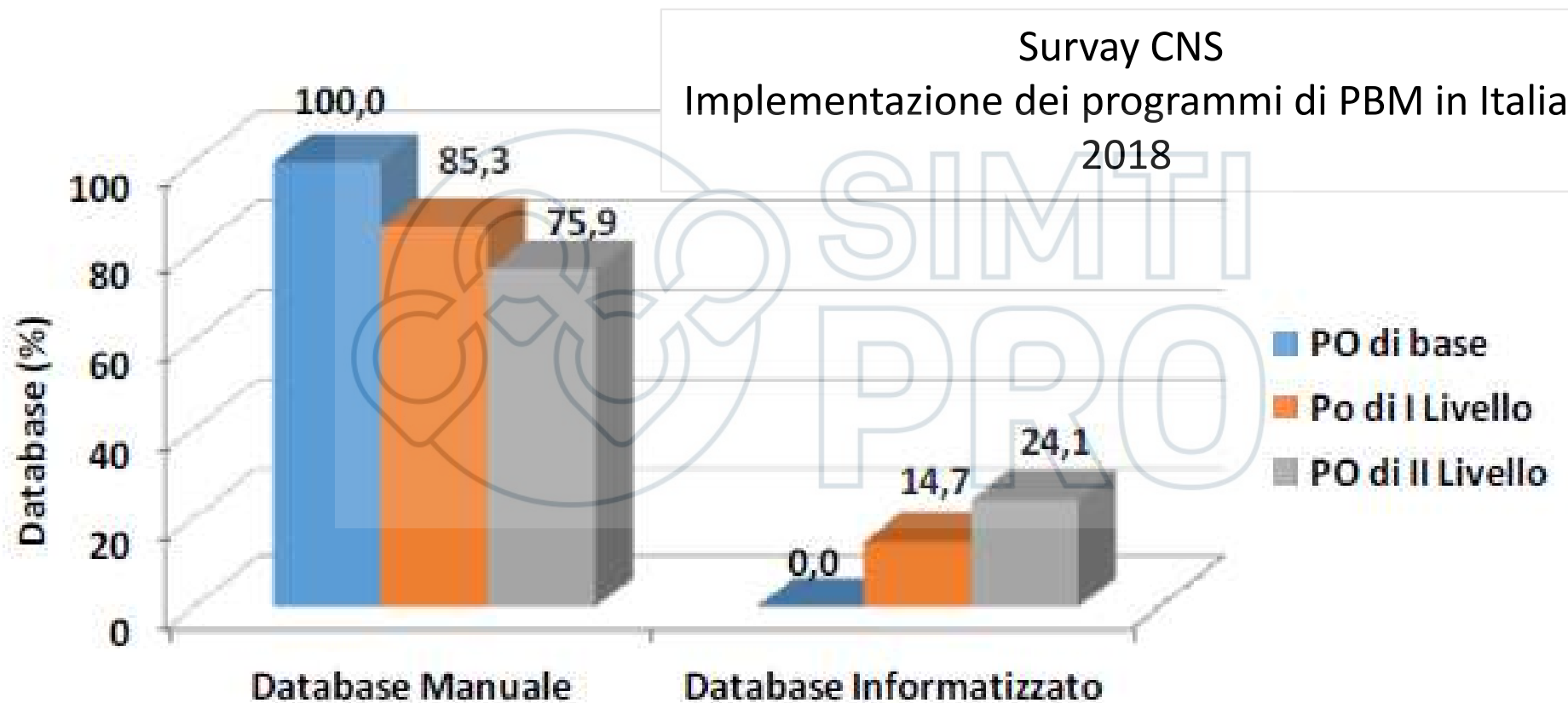


Il «Data Manager»



Italia – Anno Domini 2022

Il «Data Manager»



Italia – Anno Domini 2022

POPULAR SCIENCE

THE
FUTURE
NOW

THE CONTROL CENTERS

Using Data to Feed the World, Solve Cold Cases, Battle Malware, Predict Our Fate p.52

OFFICER ALGORITHM

Can a Crime Be Prevented Before It Begins? p.38

NEW WAYS OF SEEING

A Gallery of Extraordinary Infographics p.69

SPECIAL ISSUE

DATA IS POWER

HOW INFORMATION IS DRIVING THE FUTURE

PLUS

Juan Enriquez
Reprograms Life
p.31

James Gleick
Unsplits the Bit
p.58

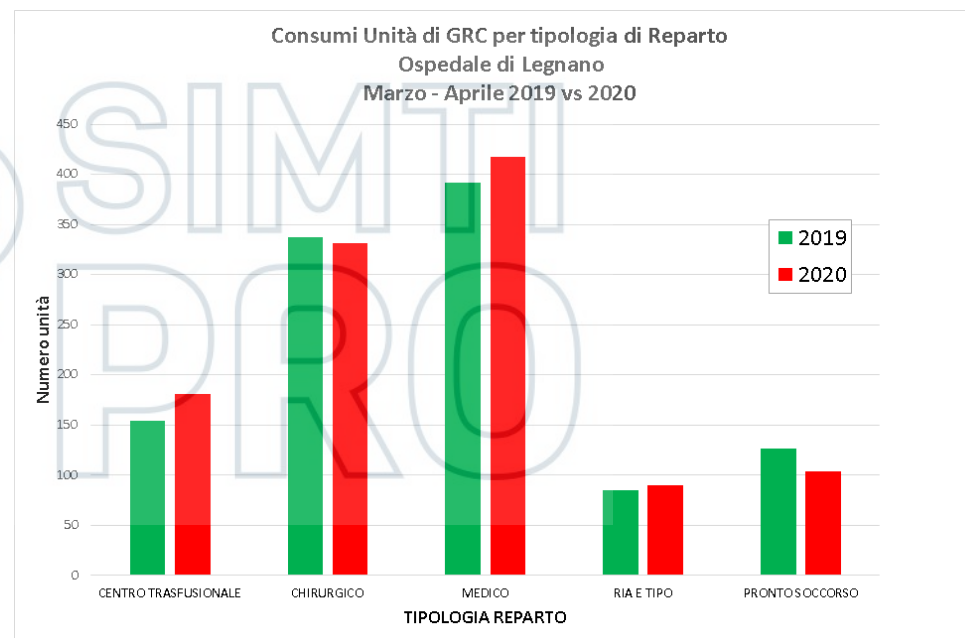
AND
Lawrence
Wescher
Questions the
Cloud
p.76





I DATI TRASFORMANO LE
SENSAZIONI IN EVIDENZE

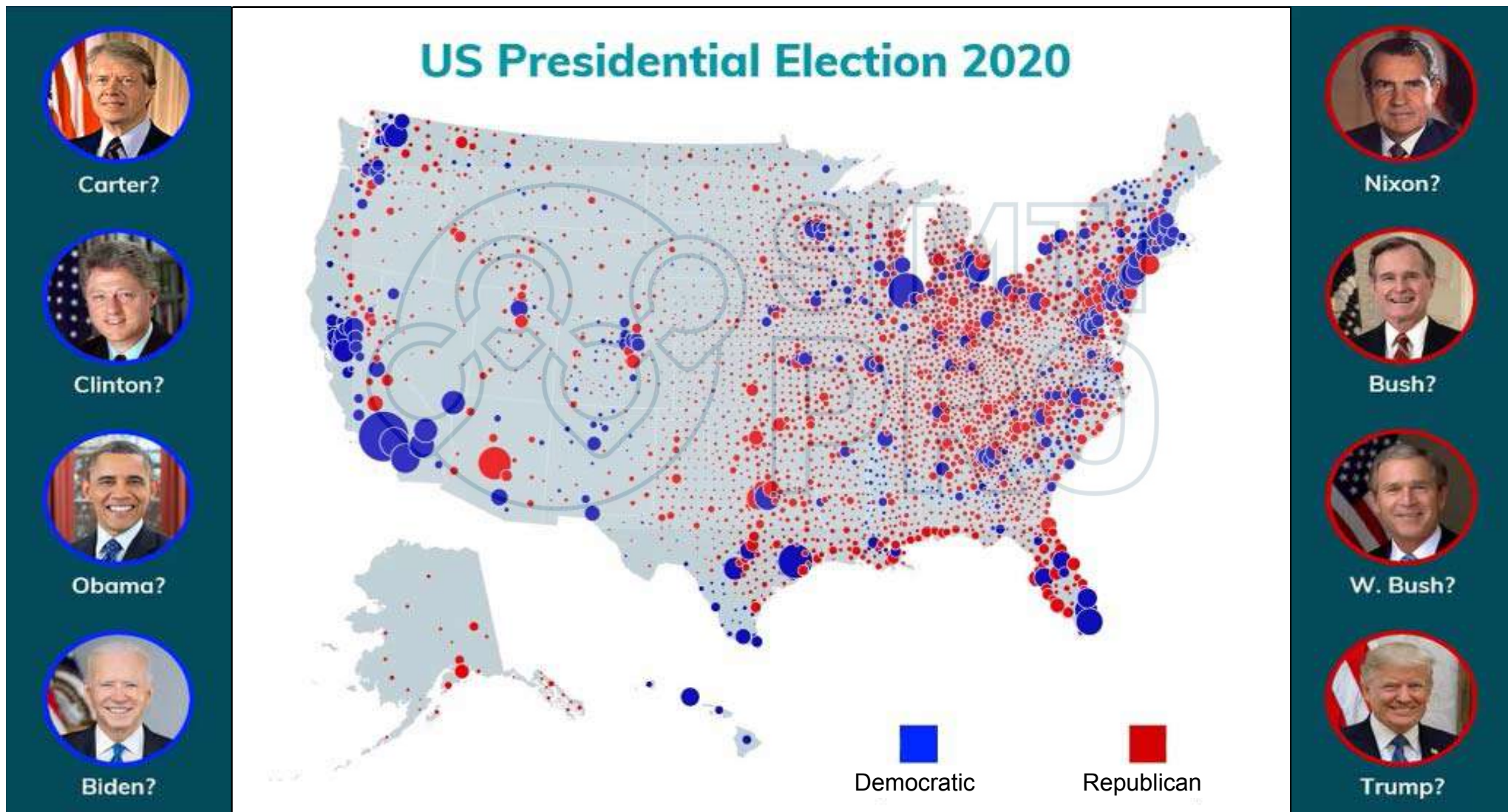
A VOLTE I DATI NON CONFERMANO LE SENSAZIONI



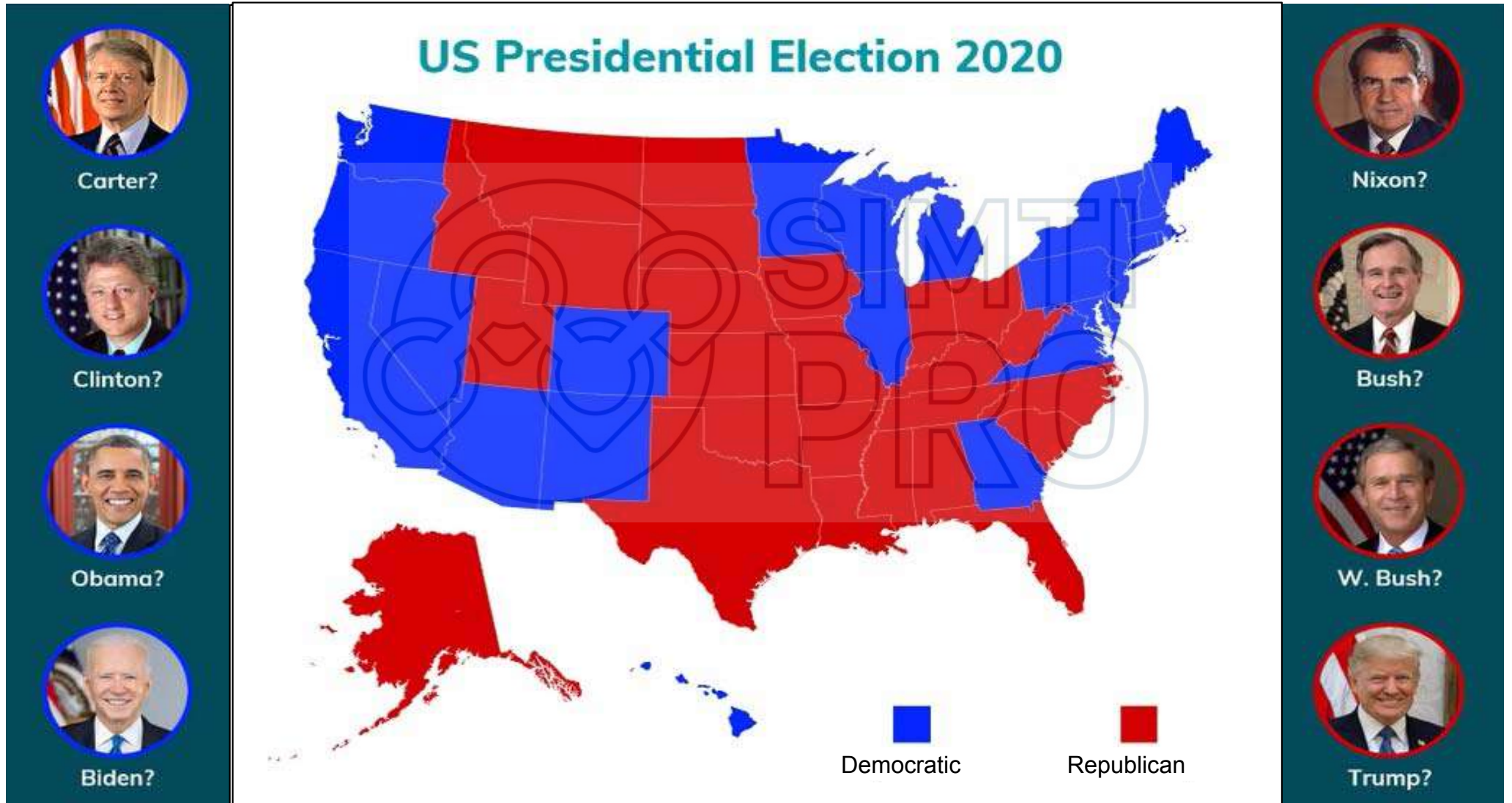
I DATI VANNO CORRETTAMENTE RAPPRESENTATI



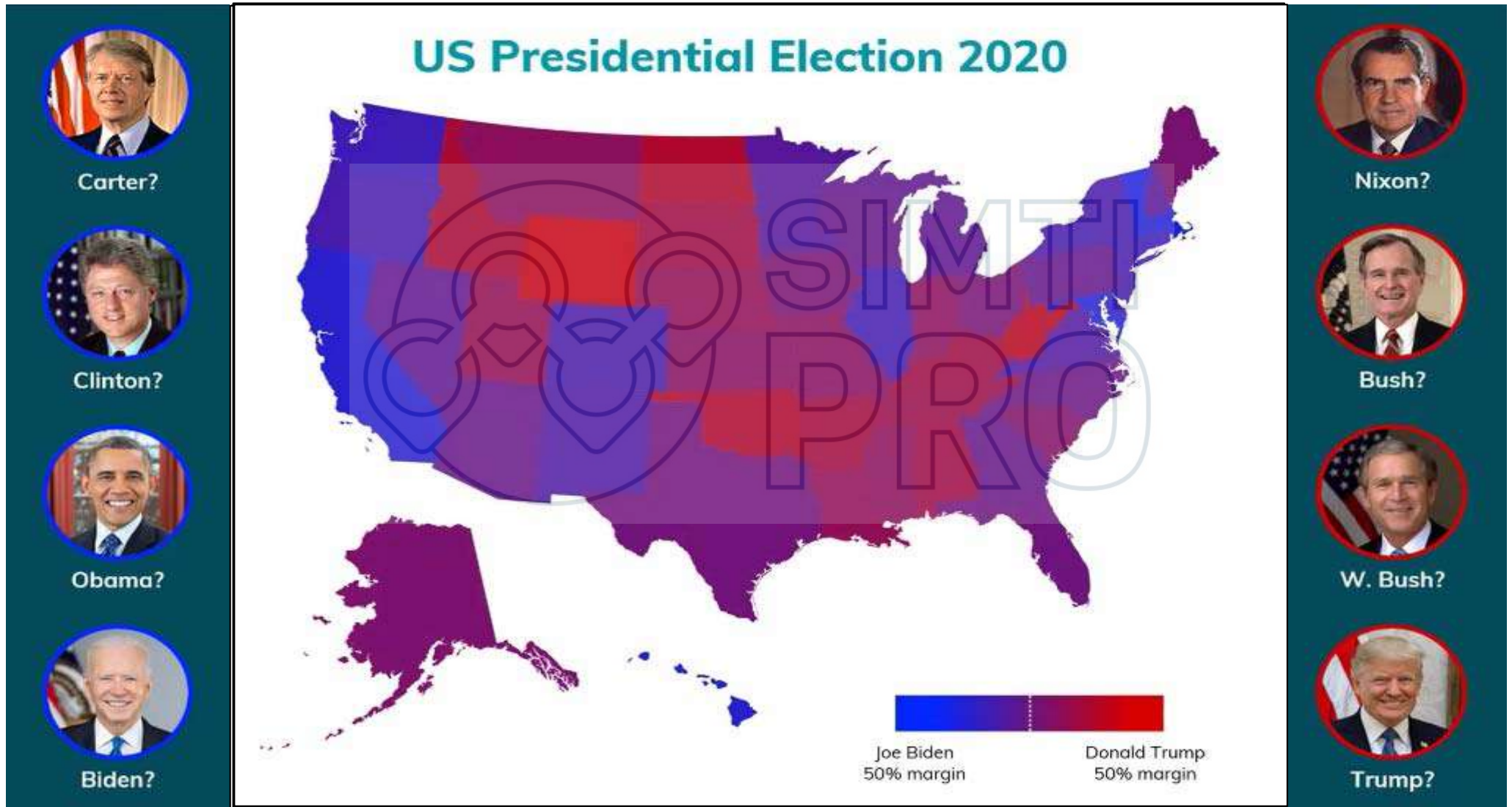
I DATI VANNO CORRETTAMENTE RAPPRESENTATI



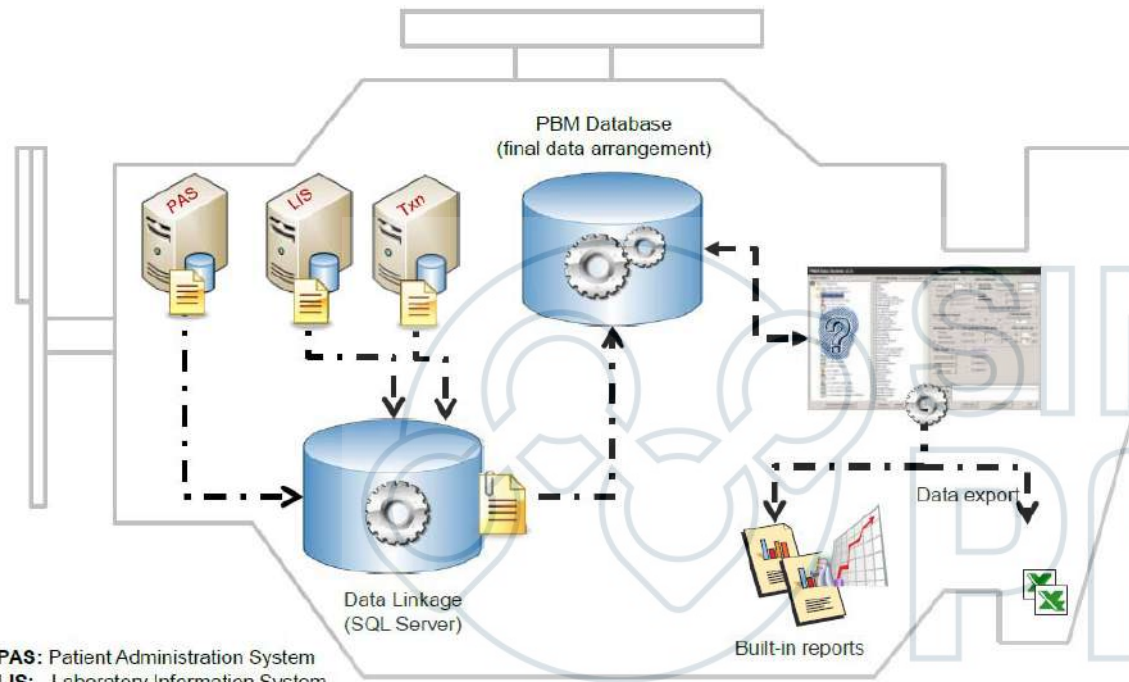
I DATI VANNO CORRETTAMENTE RAPPRESENTATI



I DATI VANNO CORRETTAMENTE RAPPRESENTATI



PBM Data System



PAS: Patient Administration System
LIS: Laboratory Information System

Developed by Aqif Mukhtar and Kevin Trentino



AUSTRALIAN COMMISSION
ON SAFETY AND QUALITY IN HEALTH CARE

National Priorities

National Patient Blood Management Collaborative

The Commission has been engaged by the Department of Health to lead the National PBM Collaborative, in consultation with the National Blood Authority and the states and territories, to promote appropriate care in relation to the use of blood across Australia.



Western Australia - abitanti: 2.5 milioni (~ 74% vive a Perth)

Area Metropolitana di Milano - abitanti: 3.2 milioni

WA PBM database data elements

<p>1. GENERAL PATIENT DATA</p> <p>Institution Diagnosis at discharge Age Gender Body Weight Height BMI ASA-Score Creatinine Coronary artery disease</p> <p>2. HAEMATOLOGY: SURGICAL PATIENTS</p> <p>Haemoglobin (g/L) Admission (pre-op) Day of Surgery (pre-op) Post-op: Day 3 Post-op: Day 4 Post-op: Day 5 Post-op: Specify day if not day 3-5 At Discharge Pre-transfusion Post-transfusion Platelet Count Pre-op On day of surgery (pre-op) Between 3 -9 hrs post transfusion Partial Thromboplastin Time (PTT) Pre-op On day of surgery (pre-op) Post-op PTT Between 3 to 9 hrs post transfusion Pre-op Haematology Serum iron Serum transferrin Transferrin saturation Serum ferritin PCV MCV MCH MCC RDW Reticulocytes CRP</p>	<p>3. HAEMATOLOGY: NON-SURGICAL PATIENTS</p> <p>Haemoglobin (g/L) Pre-transfusion Post-transfusion Post-transfusion: Day 3 Post-transfusion: Day 5 Post-transfusion: specify if not Day 5 Discharge Platelet Count Pre-transfusion Day of transfusion Post-txn platelet count Between 3 to 9hrs post-transfusion Partial Thromboplastin Time (PTT) Pre-transfusion Day of transfusion Post-txn Between 3 to 9hrs post transfusion Pre-transfusion Haematology: Serum iron Serum transferrin Transferrin saturation Serum ferritin PCV MCV MCH MCC RDW Reticulocytes CRP</p>	<p>4. OUTCOMES</p> <p>ICU Length of stay (days) Hospital length of stay (days) Mortality (in-hospital & 30-days) Mortality (60-days, 90-days, 6mths, 1-year, 5-yrs, 10-yrs, >10yrs) Complications Neurological Cardiovascular Infection Respiratory infection Septicaemia Wound infections Other infections Myocardial infarction Stroke Renal impairment/failure Multisystem Organ Failure Acute Respiratory Distress Syndrome (ARDS) Transfusion-Related Acute Lung Injury (TRALI) Transfusion-Associated Circulatory Overload (TACO) Thromboembolism Bleeding Return to theatre for bleeding</p> <p>5. DRUGS</p> <p>Anti-platelet therapy Thrombosis prophylaxis Antifibrinolytics Desmopressin Erythropoiesis-stimulating agent (ESA) (units) Iron - IV Iron - oral</p> <p>6. BLOOD PRODUCT TRANSFUSION</p> <p>Indication for transfusion Transfusion ordering department (procedure) Transfusion ordering clinician 6.1 Pre-Op Autologous Blood <i>Type of Pre-Op autologous blood collected:</i> Whole blood (units) RBCs (units) FFP (units) Platelets (units)</p>	<p><i>Type of Pre-Op autologous blood transfused:</i> Whole blood (units) RBCs (units) FFP (units) Platelets (units) 6.2 Intra-Op Autologous Blood Intra-Op salvaged autologous RBCs transfused (mls) Intra-Op sequestered autologous plasma transfused (mls) Intra-Op sequestered autologous platelets transfused (units) Acute normovolaemic haemodilution (ANH) blood withdrawn (mls) Acute Normovolaemic Haemodilution (ANH) blood transfused (mls) Post-Op drain blood transfused: Washed (mls) Post-Op drain blood transfused: Unwashed (mls) 6.3 Type of Allogeneic Blood Transfused Date of Production for any products used Date of transfusion for any products used Age of blood when transfused Number of units of products used. Whole Blood: Fresh Stored Red Blood Cells (RBC) Filtered Non-filtered Washed/irradiated Washed Irradiated Frozen Paediatric CMV tested Fresh Frozen Plasma (FFP) Platelets Random Apheresis Washed/irradiated Washed Irradiated Clotting Factors</p>	<p>7. DISCARDED BLOOD PRODUCTS (units)</p> <p>Pre-operative autologous blood Whole blood RBCs FFP Platelets Allogeneic Whole Blood Fresh Stored Red Blood Cells Filtered Non-filtered Washed/irradiated Washed Irradiated Frozen Paediatric Fresh Frozen Plasma Platelets Random Apheresis Washed/irradiated Washed Irradiated</p> <p>8. SURGICAL DETAILS (see table 2 for more information on surgical data) Technique (Minimally Invasive or Open) Duration of surgery (mins) Type of Anaesthetic Used Date of surgical procedure Type of Surgery/Procedure Performed Surgical Department Total No. of Procedures per Hospital</p>
---	--	--	--	---



Esempio di output:

Trigger trasfusionale per tipo di intervento chirurgico

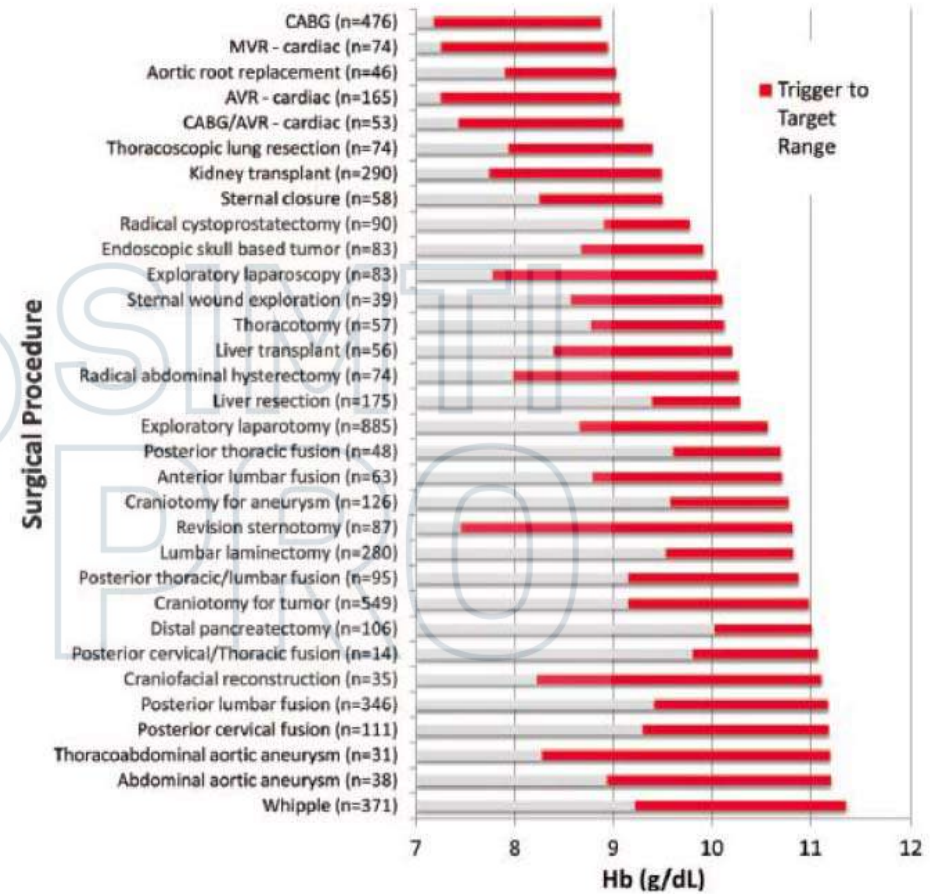


Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



II Risk Manager



Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



Supporting Patient
Blood Management (PBM)
in the EU
A Practical Implementation Guide
for Hospitals

Hospital administrators:
**Reallocation of resources
to improve effectiveness**

- ✓ Administrative director
- ✓ Chief financial officer (CFO)
- ✓ Medical director / Clinical governance
- ✓ Medical director
- ✓ Nursing director
- ✓ Risk and Quality Assurance Manager
- ✓ IT Manager

Supporting Patient
Blood Management (PBM)
in the EU
A Practical Implementation Guide
for Hospitals

The five most important parameters to control are:

- ✓ Costs
- ✓ Mortality rates
- ✓ Complication rates
- ✓ Readmissions
- ✓ Average length of stay (ALOS)



L'approccio PBM deve essere
strutturale, non lasciato alla buona
volontà dei singoli



Due percorsi diversi...

National Priorities

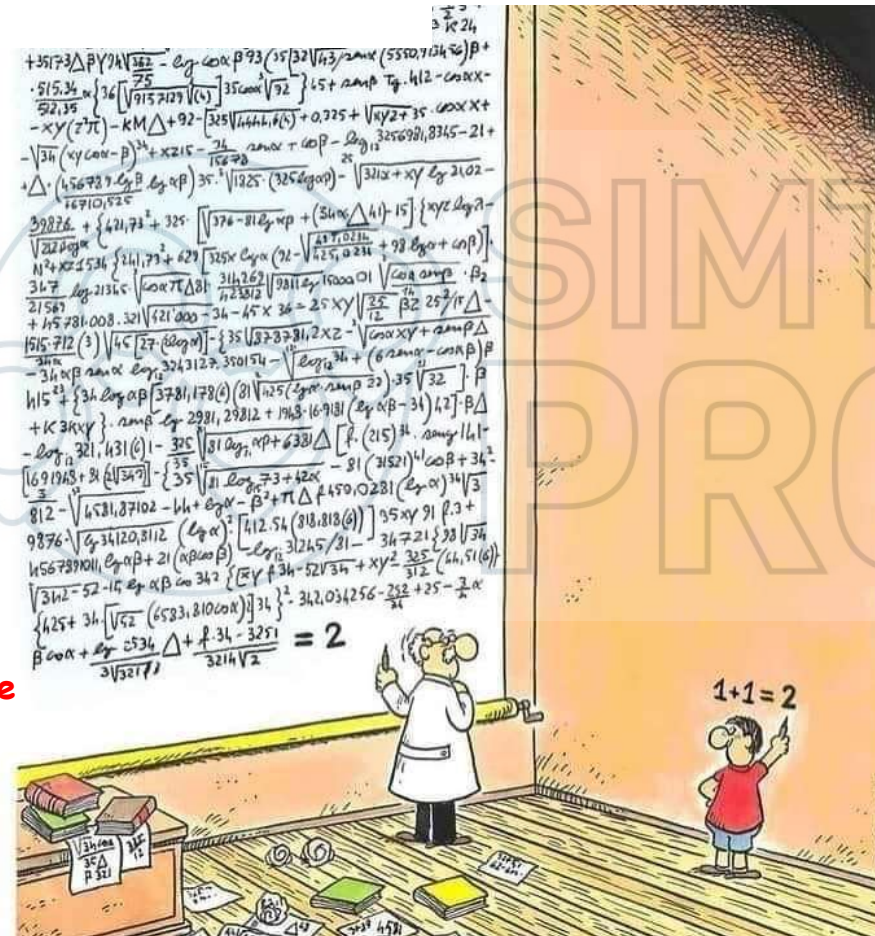
MINISTERO DELLA SALUTE

DECRETO 2 novembre 2015
Disposizioni relative ai requisiti di qualità e sicurezza del sangue
e degli emocomponenti. (15A09709)
(GU n.300 del 28-12-2015 - Suppl. Ordinario n. 69)

National Patient Blood Management
Collaborative



The Commission has been engaged by the Department of Health to lead the National PBM Collaborative, in consultation with the National Blood Authority and the states and territories, to promote appropriate care in relation to the use of blood across Australia.

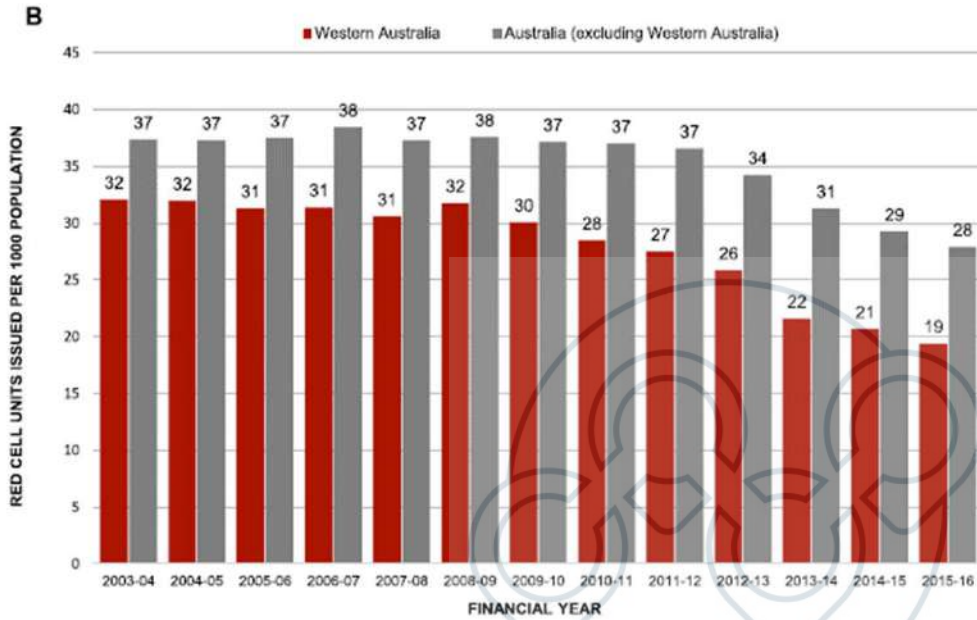


- ✓ E' obbligo di legge
- ✓ Nessuna allocazione di risorse specifiche

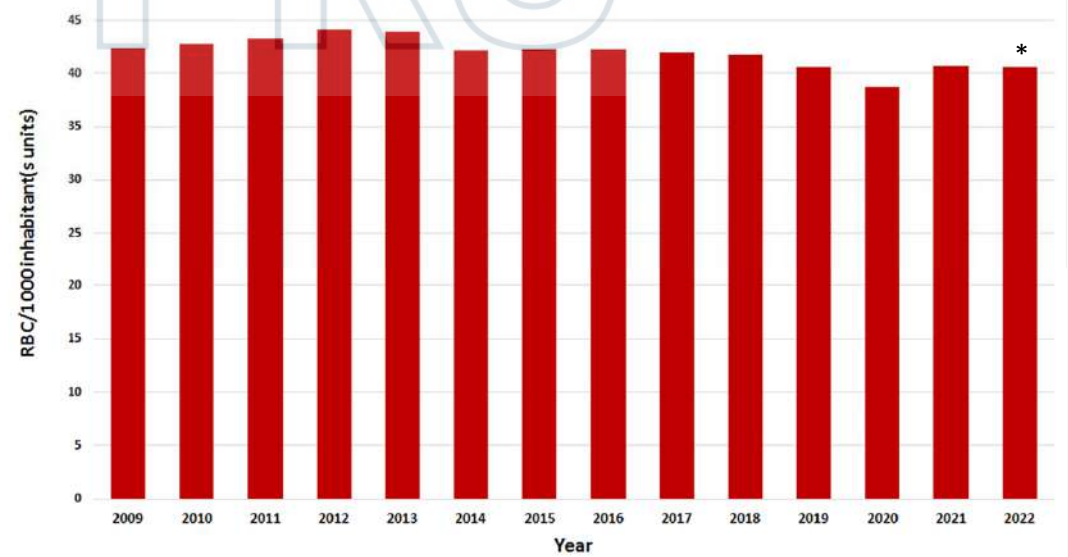


- ✓ Non è obbligo di legge
- ✓ Allocazione di risorse specifiche

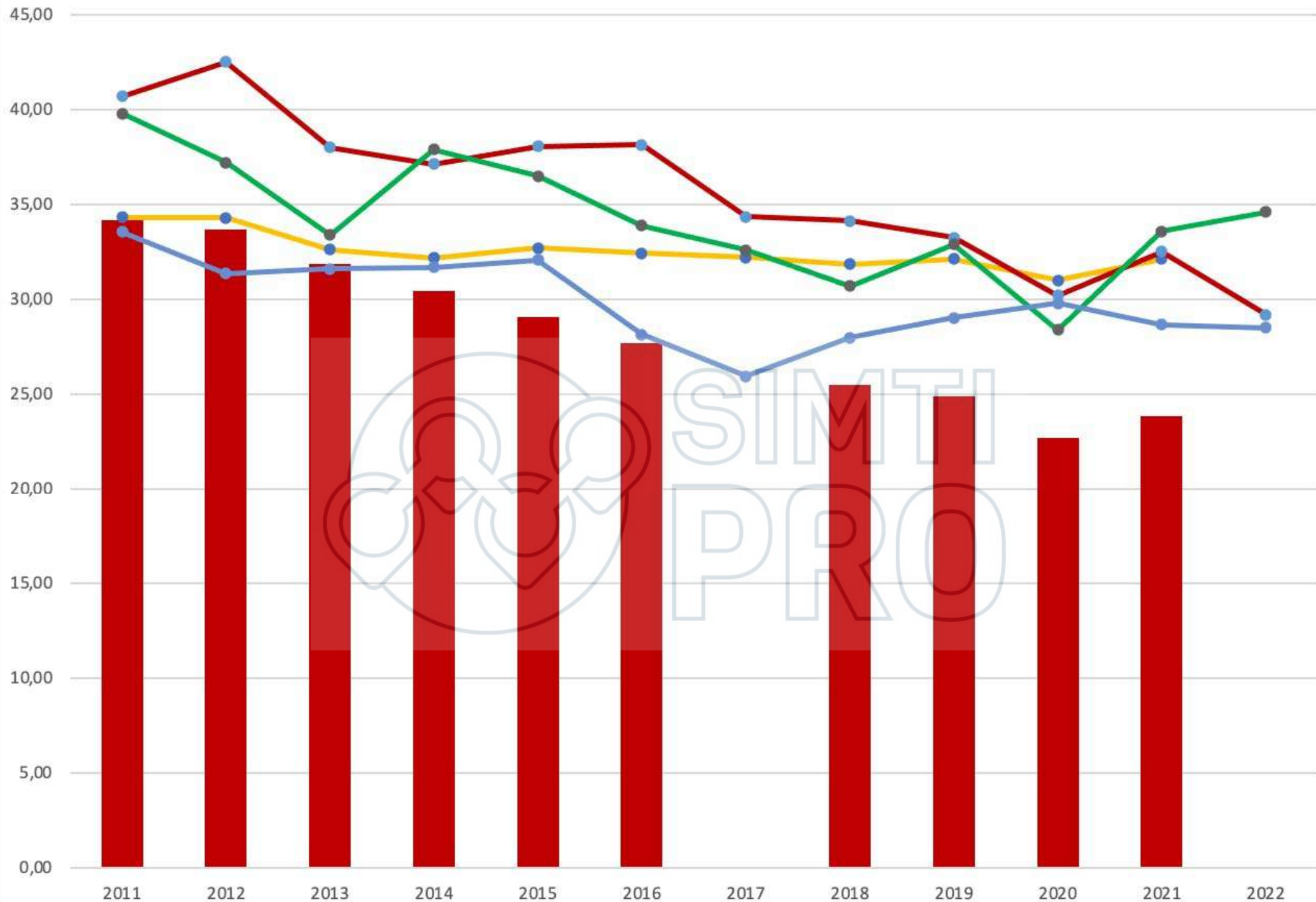
Con due risultati diversi...

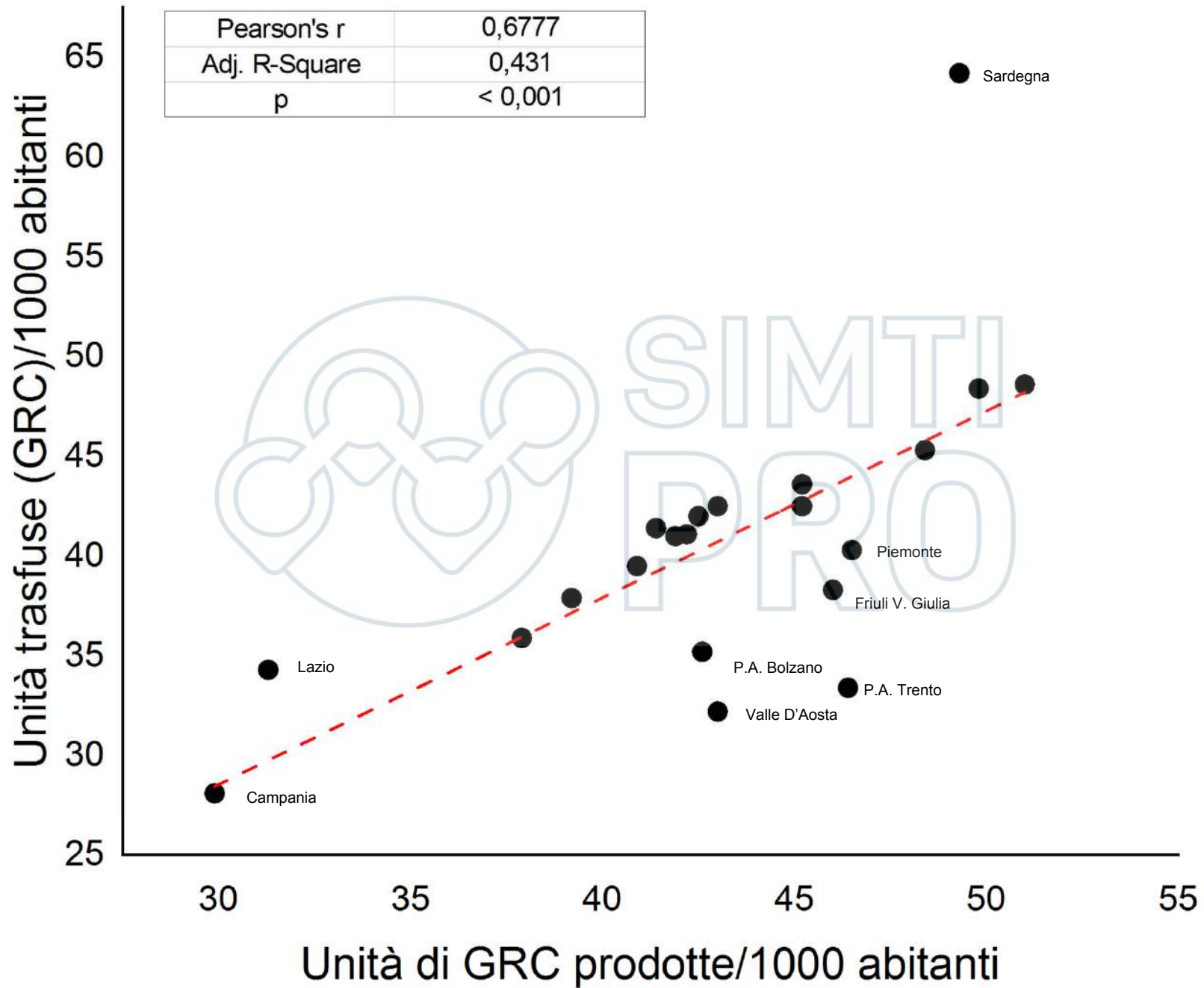


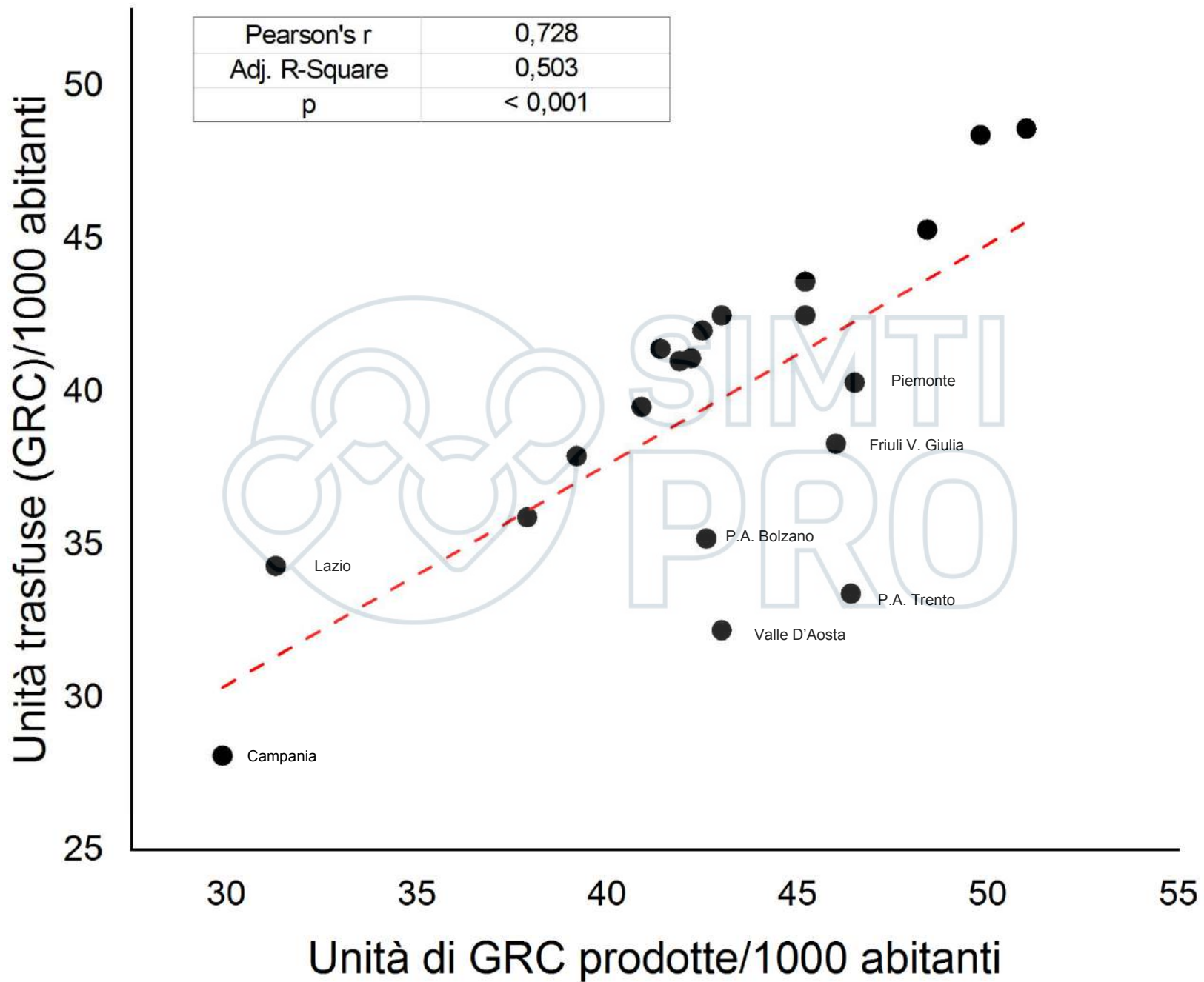
Packed Red Blood Cell units transfused in Italy / 1000 inhabitants (2009 - 2022)

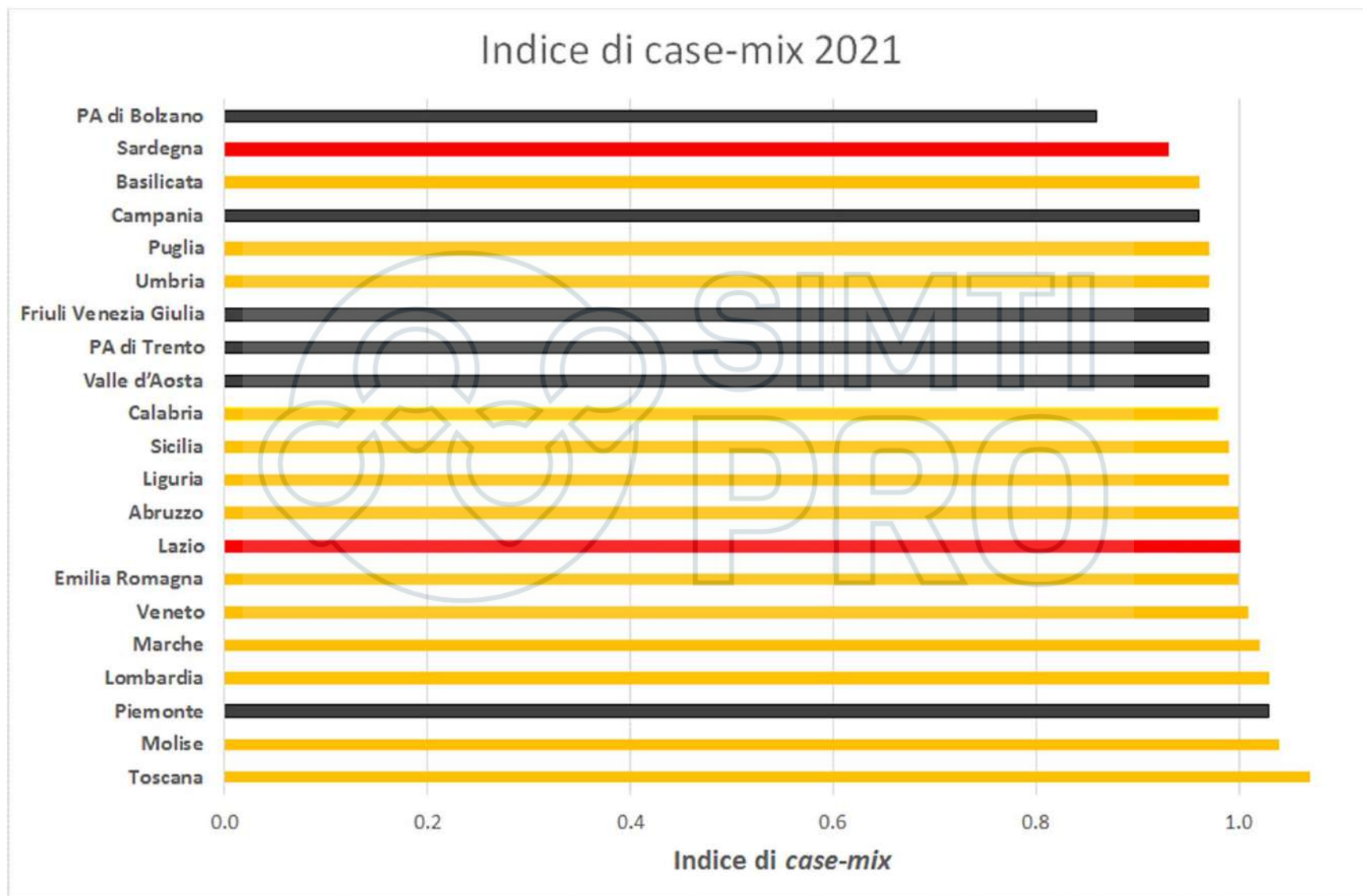


* Dati 2022 non ancora sottoposti a validazione





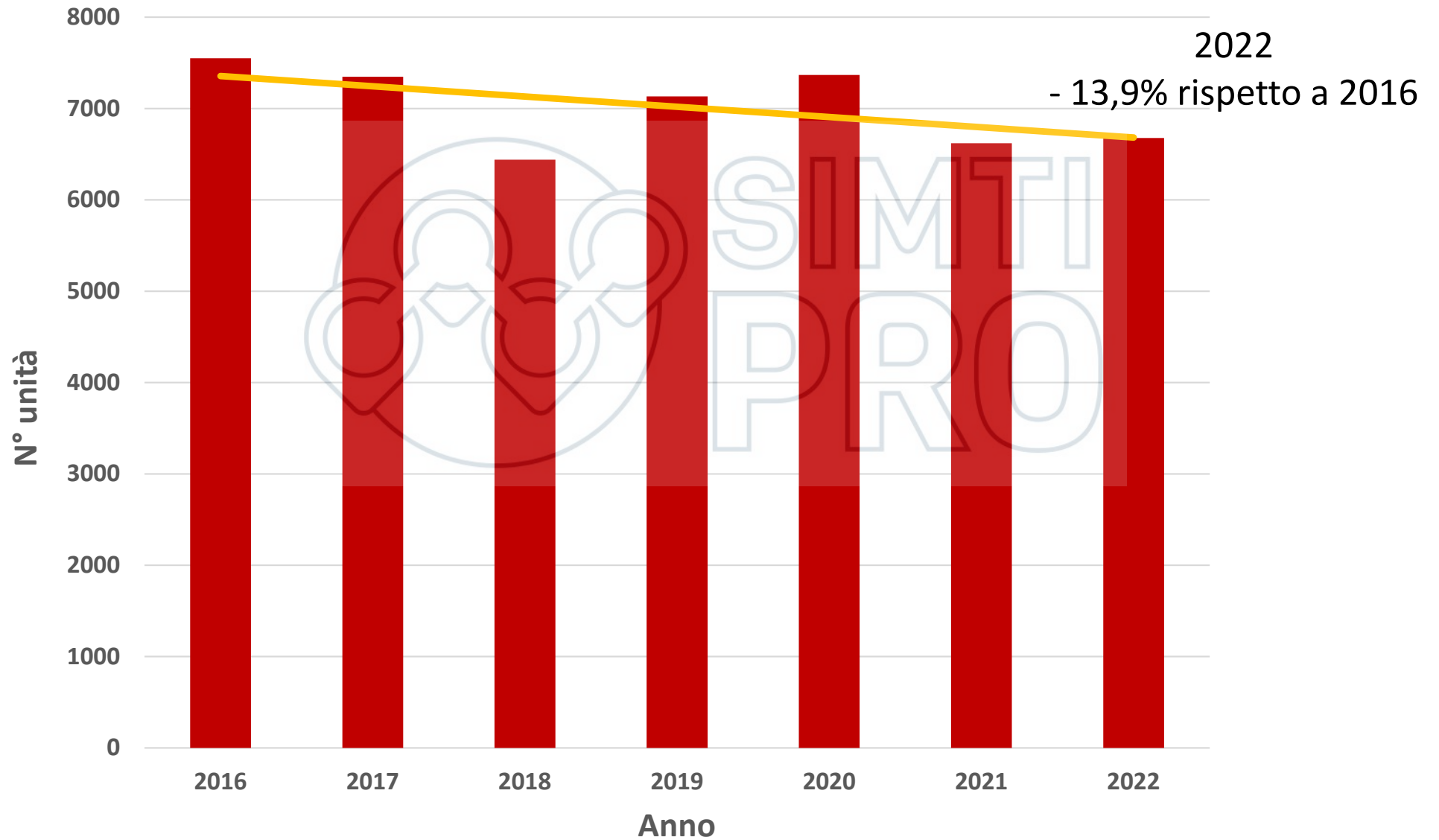




Fonte: Ministero della salute. Decreto 26 maggio 2022. Programma di autosufficienza nazionale del sangue e dei suoi prodotti 2022.

ASST Ovest Milanese

Consumo di emazie P.O. Legnano/Cuggiono (2016 – 2022)



"One Unit Policy"

BO 1000000

ASST Ovest Milanese Comitato per il buon uso del sangue (COBUS)	PROCEDURA APPLICAZIONE "ONE UNIT POLICY" Centro Nazionale Sangue	PAP149 Rev0 Pag. 1 di 3
--	---	--

Rev	Data di Applicazione	Descrizione modifiche	REDAZIONE / REVISIONE	VERIFICA	APPROVAZIONE
			Ruolo	Ruolo	Ruolo
0	20 marzo 2023	Prima emissione	Redazione: Dr. Ivo Beverina Responsabile S.S. Centro Trasfusionale Referente del documento Dr. Ivo Beverina	COBUS	Direttore Sanitario Dr. Cesare Candela

23

23

23

23

Anno

23

23

23

23

23

Progetto «Appropriatezza della trasfusione di plasma»

(2005 – 2022 – Presidio di Legnano)

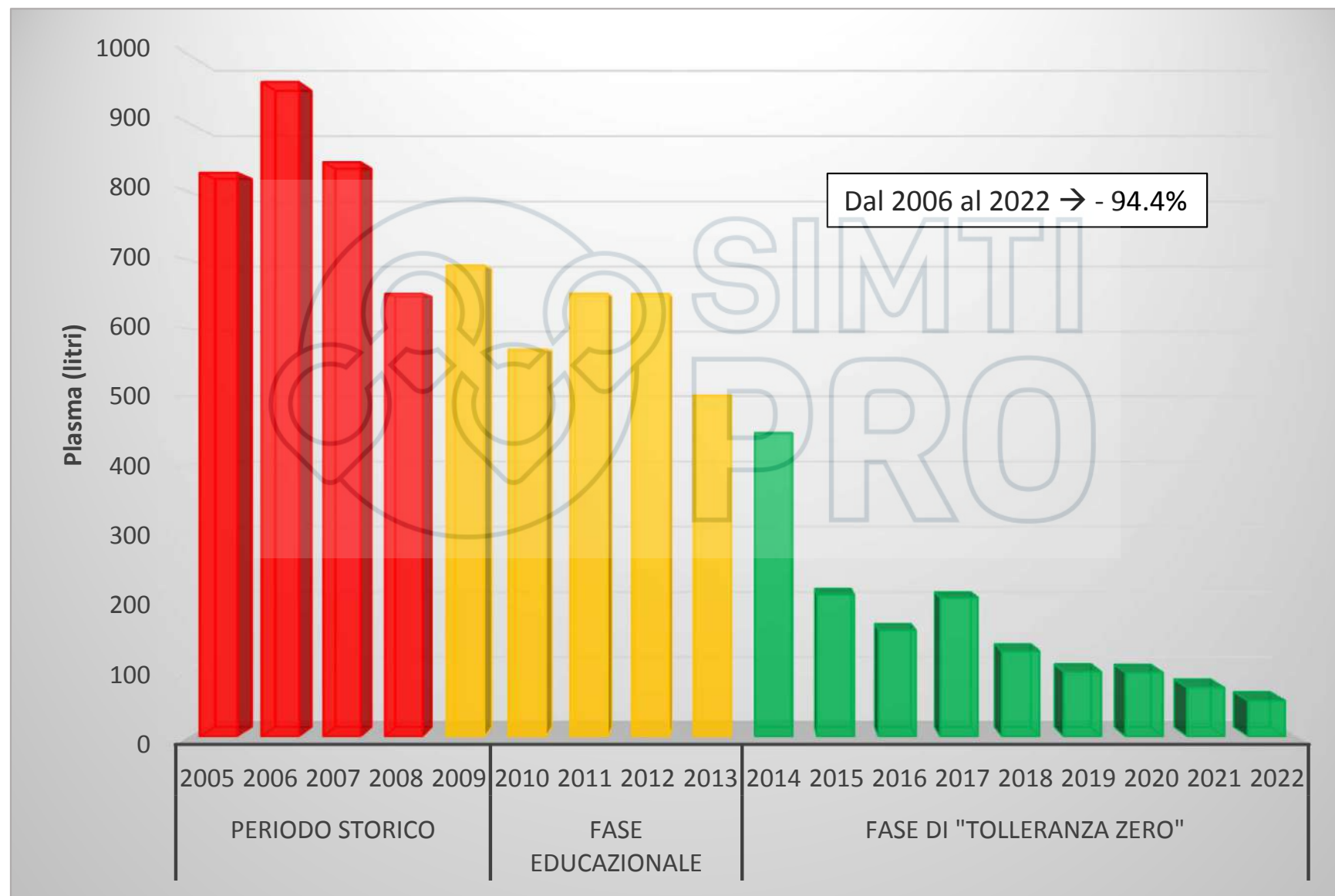
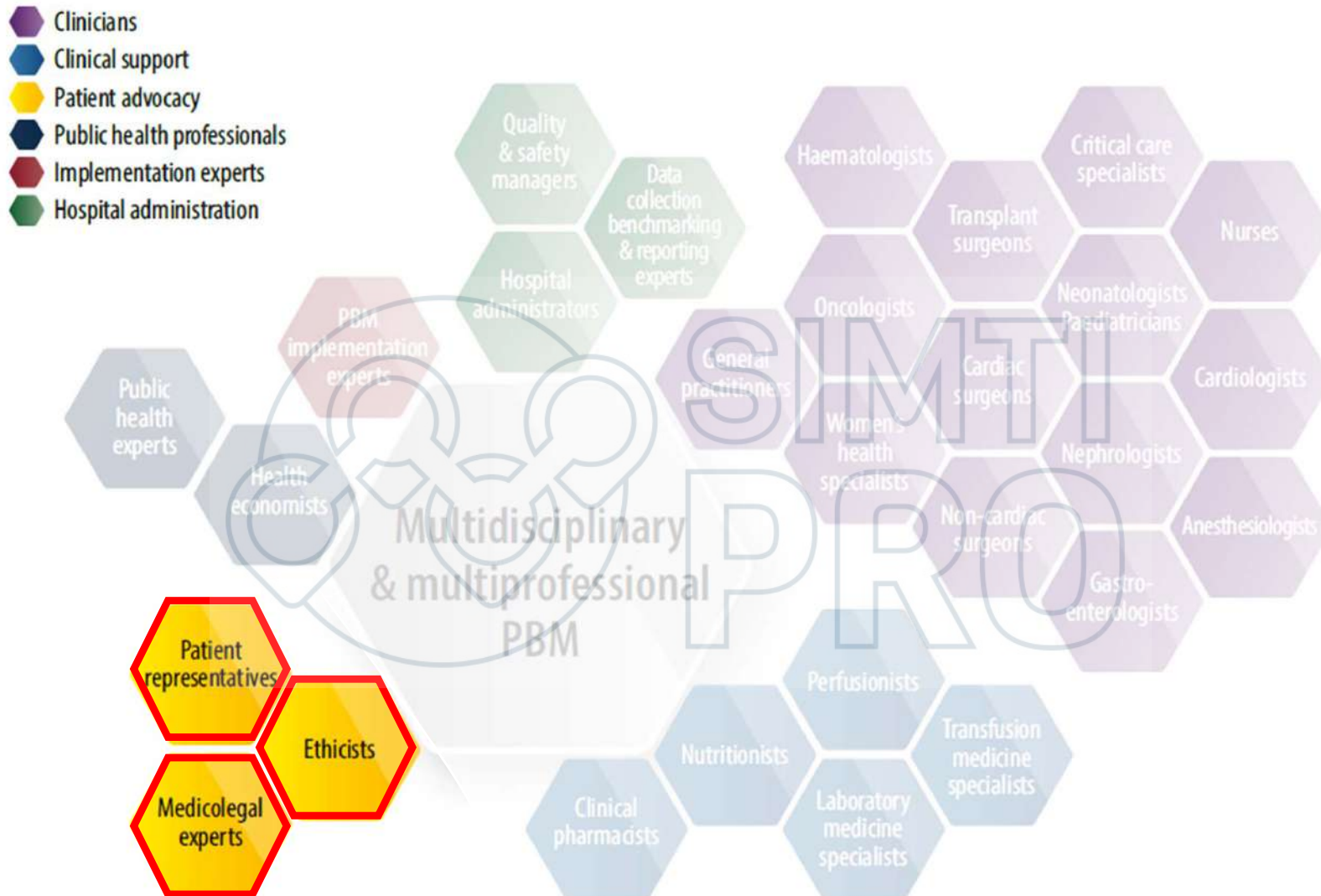


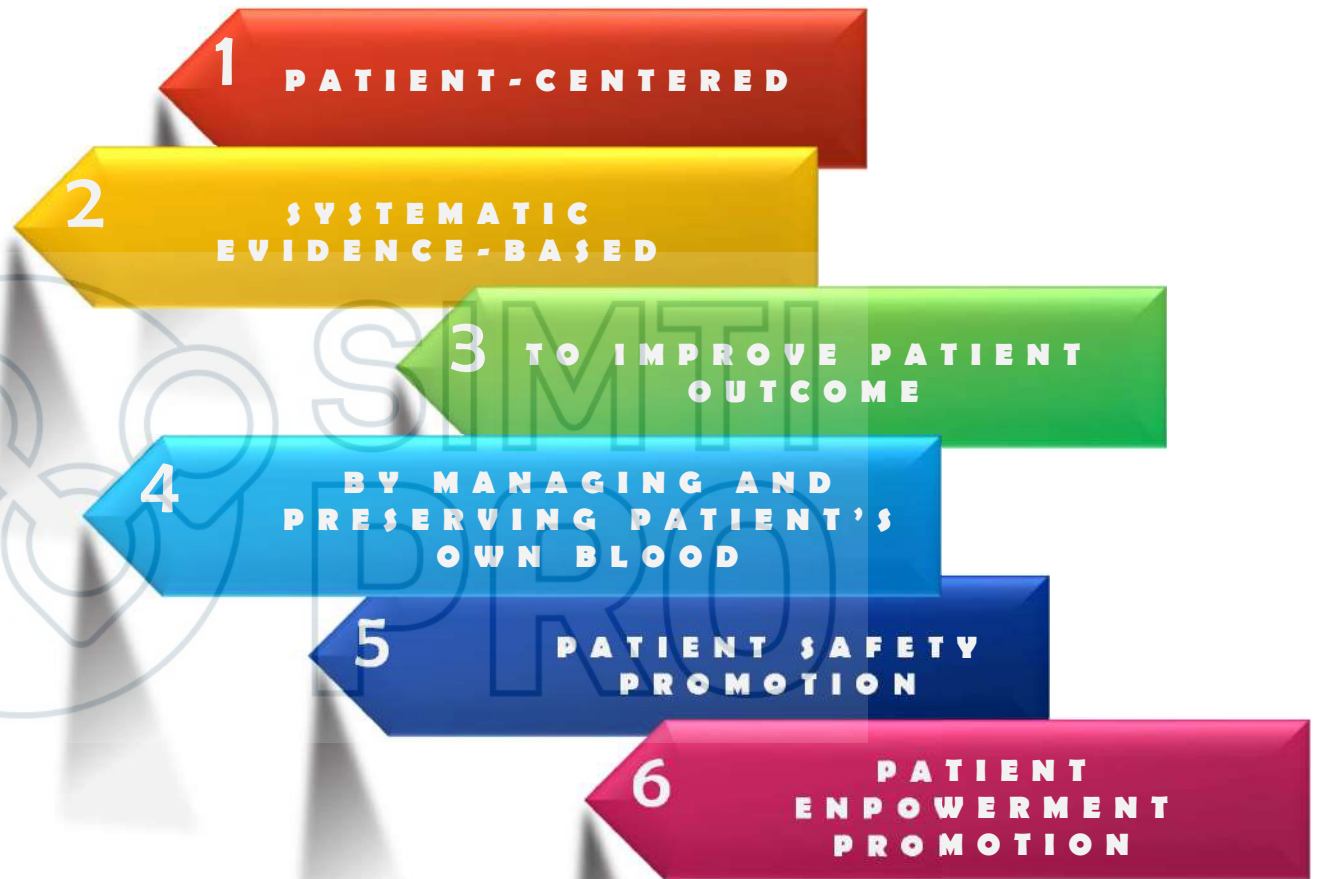
Fig. 4. Stakeholders in multidisciplinary and multiprofessional PBM



Anesthesia & Analgesia: February 10, 2022

A Global Definition of Patient Blood Management

Aryeh Shander, MD,*† Jean-Francois Hardy, MD,‡§ Sherri Ozawa, RN,†|| Shannon L. Farmer, DHSc,¶##††
Axel Hofmann, Dr.rer.medico,¶††† Steven M. Frank, MD,§§ Daryl J. Kor, MD,||¶¶ David Faraoni, MD,§##
and John Freedman, MD,***††† Collaborators



PATIENT EMPOWERMENT

What is Patient Empowerment?



The New England Journal of Medicine

VOLUME 215

SEPTEMBER 3, 1936

NUMBER 10

The Massachusetts Medical Society

SECTION OF MEDICINE

Lower Section Room, Municipal Auditorium, Springfield,
Tuesday, June 9, 1936, 2 p. m.

PRESIDING:

Dr. William D. Smith, Boston, Chairman.
Dr. Laurence B. Ellis, Boston, Secretary.

CHAIRMAN SMITH: Will the meeting please come to order.

The first duty of the Section is the selection of the Chairman and the Secretary for the coming year, and, in accordance with the usual custom, the Chair will appoint as the Nominating Committee to suggest names Dr. Dwight O'Hara, Chair-

man, Dr. George R. Minot and Dr. Chester M. Jones. They will report later and abide the pleasure of the Section.

I do not see Dr. Hamilton here. Apparently she is delayed, so we will pass on to the second paper. To those of us who have had our moments of indecision whether to transfuse or not to transfuse in some of our medical problems, Dr. Bock's paper should be of interest. His subject is "The Use and Abuse of Blood Transfusions."

THE USE AND ABUSE OF BLOOD TRANSFUSIONS*

BY ARLIE V. BOCK, M.D.]

La trasfusione del sangue può in certe circostanze essere una procedura salvavita, in altre una necessaria terapia di supporto, ma è troppo spesso intrapresa quando il medico pensa che non ci sia nient'altro da fare dopo che tutte le altre terapie hanno fallito

Bock A.V.

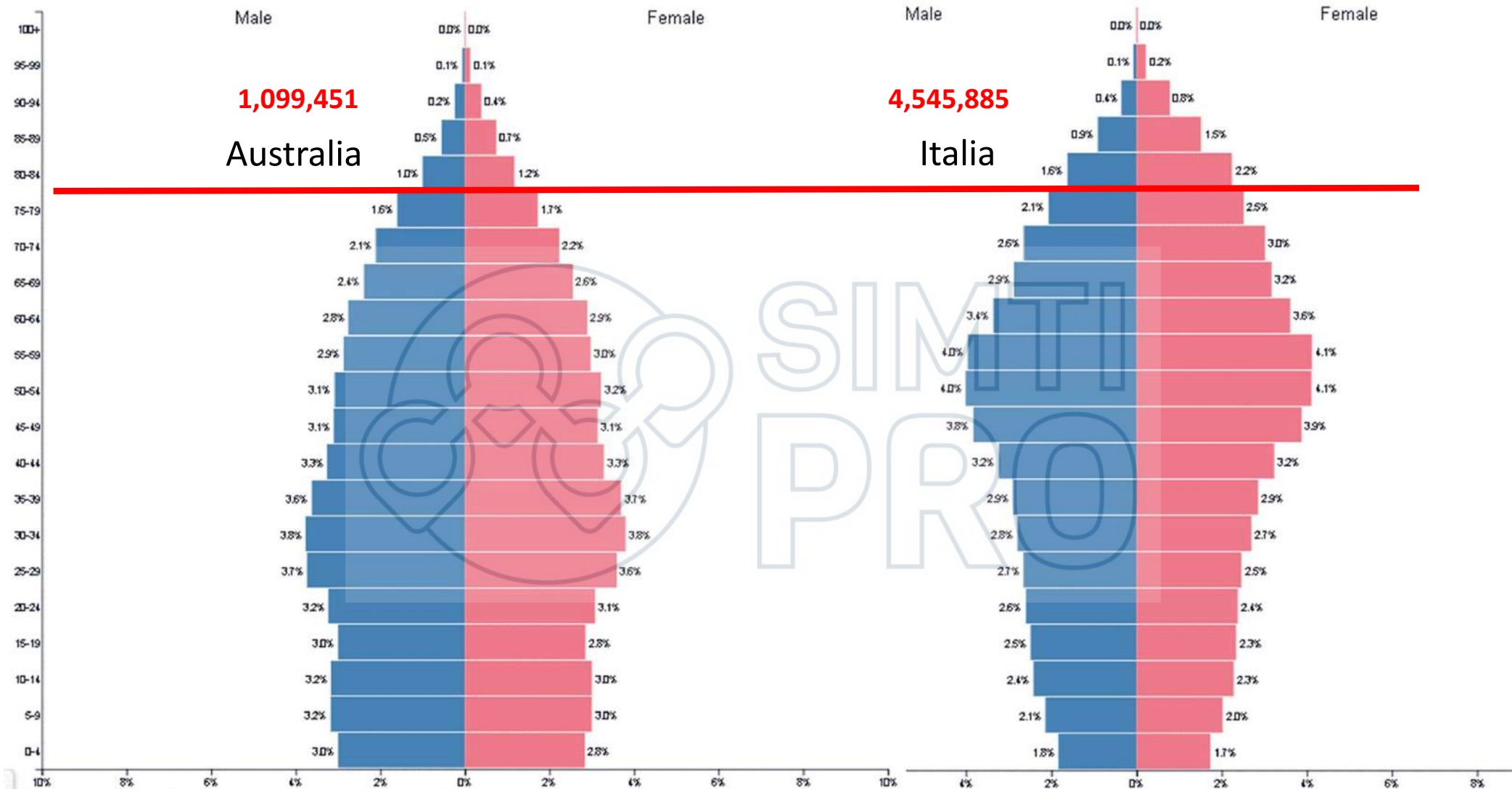
Use and abuse of blood transfusion.

N. Engl. J. Med. 1936; 215:421-425

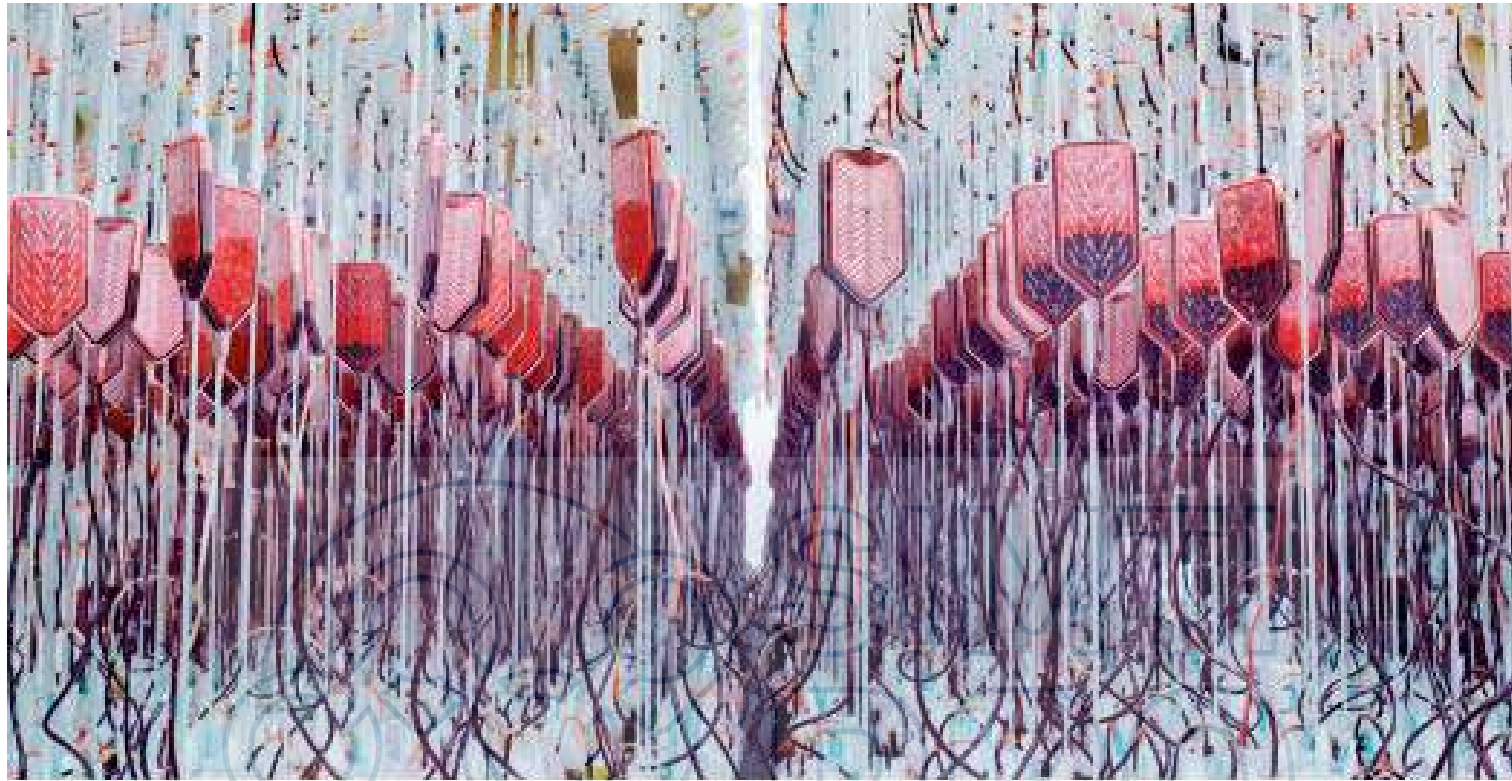
Popolazione 26,177,413

2022

Popolazione 59,037,474

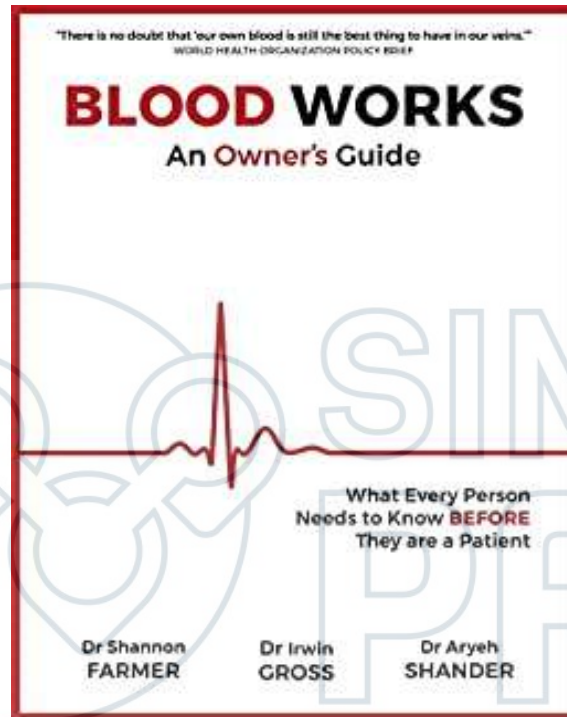


Fonte: www.populationpyramid.net



SAVE BLOOD, SAVE LIVES

Transfusions are one of the most overused treatments in modern medicine, at a cost of billions of dollars. Researchers are working out how to cut back.



GRAZIE PER L'ATTENZIONE

ivo.beverina@asst-ovestmi.it