Análisis de la Vulnerabilidade Latinoamericana por hemotransmisibles

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GCIAMT, 2009

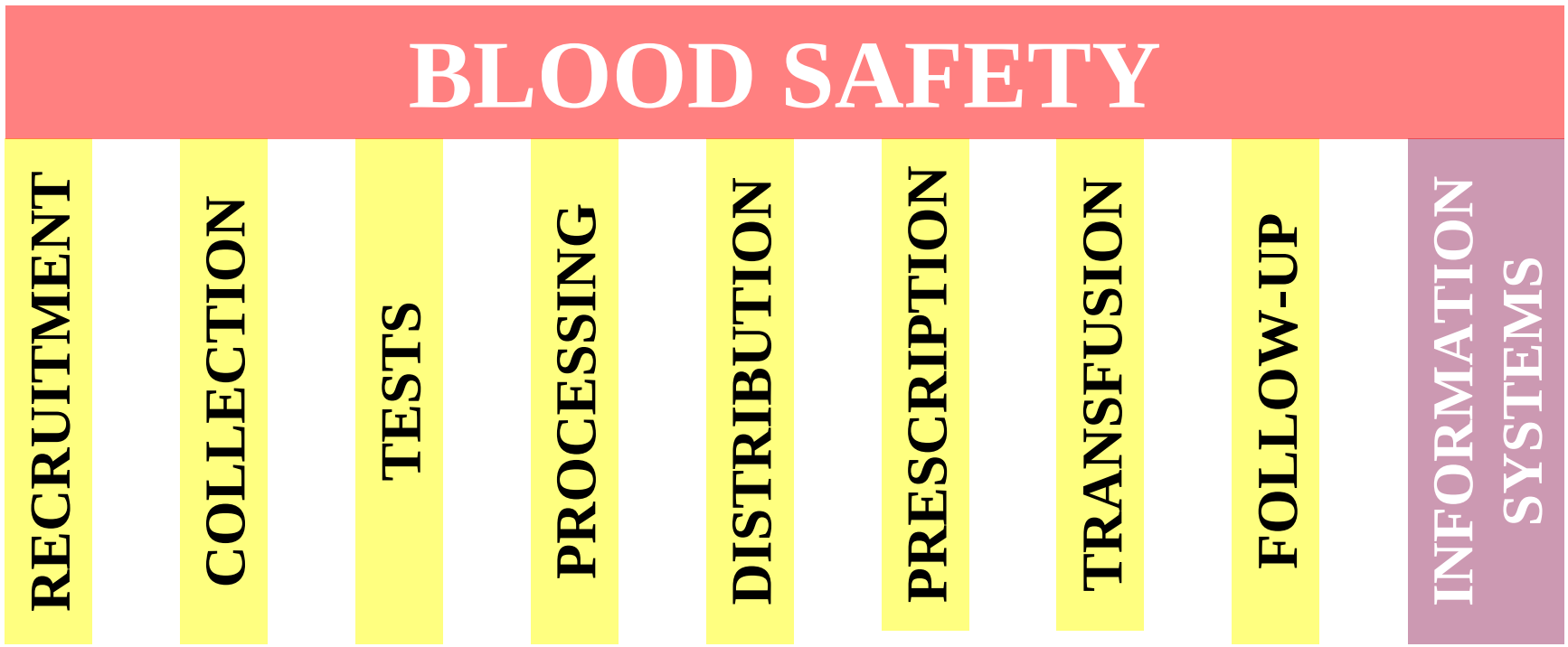
La Transfusión Sanguinea en Latinoamérica

- América Latina → 20 países:
  - Qualidade variável
  - Pobreza (50% < U$ 2,00/dia)
  - Alta prevalência marcadores infecciosos
  - Serviços fragmentados
  - Alta taxa doadores familiares e reposição
  - Apêndices de serviços laboratoriais

  - Concentração testes sorológicos
  - Pouco esforço:
    - **Recrutamento de doadores**
    - **Uso clínico do sangue**

Vinelli, 2008

FROM VEIN TO VEIN



La Transfusión Sanguinea en Latinoamérica

- América Latina
  - 14 doações/ 1000 habitantes
  - Doações pagas proibidas por lei (fiscalização?)
    - República Dominicana, Honduras, Panama´, Paraguay e Peru (Alonso, 2009)
  - Predomínio doadores masculinos
    - 50% entre 17-60 anos
    - 2% em fase gestacional
    - ♀ média de 4.5 filhos → 12-15 anos sem poder doar
  - Alto índice de descarte sorológico
  - Budget informal a vários países ou regiões!

Vinelli, 2008

La Transfusión Sanguinea en Latinoamérica

"El mayor reto que enfrentan los países de la Región es el de desarrollar servicios de sangre orquestados que se den colaboración y apoyo mutuos. Para lograrlo es preciso que los ministerios de salud asuman un papel directivo en orientar a todos los interesados y en reunir los recursos necesarios para tratar la sangre para transfusión como un valioso recurso nacional.

Periago MR. *Rev Panam Salud Publica/Pan Am J Public Health* 13(2/3), 2003

La Transfusión Sanguinea en Latinoamérica

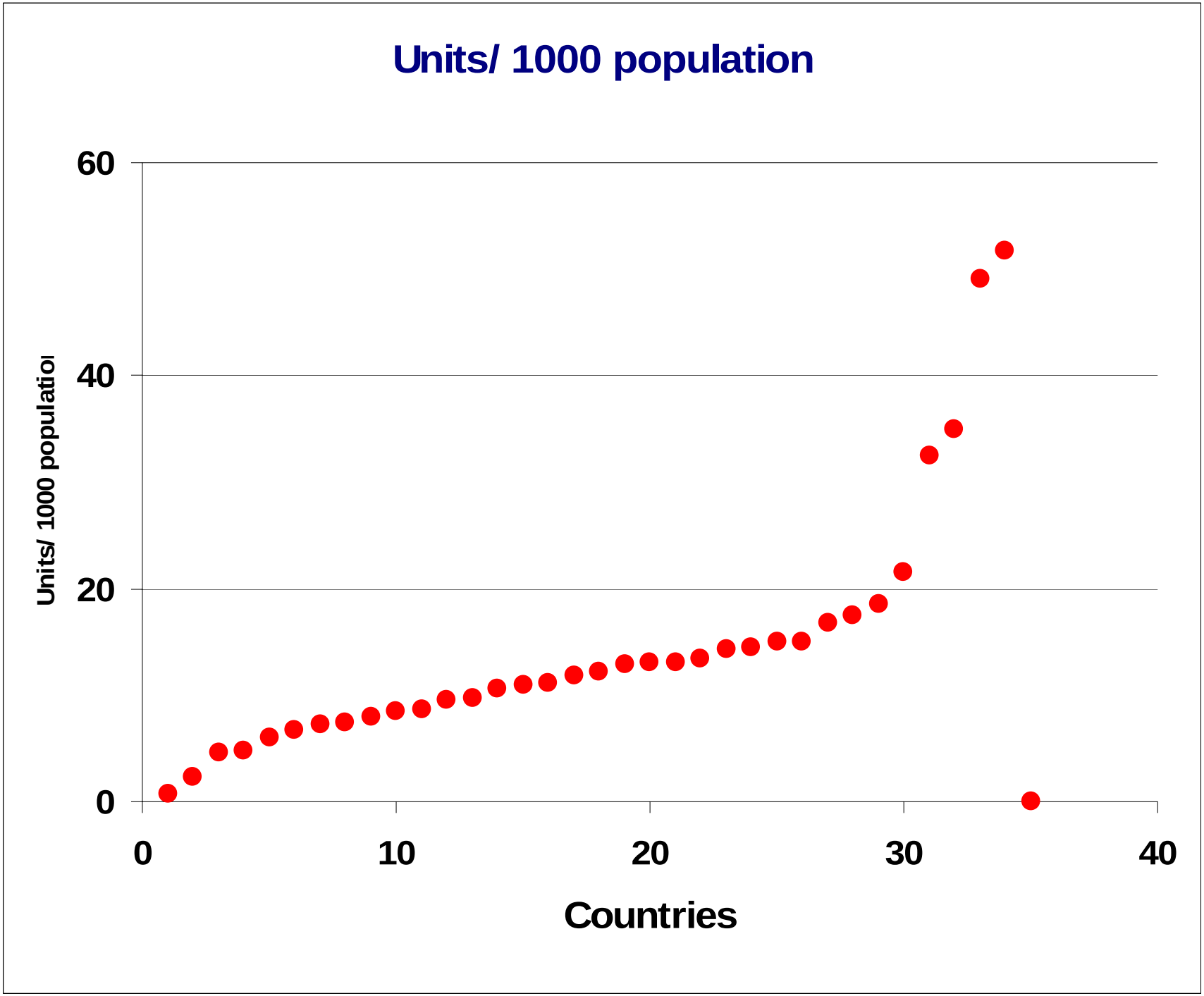
The provision of safe and adequate blood supply at national level is the responsibility of each country's national health authority. A prerequisite for the safe and effective use of blood and blood products is the existence of a nationally coordinated blood transfusion system that is based on voluntary nonremunerated donation from low-risk populations and with every aspect of the service governed by quality management.

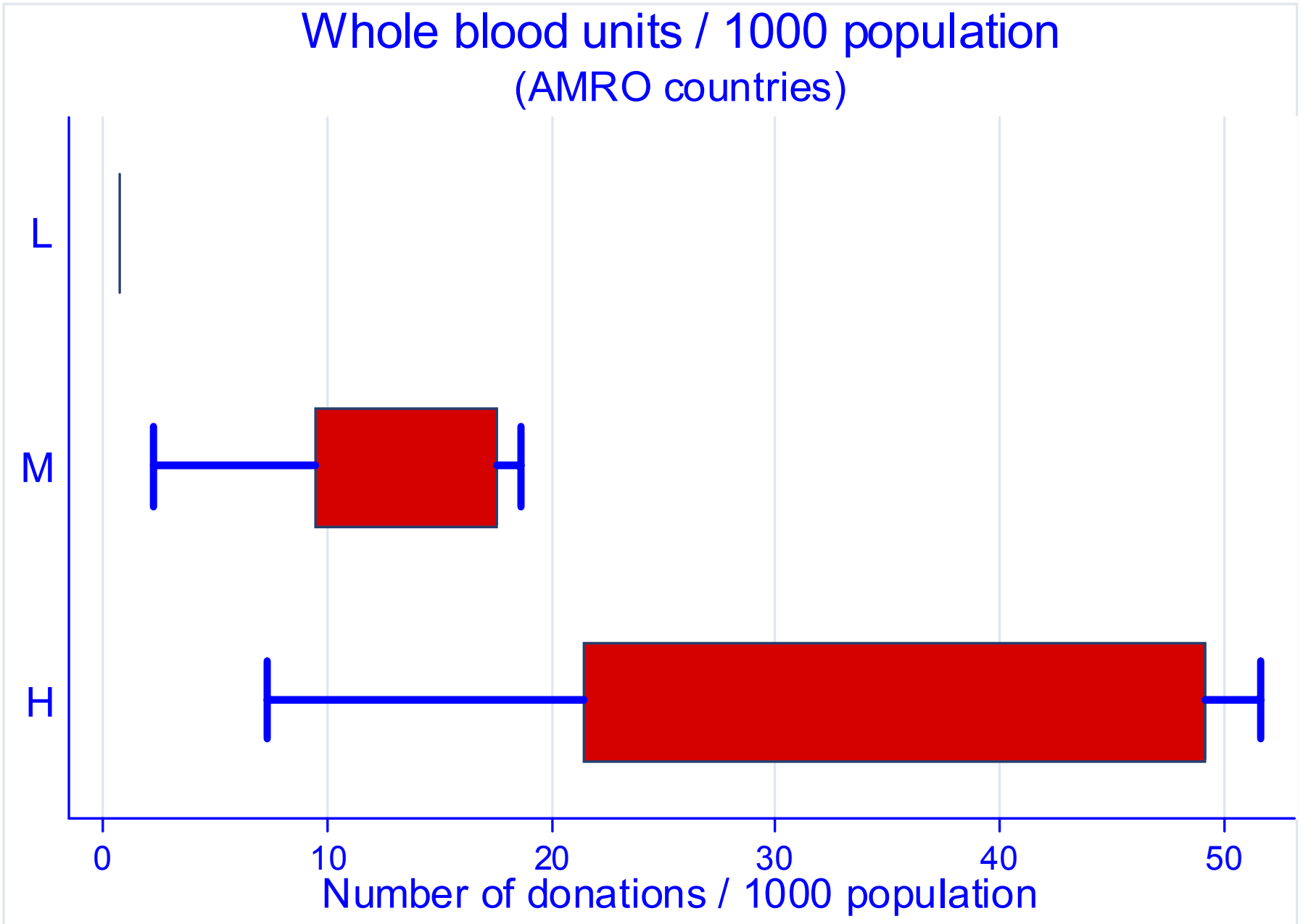
Alonso *et al.* J Acquir Immune Defic Syndr Volume 51, Supplement 1, May 1, 2009

La Transfusión Sanguinea en Latinoamérica

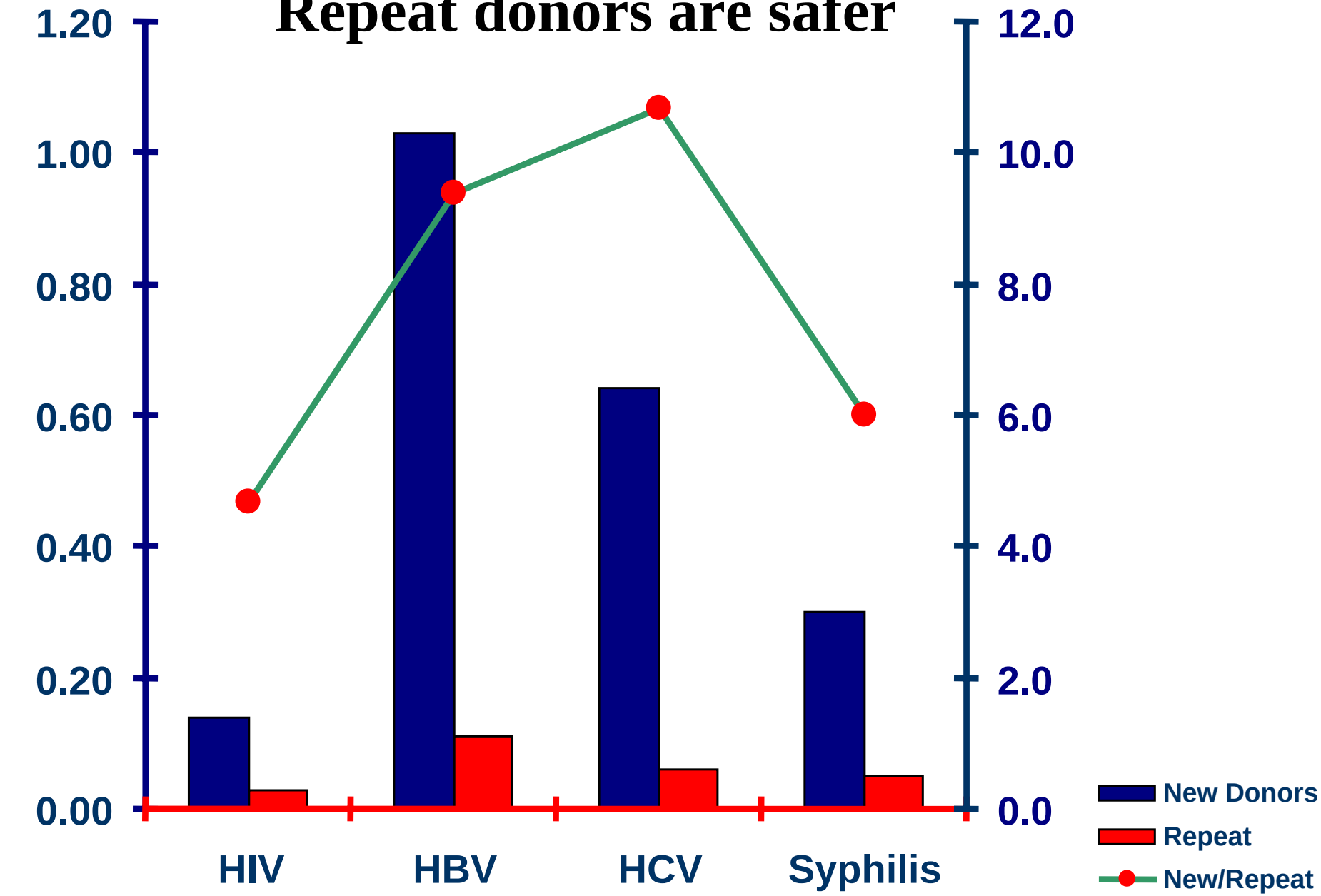
Para alcanzar la meta de 50% de donaciones voluntarias, hace falta iniciativas nacionales coordinadas bajo la dirección de los ministerios de salud, com el apoyo de los ministerios de educación, los ministerios del trabajo y la sociedad civil. La estrategia debe encaminarse a colocar la donación de sangre fuera del entorno hospitalario.

Periago MR. *Rev Panam Salud Publica/Pan Am J Public Health* 13(2/3), 2003


Units/ 1000 population
60
40
20
0
Units/ 1000 populatio
0
10
20
30
40
Countries

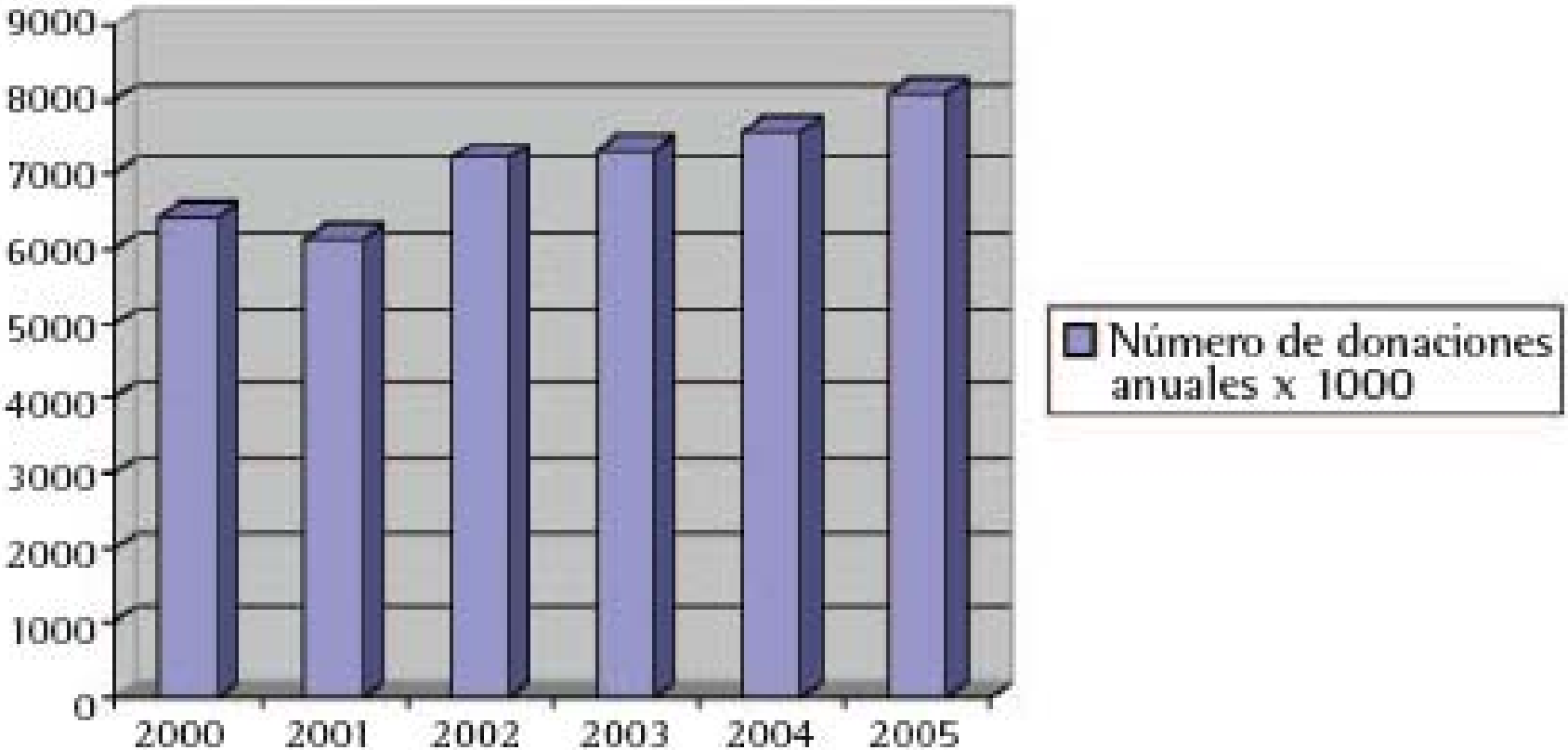

Whole blood units / 1000 population
(AMRO countries)
L
M
H
0
10
20
30
40
50
Number of donations / 1000 population

Repeat donors are safer

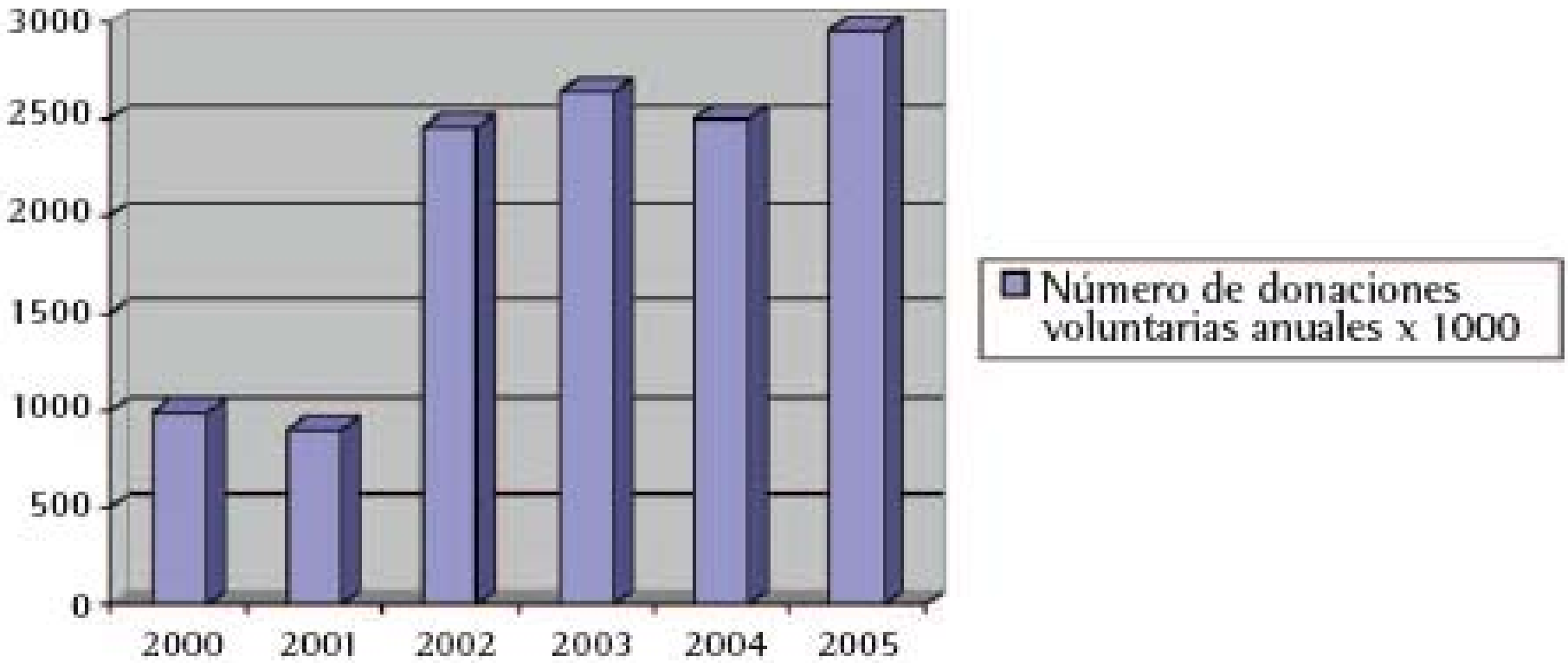


Source: WHO, 2003

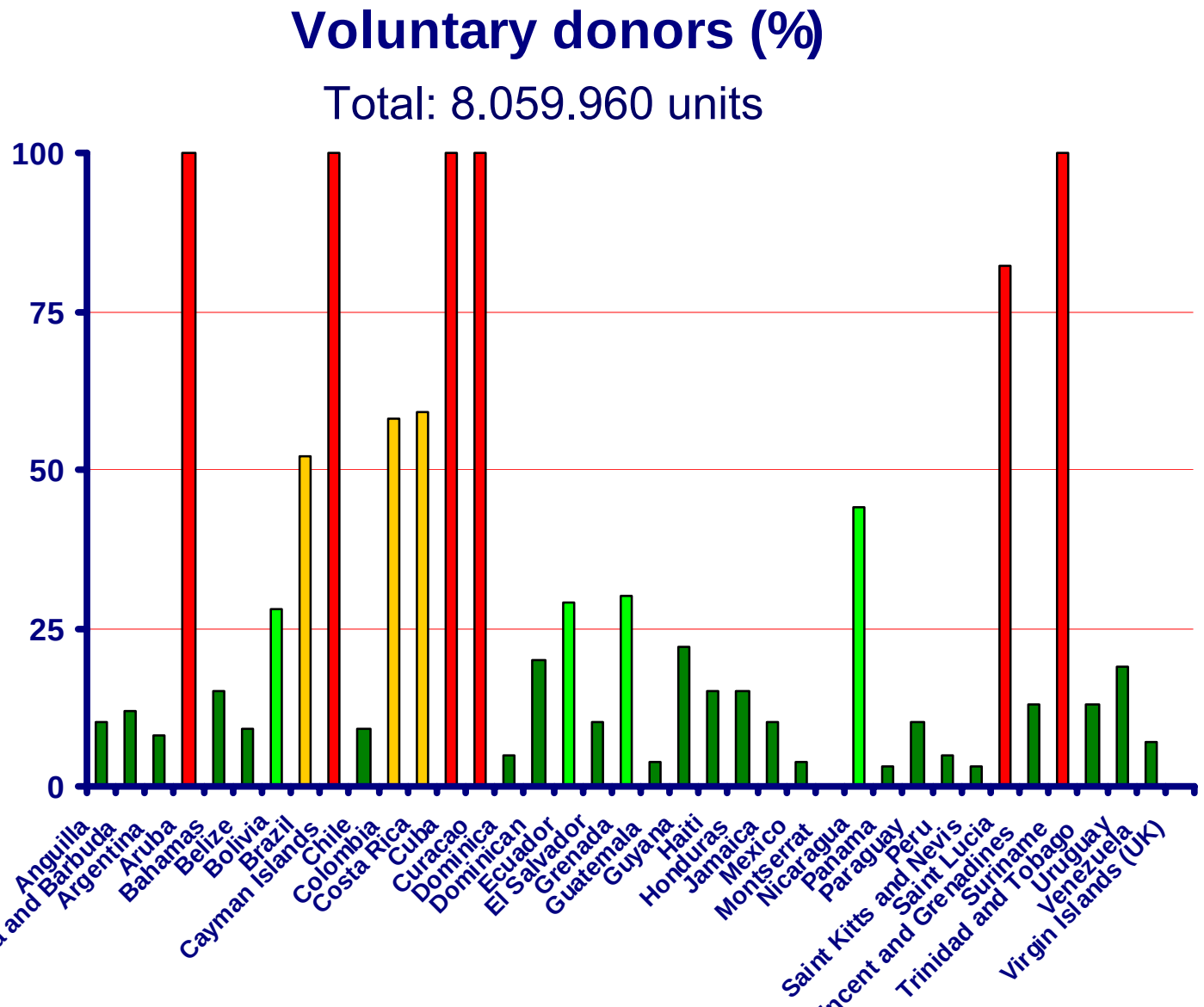
La Transfusión Sanguinea en Latinoamérica



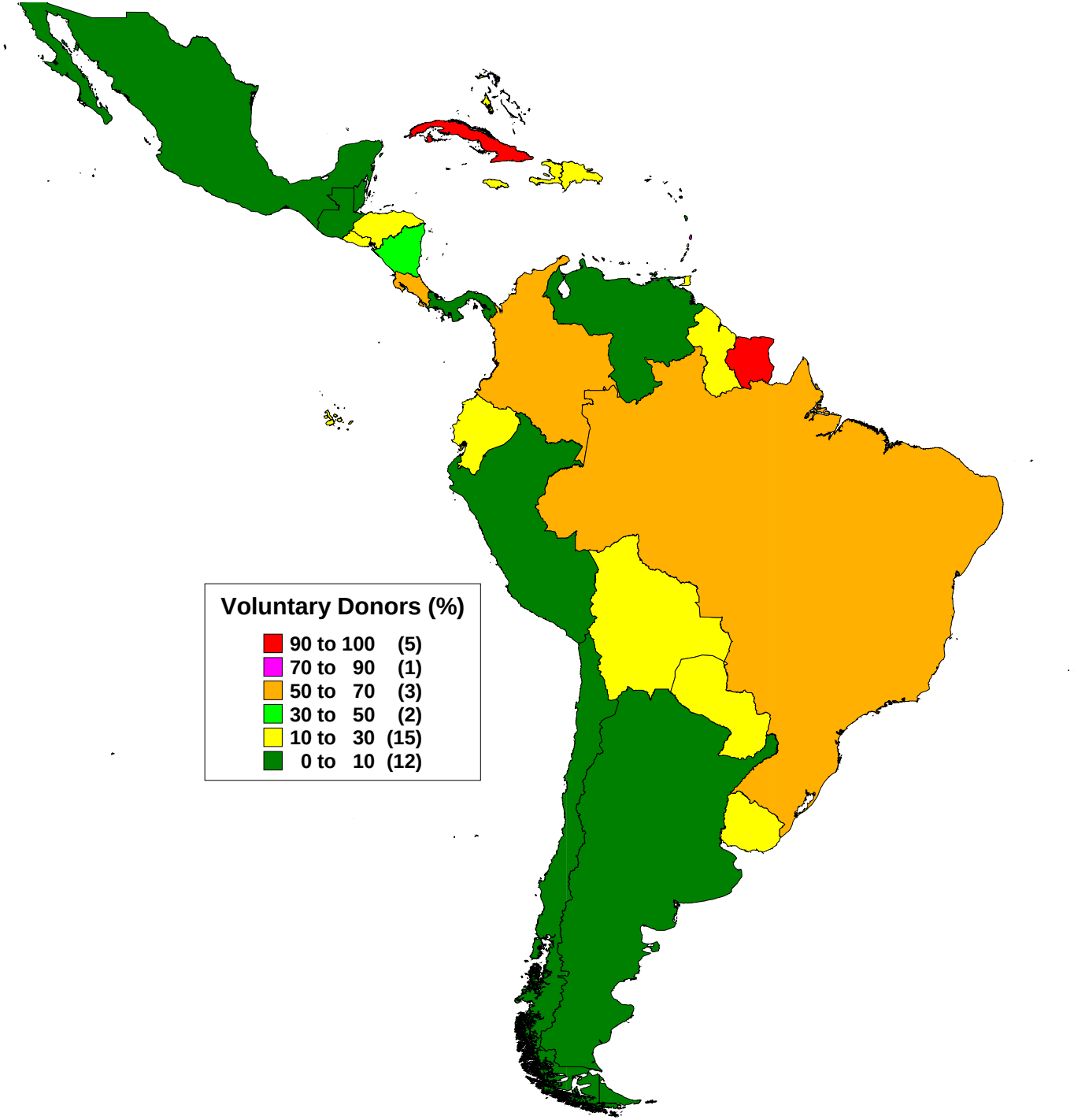
La Transfusión Sanguinea en Latinoamérica



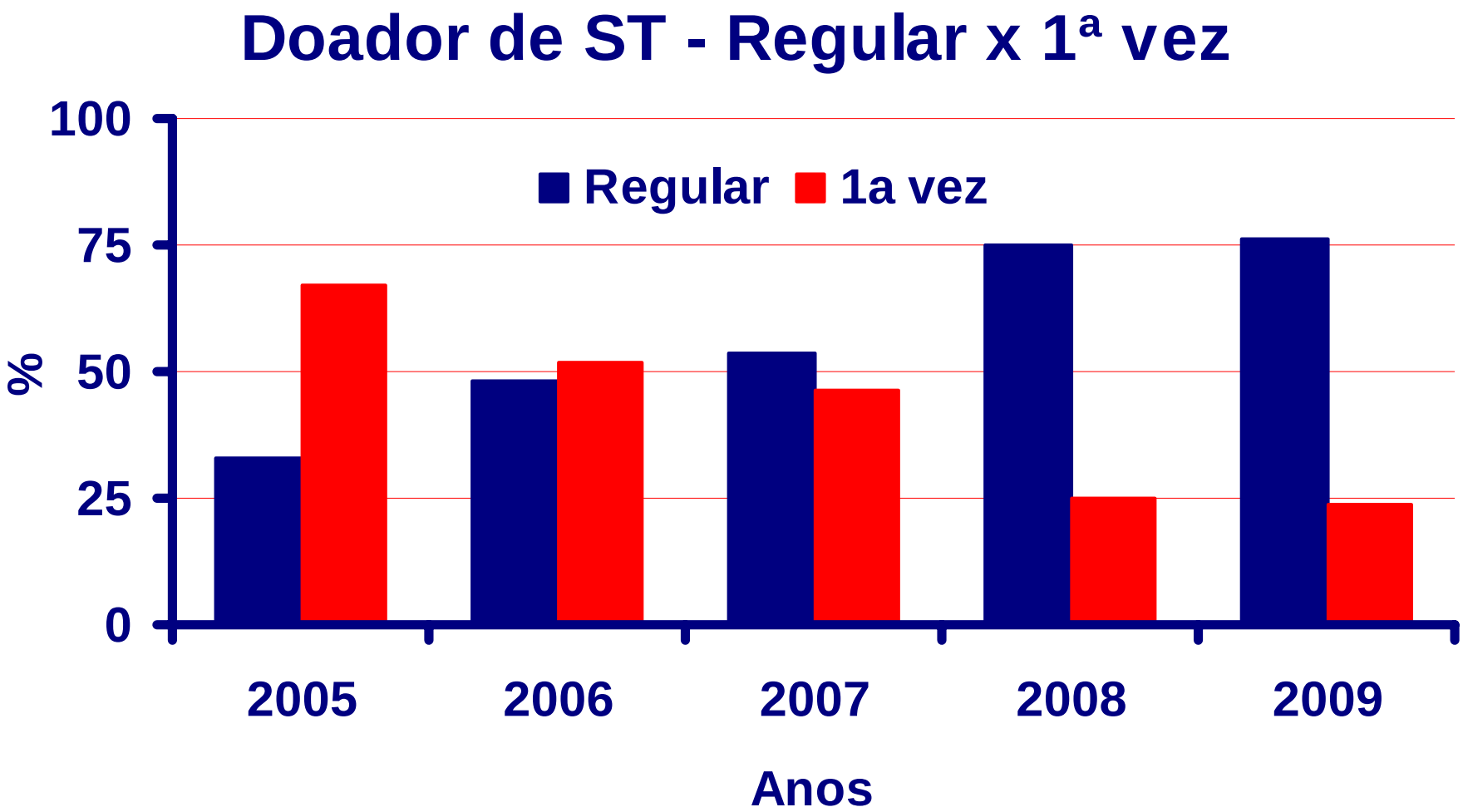
La Transfusión Sanguinea en Latinoamérica



Alonso *et al.* J Acquir Immune Defic Syndr Volume 51, Supplement 1, May 1, 2009

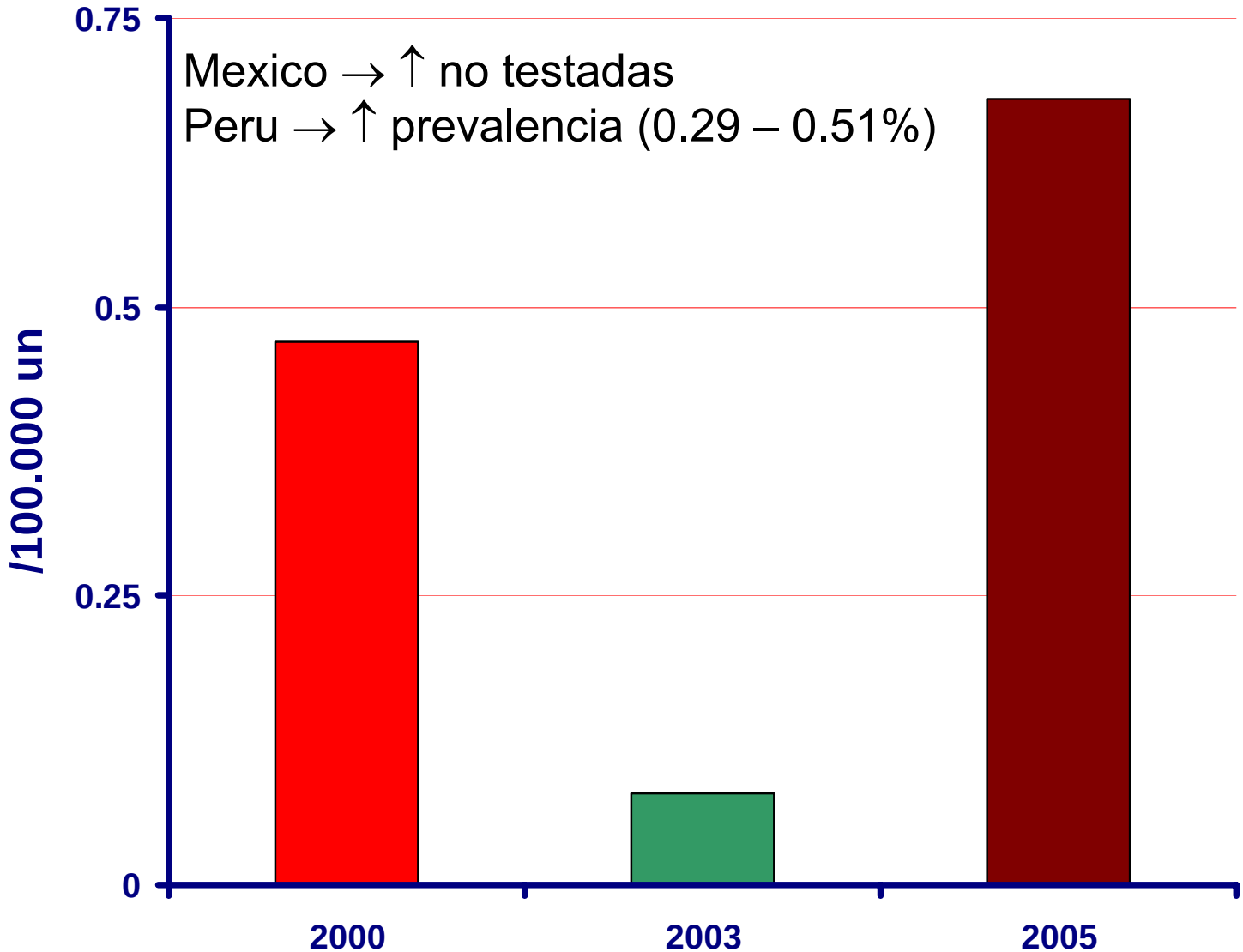

Voluntary Donors (%)
90 to 100 (5)
70 to 90 (1)
50 to 70 (3)
30 to 50 (2)
10 to 30 (15)
0 to 10 (12)

Doação de ST no HSL (excluídas plaquetaféreses)



La Transfusión Sanguinea en Latinoamérica

Risco Estimado HIV



Alonso *et al.* J Acquir Immune Defic Syndr Volume 51, Supplement 1, May 1, 2009

La Transfusión Sanguinea en Latinoamérica

La población:

- tiene una actitud positiva hacia la donación de sangre;
- considera que donar sangre es útil;
- está deseosa de ayudar en el logro de la suficiencia de sangre;
- dona sangre cuando es necesario;
- carece de conocimientos acerca de los temas vinculados a la donación de sangre;
- está interesada en aprender más sobre la donación de sangre;
- mas que incentivos, prefiere que se le ofrezca oportunidades para donar sangre; y
- requiere mayor transparencia en los sistemas nacionales de sangre.

Basic Guides

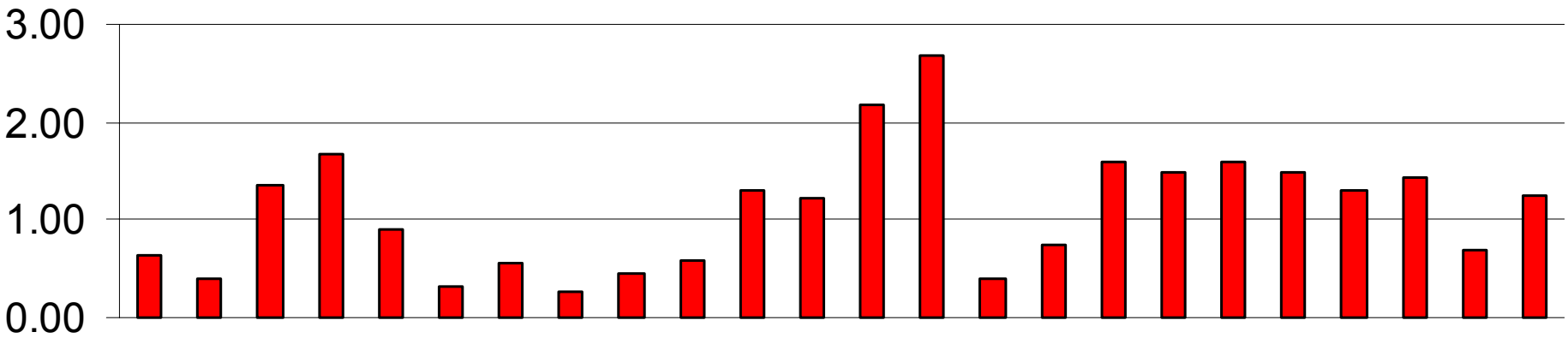
Graduates, Post Graduates, Continuing Medical Education, Prescribers

Objectives :

- **Clinical decision**
- **Minimize blood transfusion**
- **Simple and feasible alternatives**

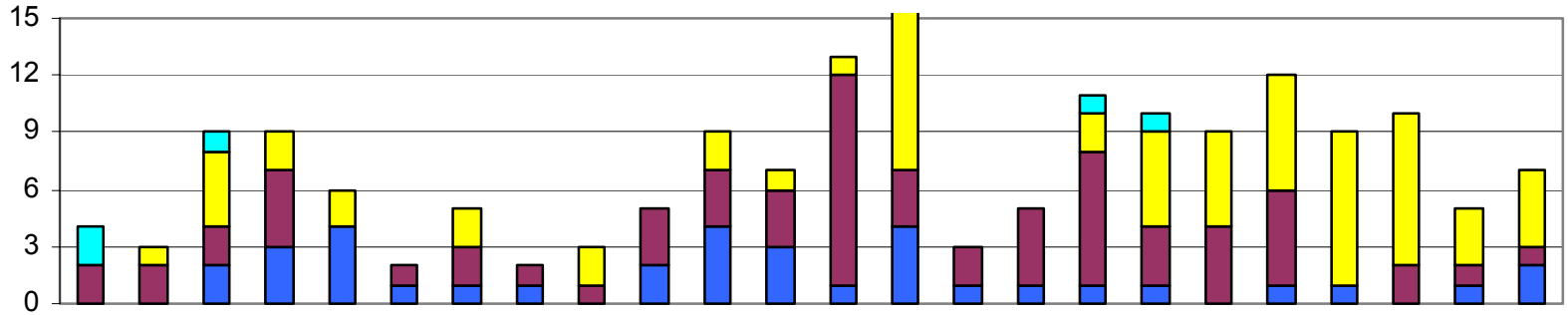
Written by a selected group of professionals

% Non compliance (prescribed units)



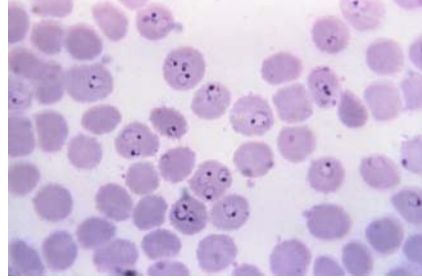
	jan/07	fev/07	mar/07	abr/07	mai/07	jun/07	jul/07	ago/07	set/07	out/07	nov/07	dez/07	jan/08	fev/08	mar/08	abr/08	mai/08	jun/08	jul/08	ago/08	set/08	out/08	nov/08	dez/08
Series1	0.64	0.39	1.35	1.67	0.91	0.32	0.57	0.28	0.46	0.57	1.31	1.21	2.17	2.68	0.40	0.74	1.59	1.48	1.58	1.49	1.30	1.44	0.69	1.25

Non Compliance Evolution (A,B,C)

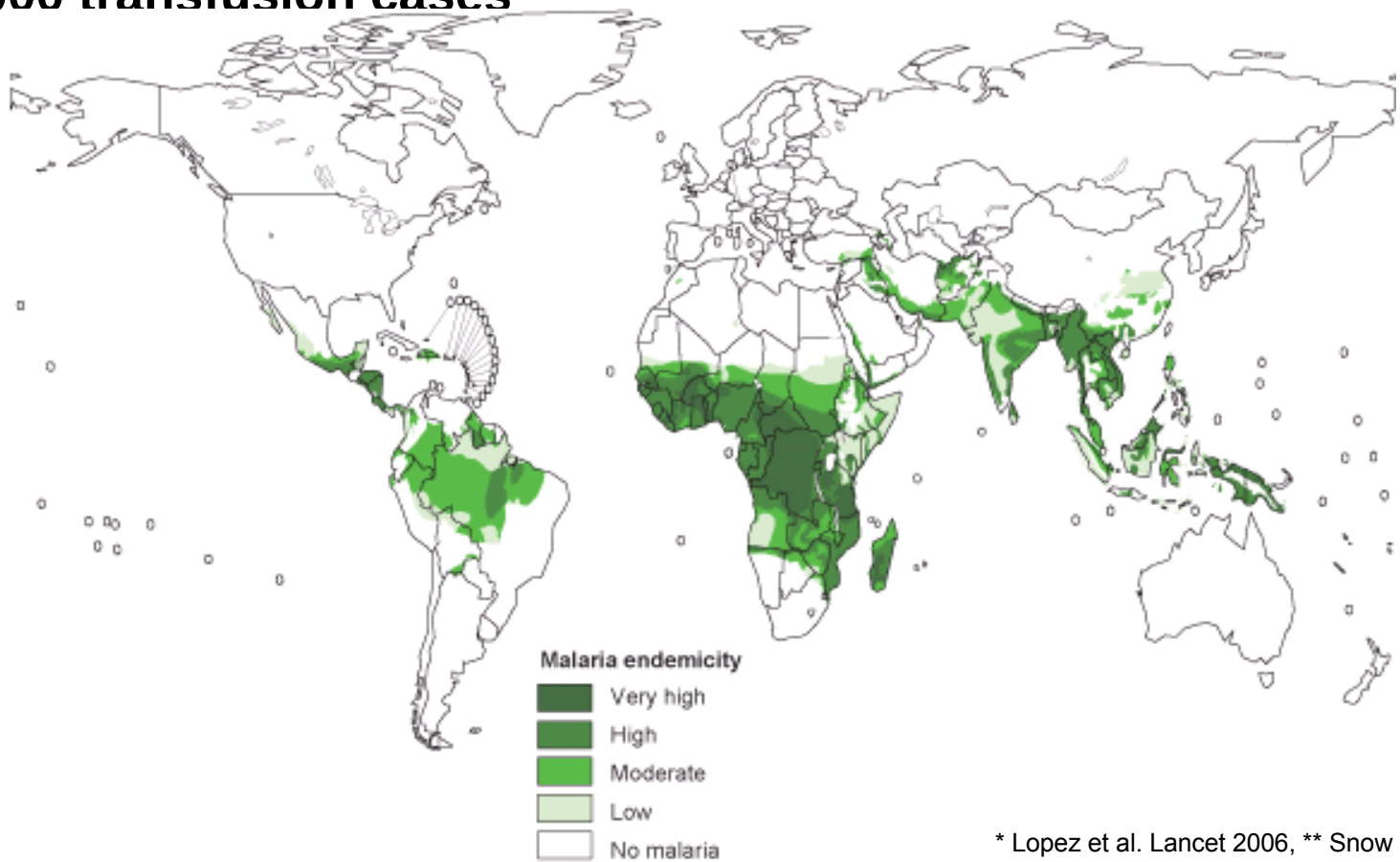


	jan/07	fev/07	mar/07	abr/07	mai/07	jun/07	jul/07	ago/07	set/07	out/07	nov/07	dez/07	jan/08	fev/08	mar/08	abr/08	mai/08	jun/08	jul/08	ago/08	set/08	out/08	nov/08	dez/08
C2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
C1	0	1	4	2	2	0	2	0	2	0	2	1	1	9	0	0	2	5	5	6	8	8	3	4
B	2	2	2	4	0	1	2	1	1	3	3	3	11	3	2	4	7	3	4	5	0	2	1	1
A	0	0	2	3	4	1	1	1	0	2	4	3	1	4	1	1	1	1	0	1	1	0	1	2

Malaria

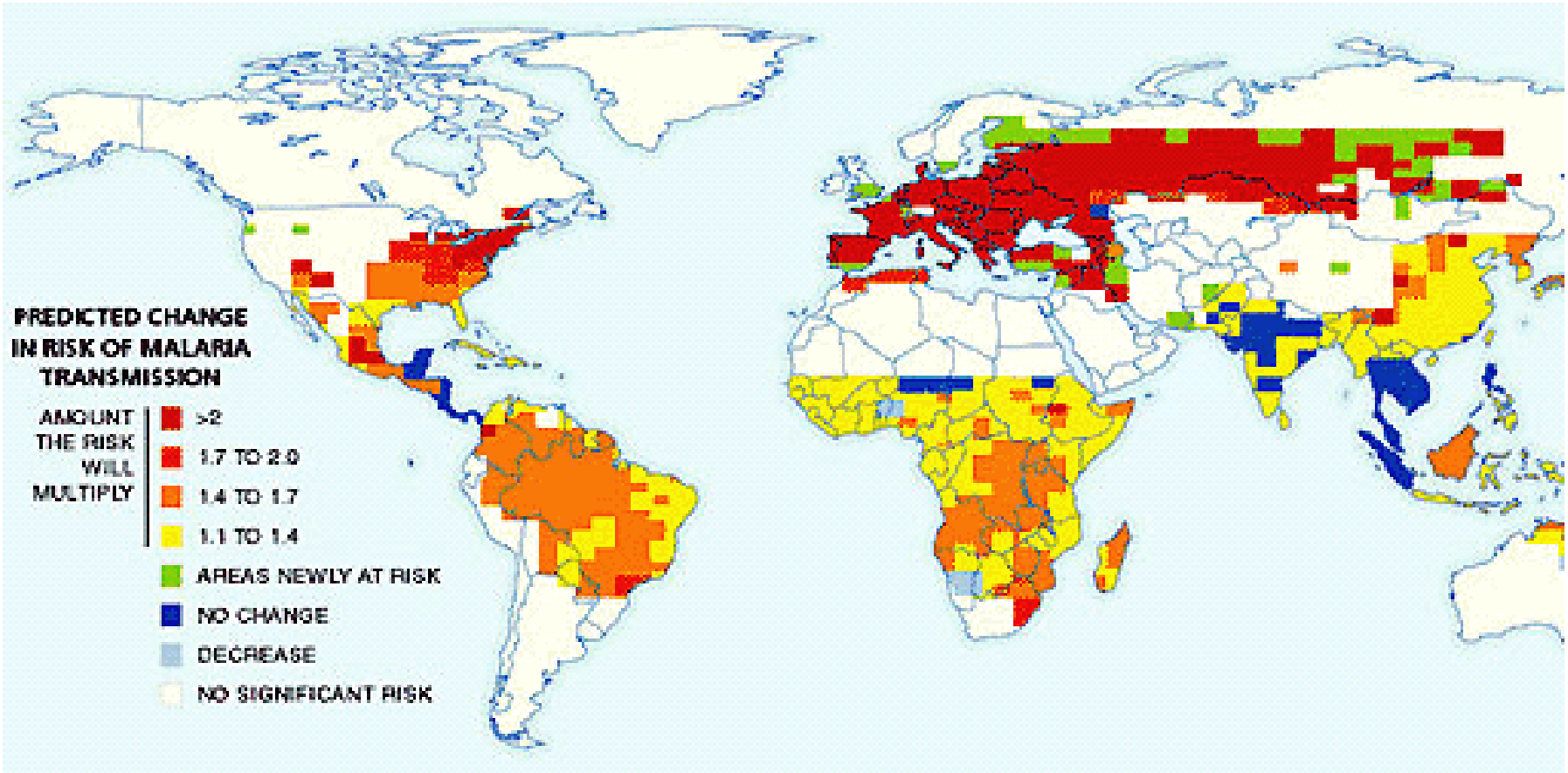


- **106 countries affected, 40 million DALY´s (Low/medium HDI)***
  >1 billion new cases/year, 500 million *P.falciparum* **
  >1-2 million deaths/year, 50% global population at risk (3 billion)
  >3,000 transfusion cases



* Lopez et al. Lancet 2006, ** Snow et al. Nature 2005

Malaria and Global Warming
2020 → 2F (± 1.1 C)



Different regions, different strategies

Recipients / Donors	Non-endemic (immunossupresed)	Endemic (Infants, pregnant women)
Non-endemic Recent travel	Questionnaire Temp. deferral Ab test	Standard procedure Tourists Visitors to homeland *
Endemic	Questionnaire Temp. deferral Ab test Ag Test Ab and Ag test Pathogen reduction	 Ag Test Pathogen reduction

* 8-fold risk than tourists

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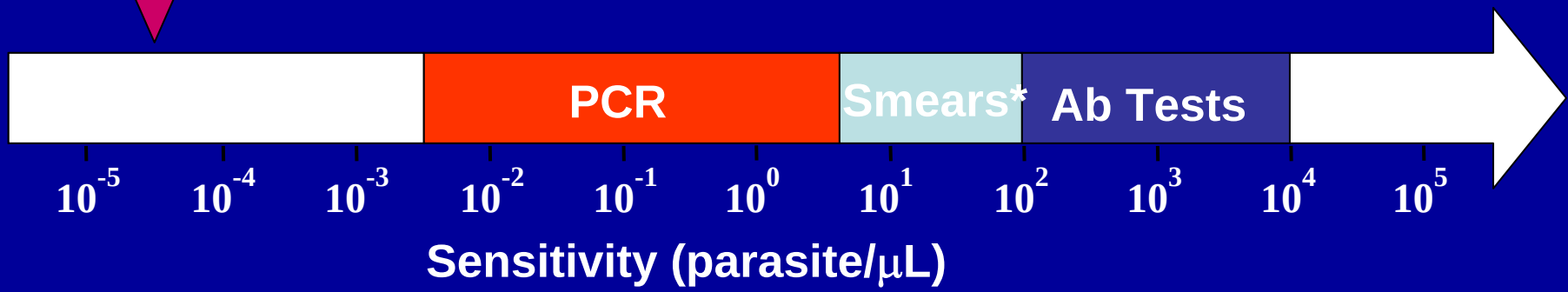
Malaria Test Sensitivity Problems

Presumed Infective Dose

Sensitivity Problems Mainly in Low Level Infected Donors from Endemic Regions

10 parasites / 250 mL RBC



Sensitivity (parasite/μL)

To detect 10 parasites, sensitivity should be:

- **4,000 times better than PCR**
- **200,000 times better than microscopy**

***Microscopy (Thick/Thin Smears)**

**** One RBC unit = 250 mL** 23

Seed et al. Transf Med Rev 2005, M. Wilson – FDA,2006

Conclusions

- High burden in developing countries
- Transmission rates in developing countries unknown
- High blood donor losses in developed countries
  - Some adopted testing → Great savings
  - Others are reluctant to change policies
- Tests available, but can be improved

Most of us still keep our eyes closed → Neglected disease

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Malaria defeated the international community many years ago. We cannot allow this to happen again. A single global action plan for malaria control, that enjoys partnership-wide support, is a strong factor for success."

Margaret Chan

Director-General - World Health Organization

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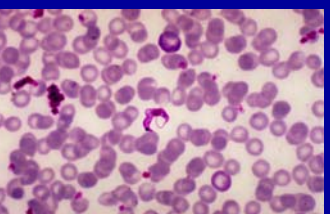
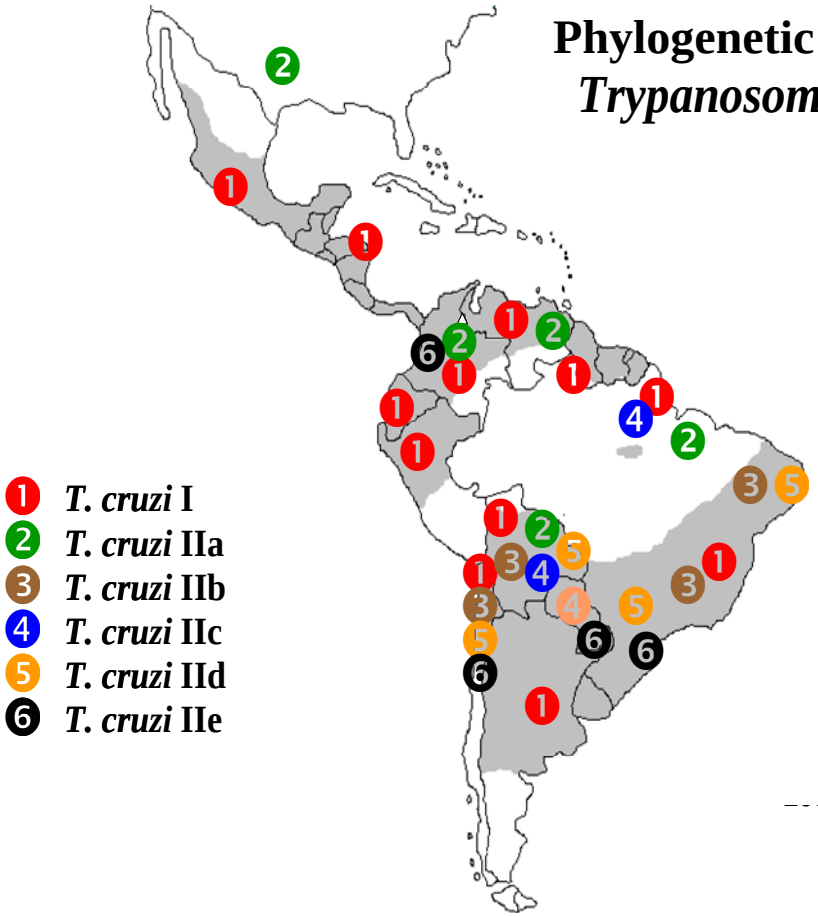
AMERICAN TRYPANOSOMIASIS

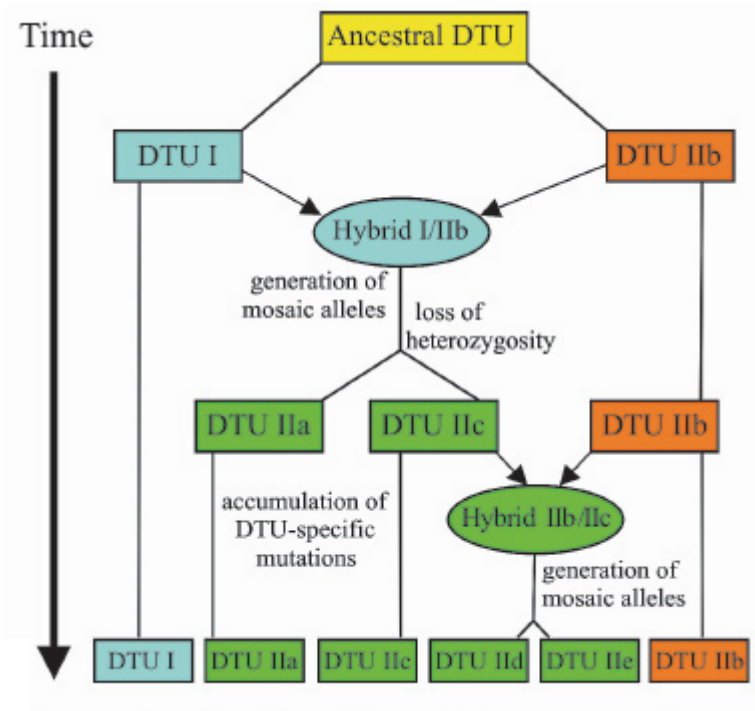
	AMERICAN TRYPANOSOMIASIS
TDR Class	III
Existing tools, strategies and risk avoidance	Control strategy proven effective Disease burden falling Elimination planned
At risk	100 million
Infected	18-20 million
Annual deaths	13,000
DALY	667,000

* Extremely rare as transfusion transmitted.
** Special Programme for Research and Training in Tropical Diseases (TDR). DALY = Disability-adjusted life years



CHAGAS DISEASE





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CHAGAS DISEASE

Reliability of tests – No gold standard, apart from parasite recovery

- **PCR**
  - **S35/S36 primers – USA**
  - **WHO Consensus – Argentina, 2008**
    - **nDNA → Real Time PCR (Piron et al.)**
      Conventional (Cruzi 1 and 2)
    - **kDNA → 121 and 122**

- **Time for selective testing?**
  - **Questionnaire → Different performance (USA x Spain)**
  - **One test – Concerns**
  - **Two tests – Plausible ?**

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Emerging Infectious Diseases

Infections whose incidence in humans has increased within the past two decades or threatens to increase in the near future (IOM).

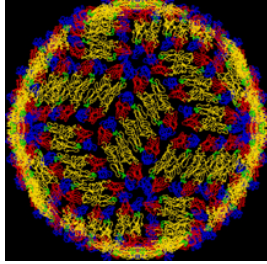
Causes:

- **Spread of a new agent (SARS)**
- **Recognition of infection that was undetected (WNV)**
- **Re-appearence after decline (Dengue)**

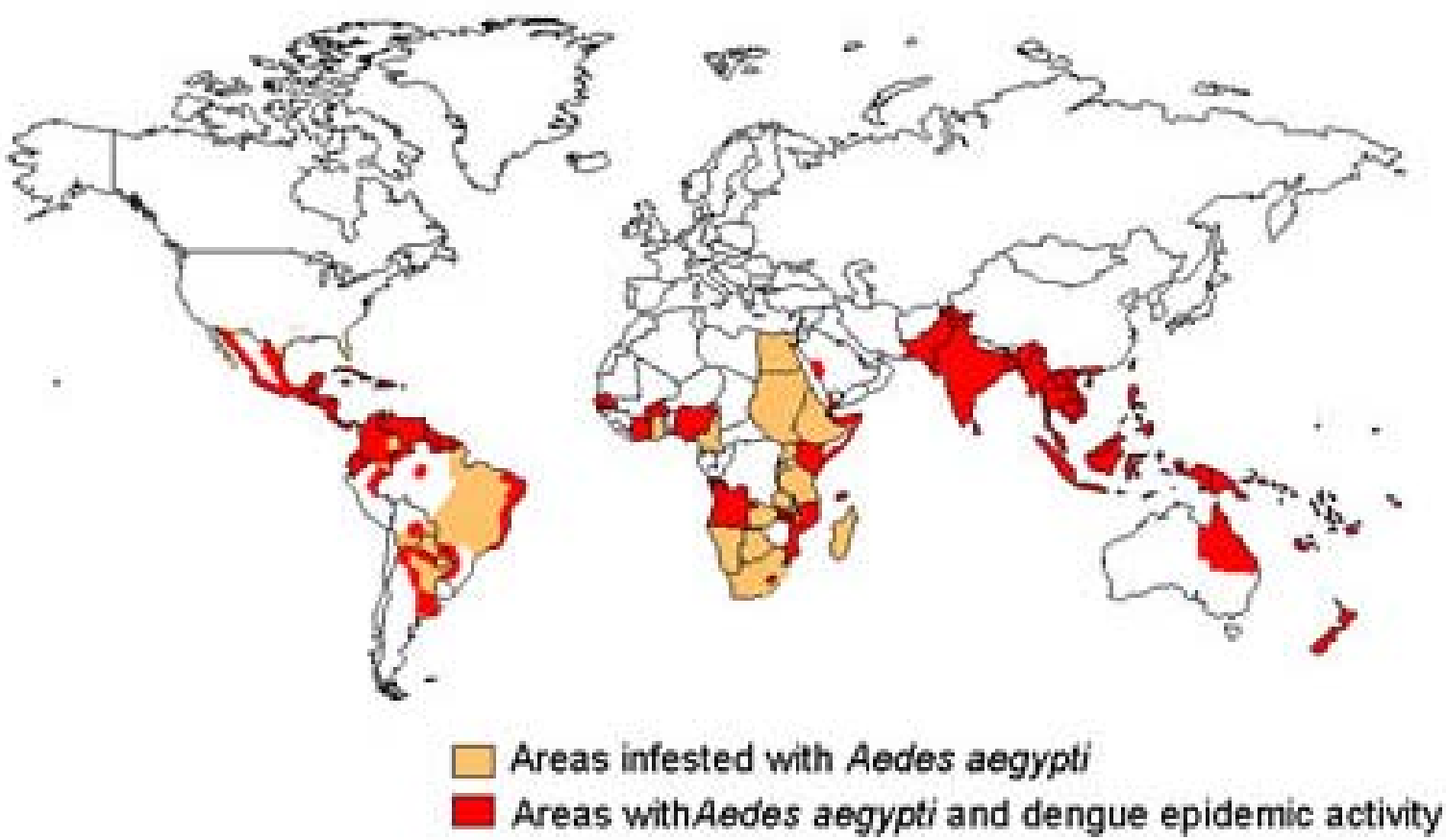
Main groups:

- **Failure of existing controls (Malaria, Dengue)**
- **Environmental changes (Chikungunya)**
- **Population movements (Chagas disease)**
- **Human behavior (SARS)**
- **Combined groups**

HUMAN DENGUE VIRUS



- **100 countries affected, 4 Serotypes**
- **>50 million new cases/year, 500 thousand hemorrhagic fever**
- **2.5% deaths, 40% global population at risk (2.5 billion)**



AABB EID Project

- Prioritization:
  - **RED** = high potential for concern based primarily on science/epidemiology (***moderate to high scientific/epidemiologic evidence of risk regarding blood safety combined with heightened public concern***)
    - vCJD, dengue virus, *Plasmodium spp*., *Trypanosoma cruzi*, *Babesia spp.*
  - **ORANGE** = ***public concern*** *high (****including FDA****)* re blood safety but science lacking at this time that the agent is a major threat
    - HIV variants, *Borrelia* (Lyme), Avian influenza virus (H5N1), Simian foamy virus, Ebola virus
  - **YELLOW** = agent should be monitored carefully for change
    - chronic wasting disease prion, St Louis encephalitis virus, HHV-8, *Leishmania*
  - Others = agents investigated but no further action appears warranted at this time
  - BT agents also listed separately according to CDC categories A, B and C
  - Pathogen reduction will be handled separately
    - received input from Cerus/Navigant

Stramer *et al.* 2008

AABB EID Project

Prions	Viruses	Rickettsiae	Bacteria	Parasites
vCJD	Dengue	*Rickettsia rickettsii*	Borrelia (Lyme Disease)	*Plasmodium spp.*
Chronic Wasting Disease	HIV Variants	*Rickettsia prowazekii*	Borrelia (Relapsing Fever)	*Babesia spp.*
Classical CJD	Avian Influenza Virus (H5N1)	*Orientia tsutsugamushi*	*Francisella tularensis*	*Trypanosoma cruzi*
	Simian Foamy Virus	*Coxiella burnetii*	*Brucella spp.*	*Leishmania spp.*
	Ebola virus	*Anaplasma phagocytophilum*	*Chlamydia pneumoniae*	*Trypanosoma brucei*
	St. Louis Encephalitis	*Ehrlichia spp.*	*Bartonella henselae*	*Toxoplasma gondii*
	HHV-8		*Yersinia pestis*	Filariae
	HAV		*Yersinia entercolitica*	
	HEV		*Listeria spp.*	
	HBV Mutants		*Bacillus anthracis*	
	HGV			
	SEN-V and Related Agents			
	Parvovirus B19			
	HTLV Variants			

Gripe A (H1N1)

AABB EID Project (cont.)

Viruses	Viruses
Colorado Tick Fever	Polyoma Viruses
Eastern Equine Encephalitis	Enteroviruses
Western Equine Encephalitis	Crimean Congo Hemorrhagic Fever
Tick-Borne Encephalitis	Marburg Virus
JE Virus	Hantavirus
SARS Coronavirus	Monkeypox
Other Type A or B Influenza Viruses	Porcine Endogenous Retrovirus
EBV	Porcine Parvovirus
Other Herpes Viruses	Bornavirus
Mumps	Vaccinia
Chikungunya Virus	Variola
	Papillomavirus

Problemas específicos da América Latina

CONCLUSÕES

- **LEGISLAÇÃO ESPECÍFICA**
- **REGIONALIZAÇÃO (Mercosul - *Argentina, Bolívia,Brasil, Chile, Paraguai e Uruguai*)**
- **ALTA TAXA DE DOADORES DE REPOSIÇÃO (8 - 100%)**
- **POUCOS LÍDERES E FUNCIONÁRIOS BEM TREINADOS**
- **GRANDE HETEROGENEIDADE (DO NAT AO NADA !)**

Problemas específicos

SOLUÇÕES

- **PERSISTÊNCIA**
- **RAZÃO E BOM SENSO**

“ O bom senso é a coisa mais bem distribuída do mundo: pois cada um pensa estar tão bem provido dele, que mesmo aqueles mais difíceis de se satisfazerem com qualquer outra coisa não costumam desejar mais bom senso do que têm. “

Problemas específicos do Brasil

SOLUÇÕES

- **DEFINIR PRIORIDADES**

•“Nunca aceitar coisa alguma como verdadeira sem que a conheça evidentemente como tal, evitando a precipitação e a prevenção.

•Dividir cada dificuldade em tantas parcelas quantas possíveis e necessárias, para melhor resolvê-las.

•Conduzir por ordem os pensamentos, começando pelos mais simples e fáceis de conhecer, subindo pouco a pouco até os mais complexos.

•Fazer em tudo enumerações tão completas, e revisões tão gerais, para que se tenha a certeza de nada omitir. “

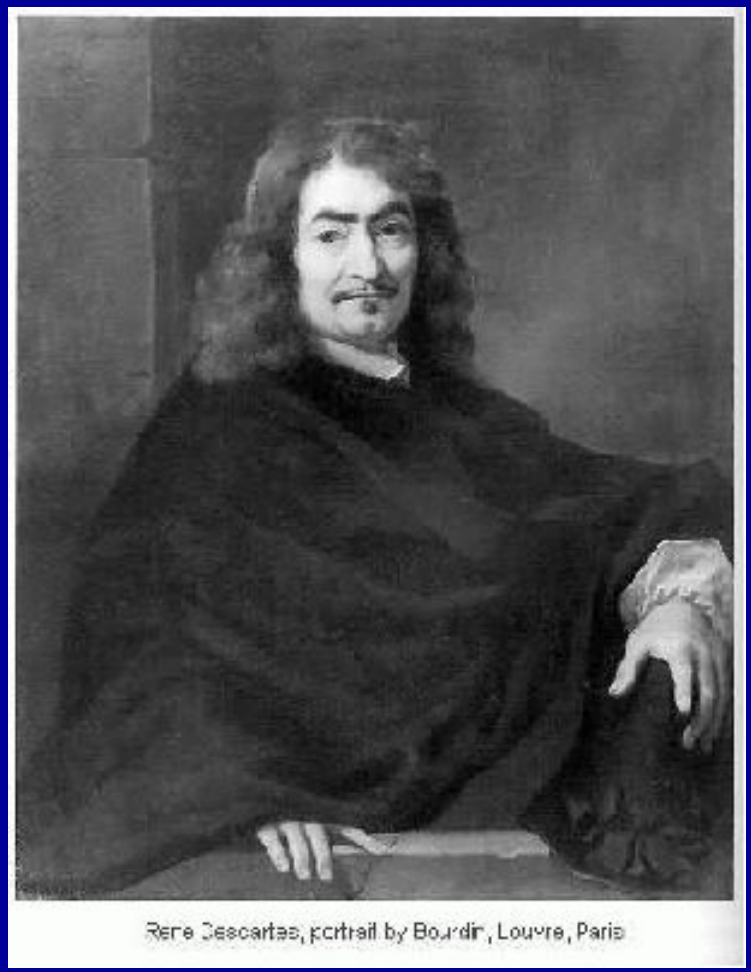
Problemas específicos

SOLUÇÕES

- **SEGUIR A LEGISLAÇÃO VIGENTE**

“A multiplicidade de leis freqüentemente fornece desculpas aos vícios, de modo que o Estado é muito mais regrado quando, tendo pouquíssimas leis, elas são rigorosamente observadas”.

René Descartes



Rene Descartes, portrait by Bourdir, Louvre, Paris

Copyright Archive Photos

Discurso do Método,1637

The results achieved in promoting blood donation and conducting adequate laboratory processing of collected blood (screening it for infectious markers and separating it into its components) depend on the availability of financial resources and on how well organized blood services are.

Clearly indications that countries with higher economic levels have greater and better access to blood (but also to health services...)

Cruz & Pérez-Rosales, PAHO 2003

CONSIDERAÇÕES

Tomando en consideración la información precedente, el documento MEJORAMIENTO DE LA DISPONIBILIDAD DE SANGRE Y LA SEGURIDAD DE LAS TRANSFUSIONES EM LAS AMÉRICAS (5), presentado por la Directora de la Organización Panamericana de la Salud al Consejo Directivo en 2008, recomienda que:

a. **Los países hagan el esfuerzo de estimar sus necesidades anuales de sangre y sus componentes;**
b. **el número de donantes repetidos alcance al menos el 50% de todas las necesidades de concentrados de glóbulos rojos;**
c. **se ponga en funcionamiento un programa nacional para educar y reclutar individuos sanos como donantes regulares y lograr que estos donen sangre al menos dos veces al año; y**
d. **se establezca una red de voluntarios dispuestos a ayudar en la educación de la comunidad, para promover la donación voluntaria de sangre y colaborar con la atención de los donantes.**

São Paulo


EVAIN