Implementing strategic plasma resource self-sufficiency through unpaid plasma donations on the global plasma market

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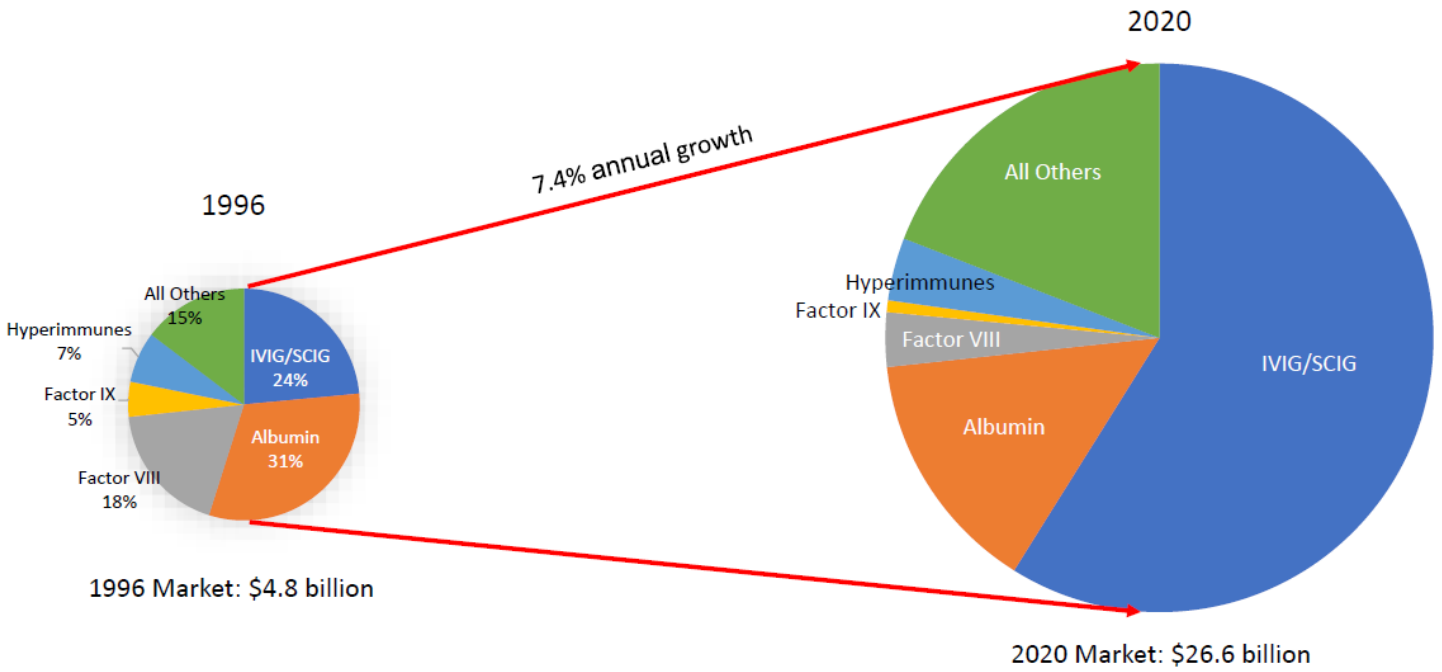
The last three decades have seen a considerable increase in the pharmaceutical industry's demand for plasma on a global scale for the production of plasma-derived medicinal products (**PDMP**s), driven mainly by the growing demand for immunoglobulins (see the graph below).

In 2019, the year before the COVID-19 pandemic, the consumption of plasma by the fractionation industry reached **69 million liters**

24 Years of worldwide plasma proteins market growth (without recombinant products)



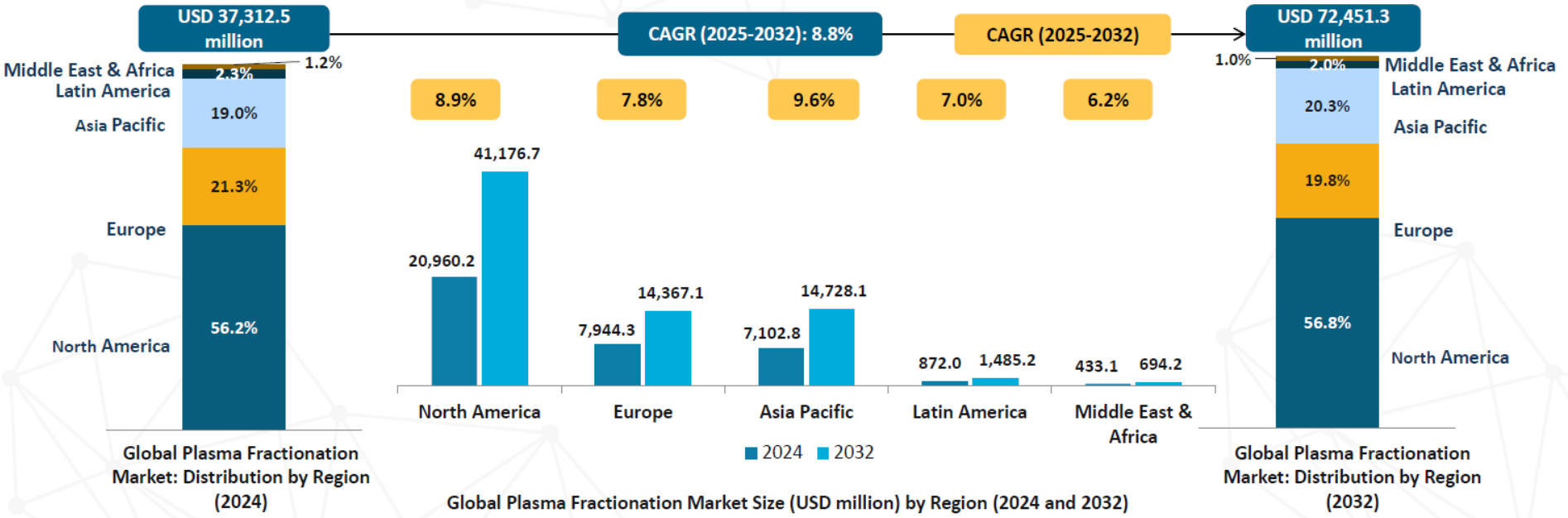
Note: Pie charts are drawn to scale

(Graph from Hotchko, M. Current market landscape for plasma and immunoglobulins, contribution to the *IPFA/EBA Symposium on Plasma Collection Supply*, 15-16 March 2022)

After a brief interruption due to the sanitary (covid) crisis, growth got back to its former trend, with a perspective of a market size doubling at the 2032 horizon, and growth trends by and large identical in the three main regional components of the world market (USA, Europe, Asia-Pacific) as described in the graph below.

Executive Summary

Figure 01: Global Plasma Fractionation Market Revenue Breakdown (USD million, %) by Region, 2024 & 2032



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Sources: Fortune Business Insights Analysis

Nearly **90%** of the fractionation plasma consumed by the industry in 2019 came from **paid plasmapheresis** performed in dedicated collection centers, the bulk of it (approximately **two-thirds** of global consumption) collected at **FDA-licensed collection centers in the USA**.

In contrast, the plasma recovered from **unpaid whole blood donations** accounted for only 8 ML, or **11.5%**, of the total collection for fractionation.

The above facts imply that it is **impossible to meet the demand for fractionation plasma from unpaid voluntary donations *on a global scale*** at the present state of manufacturing and biomedical techniques.

A simple calculation will illustrate this impossibility:

1- Total number of **unpaid voluntary whole blood donations** 2018: **95 million** in 2018.

2-Assume that these donations are converted to plasmapheresis. Let us further make the optimistic assumption that the average volume of plasma collected per donation is **800 ml** (i.e., the maximum volume that can be collected per plasmapheresis in the USA).

3-The total volume of plasma collected in this manner would reach only **76 ML**, already insufficient to cover the current consumption of the fractionation industry.

I argue that, nevertheless, and somewhat paradoxically, properly defined, **self-sufficiency** in strategic plasma resources **can be achieved** through **unpaid** plasma donations to appropriately designed ***national*** blood donation organizations.

I proceed in two short steps:

1-by first explaining why self-sufficiency in **strategic** plasma products matters and in what **practical** sense it can be achieved;

2- and by outlining the main characteristics that a **national blood organization** must meet to achieve self-sufficiency through **unpaid** voluntary donations.

I-Donated plasma as a strategic resource

Donated plasma has **two main uses** in the health care system :

1-First, in **transfusion** medicine as a **labile blood product**.

2-Second, by the pharmaceutical industry, as **fractionation plasma**, that is, as the **basic raw material for the production of Plasma-derived Medicinal products (PDMPs)**.

Fractionation plasma and, by extension, **PDMPs** are considered **strategic** products for three reasons at least :

1-the classification of PDMPs as **essential medicines** by the **WHO**

2- the **human origin** of these products

3-the **risks of supply interruption**

Supply tensions, shortages, and the pandemic shock

Three short factual outlooks to illustrate the third aspect (the risks of supply interruption):

First fact: The **rapid growth of demand** resulted in the emergence of supply tensions and subsequent **shortages of intravenous Ig** (IVIG) by the **late 2010s**, e.g. :

1-UK (2017-18)

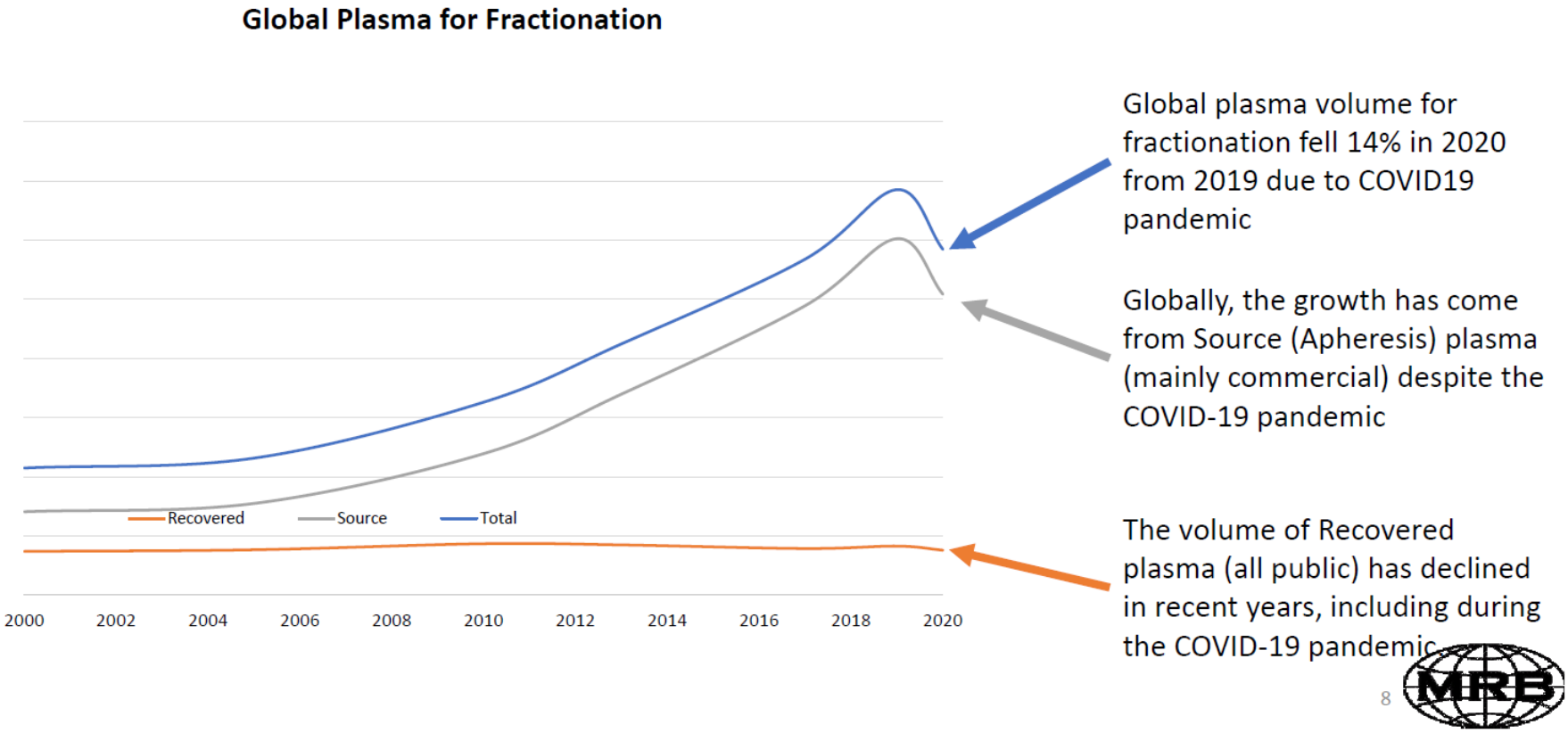
2-France: from 2018 on

3-Germany: 2021

4-USA: from 2019 on

5-and also, as far as the EU is concerned, in Cyprus, Greece, Hungary, Latvia, Lithuania and Portugal.

Second fact : These supply tensions were **transitorily exacerbated by the covid pandemic**, due notably to the resulting (temporary) shrink of plasma collection: the global volume of collected fractionation plasma dropped from **69 million liters** in 2019 to **59 million liters** in 2020.



(Graph from Hotchko, M. Current market landscape for plasma and immunoglobulins, contribution to the *IPFA/EBA Symposium on Plasma Collection Supply*, 15-16 March 2022)

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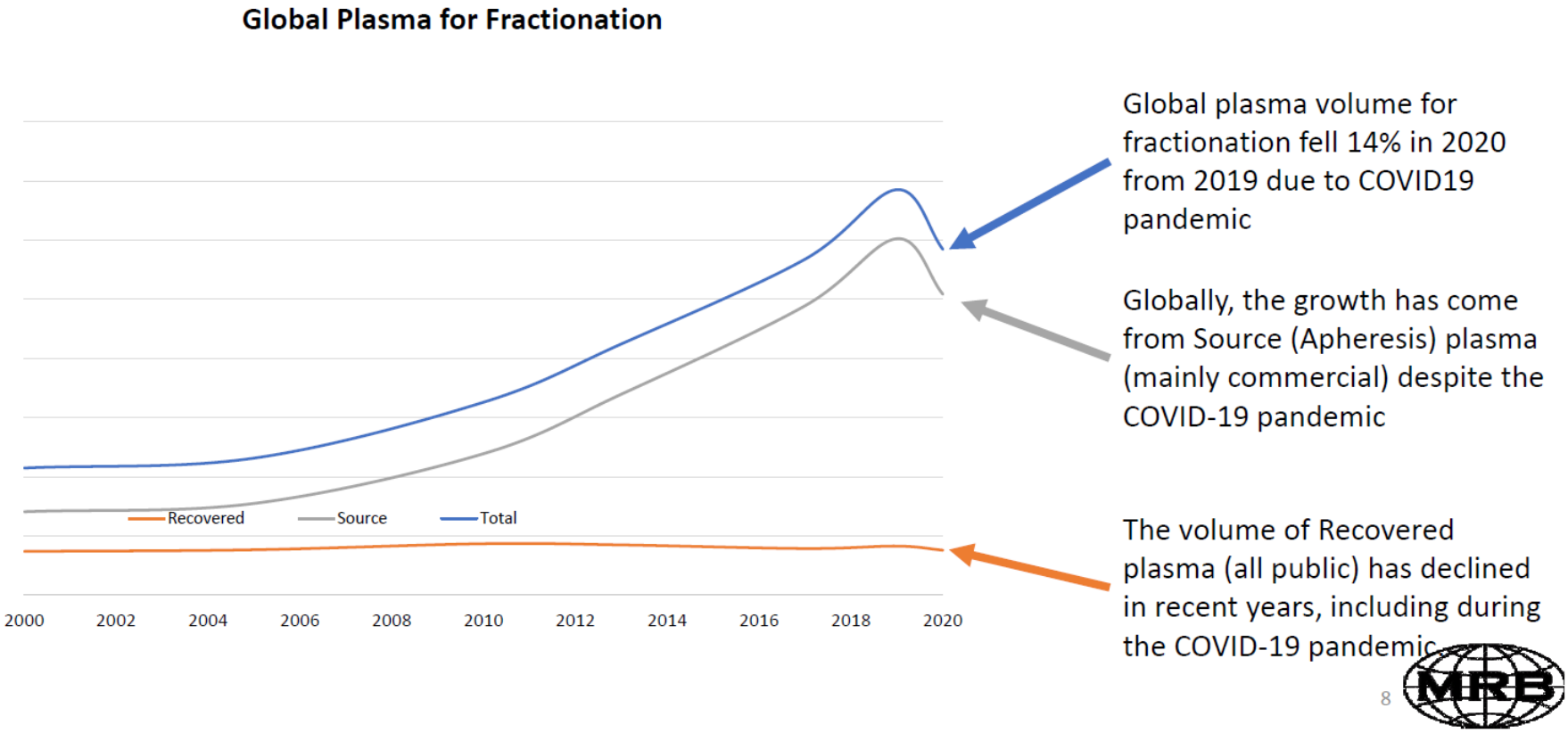


(Graph from Hotchko, M. Current market landscape for plasma and immunoglobulins, contribution to the *IPFA/EBA Symposium on Plasma Collection Supply*, 15-16 March 2022)

Third fact: The **strong integration of the plasma market into the world economy** makes it particularly vulnerable to the consequences and dangers of the **rising protectionism** that accompanies the profound transformations of international relations now underway.

The **European Union** appears particularly vulnerable in this respect because it heavily relies on imports of fractionation plasma :

the EU **consumes about a quarter** of all immunoglobulins but **collects only 15%** of the world's fractionation plasma, the gap being covered mainly by its large imports of fractionation plasma from the USA.

These facts have **public policy** consequences.

One of the most significant of them is the promotion and implementation of **self-sufficiency objectives** at the level of the **national** blood organizations **that have chosen to ban paid plasma donations**.

Under current technological and economic conditions, a self-sufficiency policy is futile for countries that have well-established blood donation organizations that **allow paid plasmapheresis**. These countries, such as the USA and Germany, accumulate quantities of domestic fractionation plasma that are large enough, under current normal conditions, to satisfy their domestic demand and feed significant **exports** of this raw material. Therefore, a self-sufficiency policy by public health authorities makes practical sense only in those countries that **either do not have a suitable blood donation organization** or have such an organization but **prohibit paid plasmapheresis**. In this presentation, I focus on the latter case.

A basic stake in designing **enforceable** public policies in such cases is defining **appropriate self-sufficiency objectives**.

We argue that these goals should be :

1-based on **medical consensus** and **evidence-based prescriptions of PDMPs** at the level of the relevant **national** blood organization;

2-based on a **pragmatic** (that is, **flexible** enough) interpretation of the self-sufficiency standard by public health authorities.

1-Evidence-based medical consensus on PDMPs

Brand et al. ([9]) show that the observed increase in demand for PDMPs is not based on clinical evidence.

Instead, based on established clinical evidence, they argue that the normalization of indications is a necessary prerequisite for sustainable self-sufficiency if plasma donation is not compensated.

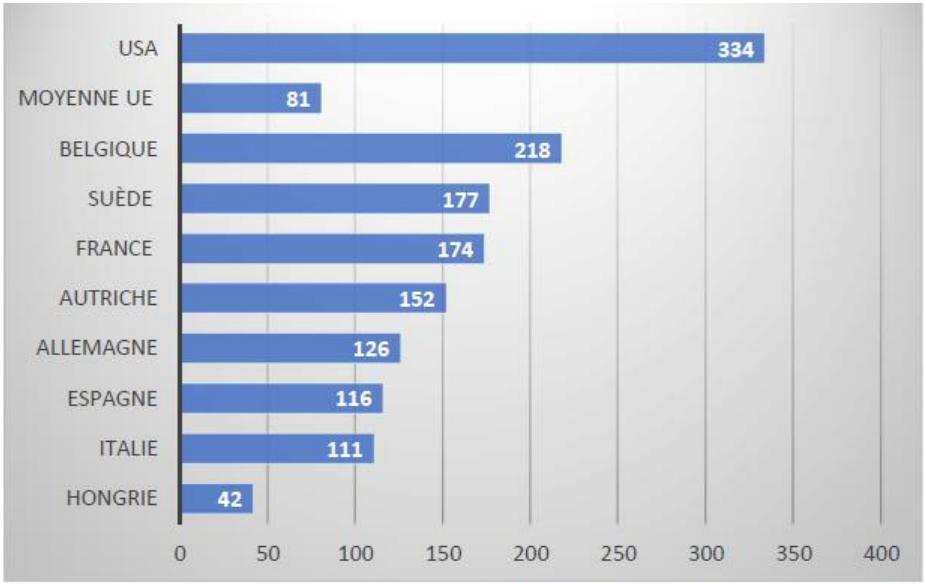
They also remind us that evidence-based restrictions on clinical indications for **labile blood products** have been successfully applied over the past several decades, resulting in a nearly 40% decline in their use.

Some **facts** supporting this view, and particularly their first point (a demand for PDMPs that is **not based on clinical evidence**) :

large variations in Ig use by country or by large region, clearly inconsistent with a determinant role of the health status of populations on PDMPs' prescriptions

USA : **1/2** global Ig consumption, **335** million people
European Union : **1/4** global Ig consumption, **445** million people
Asia-Pacific region : **1/5** global Ig consumption, **over 4** billion people

Ig consumption (kg / million people), 2020



Market Research Bureau, Mai 2023

2-Practical need for flexibility

Under realistic conditions, self-sufficiency generally **cannot mean full coverage** of basic needs in PDMPs. For **two reasons** at least.

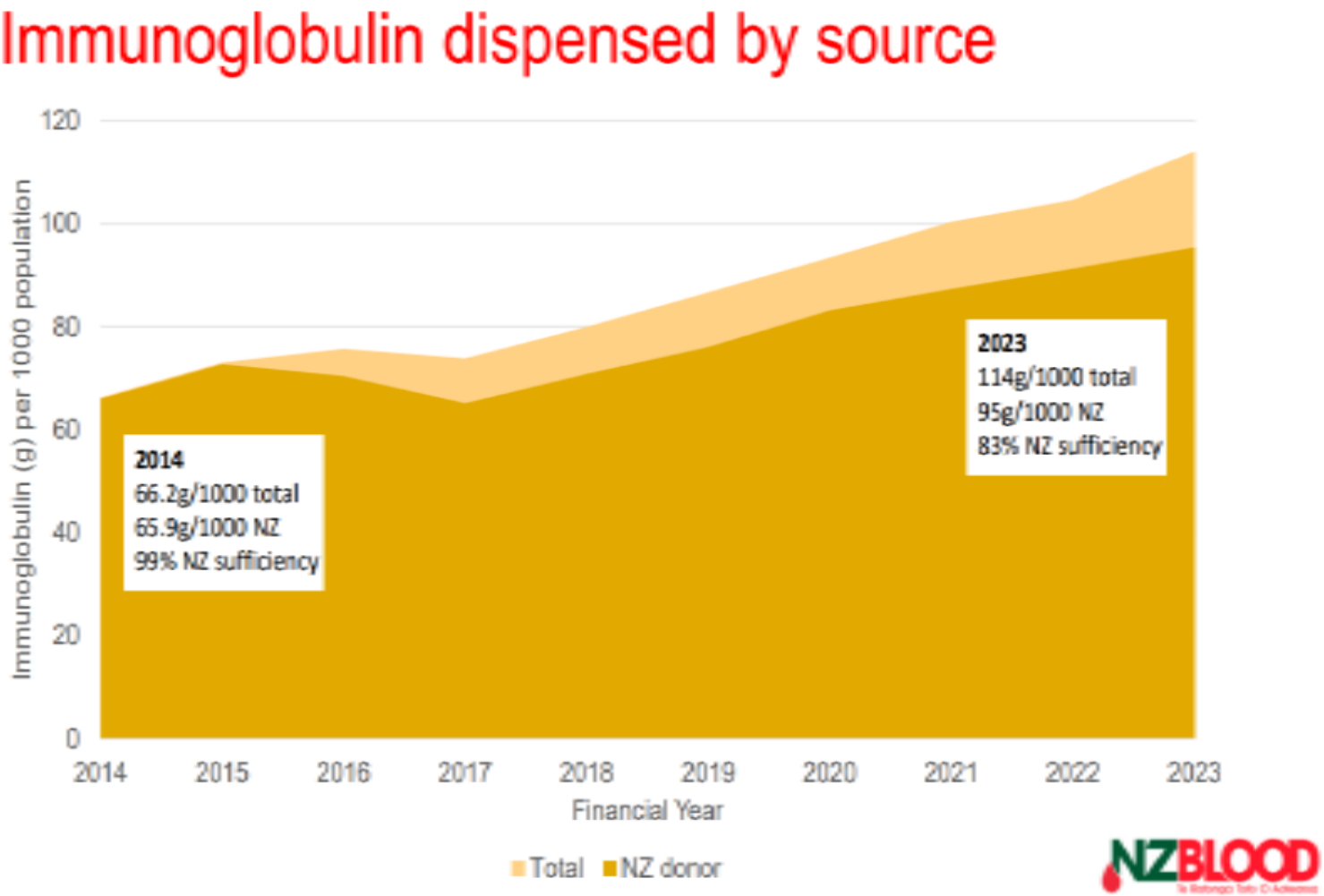
One stems from the fact that definite quantitative objectives cannot be inferred from the type of national medical consensus recommended above; they can only be derived from the varying conditions of (compliant) clinical practice.

A second important reason applies specifically to **unpaid** plasma donations. The latter cannot adjust in time to variations in demand, especially **rapidly increasing** demand, even if the demand is based on adequate medical consensus.

The **Italian experience** provides an interesting example of the type of pragmatic self-sufficiency objectives we have in mind:

The self-sufficiency rates reported for 2017 range from **70%** for **albumin** to **96%** for **PCCs3**, and a rate of **73%** for immunoglobulins.

Another interesting example is **New Zealand** :
1-**full unpaid** plasma collection,
2-**83%** self-sufficiency rate in Igs (and Ig consumption of **114 kg** per million people).



II-Implementation of self-sufficiency objectives for PDMPs from **unpaid** plasma donations

I argued above that a self-sufficiency policy by public health authorities makes practical sense only in those countries that **either do not have a suitable blood donation organization** or have such an organization but **prohibit paid plasmapheresis**.

We focus here on the latter case.

The self-sufficiency policy of such countries will mainly **collect domestic fractionation plasma** from **unpaid** plasma donations and achieve **domestic production of PDMPs from these domestic resources in raw materials** to meet the quantitative self-sufficiency objectives outlined above, i.e. **self-sufficiency rates** ranging in an interval from, say, **75 to 85** percent on average.

1-Collection

The collection of fractionation plasma must be done primarily by **dedicated plasmapheresis** for at least two reasons:
1-the **large volumes** required
2-and the **divergent trends** in transfusion (which is declining in established blood organizations) and in demand for PDMPs (which is growing rapidly in the same organizations).

Uncompensated plasmapheresis must be performed by a **nonprofit** collection organization of the public or associative type.

A **crucial determinant of** the **cost-effectiveness** of plasmapheresis is **equipment utilization**, as measured by the **number of donations per device per day**:
Collection costs range from more than **$250/€** per liter in **low-intensity** conditions (**one** donation per machine per day), to roughly **half this amount** in **high-intensity** conditions (**six** donations per machine per day).

It is difficult, if not impossible, for **nonprofit** organizations to achieve the cost-effectiveness of **for-profit** plasmapheresis centers of the fractionation industry, because **donor availability**, as measured by the average number of donations per donor per year, is **lower for unpaid donations**, making it more difficult to achieve the high utilization rates of collection rooms, equipment, and staff (and thus the high-cost efficiency) achieved by for-profit collection centers.

Cost Breakdown of Plasma Fractionation, By Key Countries

Country	Donor Cost per Appointment	Plasma Fractionation Cost (in USD)		
	In USD	Plasmapheresis	Whole Blood	Multi-component apheresis
U.S.	50.0-75.0	186.5	32.9	80.1
Canada	60.0-65.0			
Germany	27.5-30.5			

2-Industrial production of PDMPs

The second type of relevant organizational pattern is **contract fractionation**, which consists of contracts negotiated between **public health authorities**, the **nonprofit collection organization**, and a **domestic fractionator** to produce PDMPs that meet public policy self-sufficiency goals.

Economic sustainability requires that the industrial operator, whether public, private, not-for-profit, or for-profit, earn a **return on capital employed** comparable to the returns earned by its competitors in the field.

A distinctive feature of the fractionation industry, as part of the pharmaceutical branch, is the **share of raw materials (i.e., fractionation plasma) in its total production costs**, which is **far higher** than the average for the pharmaceutical industries.

Consequently, **economically sustainable** contract fractionation requires that the **purchase price paid by the fractionator to the nonprofit collection operator for the fractionation plasma be equal to the international market price of that raw material**.

This might require a **public subsidy** to cover the difference (if any) between the **international market price of fractionation plasma** and the **collection cost** of the domestic collection organization.

Main conclusions:

1-Properly formulated self-sufficiency objectives **can be achieved** through **unpaid** plasmapheresis

2-Economic sustainability requires that the **sale price** of the fractionation plasma from the **nonprofit collection organization** covers the **collection costs** of the appropriate dedicated plasmapheresis centers

3-If these collection costs are higher than the international market price of fractionation plasma, a **public subsidy** from the government budget to the collection organization **should make up the difference** to ensure the economic viability of **both nonprofit collection** and **industrial production**.

Disclosure of interest

The author declares that he has no competing interests.

References

[1] Mercier Ythier J. The contested market of plasma. Transfus Clin Biol 2020;27:52–57.

[2] Hotchko M. Current market landscape for plasma and immunoglobulins. Proceedings of the IFPA/EBA Symposium on Plasma Collection and Supply, March 15th-16th, 2022. https://ipfa.nl/events/ipfa-eba-symposium-on-plasma-collection-and-supply/

[3] Strengers PF. Plasma Collection and Fractionation in Europe, past, present and future. Proceedings of the IFPA/EBA Symposium on Plasma Collection and Supply, March 15th-16th, 2022. https://ipfa.nl/events/ipfa-eba-symposium-on-plasma-collection-and-supply/

[4] Hotchko M, Roberts P. Recent market status and trends of fractionated plasma products. Ann Blood 2018;3:19.

[5] World Health Organization. Global status report on blood safety and availability, 2021. https://www.who.int/publications/i/item/9789240051683

[6] Strengers PF, Klein HG. Plasma is a strategic resource. Transfusion 2016;56:3133–7.

[7] Tiberghien P. Increasing unpaid plasma collection by blood establishments to ensure availability of plasma–derived medicinal products and blood components in Europe. Transfus Clin Biol 2021;28:331-3.

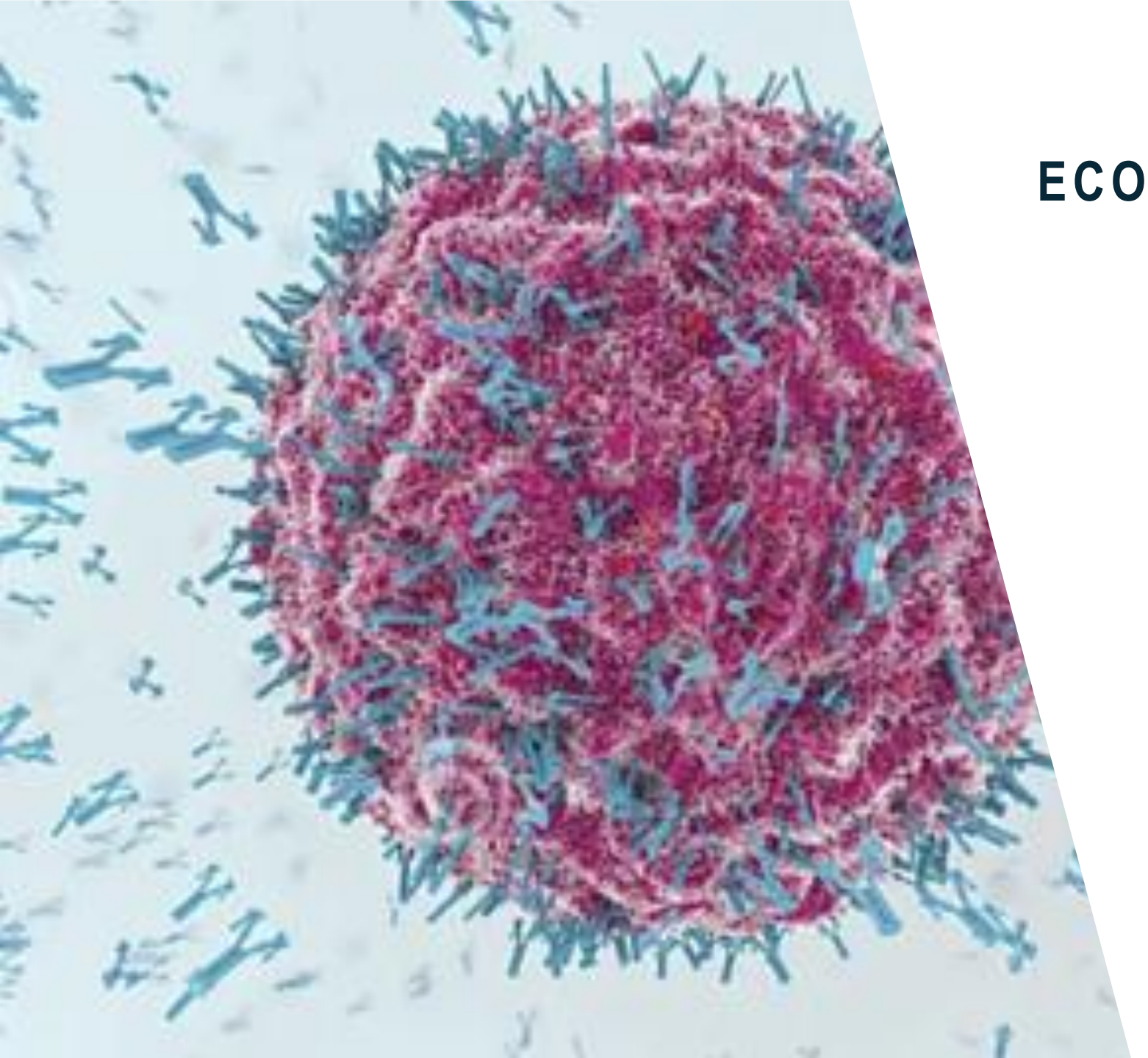
[8] Strengers PF. Is the yearly collection of recovered/apheresis plasma adequate to ensure European self-sufficiency of essential plasma-derived medicinal products? Proceedings of the EDQM International Symposium on Plasma Supply Management, January 29th-30th, 2019. EDQM, 2021. https://www.edqm.eu/en/news/international-symposium-plasma-supply-management-proceedings-now-available

[9] Brand A, De Angelis V, Vuk T, Garraud O, Lozano M, Politis D. European Mediterranean Initiative for Transfusion Medicine. Review of indications for immunoglobulin (IG) use: Narrowing the gap between supply and demand. Transfus Clin Biol 2021;28:96–122.

[10] Liumbruno G. Regulation of plasma self-sufficiency program: National regulations versus regional regulations and current developments. Proceedings of the EDQM International Symposium on Plasma Supply Management, January 29th-30th, 2019. EDQM, 2021. https://www.edqm.eu/en/news/international-symposium-plasma-supply-management-proceedings-now-available

[11] Thijssen-Timmer D. Obstacles to strategic independence of plasma for fractionation in Europe and the way forward – Is the EU legislation/regulation itself a barrier in any way? Learnings from the Dutch attempt to convert whole blood donors into plasmapheresis donors. Proceedings of the EDQM International Symposium on Plasma Supply Management, January 29th-30th, 2019. EDQM, 2021. https://www.edqm.eu/en/news/international-symposium-plasma-supply-management-proceedings-now-available

[12] Bigey F. Obstacles to strategic independence of plasma for fractionation in Europe and the way forward – Is the EU legislation/regulation itself a barrier in any way? Learnings from the French attempt to convert whole blood donors into plasmapheresis donors. Proceedings of the EDQM International Symposium on Plasma Supply Management, January 29th-30th, 2019. EDQM, 2021. https://www.edqm.eu/en/news/international-symposium-plasma-supply-management-proceedings-now-available



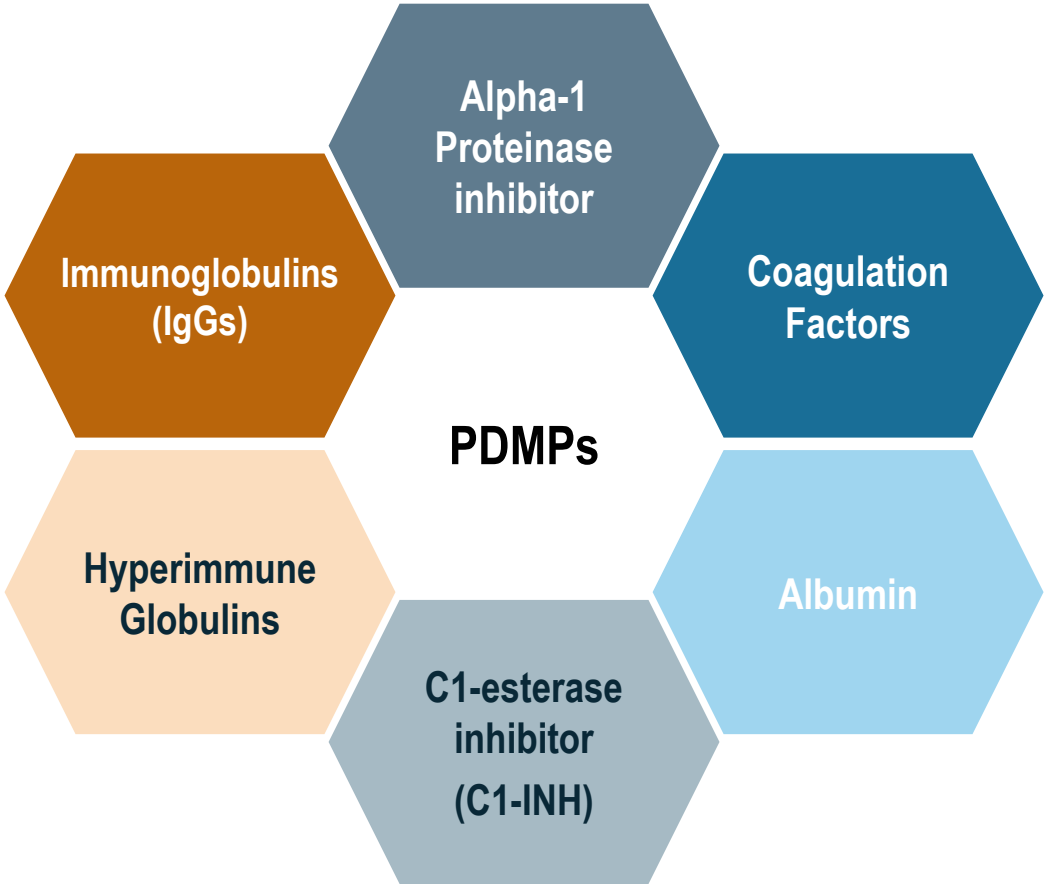
CLINICAL AND SOCIO-ECONOMIC VALUE OF PDMPs

EDQM Meeting
26-27th March 2025

Tomasz Kluszczynski

PDMPs are a class of unique biological medicines, derived from human plasma and used to treat patients with rare conditions, characterised by high individual/societal burden

ILLUSTRATIVE/ NOT EXHAUSTIVE



- Alpha-1 Antitrypsin Deficiency (AATD) (genetic emphysema)

- Immunodeficiencies: PID and SID
- Neuropathies: CIDP, MMN, (GBS), Autoimmune Encephalitis
- Haematology: Idiopathic Thrombocytopenic Purpura (ITP), Alloimmune thrombocytopenia

Bleeding Disorders

- Hemophilia A and B
- Von Willebrand disease (VWD)
- Rare clotting factor deficiencies, Bleeding from trauma, Liver disease

- Rabies, tetanus, hepatitis B, cytomegalovirus, varicella-zoster virus
- Rh negative pregnancy
- Liver transplant and surgery

- Cardiac surgery
- Liver disease
- Severe infections
- Emergency and Surgical Medicine (shock, severe burns, intraoperative)

- Hereditary angioedema (HAE)

Adapted from: Kluszczynski et al: Key economic and value considerations of Plasma Derived Medicinal Products (PDMPs)in Europe, 2020

The medical need for PDMPs in general and IgGs in particular is growing, due to demographics, better diagnostics and new indications for effective/appropriate use

Unmet medical need \ Added therapeutic value	Absent	Low	Moderate	High	Maximum
Maximum				• Alloimmune thrombocytopenia • Toxic Eepidermal Necrolysis (TEN)	• PIDs associated with significant antibody defects
High		• Multiple Sclerosis (MS) in pregnant women • IgM Paraprotein-associated demyelinating neuropathy • ANCA-associated systemic vasculitides (AAV) • Autoimmune uveitis	• Autoimmune hemolytic anaemia (AIHA) • Stevens-Johnson syndrome • Scleromyxedema • Generalized morphea	• Acquired hypogammaglobulinaemia secondary to haematological malignancies • Chronic Demyelinating Idiopathic Polyneuropathy (CIDP) • Guillain-Barré Syndrome (GBS) • Acquired red cell aplasia associated with chronic parvovirus B19	• Kawasaki Disease • Multifocal Motor Neuropathy (MMN) • Myasthenia gravis crisis (MC)
Moderate		• Myasthenia gravis (MG) • Rasmussen's Encephalitis • Opsoclonus-myoclonus syndrome - paediatric or adult non paraneoplastic • Autoimmune neutropenia • Pyoderma Gangrenosum (PG)	• Non-infective Autoimmune Encephalitides (AIE) • Autoimmune bullous dermatosis (AIBD): Pemhigoid, Pemphigus Vulgaris and LABD • Haemolytic disease of the newborn (HDFN) • Post-transfusion purpura	• Idiopathic thrombocytopenic purpura (ITP) • Inflammatory Myopathies-Dermatomyositis (DM)/ Polymyositis (PM)/ Necrotizing autoimmune myopathy (NAM) • Cutaneous scleroderma	
Low		• Acute idiopathic/ autoimmune dysautonomia/ ganglionopathy	• Acquired von Willebrand disease (vWD) • Neuromyelitis optica spectrum disorders (NMOSD)	• Systemic capillary leak syndrome (SCLS) • Chronic recurrent thrombosis	
Absent					

LEGEND:

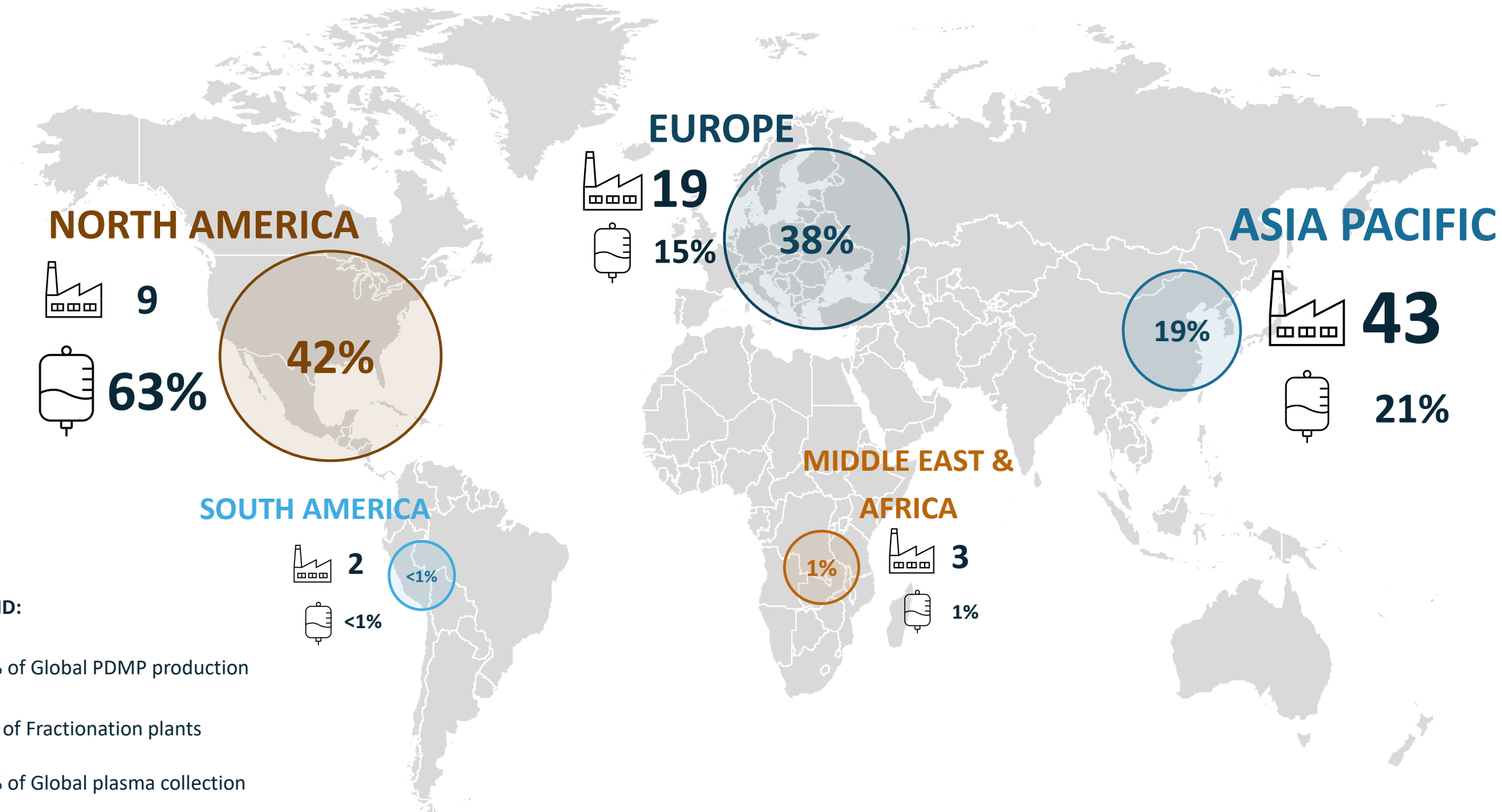
Level of appropriateness is indicated by a shade of the tile:

- ***Appropriate Use***
- ***Conditional Use***
- ***Not Appropriate***

Quality of evidence is indicated by colour of text:

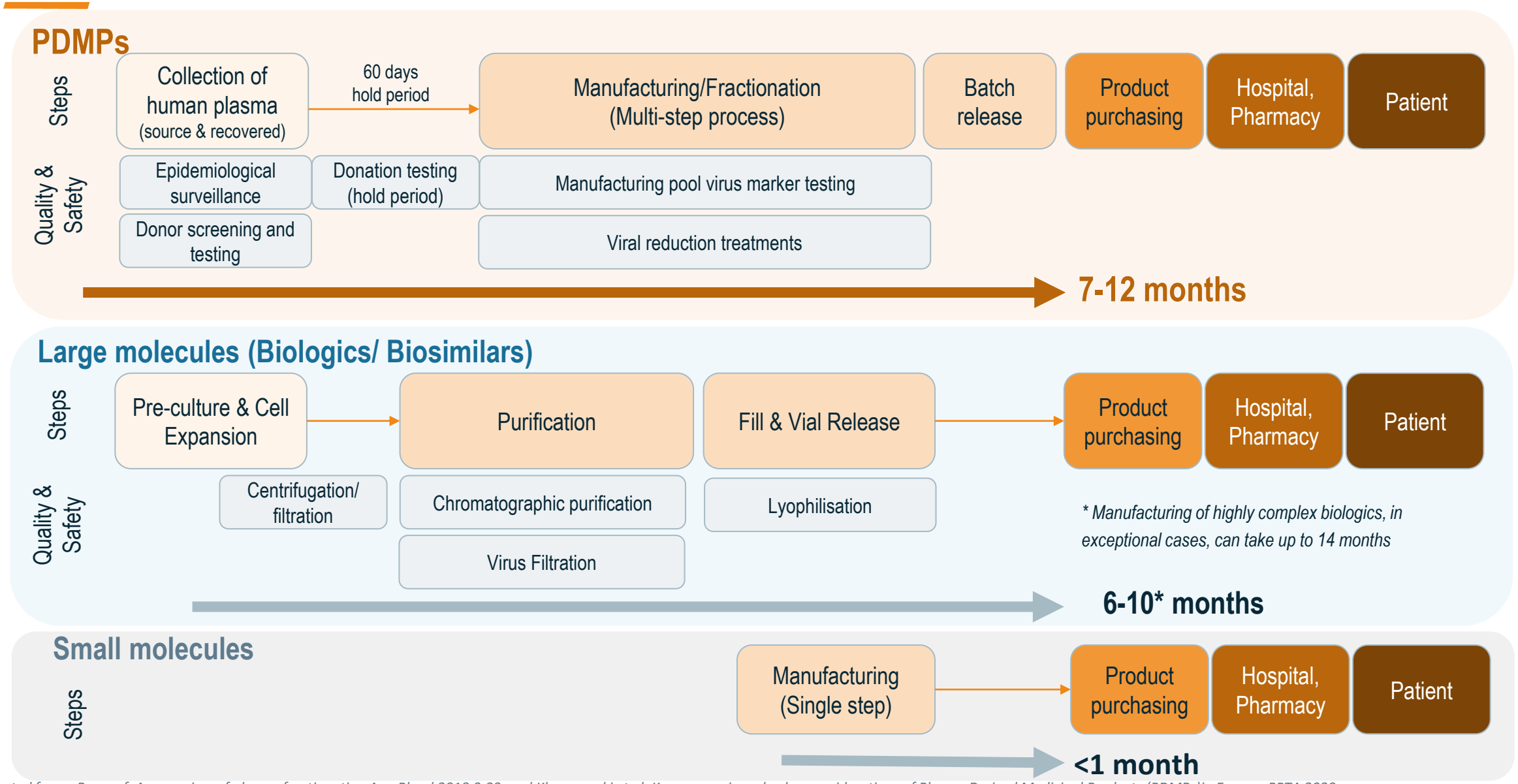
- Lipsum — **High Quality**
- Lipsum — **Moderate Quality**
- Lipsum — **Low Quality**
- Lipsum — **V Low Quality**

Despite the high and growing demand for PDMPs, many regions do not collect and/or fractionate sufficient amounts of plasma to meet the local medical needs



Adapted fromn Hotchko et al. Plasma Flows at Global Level: Why it travels so far?, available publicly at https://marketingresearchbureau.com/plasma-flows-on-a-global-level/

Additionally, the PDMP value chain, from Donor to Patient, is prone to disruptions due to its complexity and extremely long duration of manufacturing process



Adapted from : Burnouf: An overview of plasma fractionation Ann Blood 2018;3:33, and Kluszczynski et al: Key economic and value considerations of Plasma Derived Medicinal Products (PDMPs)in Europe, PPTA 2020

Adapted from: Vulto, Arnold & Jaquez, Orlando. (2017). The process defines the product: what really matters in biosimilar design and production?. Rheumatology (Oxford, England). 56. iv14-iv29. 10.1093/rheumatology/kex278.

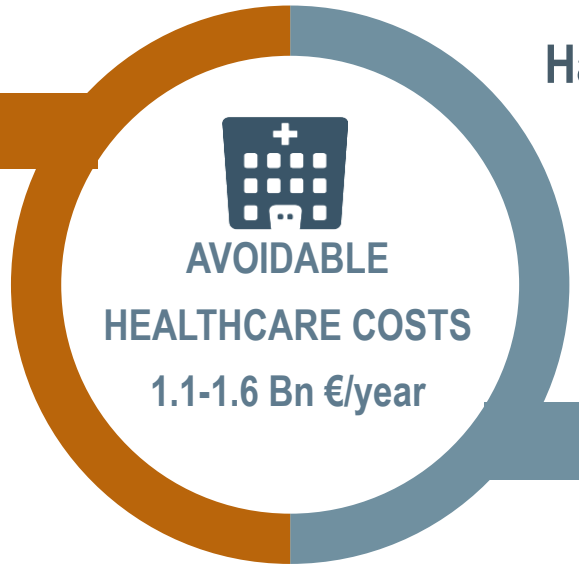
Many PDMPs, such as IgGs, are categorised by the WHO as essential medicines; offering high clinical value and a significant socio-economic impact

HEALTH GAINS AND AVOIDABLE HEALTHCARE COSTS
(PID & HAEMOPHILIA IN EUROPE)

PIDs: treated with IgGs

PID≈1 Bn €/year

PDMP eligible population in Europe: ~44,000
Survival rate 1979 = 30 % vs. 2010 = ~100%
65% reduction in infections



Haemophilia: Coagulation Factors

PDMP eligible population in Europe: ~47,000
Life expectancy prior 1955 = 19 years vs. 2001 = 71 years; 80% reduction in bleeds

Haemophilia ≥ 1 Bn €/year

- Health Gain = Recovered DALY * VOLY
- DALY is the sum of the Years of Life Lost (YLL) due to premature death and the Years Lost due to Disability (YLD)
- Key DALY component for PID is # of severe infections per year and for Haemophilia: key DALY component is 3 of bleeds per year
- VOLY (Value of a Statistical Life Year) is estimated at €40,000
- Avoidable indirect healthcare costs for PID based on reduction of hospitalization days due to severe infection

Adapted from: Kluszczynski et al: Key economic and value considerations of Plasma Derived Medicinal Products (PDMPs)in Europe, PPTA 2020

In spite of the demonstrable IgG value in >20 conditions, most countries reimburse IgGs in fewer than 10 indications, with some focusing very narrowly, only on PID/SID

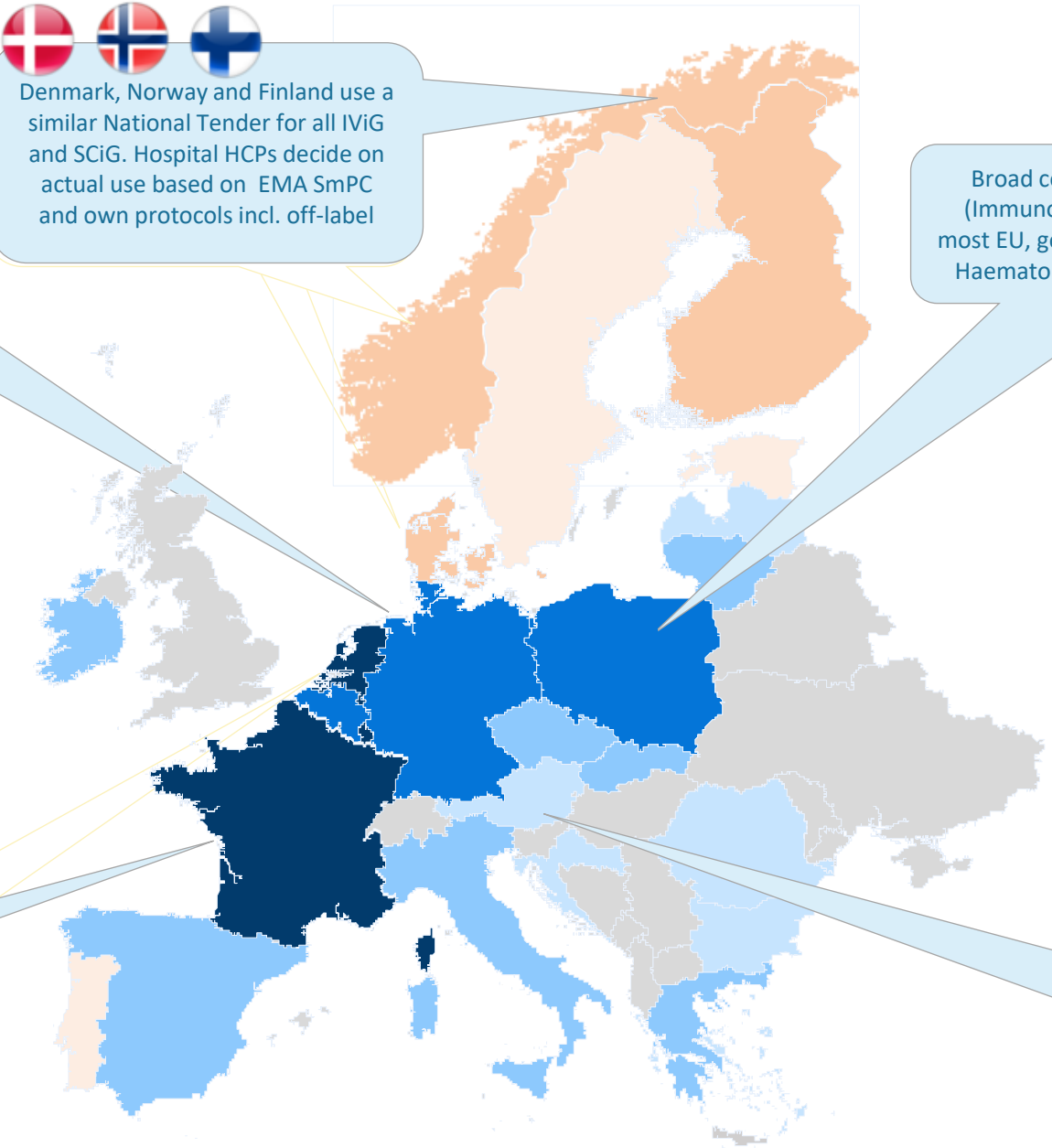
Germany has a mixed system: 14 indications with open reimbursement and remaining reimbursed under EMA SmPC and Off-Label procedures

Denmark, Norway and Finland use a similar National Tender for all IVIG and SCIG. Hospital HCPs decide on actual use based on EMA SmPC and own protocols incl. off-label

Broad coverage under 2 Drug Programs (Immunology and Neurology) and, unlike most EU, good additional coverage of hospital Haematology and Dermatology indications

IgG Reimbursed by ICD10/ORPHA (*Indication-specific*)

- 15+ Indications
- 12-15 Indications
- 7-11 Indications
- 4-7 Indications



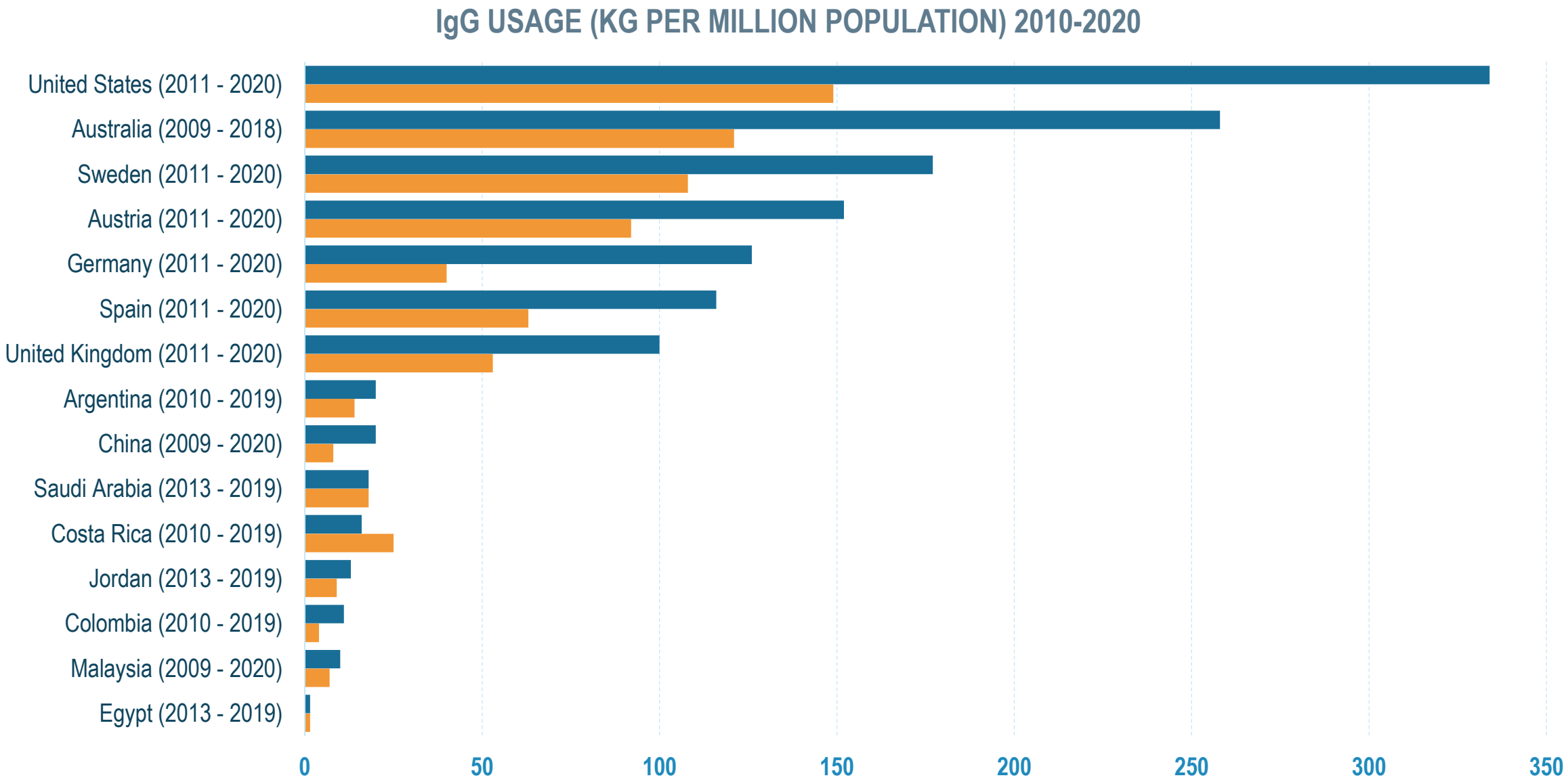
IgG Reimbursed as a Class (*not Indication-specific*)

- National Tender covering EMA SmPC and Off-label
- National Tender covering EMA SmPC
- No data

French and Dutch reimbursement coverage are the most comprehensive with over 20 indications

Low "Automatic" reimbursement coverage off-set by "Individual Funding Request" system, under which all EMA SmPC and Off-Label indications can be reimbursed on a case-by-case basis

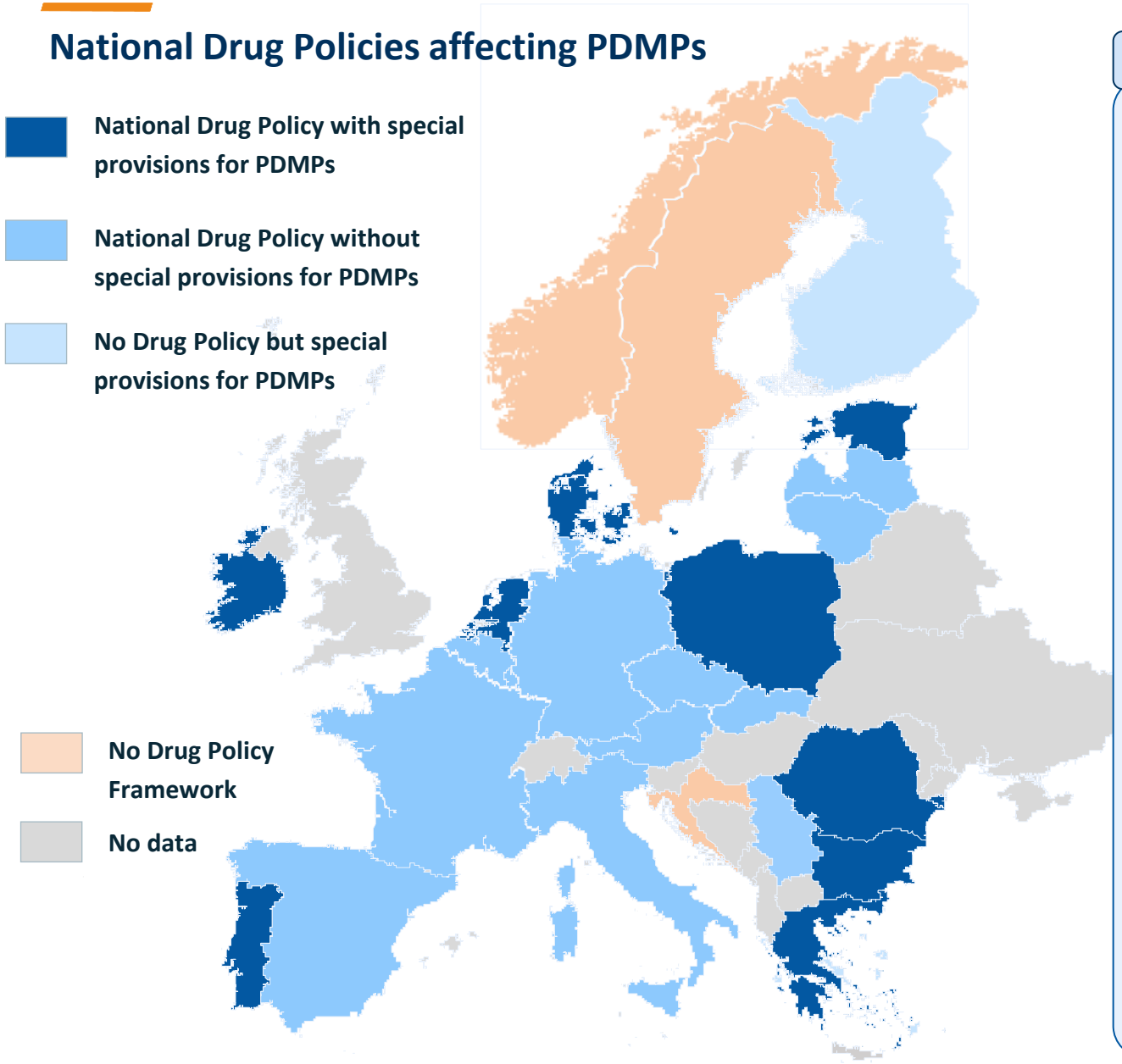
Additionally, IgG consumption per capita varies greatly, often driven by plasma deficits, insufficient reimbursement coverage and sub-optimal clinical practice



Adapted from Hotchko et al. Data & analysis of immunoglobulin supply and plasma requirements in Europe, available publicly at https://marketingresearchbureau.com/wp-content/uploads/2023/05/MRB_EU_SOHO_Figures-2023.pdf

In recognition of the PDMPs unique value, some countries have created extra provisions in their Drug Policies aimed primarily at PDMPs' secure supply chain

National Drug Policies affecting PDMPs

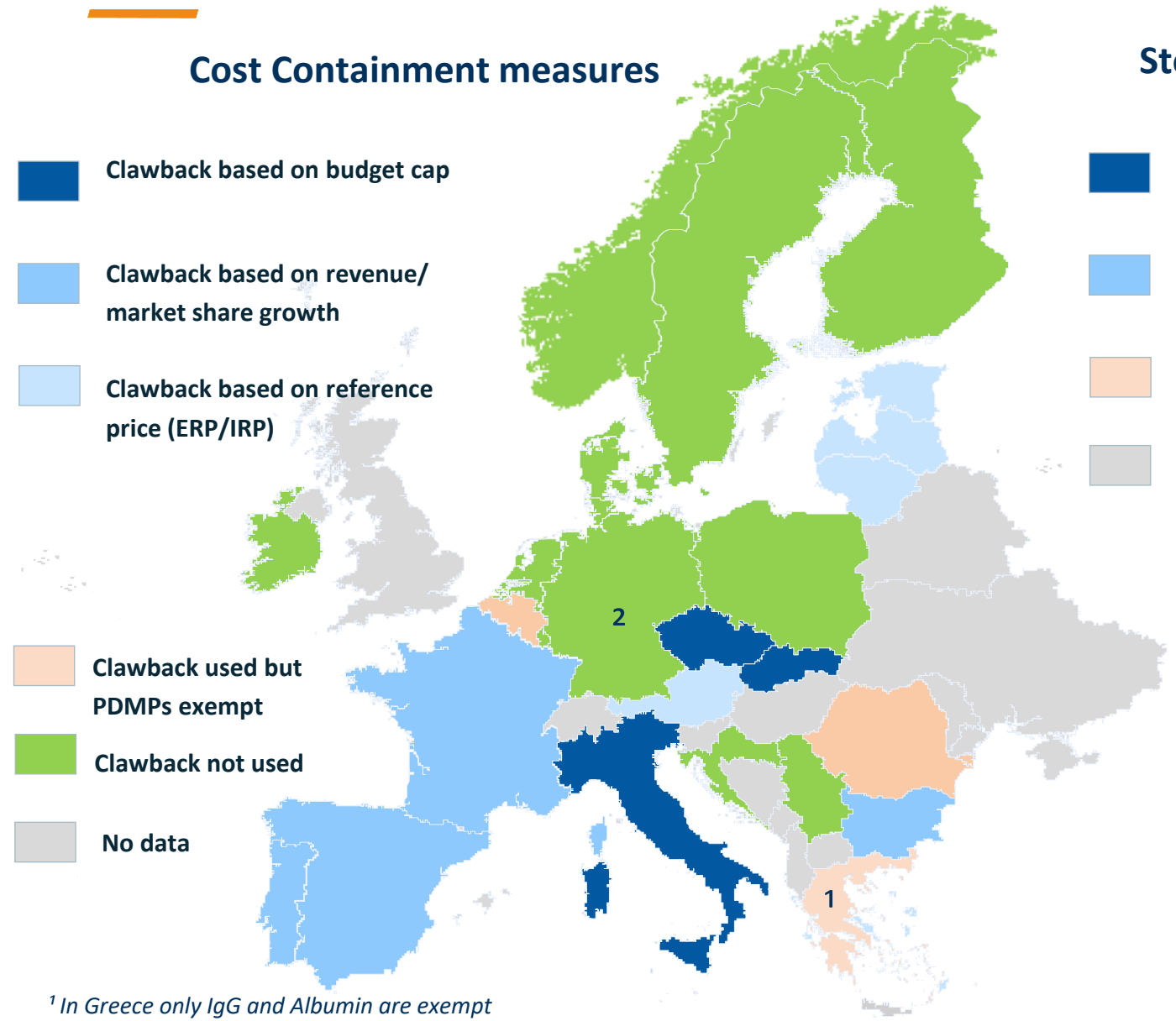


Special Provisions for PDMPs

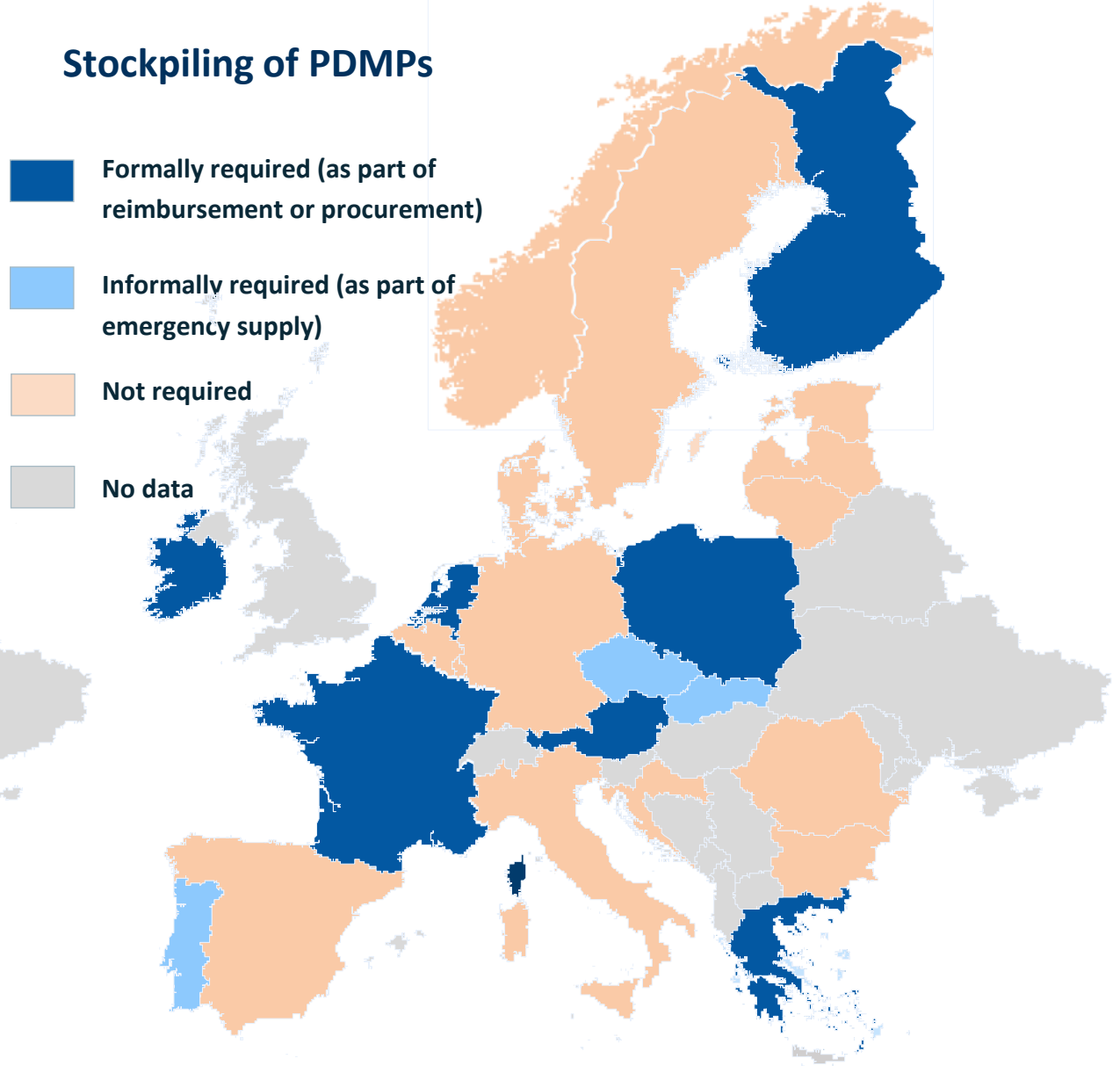
- Majority of the EU countries have a documented Medicines/Drug policy, clearly outlining healthcare system's priorities
- PDMPs are rarely treated as a unique or separate category
- When special provisions are made for PDMPs they typically focus on 3 areas:
  1. Exemption from cost-containment measures:
     - Bulgaria exempts PDMPs and Vaccines from clawback tax
     - Portugal applies PDMP-specific tax at 2.5%, significantly lower than all other medicines at 14.3%
     - Romania exempts all PDMPs (alongside Vaccines) from clawback
  2. Stockpiling requirements and rules:
     - Denmark requires contract holder to supply PDMPs in volume of at least the equivalent of the plasma volume collected
     - Finland does not have a documented drug policy, but has special requirement of stockpiling IgG and Albumins (FIMEA legislation)
     - Ireland issued PDMP conservation protocol during the COVID pandemic which remains in force
     - Netherlands prioritises patient access to PDMPs through stockpiling
     - Poland has both stockpiling policy and IgG on the non-export list
  3. Special pricing methodology
     - Estonia for IgG allows average EU price based on EURIPID; unlike the other medicines priced at the average of the 3 lowest prices
     - Greece exempts PDMPs from annual re-pricing/ price revisions
     - Romania for all PDMPs allows special pricing of the average of 3 lowest, unlike the other medicines priced at the lowest in EU

However, use of cost containment measures and stockpiling requirements puts a significant strain on the fragile PDMP ecosystem, effecting inequity in patient access

Cost Containment measures



Stockpiling of PDMPs



[1] *In Greece only IgG and Albumin are exempt*

[2] *Germany does not apply a classic CB, but rather statutory manufacture discounts and a price moratorium*

Securing commitment and control for the supply of plasma derivatives for public health systems
A short review

Fabio Candura

National Blood Centre

Italian National Institute of Health, Rome

Strasbourg, March 26-27, 2025

Disclosure

I do declare that I have no relevant financial or non-financial relationships within the products or services described, reviewed, evaluated or compared in this presentation other than those related to my function of Public health official.

Agenda

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-
-
-

Foreward

Sources used in preparing this presentation are taken from project “101056988/SUPPLY” co-funded from the European Union’s EU4Health Programme (2021-2027) at https://supply-project.eu/resources/.

In particular,

D4.2 Report on policies and/or legal frameworks in plasma collection and PDMPs management throughout EU

Results of the “Survey on plasma collection and PDMPs production from national plasma in EU”

addressed to the list of national CAs for blood and blood components as provided by DG SANTE.

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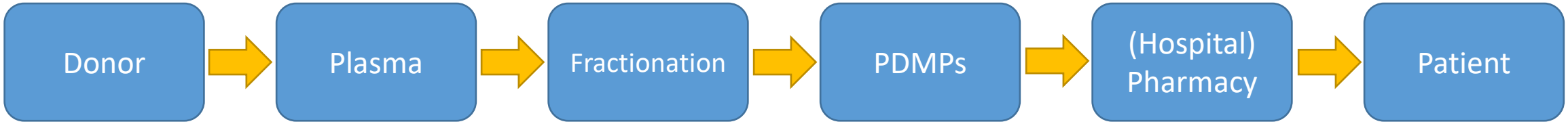
PLASMA ITALIA | CENTRO NAZIONALE SANGUE

Background

Starting from 80s - 90s

- PDMP production shifted from a public-owned to a private for-profit system and involved the collection of plasma for fractionation
- A continuous process of concentration (still in progress) of fractionators and growing of the potential manufacturing capability
- Development of non-plasma-based alternatives with consequences in the mutation of driver products:
  from human albumin to factor VIII to immunoglobulins
  and in the economy of production (cost structure, economy of last litre, …)

The plasma value chain



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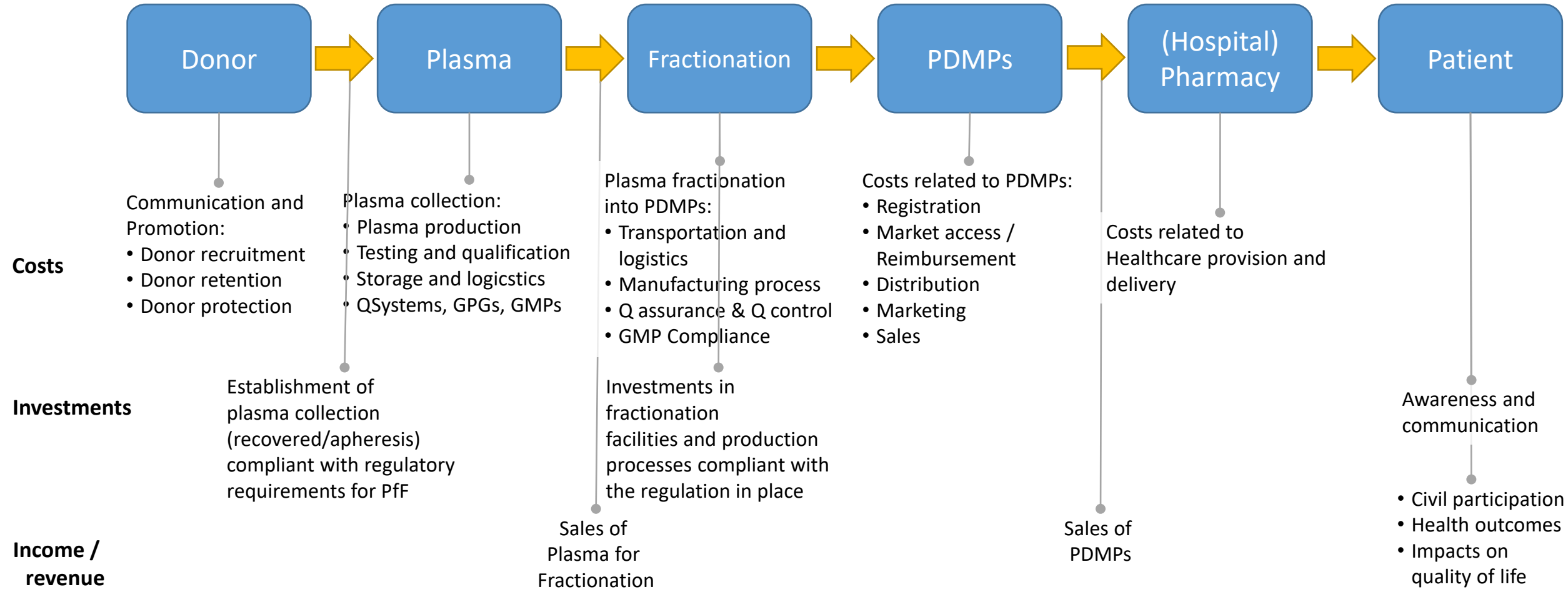

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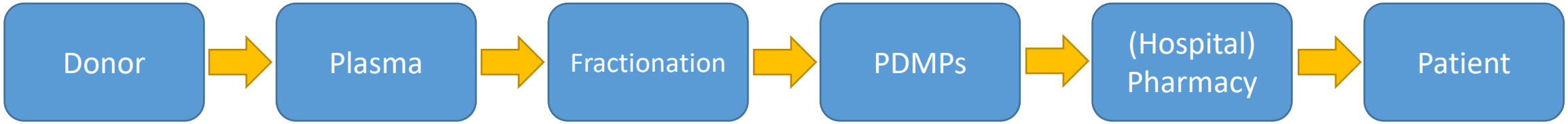
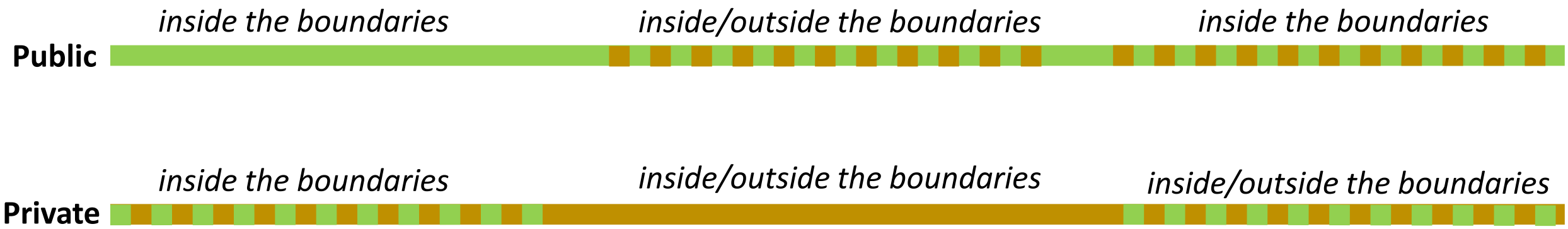
The plasma & PDMPs chain





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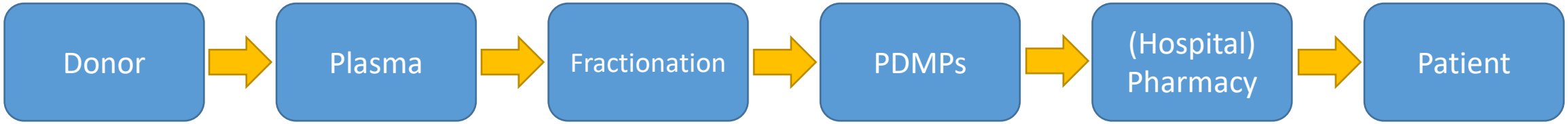

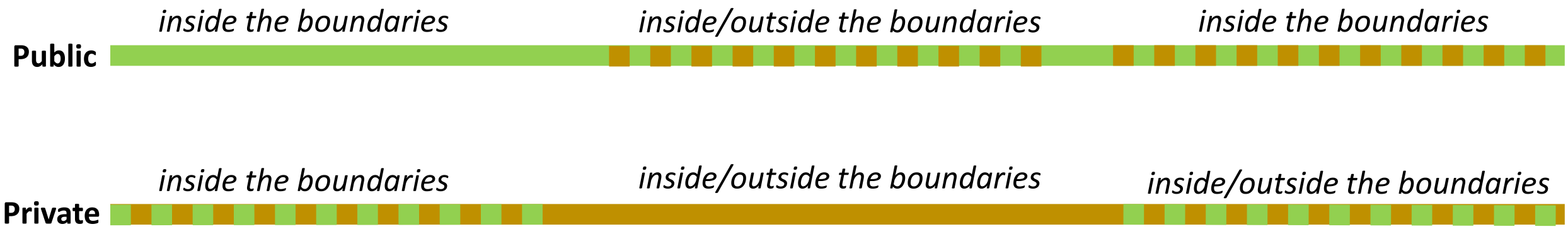

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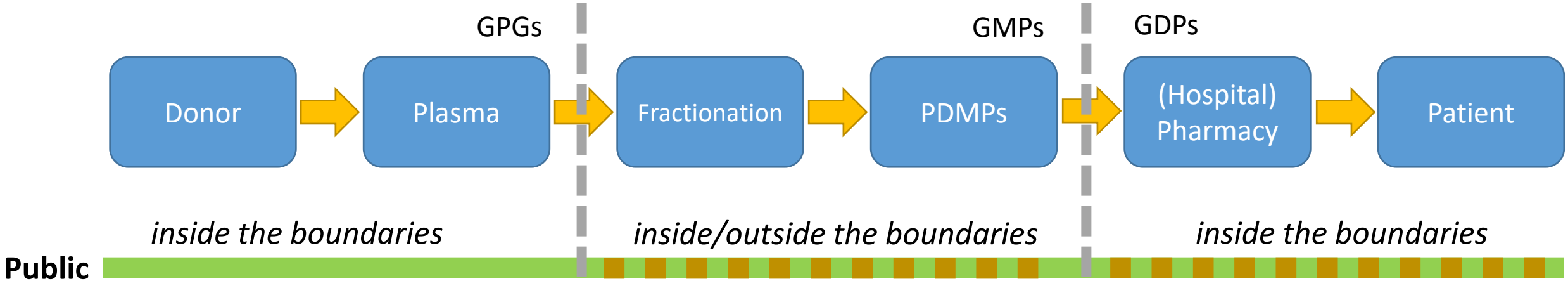
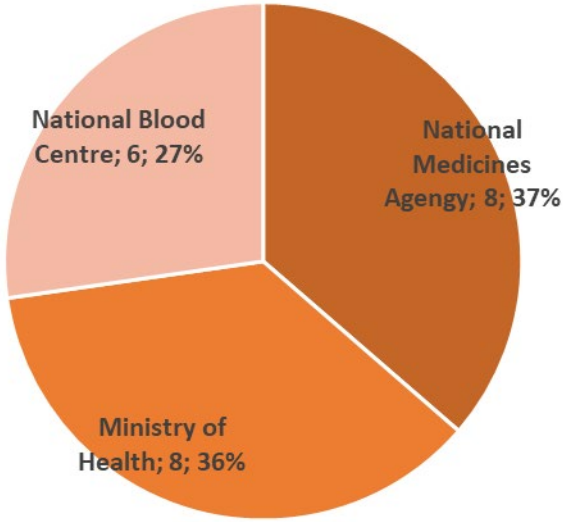


Who is in charge of Plasma collection and PDMPs production from national plasma



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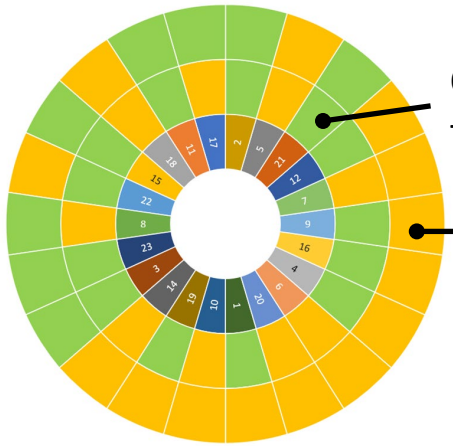
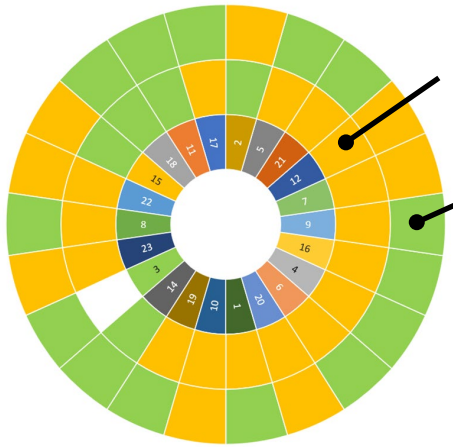
The plasma & PDMPs chain



Countries with a specific **legislative framework** on the **collection of plasma** intended for fractionation into PDMPs

Countries with a national **programme/policy** on the **collection of plasma** intended for fractionation into PDMPs



Countries with a specific **legislative framework** on the **appropriate** and **rational clinical use** of PDMPs

Countries with a specific **programme/policy** (e.g. guidance documents, recommendations) on the **appropriate** and **rational clinical use** of PDMPs

Yes or Available

No or Not available

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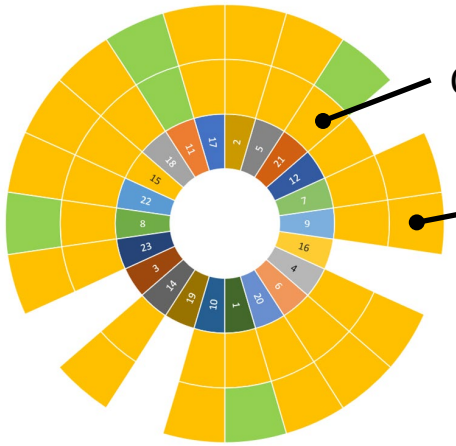
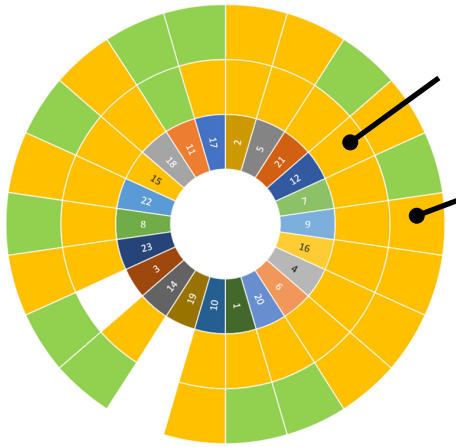
PLASMA ITALIA | CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain



Countries with a specific **legislative framework** on **prioritising use** of PDMPs

Countries with any **guidelines/indications** on **prioritising use** of PDMPs



Country with a specific **legislative framework/policy** on **exceeding** PDMPs

Country with a specific **legislative framework/policy** on PDMPs **shortage** (e.g. mandatory storage and/or contingency rules)

Yes or Available

No or Not available

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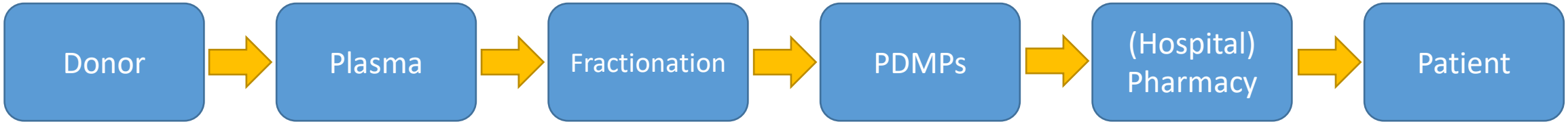
PLASMA ITALIA | CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain



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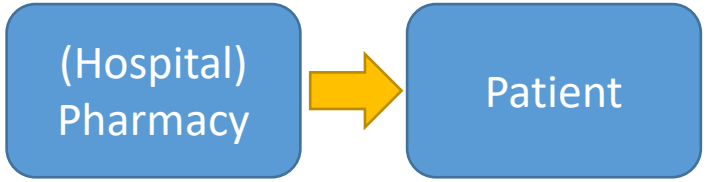


Assessment of needs -

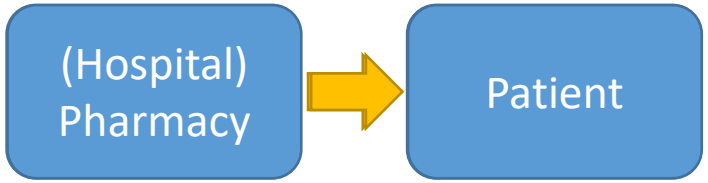
Analysis of the demand for driver(s) -

Analysis of the demand for other PDMPs -

Analysis of spatial and temporal trends -

Evaluation of clinical appropriateness -

The plasma & PDMPs chain



Assessment of needs -

Analysis of the demand for driver(s) -

Analysis of the demand for other PDMPs -

Analysis of spatial and temporal trends -

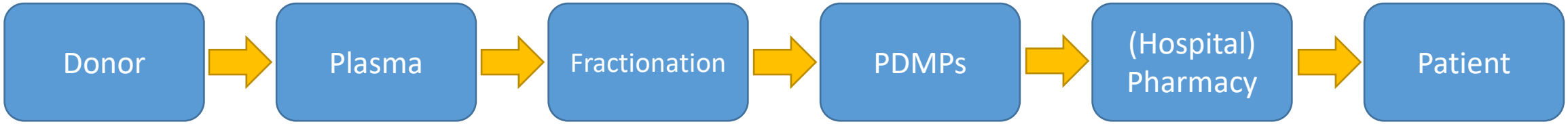
Evaluation of clinical appropriateness -

Analysis of

- Volumes of Plasma for fractionation available today and dynamics of the global context
- Planning of a sustainable plasmapheresis collection programme
- Impacts of the programme on the organisation of the BEs network and collection costs
- Impacts of programming on pharmaceutical expenditure

Source: - Adapted from von Bonsdorff L, et al. Securing commitment and control for the supply of plasma derivatives for public health systems. I: A short review of the global landscape. Vox Sang. 2025;120:114–23.

The plasma & PDMPs chain



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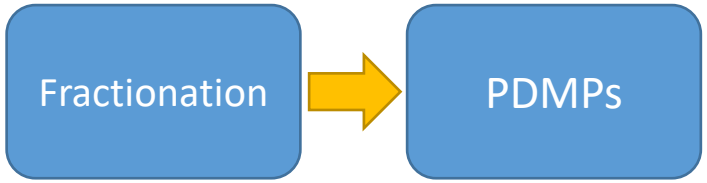
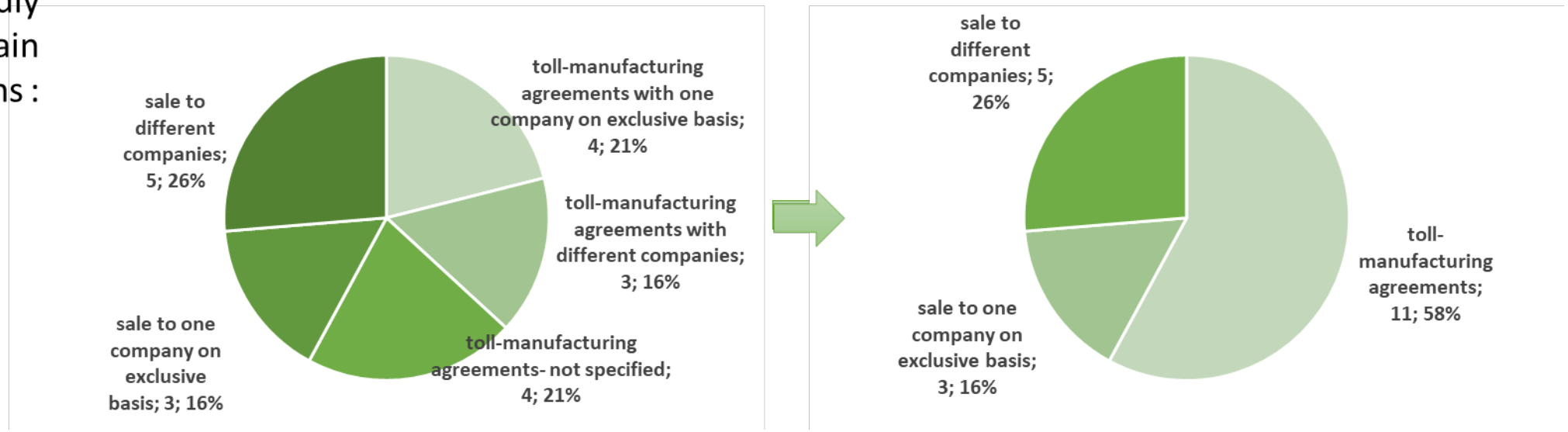
The plasma & PDMPs chain

EU MS manage the plasma collected under different manufacturing models, broadly belonging to two main systems :





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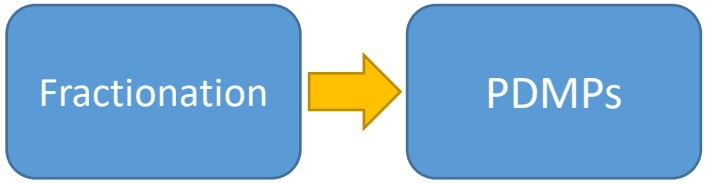
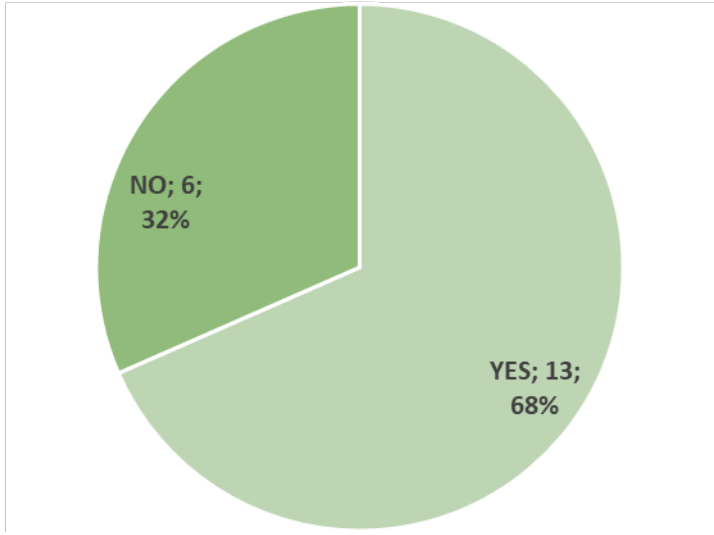
PLASMA ITALIA
CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain

EU MS where PDMPs from national plasma return to the origin:





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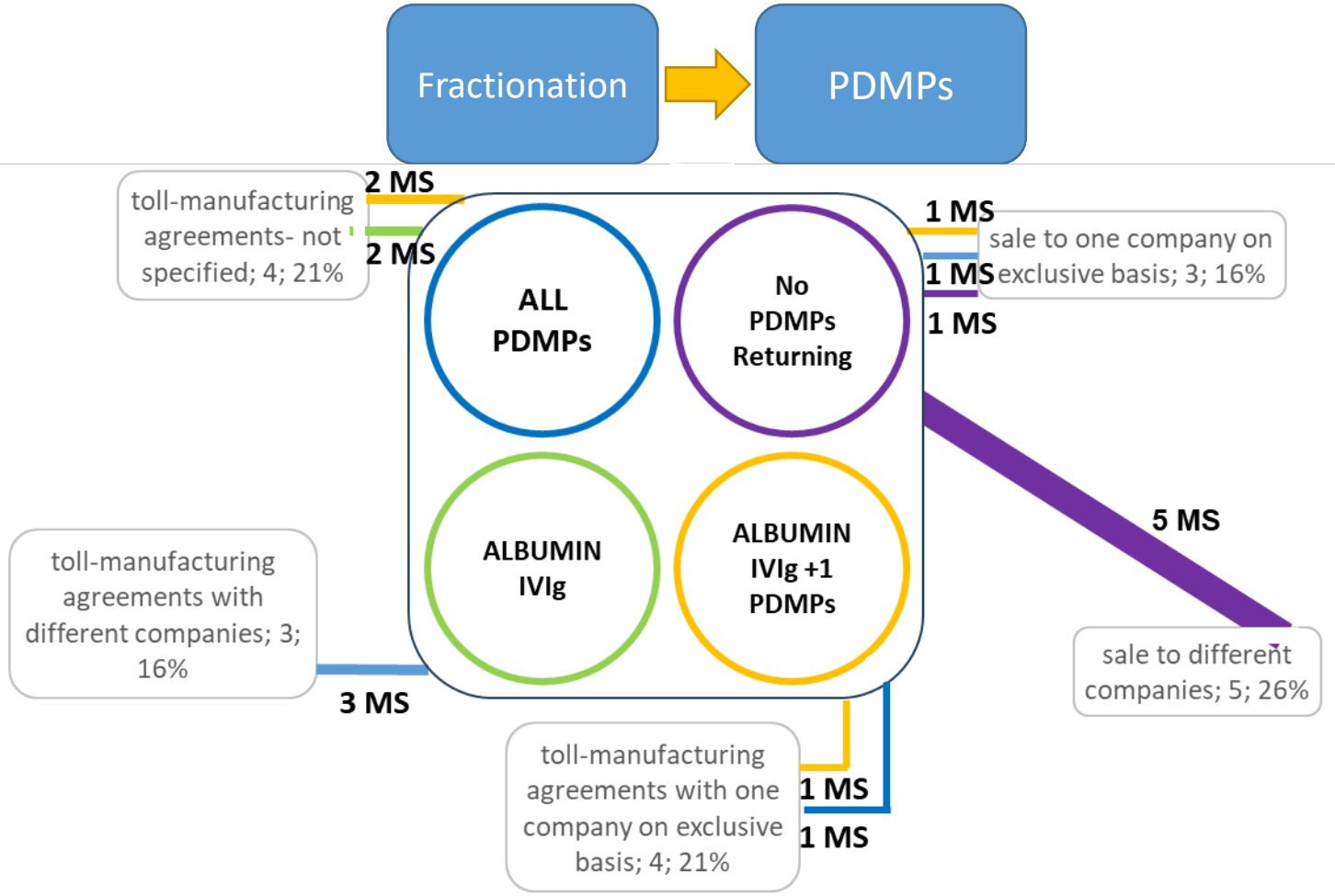
PLASMA ITALIA
CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain

Cross-Ref EU MS manufacturing models and PDMPs from national plasma return to the origin:



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PLASMA ITALIA
CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain

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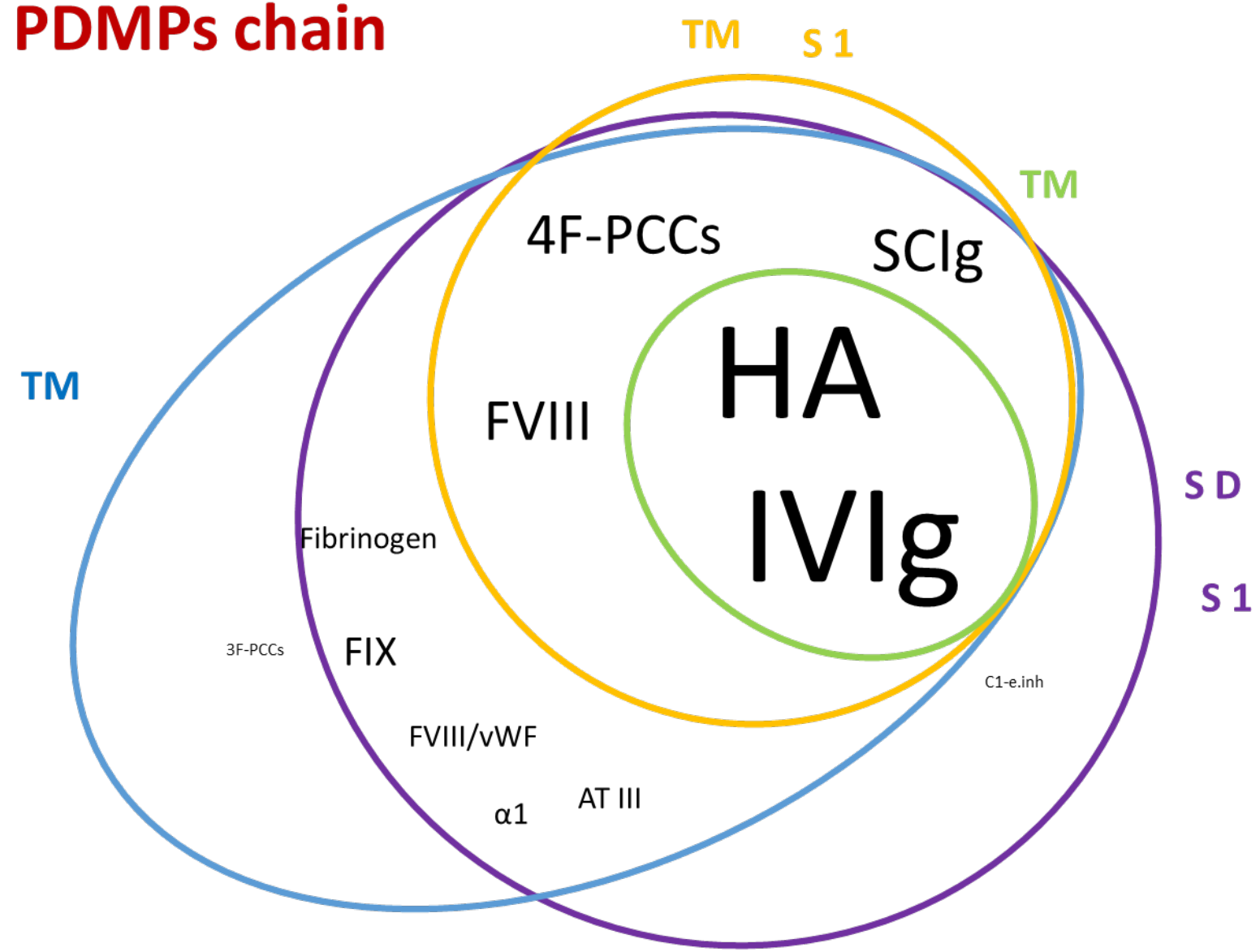

All PDMPs return

Drivers + 1 PDMP

Only drivers

No PDMPs return (free market purchasing)

Legend
TM: toll-manufacturing agreements
S D: sale to different companies
S 1: sale to one company on exclusive basis

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PLASMA ITALIA | CENTRO NAZIONALE SANGUE

The plasma & PDMPs chain

No matter what the manufacturing model is in place, national, regional, local tenders should consider:

Fractionation → PDMPs

Quantity and quality of Plasma for fractionation

- Higher volumes of Plasma for fractionation find higher commercial interest from the (private) fractionators
- Overall IgG concentration in plasma contributes to a more abundant supply of final products. An IgG based pricing model may put emphasis on this crucial parameter

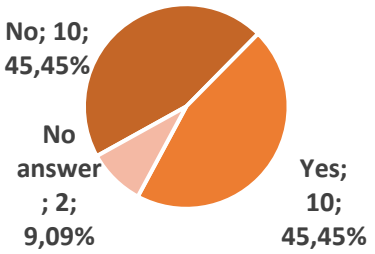
Commercial yields[1] for drivers manufacturing

- Benchmark for assessing the return in products from the fractionation of domestic plasma (3.5 - 5 g/kg)

Market prices for drivers and other PDMPs

- Benchmark for the extrinsic value of the plasma collected within Public facilities

Q34. Access to market prices



1. Plasma provided vs approved products made out of it

Source: - Adapted from von Bonsdorff L, et al. Securing commitment and control for the supply of plasma derivatives for public health systems. I: A short review of the global landscape. Vox Sang. 2025;120:114–23.

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PLASMA ITALIA | CENTRO NAZIONALE SANGUE

…securing the control for the supply of PDMPs

…securing the control for the supply of PDMPs

Information on the plasma & PDMPs chain should be available to NCAs;
Transparency and dissemination of information on all the plasma & PDMPs chain

vertical: from Local Health Authorities to NCAs to European/International bodies

orizontal: between NCAs at national level (Blood/SoHO CA ⟷ Pharma CA),
at European and international levels (e.g. EDQM, EMA)

inwards the System: to all stakeholders (patient organisations, donor association, scientific societies, health authorities, regulatory authorities, pharma companies and fractionators, etc.);

Participatory approach involving all stakeholders in designing the National (and Local) Health Policies addressed to:
Planning of the collection, tendering processes, clinical use, etc.;

Awareness of the complexity of the PDMPs brings all the stakeholders to contribute to the optimal achievement of the objectives;

Provides elements for the improvement of competition.

…securing the control for the supply of PDMPs

European bodies should consider that the SUPPLY survey should be administered on a routine basis (yearly? biannual?) and become an instrument for transparency, monitoring, decision making, communication on plasma & PDMPs

…securing the control for the supply of PDMPs

Identification of a NCA or strengthen the collaboration among different NCAs that ensure:

- Planning of collection according to identified appropriate needs
- Monitoring of the process (from collection of PfF to distribution and clinical use of PDMPs)
- Monitoring the pharmaceutical expenditure on PDMPs (and their therapeutic alternatives)
- Long-term sustainability

At the very last point, “Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures*”.

*: International Health Conference. (2002). Constitution of the World Health Organization. 1946.. Bulletin of the World Health Organization, 80 (12), 983 - 984. World Health Organization. https://iris.who.int/handle/10665/268688

Accessing raw material

- If the PDMPs manufacturing is essentially addressed to the drivers production (mainly IgG) what is the role of other fractions?

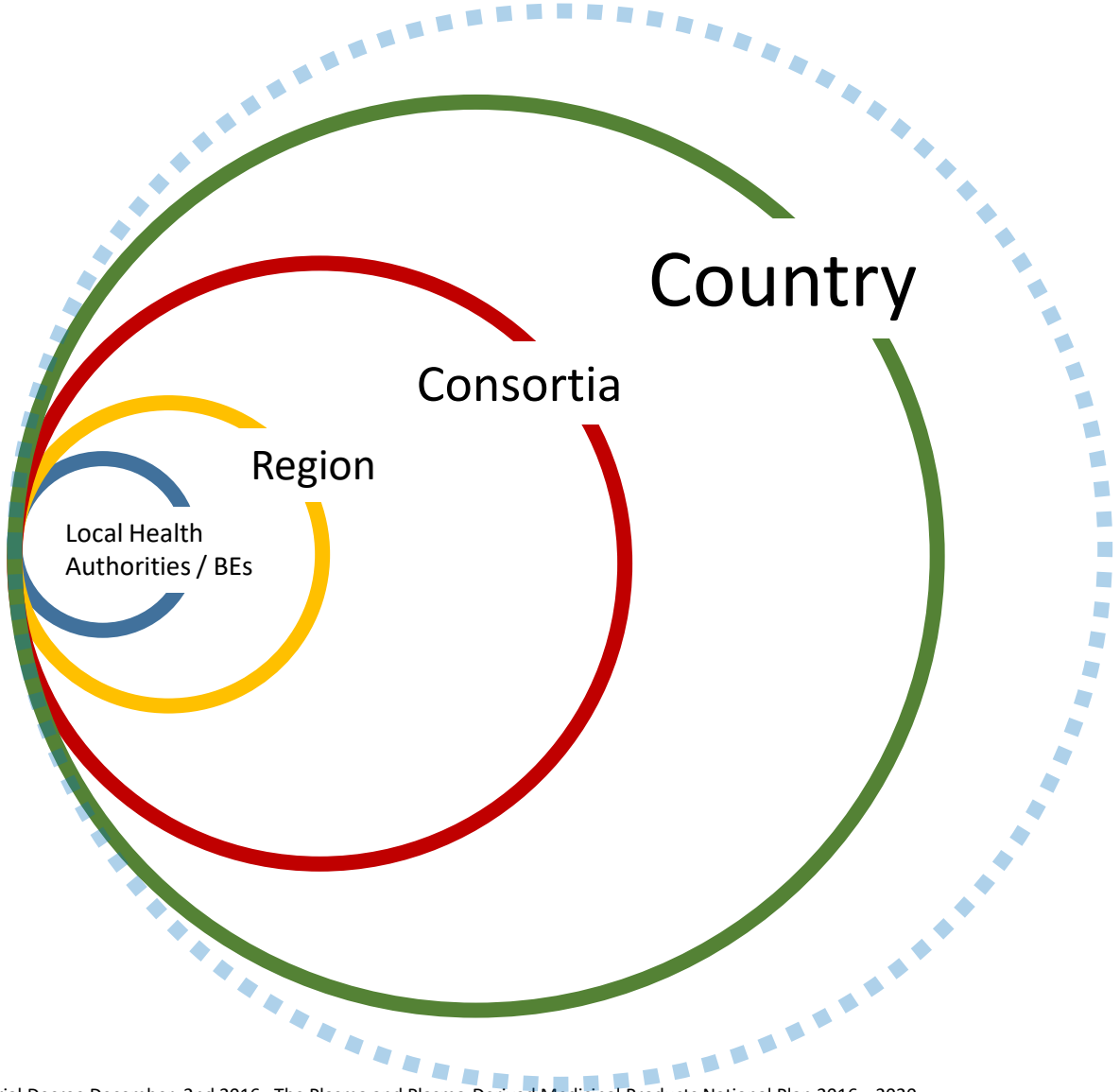
  - In some manufacturing models they are left to the manufacturer and partially valued to define the selling price

  - In some manufacturing models they are used to produce other PDMPs offered by the fractionator

In any case they usually exceed national needs (e.g. FVIII, FIX) and could be made available and benefit European or low- and middle-income patient communities

Self-sufficiency *vs* Strategic independance

"[...] the capability to ensure to patients, in a systematic and sustainable manner, the ready and continuous availability of a defined set of PDMPs with the highest degree of quality and safety and in accordance with the existing regulatory framework, meeting appropriate clinical needs through national plasma collection based on voluntary, non-remunerated donations with the contribution of market-acquired shares."



"[...] the capability of Health Systems to release and make autonomous the PDMPs supply from global market dynamics".

Strategic distance

from childish behaviour in a context where…

Source: Official Journal of Italian Republic no. 9, January 12th 2017. Ministerial Decree December, 2nd 2016 «The Plasma and Plasma-Derived Medicinal Products National Plan 2016 – 2020»

Reinforcements

Within the framework of the Council of Europe, Member States are obliged to respect the principles enshrined in the Conventions to which they are party.

In particular, the **Oviedo Convention (Convention on Human Rights and Biomedicine)** establishes in **Article 3** that:

“Parties*, taking into account health needs and available resources, shall take appropriate measures with a view to providing equitable access to appropriate health care of good quality”.

This principle of equity constitutes both a legal obligation and a fundamental ethical reference point for national health policies.

* Member States of the Council of Europe

Source: - European Treaty Series, No. 164 - Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine. Oviedo, 4.IV.1997

https://www.centronazionalesangue.it/rapporti-tecnici/

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Present and future of International Cooperation in the blood sector

The Italian System of PDMP production

Analysis and trends related to self-sufficiency, PDMP demand, pharma expenditure, donation and collection and PDMP manufacturing from national plasma:
stories from a long story

F R E E E V E N T S

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PLASMA ITALIA

CENTRO NAZIONALE SANGUE

Ackowledgements

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Piotr Radziwon
The EDQM Organisational Secretariat
IPFA team
Albert Farrugia
Françoise Rossi
Leni von Bonsdorff
EBA team
Peter O'Leary
Bernardo Rodriguez
Pierre Tiberghien
The SUPPLY Consortium
Friends from the
Patient organisations
Donor associations
Tiaso winery
Les DebouChats
Colleagues from
CSL Behring
Grifols
Kedrion
Takeda

Vincenzo De Angelis