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WORLD HEALTH ORGANIZATION



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### **IMPROVING BLOOD AVAILABILITY AND TRANSFUSION SAFETY IN THE AMERICAS**

#### **Background**

1. Since 1975 the World Health Assembly, the World Health Organization Executive Board and the Directing Council of the Pan American Health Organization have adopted several resolutions urging Member States to promote the establishment of coordinated blood services based on voluntary non-remunerated blood donation and on quality assurance, and to enact legislation and formulate national blood policies that facilitate the cost-effective organization and operation of blood services. The Governing Bodies have made it clear that it is necessary for the Member States to focus on blood transfusion safety as a means to improve patient care and to reduce the burden of HIV and other infections in the general population.
2. In 1999 the PAHO Directing Council adopted Resolution CD41.R15 and a Plan of Action that pursued the universal screening of blood units for HIV, hepatitis B (HBV) hepatitis C (HCV), and syphilis in the Region, and for *T. cruzi* in continental Latin America, universal participation of blood banks in programs of external evaluation of performance, 50% voluntary blood donation and the monitoring of high-risk groups for transfusion-transmitted infections. These expected results were not achieved by 2005.
3. In 2005, the PAHO Directing Council adopted Resolution CD46.R5, which urged the Member States to adopt the Regional Plan of Action for Transfusion Safety 2006-2010 and requested the Director to report periodically to the Governing Bodies on the progress of its implementation.

4. A report on the challenges to achieve blood sufficiency, availability and safety in the Americas was presented to the Executive Committee during its 142nd Session in June 2008. The Executive Committee recommended that the Directing Council adopt a resolution as a means to enhance regional efforts to achieve the objective of the Regional Plan of Action for Transfusion Safety 2006-2010.

5. The objective of the Regional Plan of Action is to contribute to the reduction of mortality and to the improvement of patient care by making safe blood available in a timely manner for all those patients who need it. The Plan involves four strategies: Planning and Management of the National Blood Network System, Promotion of Voluntary Blood Donation, Quality Assurance, and Appropriate Use of Blood and Blood Components, and identified nine indicators of progress based on regional data for the period 2000-2003.

## **Regional Situation in 2005**

### ***Screening Coverage***

6. In 2003, 99.93% of the units collected by the Latin American and Caribbean countries that officially submitted reports to the Pan American Health Organization were screened for HIV, 99.86% were screened for HBV, 99.52% were screened for HCV, and 99.84% were screened for syphilis. The proportions of units that were screened for the four markers decreased to below 99% in 2004 and 2005 (Table 1). A negative trend was also observed for *T. cruzi*: the rates of screening were 87.17%, 86.20% and 87.06% in 2003, 2004 and 2005, respectively (Table 2).

7. In 2003 there were 19 (46%) countries that reported universal screening of all markers; there were 17 (41%) and 22 (54%) countries that screened all the collected units in 2004 and 2005, respectively (Table 3). Bolivia, Colombia, Honduras, Mexico, Nicaragua, Paraguay and Peru did not test all units for markers of viral infections in 2005. Nevertheless, two countries—Mexico and Peru—contributed 98.8% and 99.6% of the units that were not screened for HIV in 2004 and 2005, respectively. Anguilla, Belize, Dominica, and Saint Kitts and Nevis reported zero screening for HCV in 2005.

### ***External Performance Evaluation***

8. The Regional Programs for External Performance Evaluation continued with support from the Spanish Agency for International Cooperation, the UKNEQAS, the International Consortium for Blood Safety, the Hemocentro in São Paulo, Brazil, and the Sevilla Transfusion Center in Spain (Tables 4 and 6). The purpose of these regional programs is to support the national reference centers that are responsible for organizing the national programs with participation of all local services. Local participation,

nevertheless, is limited: in 2003 there were 1,330 (53.01%) national centers participating in national programs for external performance evaluation of serology for transfusion-transmitted infections. The proportion of participants decreased to 46.66% and 46.42% in 2004 and 2005 (Table 5).

9. Results from both the Regional and National Programs for External Performance Evaluation indicate that the quality of screening for serological markers of transfusion-transmitted infections has improved over the last four years. Some weaknesses remain in the immunohematological assays.

### ***Blood Donors***

10. The proportion of voluntary blood donors in Latin American and Caribbean countries was 36.06% in 2003; that same year, 0.34% of blood units were collected from paid donors (Table 7). The proportion of voluntary blood donors remained unchanged between 2003 and 2005, although there was a reduction to 33.05% in 2004. Recognized paid donors accounted for only 0.19% of all units collected in 2005 (Table 7), but the actual number of individuals who receive money in exchange for their blood is unknown. In 2003, there were seven (17%) countries that reported more than 50% voluntary blood donors; Aruba, Brazil, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Saint Lucia, and Suriname did so in 2005.

11. The median prevalence rate of infectious markers among blood donors was always higher in countries with less than 50% voluntary donation than in those countries with more than 50% voluntary donors (Table 8). Nevertheless, it is noteworthy that, while the prevalence rates of markers remained unchanged in the former group of countries, the rates for countries with more than 50% voluntary donors tended to increase from 2002 to 2005 (Table 8).

12. The higher rate of prevalence of infectious markers among donors in some countries and the larger number of units that were not screened in 2004 and 2005 resulted in higher estimates of transfusion-transmitted infections. In 2002 and 2003 the estimated numbers of HIV infections associated with transfusions were six per year. The corresponding numbers for 2004 and 2005 were 57 and 55, respectively (Table 9). There were also significant increases in the estimated number of HBV and HCV transfusion-associated infections (Table 9).

### ***Availability and Safety of Blood for Transfusion***

13. The number of blood units collected in Latin America and the Caribbean increased from 7,325,093 in 2003 to 8,059,960 in 2005 (Table 10). The corresponding donation rates were 121.5/10,000 inhabitants in 2003 and 145.0/10,000 in 2005. There

was, however, a wide range among national donation rates in 2005: the rate for Haiti was 12.7 and that for Cuba was 439.6. In all, there were 15 (42%) countries with donation rates below 100/10,000 inhabitants and five (14%) with rates above 200 (Table 13).

14. The actual availability of blood at the national level is affected by the prevalence of infectious markers among blood donors –units from donors who are found to have an infectious marker must not be used for transfusions. In 2005, the cumulative proportion of units discarded because they were reactive/positive in the laboratory tests varied from 0.03% in Curacao to 11.00% in Bolivia, with a median of 3.11% (Table 13). There were at least 3,562 (4.28%) units discarded in the Caribbean countries and 235,134 in Latin America due to reactivity/positivity in laboratory tests, although some countries did not test any of the units collected for markers of HCV and HTLV/II and others reported the rate of donors that were confirmed as positive after being reactive in screening test. The 238,696 units discarded, at a direct cost of basic supplies of US\$ 56 per unit, represented a loss of \$13.4 million.

15. In the Caribbean and Latin American countries, rates of national availability of blood for transfusion are inversely related to national maternal mortality ratios and proportion of maternal deaths associated with hemorrhage.

16. In Latin America, transfusions are given primarily to treat medical and not surgical conditions; one of every seven patients who receive transfusions is under one year of age. Reduction of infant mortality, therefore, must consider availability of blood.

17. Treatment of road traffic injuries, which are predicted to increase by 67% by the year 2020, requires transfusions. Almost two thirds of blood used among patients of acute trauma is given during the first 24 hours of care. Timely availability of blood at the emergency services is a determinant factor of patient survival.

18. The risk of receiving a blood unit contaminated with HIV, HBV or HCV for lack of laboratory screening increased from 1 in 41,858 donations in 2003 to 1 in 11,784 donations in 2005 (Table 10). The risk was 8.79 times higher for HCV and 2.67 times higher for HBV than for HIV (Table 9). In continental Latin America, the risk of receiving a *T. cruzi* positive transfusion was 1 in 3,377 donations in 2005, which is similar to the risk observed in 2003 (1 in 3,330 donations) (Table 10).

### ***Efficiency of National Blood Systems***

19. In Latin America, where countries collected between 42,771 and 3,738,580 units of blood in 2005, there is a wide range in the mean number of units processed by the individual blood services in a year: from 761 units in Argentina to 10,320 in Cuba. The seven countries with lowest mean annual collection per service had an average of

11% voluntary blood donors, while the average voluntary donation was 51% in the six countries with the highest mean annual collection per service (Table 11). The mean donor deferral rate was lower, 7.9%, in the six countries with highest annual collection per service than in the other two groups of countries, 20.1% and 24.7%. Furthermore, the blood donation rate was 100.85 per 10,000 inhabitants in the group of countries with the less efficient blood collection systems, 115.90 in the intermediate group and 186.81 in the group of countries with blood services that collected a mean of 5,888 units per year (Table 11). There was no difference in the proportion of blood units discarded, which fluctuated around 10% in the three groups of countries (Table 11).

20. It is estimated that 603,950 units of red blood cells became outdated and were discarded in Latin America in 2005, for an estimated loss of \$33.8 million.

21. In the Caribbean, where countries collected between 114 and 22,155 units of blood in 2005, donor deferral varied between 0% and 53%, with a median of 20%. The estimated number of deferred donors was 29,152 in 2005. Seven countries had deferral rates below 10%; the rate was between 20% and 53% in the other eight countries (Table 12). The median blood donation rate in the first group of countries was 167.6 (range 108.4 – 368.6) per 10,000 inhabitants, and 87.7 (range 12.7 – 118.9) in the second group. The median proportion of units that were reactive for any of the infectious markers was 0.90% (range 0.03% – 6.85%) in the first group and 4.09% (range 0.40% – 10.25%) in the second. Aruba, Cayman Islands, Curacao, and Suriname, the four countries with 100% voluntary blood donors, are in the first group.

22. It is estimated that 6,425 units of red blood cells became outdated and were discarded in the Caribbean countries in 2005, for a loss of \$360,000. The median proportion of red blood cells discarded was 5.9% (range 2.0% – 15.7%) among countries with lower blood donor deferral rates, and 10.8% (range 1.8% – 14.7%) among countries with higher proportion of deferred donors (Table 12).

### **Progress since 2005**

23. The Regional Plan of Action 2006-2010 has nine progress indicators:

- In order to strengthen the organizational and functional capacities of the national blood systems, the legal framework is to be revised. Argentina, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Guyana, Haiti and Jamaica have either started or completed the process. Only Paraguay has enacted a revised blood law.
- To allow the development of national plans, the allocation of resources and appropriate evaluation of the national blood systems, the Regional Plan of Action

- included structured surveys to estimate the geographic and temporary blood requirements and blood components in the country. Aruba, Cuba, Curacao, Haiti, Paraguay, and Suriname have those estimates. Argentina, Bahamas, British Virgin Islands, Colombia, Costa Rica, Grenada, Guatemala, El Salvador, Saint Vincent and the Grenadines have either gross or partial estimates that do not take geographic and time variables into consideration.
- Considering that sufficiency and safety of blood can only be achieved through voluntary blood donation, the countries adopted the goal of collecting more than 50% of their blood units from voluntary blood donors. Aruba, Brazil, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Saint Lucia, and Suriname have achieved this goal.
  - Argentina, Brazil, Colombia, Costa Rica, Cuba, Curacao, Haiti, Paraguay and Suriname have initiated the implementation of national quality assurance programs.
  - To facilitate better patient care and planning of the national blood systems it is necessary to develop national guidelines for the clinical use of blood. Argentina, Aruba, Belize, Bolivia, Brazil, Costa Rica, Cuba, Curacao, Ecuador, El Salvador, Guyana, Haiti, Jamaica, Mexico, Nicaragua, and Paraguay have prepared their guidelines.
  - Belize, Costa Rica, Cuba, Guyana, Nicaragua and Suriname have established national blood transfusion committees.
  - Brazil, Colombia, Cuba and Nicaragua have implemented hemovigilance systems.
  - Colombia, Cuba, Curacao and Nicaragua have prepared components in at least 95% of the blood units collected.
  - Nine Latin American countries—Argentina, Brazil, Colombia, Cuba, El Salvador, Mexico, Nicaragua, Panama and Paraguay—have designed a regionalized national system for blood collection and processing.

### **Lessons Learned, Enablers and Obstacles for Progress, and Recommendations**

24. Progress was made in blood safety in the Region of the Americas from 2000 to 2003 (Tables 1, 2, 3, 7, 9, 10). Unfortunately, despite the fact that some countries initiated or achieved universal screening of blood for infectious markers, the overall risk of receiving a virus-contaminated transfusion—estimated by using the number of

unscreened blood units and the prevalence of infectious markers among blood donors—increased almost fourfold from 2003 to 2005 (Table 10).

25. Similarly, the proportion of voluntary blood donors in the Region increased from 15% in 2000 to 36% in 2003, but remained unchanged in the last two years (Table 7). Despite the increase in the number of voluntary blood donors, the proportion of those who are reactive/positive for infectious markers gradually increased from 2003 to 2005 (Table 8). This observation is associated with first-time or sporadic voluntary blood donors and underscores the need to pursue repeated and regular voluntary blood donation.

26. The number of blood units to be collected annually determines resources necessary to recruit blood donors, to procure supplies, and to collect, process, store and distribute blood components. It is difficult to appropriately plan and allocate national resources to blood systems when the need for blood and blood components in the country are unknown.

27. Central national health authorities have difficulties in organizing the different sectors (provincial or state authorities, social security, private and non-profit organizations) to implement national blood collection, processing and transfusion systems because the local factors that determine availability, opportunity, safety and efficacy of blood for transfusions are not taken into consideration for planning. In countries where structured efforts are being made, the political will and the technical skills of those at the normative level within the ministry of health determine the level of success. The permanent technical involvement of the PAHO Country Office is an important factor.

28. Regional work plans approved by the Directing Council in 1999 and in 2005 included the achievement of the goal of 50% voluntary blood donation. This goal was agreed upon by the national blood programs in order to induce gradual changes that would be acceptable to health workers. In retrospect, aiming for 50% voluntary blood donation results in policy, ethical and operational challenges since half of the recipient patients have to provide replacement donors; voluntary and replacement donors are handled differently by the blood services, and the access to blood in healthcare facilities is hindered by administrative processes of cost recovery. Pursuing the goal of 100% voluntary blood donation in the short term will result in the multidisciplinary operational approaches that were identified as vital in 2005.

29. Blood services need to work in three different spheres: (a) the community, to educate, recruit, select and maintain a healthy and committed donor pool; (b) within the blood processing center, as a factory of essential medicaments; and (c) the clinical services where patients are treated. Staffs with appropriate competencies, adequate

infrastructure and sufficient resources are necessary to educate and service voluntary blood donors, to manage blood processing facilities and to administer, monitor and evaluate blood transfusions.

30. The current organizational system results in a loss of financial resources, limits the efficacy of blood transfusions and has negative effects on morbidity and mortality.

31. The concepts of Resolution CD46.R5 still apply to the Region of the Americas but action is required by national authorities to implement the strategies of the Regional Plan of Action for Transfusion Safety 2006-2010, approved by the 46th Directing Council. It is recommended that the Ministries of Health support their national blood systems using the Health Agenda for the Americas 2008-2017 as the general framework.

32. Blood for transfusions should be considered an essential medicament, a national resource and a public good.

33. It is recommended that the Ministries of Health make a specific entity within their normative level responsible for the planning, oversight and overall efficient operation of the national blood system. The normative level must be clearly separated from the operational one.

34. The normative level should be staffed by personnel from multiple disciplines with competences in planning, management and public health. The National Blood Program should work closely with other groups within the Ministry of Health—Health Promotion, Maternal and Child Health, Immunization, Prevention and Control of Communicable Diseases, Cancer Prevention and Control, Adolescent Health, Pharmacovigilance, Patient Safety—and with other sectors—Ministry of Education, Ministry of Labor, Social Security.

35. The operational level should consider: (1) procurement, collection, processing and distribution of blood components, and (2) transfusion services. The processing centers should not be part of the individual hospitals. Consolidated processing facilities should be responsible for distributing sufficient blood components to a determined group of hospitals. In the smaller Caribbean countries the hospital laboratories may be used to process blood units, but the responsibility for donor education, selection and recruitment, and blood collection should be independent from the hospital administration.

36. Efforts should be made to estimate the annual national need for blood and blood components, by geographic area and by month. The national guides for clinical use of blood and the potential number of cases of the clinical conditions that require transfusions, including voluntary and involuntary injuries, should be used as the basis for the estimate. In order to cover unforeseen emergencies—natural or man-made disasters,



infectious outbreaks, emergency vaccination campaigns—it is recommended that the national blood systems have an additional stock equivalent to 4%, or two weeks, of the annual need.

37. The annual estimates of blood needs should take into consideration the expected increases in (a) numbers of the general and elderly population; (b) social inclusion of currently excluded populations; (c) road traffic injuries; and (d) local adoption of medical technologies such as organ transplants. Sufficient financial resources to collect and distribute enough blood components should be made available to the corresponding responsible unit within the Ministry of Health. National financial resources that are currently being wasted should be invested towards this effort.

38. The number of repeat donors needed in each country should be estimated at least as 50% of the national need of red blood cells. A national program should be put in place to educate and recruit healthy individuals as regular blood donors and to have them donate at least twice a year.

39. Ministries of Health should work to terminate replacement and paid donation before the end of 2010, with the goal of 100% voluntary, altruistic, non-remunerated donors, using the information obtained in the socio-anthropological surveys conducted in at least 18 of the Caribbean and Latin American countries.

40. A social network of volunteers should be established to help educate the community, to promote voluntary blood donation, and to service the donor. Youth programs, such as Pledge 25, should be given special attention.

41. National public information strategies should be developed to inform the community on the national needs for blood and blood components, the cost involved in procurement and processing of blood units, the daily level of coverage of the estimated need of blood, and the impact of transfusions on the wellbeing of the patients.

42. Hospital transfusion services should be staffed by medical specialists. Clinical laboratories in hospitals should actively participate in the evaluation of patients both before and after transfusions. Hospital transfusion committees should assess the clinical management of patients and the pertinence of hospital transfusion guidelines.

43. PAHO country offices should have staff specially dedicated to coordinating the technical cooperation given by PAHO on issues pertaining to blood transfusion safety. A coordinated approach is necessary at all levels of the Organization.

44. Local and national data on blood availability and safety and on blood transfusion efficiency should be analyzed periodically by the national health authorities and other stakeholders, including patient groups, blood donors and community volunteers.

**Action by the Directing Council**

45. The Directing Council, after reviewing the information provided, is invited to consider adoption of the resolution recommended by the 142nd Session of the Executive Committee, in Resolution CE142.R5 (see Annex C.)

Annexes

**Table 1: Number and percent of blood units screened in the Region between 2000-2005**

|                             | 2000                 | 2003                 | 2004                 | 2005                 |
|-----------------------------|----------------------|----------------------|----------------------|----------------------|
| Units collected (N)         | 6 409 596            | 7 325 093            | 7 559 080            | 8 059 960            |
| Units screened for HIV      | 6 387 790<br>(99.66) | 7 320 292<br>(99.93) | 7 466 769<br>(98.77) | 7 972 085<br>(98.91) |
| Units screened for HBV      | 6 387 247<br>(99.65) | 7 315 191<br>(99.86) | 7 460 221<br>(98.69) | 7 966 011<br>(98.83) |
| Units screened for HCV      | 6 332 331<br>(98.79) | 7 290 038<br>(99.52) | 7 448 173<br>(98.53) | 7 963 998<br>(98.81) |
| Units screened for syphilis | 6 381 752<br>(99.57) | 7 313 335<br>(99.84) | 7 383 987<br>(97.68) | 7 900 040<br>(98.02) |

**Table 2: Number and percent of units screened for *T. cruzi* in Latin America between 2000-2005**

|                          | 2000                 | 2003                 | 2004                 | 2005                 |
|--------------------------|----------------------|----------------------|----------------------|----------------------|
| Units to be screened (N) | 5 700 259            | 7 097 339            | 6 888 289            | 7 419 274            |
| Units screened           | 4 502 114<br>(78.98) | 6 251 932<br>(88.09) | 5 938 183<br>(86.20) | 6 459 612<br>(87.06) |

**Table 3: Number and percent of countries reporting universal screening between 2000-2005**

|                 | 2000         | 2003         | 2004         | 2005         |
|-----------------|--------------|--------------|--------------|--------------|
| HIV             | 31/37 (83.8) | 33/38 (89.2) | 29/37 (78.4) | 32/36 (88.9) |
| HBV             | 30/37 (81.1) | 33/38 (89.2) | 29/37 (78.4) | 32/36 (88.9) |
| HCV             | 19/37 (51.3) | 23/38 (62.5) | 20/37 (54.1) | 24/36 (66.7) |
| Syphilis        | 32/37 (86.5) | 33/38 (89.2) | 30/37 (81.1) | 31/36 (86.1) |
| <i>T. cruzi</i> | 6/17 (35.3)  | 7/17 (41.2)  | 8/17 (47.1)  | 12/17 (70.6) |

**Table 4: Participation in Regional PEED for TTI between 2000-2005**

|                                    | 2000 | 2003 | 2004 | 2005 |
|------------------------------------|------|------|------|------|
| Number of Latin American countries | 18   | 18   | 18   | 18   |
| Number of Caribbean countries      | 0    | 18   | 20   | 20   |
| Number of Latin American centers   | 20   | 20   | 20   | 21   |
| Number of Caribbean centers        | 0    | 22   | 21   | 24   |

**Table 5: Participation in national PEED for TTI between 2002-2005**

|  | 2000  | 2003  | 2004  | 2005  |
|--|-------|-------|-------|-------|
| Number of centers in Latin America     | 4 738 | 2 509 | 3 071 | 2 546 |
| Number of participating centers        | 1 129 | 1 330 | 1 433 | 1 182 |
| % participation                        | 23.82 | 53.01 | 46.66 | 46.42 |
| Number of countries with national PEED | 11    | 16    | 16    | 17    |

**Table 6: Number of participants in regional PEED for immunohematology in Latin America and the Caribbean between 2000-2005**

|               | 2000 | 2003 | 2004 | 2005 |
|---------------|------|------|------|------|
| Latin America | 24   | 30   | 29   | 48   |
| Caribbean     | 0    | 24   | 24   | 24   |

**Table 7: Number and percent of voluntary and paid donors between 2000-2005**

|                             | 2000               | 2003                 | 2004                 | 2005                 |
|-----------------------------|--------------------|----------------------|----------------------|----------------------|
| Units collected (N)         | 6 409 596          | 7 325 093            | 7 559 080            | 8 059 960            |
| Voluntary donors (N)<br>(%) | 989 885<br>(15.44) | 2 641 739<br>(36.06) | 2 498 174<br>(33.05) | 2 950 018<br>(36.60) |
| Paid donors (N)<br>(%)      | 31 725<br>(0.50)   | 24 925<br>(0.34)     | 25 398<br>(0.34)     | 15 507<br>(0.19)     |

**Table 8: Median prevalence (percent) of markers for TTI according to proportion of voluntary blood donors between 2000-2005**

| Marker   | Countries with | 2000 | 2003 | 2004 | 2005 |
|----------|----------------|------|------|------|------|
| HIV      | < 50% VBD      | 0.21 | 0.28 | 0.23 | 0.26 |
|          | > 50% VBD      | 0.13 | 0.01 | 0.01 | 0.02 |
| HBsAg    | < 50% VBD      | 0.60 | 0.60 | 0.62 | 0.60 |
|          | > 50% VBD      | 0.37 | 0.18 | 0.19 | 0.26 |
| HCV      | < 50% VBD      | 0.56 | 0.56 | 0.52 | 0.58 |
|          | > 50% VBD      | 0.10 | 0.06 | 0.08 | 0.11 |
| Syphilis | < 50% VBD      | 0.97 | 0.92 | 0.97 | 1.00 |
|          | > 50% VBD      | 0.55 | 0.13 | 0.14 | 0.18 |

**Table 9: Estimated indicators of blood safety between 2000-2005**

| Variable                                      | 2000   | 2003  | 2004  | 2005  |
|---|--------|-------|-------|-------|
| HIV infections transfused (N)                 | 30     | 6     | 57    | 55    |
| Risk of HIV per 100,000 donations             | 0.47   | 0.08  | 0.75  | 0.68  |
| HBV infections transfused (N)                 | 1 357  | 22    | 176   | 147   |
| Risk of HBV per 100,000 donations             | 21.18  | 0.30  | 2.32  | 1.82  |
| HCV infections transfused (N)                 | 211    | 147   | 537   | 482   |
| Risk of HCV per 100,000 donations             | 3.29   | 2.00  | 7.10  | 5.98  |
| <i>T. cruzi</i> infections transfused (N)     | 7 483  | 2 193 | 2 374 | 2 362 |
| Risk of <i>T. cruzi</i> per 100,000 donations | 131.23 | 28.22 | 34.46 | 31.88 |

**Table 10: Availability and safety of blood between 2000-2005**

|                                     | 2000      | 2003      | 2004      | 2005      |
|-------------------------------------|-----------|-----------|-----------|-----------|
| Number of units collected           | 6 409 596 | 7 325 093 | 7 559 080 | 8 059 960 |
| Donation rate per 10,000            | 126.8     | 138.6     | 139.4     | 145.0     |
| Risk of viral transfusion           | 1: 4 011  | 1: 41 858 | 1: 9 817  | 1: 11 784 |
| Risk of <i>T. cruzi</i> transfusion | 1: 762    | 1: 3 340  | 1: 3 150  | 1: 3 377  |

**Table 11: Efficiency of national blood systems in Latin America, 2005**

| Variable                                | Group1   | Group 2  | Group 3   |
|---|--|--|---|
|   | Argentina<br>Dominican Republic<br>Uruguay<br>Venezuela<br>Guatemala<br>Panama<br>Peru | Bolivia<br>Nicaragua<br>Chile<br>Honduras<br>Mexico<br>El Salvador | Costa Rica<br>Paraguay<br>Colombia<br>Ecuador<br>Brazil<br>Cuba |
| Mean number of units collected per bank | 1,404  | 2,334  | 5.888   |
| Mean GNP per capita (US \$)             | 3,664  | 3,123  | 2,628   |
| Population x 1,000                      | 121,613  | 152,079  | 266,987   |
| Units collected                         | 1,226,526  | 1,762,623  | 4,987,588   |
| Donation rate per 10,000                | 100.85   | 115.90   | 186.81  |
| Mean voluntary donors (%)               | 11.0   | 18.5   | 51.3  |
| Mean donor deferral (%)                 | 20.1   | 24.7   | 7.9   |
| Mean units discarded (%)                | 10.7   | 9.9  | 10.3  |

**Table 12: Efficiency of national blood systems in the Caribbean, 2005**

| <b>Group 1</b>                 | Donor deferral rate (%) | Voluntary donors (%) | Prevalence TTI (%) | Discard rate (%) |
|--------------------------------|-------------------------|----------------------|--------------------|------------------|
| St Kitts and Nevis             | 0                       | 3                    | 6.85               | NR               |
| Curacao                        | 0.3                     | 100                  | 0.03               | 2.0              |
| Aruba                          | 2                       | 100                  | 0.90               | 2.0              |
| Suriname                       | 4.6                     | 100                  | 0.14               | 5.9              |
| Bahamas                        | 5                       | 15                   | 2.23               | 15.70            |
| Dominica                       | 9                       | 5                    | 5.41               | 7.1              |
| Cayman Islands                 | 10                      | 100                  | 0.11               | 20.0             |
| <b>Group 2</b>                 |                         |                      |                    |                  |
| St. Vincent and the Grenadines | 20                      | 13                   | 6.68               | 12.7             |
| Guyana                         | 24                      | 22                   | 4.09               | 6.5              |
| Grenada                        | 26.7                    | 30                   | 4.20               | 10.8             |
| Haiti                          | 27                      | 15                   | 10.25              | 7.2              |
| Belize                         | 39.0                    | 9                    | 1.89               | 11.5             |
| St. Lucia                      | 39.1                    | 82                   | 1.55               | 14.7             |
| Trinidad and Tobago            | 44                      | 13                   | 4.69               | NR               |
| Anguilla                       | 53                      | 10                   | 0.40               | 1.8              |

**Table 13: Blood donation rate per 10,000 inhabitants and proportion of units reactive/positive for infectious markers in 2005**

| Country                        | Donation rate | % TTI markers | Country            | Donation rate | % TTI markers |
|--------------------------------|---------------|---------------|--------------------|---------------|---------------|
| Anguilla                       | 87.7          | 0.40          | Argentina          | 94.2          | 6.49          |
| Aruba                          | 367.8         | 0.90          | Bolivia            | 50.9          | 11.00         |
| Bahamas                        | 159.5         | 2.23          | Brazil             | 200.5         | 2.93          |
| Belize                         | 115.1         | 1.89          | Chile              | 109.2         | 1.54*         |
| British Virgin Islands         | 194.3         | 0.22          | Colombia           | 115.7         | 3.11          |
|                                |               |               | Costa Rica         | 125.1         | 0.49*         |
| Cayman Islands                 | 196.4         | 0.11          | Cuba               | 439.6         | 1.65*         |
| Curacao                        | 368.6         | 0.03          | Ecuador            | 94.3          | 0.39*         |
| Dominica                       | 109.7         | 5.41          | El Salvador        | 116.5         | 3.98          |
| Grenada                        | 92.8          | 4.20          | Guatemala          | 61.3          | 6.39          |
| Guyana                         | 70.1          | 4.09          | Honduras           | 72.6          | 3.98          |
| Haiti                          | 12.7          | 10.25         | Mexico             | 126.2         | 1.89          |
| Jamaica                        | 83.6          | 5.40          | Nicaragua          | 98.6          | 3.82          |
| St Kitts and Nevis             | 108.4         | 6.85          | Panama             | 132.3         | 1.28          |
| St Lucia                       | 118.9         | 1.55          | Paraguay           | 76.4          | 9.98          |
| St. Vincent and the Grenadines | 69.0          | 6.68          | Peru               | 64.2          | 3.92          |
|                                |               |               | Dominican Republic | 69.8          | 3.74          |
| Suriname                       | 167.6         | 0.14          | Uruguay            | 276.3         | 1.32          |
| Trinidad and Tobago            | 104.4         | 4.69          | Venezuela          | 150.8         | 3.71          |

\* Reported tests confirmed as positive. The rest of the countries reported units that were reactive in screening tests.



**PAN AMERICAN HEALTH ORGANIZATION**  
*Pan American Sanitary Bureau, Regional Office of the*  
**WORLD HEALTH ORGANIZATION**

CD48/11 (Eng.)  
Annex B

**ANALYTICAL FORM TO LINK AGENDA ITEM WITH ORGANIZATIONAL AREAS**

**1. Agenda Item:** 4.7

**2. Agenda Title:** Improving Blood Availability and Transfusion Safety in the Americas

**3. Responsible Unit:** THR

**4. Preparing Officer:** José Ramiro Cruz

**5. List of collaborating centers and national institutions linked to this Agenda item:** Hemocentro/Fundacion ProSangue, Sao Paulo, Brazil; UK National External Quality Assessment Scheme; International Consortium for Blood Safety, New York; Centro de Transfusion de Sevilla, Spain; CAREC, Trinidad and Tobago; International Federation of Red Cross and Red Crescent Societies, Geneva; International Society for Blood Transfusion Regional Delegation, Caracas, Venezuela; International Blood Transfusion, London, UK; Grupo Cooperativo Ibero Americano de Medicina Transfusional; EUROsociAL, Madrid, Spain; Rotary Clubs in USA, Mexico, El Salvador, Colombia, Ecuador, Chile, Peru, Uruguay, Paraguay, St. Lucia, Cayman Islands; Health Canada, Canadian Blood Services, Hema-Quebec, Canada; USA Center for Disease Control and Prevention, Atlanta, USA; Centro Nacional de Transfusión Sanguínea, Mexico; Programa Nacional de Sangre. Instituto Guatemalteco de Seguridad Social, Guatemala; Laboratorio Central Max Bloch, Cruz Roja Salvadoreña, El Salvador; Programa Nacional de Sangre, Cruz Roja Hondureña, Honduras; Centro Nacional de Diagnóstico y Referencia, Cruz Roja Nicaraguense, Nicaragua; Dirección de Laboratorios, Caja Costarricense del Seguro Social, Costa Rica; Hospital Santo Tomás, Panama; Ministerio de la Protección Social, Instituto Nacional de Salud, Instituto Nacional de Vigilancia de Medicamentos y Alimentos, Cruz Roja Colombiana, Colombia; Programa Nacional de Bancos de Sangre, Venezuela; Ministerio de Salud, Cruz Roja Ecuatoriana, Ecuador; Programa Nacional de Sangre, Bolivia; Programa Nacional de Sangre, Cruz Roja Chilena, Chile; Programa Nacional de Hemoterapia y Bancos de Sangre, Instituto Nacional de Salud, Peru; Programa Nacional de Sangre, Paraguay; Plan Nacional de Sangre, Argentina; Centro Nacional de Transfusión, Uruguay; Coordinacion da Politica Nacional de Sangre e Hemoderivados, Agencia de Vigilancia Sanitaria, HEMOBRAS, Brazil; Instituto Nacional de Hematología e Inmunología, Cuba; Secretaría Estatal de Salud Pública y Asistencia Social, Cruz Roja Dominicana, Dominican Republic; National Blood Safety Program, Croix Rouge Haitienne, Haiti; Princess Alexandra Hospital, Anguilla; Stichting Bloedbank, Aruba; Princess Margaret Hospital, Bahamas; Belize National Blood Transfusion Service, Belize; Peebles Hospital, BVI; Cayman Islands Hospital, CI; Red Cross Blood Bank Foundation, Curacao; Princess Margaret Hospital, Dominica; Pathology Laboratory, Grenada; National Blood Transfusion Service, Guyana; National Blood Transfusion Service, Jamaica; Joseph N. France General Hospital, St. Kitts; St. Lucia Blood Bank Service; Milton Cato Memorial Hospital, St. Vincent; National Blood Bank, Suriname; National Blood Transfusion Service, Trinidad and Tobago.

**6. Link between Agenda item and Health Agenda of the Americas:**

**PRINCIPLES**

*Human Rights, universality, access and inclusion:* The Plan of Action for Transfusion Safety 2006-2010 seeks to promote sufficiency, availability, access and opportunity of blood for transfusions in the Region of the Americas, considering the human right to the best attainable level of health.

*Pan American solidarity:* The Plan of Action promotes cooperation among countries in the Americas with the participation of PAHO collaborating centers and professional associations.

*Equity in health:* The Plan of Action seeks to eliminate intra and intercountry differences in the availability,

access, opportunity, and quality of blood for transfusions with a public health approach.

Social participation: The document CD48/11 clearly states that a social network is indispensable to attain 100% voluntary blood donation and sufficiency of blood.

## **AREAS OF ACTION**

*Strengthening the health authority:* The Plan of Action 2006-2010 comprises four strategies. The first, Planning and Management of the National Blood Network System, requires a strong leadership of the Ministry of Health. Paragraphs 27, 29, 30, 31, 33, 34, 39 of document CD48/11 refer to steering role of the Ministries of Health.

*Tackling health determinants; Reducing the risk and burden of disease:* Safety of blood depends primarily on the quality of the blood donor. National blood requirements depend on the overall health status of the population. Health promotion, health education and interventions to protect the population will result in safer blood donors and reduced needs for blood components. Safe blood contributes to the reduction of HIV, HBV, HCV, T. cruzi and other infections. Paragraphs 6-9, 11-18, 24, 29, 34, and 37, and tables 1-5 refer to these issues.

*Increasing social protection and access to quality health services; Diminishing health inequities among countries and inequities within them:* Blood availability and access vary within and among countries. The overall objective of the Plan of Action 2006-2010 is to promote equitable access considering increased social inclusion. Tables 10-13 and paragraphs 13, 14, 15, 35, 36, 37, and 41 address social protection and access to blood.

*Strengthening health security:* Blood for transfusions is an essential component for managing emergencies. Paragraph 36 of the document specifically refers to unforeseen emergencies.

Furthermore, document CE48/11 Reads, in paragraph 31:

“31. The concepts of Resolution CD46.R5 still apply to the Region of the Americas but action is required by national authorities to implement the strategies of the Regional Plan of Action for Transfusion Safety 2006-2010, approved by the 46th Directing Council. It is recommended that the Ministries of Health support their national blood systems using the Health Agenda for the Americas 2008-2017 as the general framework.”

## **7. Link between Agenda item and Strategic Plan 2008-2012:**

### **The Regional Plan of Action for Transfusion Safety addresses issues related to**

- SO1. To reduce the health, social and economic burden of communicable diseases –T.cruzi, HBV, HCV, HTLVII by improving donor selection and laboratory screening.
- SO2. To combat HIV/AIDS, tuberculosis and malaria by improving donor selection and laboratory screening.
- SO3. To prevent and reduce disease, disability and premature death from chronic noncommunicable conditions, violence and injuries by providing enough, safe blood in a timely manner.
- SO4. To reduce mortality and improve health during key stages of life, including pregnancy, childbirth, the neonatal period, childhood and adolescence, and improve sexual and reproductive health and promote healthy aging for all individuals by promoting voluntary blood donation and by making safe blood available in a timely manner.
- SO5. To reduce the health consequences of emergencies, disasters, crises and conflicts, and minimize their social and economic impact by providing blood for transfusion when necessary.



- SO6. To promote health and development, and prevent or reduce risk factors such as use of tobacco, alcohol, drugs and other psychoactive substances, unhealthy diets, physical inactivity and unsafe sex, which affect health conditions by promoting the education of voluntary blood donors
- SO7. To address the underlying social and economic determinants of health through policies and programs that enhance health equity and integrate pro-poor, gender-responsive, and human rights-based approaches by ensuring equitable access to safe blood
- SO10. To improve the organization, management and delivery of health services by improving the planning and management of the national blood network system.
- SO11. To strengthen leadership, governance and the evidence base of health systems by improving the planning and management of the national blood network system.
- SO12. To ensure improved access, quality and use of medical products and technologies

**8. Best practices in this area and examples from other countries within AMRO:**

Canada: Organization of blood services. Aruba, Cayman Islands, Cuba, Curacao, Suriname in voluntary blood donation.

**9. Financial implications of Agenda item:**

Better planning and management at the country level will result in more efficient use of national resources. Around US\$ 48 million were wasted in 2005 by the Caribbean and Latin American countries. Paragraphs 14, 20 and 22 refer to financial resources.

Regular and extrabudgetary funding at the regional should not be further reduced in the coming years. PAHO HQ, PWR's and Subregional initiatives should work to implement coordinated approaches of technical cooperation. Paragraph 43 of the document addresses this issue.



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## 142nd SESSION OF THE EXECUTIVE COMMITTEE

Washington, D.C., USA, 23-27 June 2008

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CD48/11 (Eng.)  
Annex C

ORIGINAL: ENGLISH

### ***RESOLUTION***

#### ***CE142.R5***

### **BLOOD TRANSFUSION SAFETY: PROGRESS REPORT**

#### ***THE 142nd SESSION OF THE EXECUTIVE COMMITTEE,***

Having considered the progress report presented by the Director on Blood Transfusion Safety (Document CE142/20), which summarizes the difficulties observed in the implementation of the Regional Plan of Action for Transfusion Safety 2006-2010;

Concerned about the insufficiency and the poor quality of blood available for transfusions in the majority of countries of the Region; and

Taking into account the Health Agenda for the Americas 2008-2017,

#### ***RESOLVES:***

To recommend that the Directing Council adopt a resolution along the following lines:

***THE 48th DIRECTING COUNCIL,***

Having considered the progress report presented by the Director on Blood Transfusion Safety (Document CD48/11), which summarizes the difficulties observed in the implementation of the Regional Plan of Action for Transfusion Safety 2006-2010;

Aware of the central role that transfusions play in the appropriate medical care of patients and in the reduction of mortality among mothers, infants, victims of traffic accidents and other traumas, patients suffering from cancer or clotting disorders, and transplant patients;

Concerned that the current levels of availability and safety of blood for transfusion in the Region are unsatisfactory;

Recognizing that the current national organizational systems limit the efficacy of blood transfusions, have negative effects on morbidity and mortality, and result in major financial losses;

Considering that the concepts of Resolutions CD41.R15 (1999) and CD46.R5 (2005) still apply to the Region of the Americas, and that action is required by national authorities to implement the strategies of the Regional Plan of Action 2006-2010, approved by the 46th Directing Council; and

Recognizing that modifications in current national approaches are needed in order to achieve the regional goals set for transfusion safety by 2010,

***RESOLVES:***

1. To urge Member States to:
  - (a) proactively implement the Regional Plan of Action for Transfusion Safety 2006-2010 by:
    - i. defining a specific entity within the normative level of their ministries of health as responsible for the planning, oversight and overall efficient operation of the national blood system;
    - ii. estimating the annual national need for blood components, taking into consideration unforeseen emergencies, expected increases of the general and elderly population, social inclusion of currently excluded populations, road traffic injuries, and local adoption of medical technologies, such as

transplants and cancer treatment, and the financial resources necessary to cover those needs;

- iii. establishing a network of volunteers to educate the community and to promote voluntary blood donation and service blood donors, with special attention to youth programs;
  - (b) terminate replacement and paid blood donation before the end of 2010, with a goal of 100% voluntary, altruistic, non-remunerated blood donation, using the information obtained from socio-anthropological surveys conducted in the countries, given that blood collection should not be solely the responsibility of hospital medical teams;
  - (c) share best practices in the recruitment and retention of voluntary blood donors.
2. To request the Director to:
- (a) cooperate with the Member States in the implementation of the Regional Plan of Action for Transfusion Safety 2006-2010 using a multidisciplinary and coordinated approach for health promotion, public education, human and patient rights, quality assurance and financial efficiency;
  - (b) work with Member States and international organizations to assess the implementation of the Regional Plan of Action 2006-2010 and to identify country-specific interventions needed to assure sufficiency and acceptable quality and safety of blood for transfusions at the national level;
  - (c) prepare annual reports on the situation of blood transfusion safety in the Region.

*(Seventh meeting, 26 June 2008)*



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## 48th DIRECTING COUNCIL 60th SESSION OF THE REGIONAL COMMITTEE

Washington, D.C., USA, 29 September-3 October 2008

CD48/11 (Eng.)  
Annex D

### Report on the Financial and Administrative Implications for the Secretariat of the Resolutions Proposed for Adoption by the Directing Council

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|--|
| <b>1. Resolution:</b> Blood Transfusion Safety: Progress Report.   |
| <b>2. Linkage to program budget</b>  |
| <b>Area of work</b> 21; 01 <span style="float: right;"><b>Expected result</b> 3; 5</span>  |
| <b>3. Financial implications</b>   |
| <b>a) Total estimated cost for implementation over the lifecycle of the resolution (estimated to the nearest US\$ 10,000; including staff and activities):</b> \$1,780,000   |
| <b>b) Estimated cost for the biennium 2008-2009 (estimated to the nearest US\$ 10,000; including staff and activities):</b> \$1,420,000  |
| <b>c) Of the estimated cost noted in (b) what can be subsumed under existing programmed activities?</b> 100%   |
| <b>4. Administrative implications</b>  |
| <b>a) Implementation locales (indicate the levels of the Organization at which the work will be undertaken and identify the specific regions, where relevant):</b> HQ, Subregional Units, PWR's, and Collaborating Centers.                |
| <b>b) Additional staffing requirements (indicate additional required staff full-time equivalents, noting necessary skills profile):</b> Specific focal points for blood transfusion safety are necessary in each Subregional Unit and PWR. |
| <b>c) Timeframes (indicate broad time frames for the implementation and evaluation):</b> The implementation of the activities started in 2005 and must continue to 2010. Regional and national progress should be assessed yearly.         |