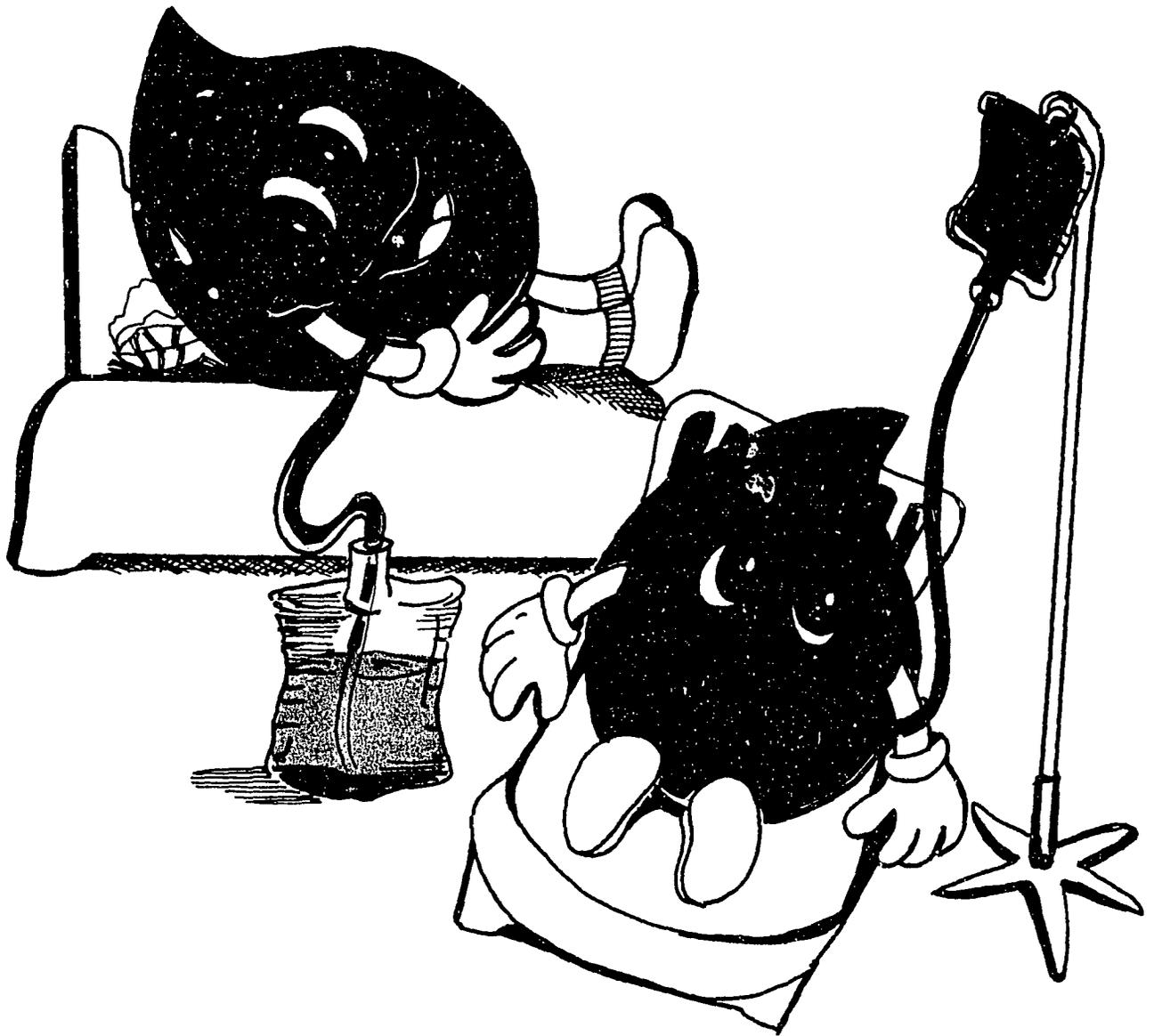


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PROJECT TO EVALUATE THE SAFETY OF
THE PHILIPPINE BLOOD BANKING SYSTEM
28 September 1993 - 15 January 1994



New Tropical Medicine Foundation
With the assistance of the
US Agency for International Development

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(28 September 1993 - 15 January 1994)

Final Report

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FOREWORD

Transmission of HIV through blood transfusion has relatively been much, much lower than through the other routes. However, the scandals in Europe, especially France and Germany, underscore the political significance of this mode of transmission.

This study was conducted in order to gather more solid information on the practices and activities in blood banking and blood transfusion in the Philippines, and carefully assess whether there is real cause for concern about the country's blood supply.

The study was conducted in 4 months and intensive work was given to the design and methodology. The findings of the study are clear and should not only trigger concern but alarm: the country's blood transfusion system is unsafe, inadequate and wasteful.

As the head of this project's study team, I wish to extend this call to everyone: let us work together to improve the safety of our country's blood supply. There is no time to engage in turf protection or business concerns. This is one activity where individuals and small groups can do very little. We need each other. Any one of us, or any member of our family, may need blood in the future. In such an emergency, who knows what can happen?

To really seal this commitment, go and donate blood also. Only then will you feel the humanity of man and the real kinship of being a Filipino. The spirit of the blood compact is not over. It will go on as long as there is a single person teetering on the brink of death needing the precious blood of life.



**Asuncion A. Paraan, MD, FPSP
Project Team Leader**

ACRONYMS

AABB	- American Association of Blood Banks
AIDS	- Acquired Immune Deficiency Syndrome
BRL	- Bureau of Research and Laboratories
CAR	- Cordillera Administrative Region
DOH	- Department of Health
FETP	- Field Epidemiology Training Program
FEU-NRMF	- Far Eastern University Nicanor Reyes Memorial Foundation
FSB	- Free-standing blood bank
GH	- Government Hospital blood bank
HIV	- Human immunodeficiency virus
IEC	- Information, education and communication
JFMH	- Jose Fabella Memorial Hospital
LQAS	- Lot Quality Assurance Sampling
NCR	- National Capital Region
NKI	- National Kidney Institute
NTMF	- New Tropical Medicine Foundation
PAMET	- Philippine Association of Medical Technologists
PBCC	- Philippine Blood Coordinating Council
PH	- Private hospital blood bank
PNRC	- Philippine National Red Cross
PSHBT	- Philippine Society of Hematology and Blood Transfusion
RBC	- red blood cell
RITM	- Research Institute for Tropical Medicine
TWG	- technical working group
USAID	- United States Agency for International Development
WHO	- World Health Organization

EXECUTIVE SUMMARY

The study was done to assess the safety of the blood banking system in the Philippines. It had the following specific objectives: (1) to document current practices of blood banks in relation to donor-related activities, blood collection, screening and processing, and blood distribution and use; (2) to make an inventory of blood banking facilities and compare these with government and World Health Organization (WHO) standards; and (3) to identify unsafe practices and reasons for their perpetuation. To achieve the objectives, the following were done:

1. **Field survey of blood banks in different parts of the country:** This consisted of: (a) interview of heads/ operators/ or owners of banks, the medical/ paramedical staff and donors; (b) observation of blood banking practices; and (c) review of available records for September 1993. A total of 136 blood banks were visited - which is 55% of all registered blood banks (269) but is 98% of the target sample, covering 82% of the Philippine National Red Cross (PNRC) blood centers; 88% of free-standing/ commercial blood banks; and 38% of hospital blood banks. Aside from blood banks, 11 free-standing outlets and 6 hospital-based outlets were also visited (63% of outlets).
2. **Laboratory retesting of blood samples:** Using the Lot Quality Assurance Sampling (LQAS) methodology, 426 blood samples were retested for syphilis, malaria, hepatitis B and HIV.

Before the field survey, an overview document was prepared to provide the national perspective on the developments and issues and the different sectors actively involved in the blood banking system. The overview was prepared after a review of existing documents such as previous legislations, memorandum circulars and department/bureau orders and statistical reports; and interview of key informants.

Two consultative workshops were called, the first one to discuss the study plans and protocols; the second to discuss the preliminary findings and issues for action. The preliminary findings were also presented on separate occasions to the Management Committee of the Department of Health (DOH); to selected Governors of the PNRC; and to Senator Freddie N. Webb Chairman of the Senate Committee on Health, and his technical staff and one staff of Sen. Orlando Mercado.

The major findings of the Overview include the following: as much as 33% of the country's annual projected need is not met by current blood sources; about 64% of the country's blood supply comes from free-standing/ commercial blood banks, which, in turn, obtains blood by paying donors; paid donors are three times more likely to test positive for any of the four blood transmissible diseases routinely screened for as mandated by law, namely, malaria, syphilis, hepatitis B and HIV. The Overview document also noted gaps in national program planning and management and monitoring of blood banks. Specifically, the study noted that only indicative plans exist, underscoring an urgent need to clarify targets in terms of the specific number of blood units to be generated or the number of

voluntary donors to be recruited. There were also political obstacles detected that prevented sectors from effectively working together, which were reiterated during the consultative workshops.

The field survey confirmed many of the findings of the Overview and provided detailed information on the actual operations and practices of the blood banks and their outlets, especially the donor recruitment activities, the general characteristics of donors, and the blood distribution patterns. In addition, actual capability for voluntary donor recruitment, blood screening and component preparation were documented.

Specifically, the survey findings showed that: across the country and across all categories of blood banks, including the PNRC, donor bleeding was low (84% of hospital blood banks bled less than 5 donors per day and PNRC blood centers on the average bled less than 10 donors a day); blood screening for all four mandated disease screening tests can be done only in 24% of the blood banks studied, HIV screening in only 37%; and blood component preparation are done in only 15% of the blood banks.

At least eight practices were considered unsafe: (1) buying and selling of blood; (2) poor donor screening; (3) inadequate blood screening; (4) inadequate monitoring of blood screening; (5) presence of unsupervised free-standing outlets which are not subject to any government regulation and monitoring; (6) lack of blood transfusion committees in hospitals; (7) unsafe waste disposal system; and (8) weak quality control and quality assurance scheme.

Thirteen of the blood samples tested positive for hepatitis B, while 2 tested positive for HIV, confirming the fear that potentially infective blood is circulating within the blood transfusion system.

The study concluded that the current blood transfusion and the blood banking system in the Philippines is unsafe, inadequate and wasteful.

The study proposed two sets of recommendations: immediate and urgent measures; and medium and long-term measures. The immediate measures included: short term improvements in regulations and procedures especially for donor screening, blood screening and monitoring, and waste disposal; immediate phase-out of free-standing outlets; discussions on better and safer blood distribution schemes; and immediate creation of hospital blood transfusion committees.

The long-term measures comprised national and local options for actions that can bring about an alternative system which should eventually have carefully-planned and well-coordinated region-wide blood transfusion services that can supply sufficient quantities of voluntarily-donated blood and blood products. These region-wide systems should be linked together - through a national plan - with national reference laboratories and biologicals production plants. A common, effective quality assurance scheme managed by the government should maintain optimum safety and quality of blood within the system.

1.0. INTRODUCTION

In recent years, the emergence of Acquired Immune Deficiency Syndrome (AIDS) and the documented cases of transfusion-acquired human immunodeficiency virus (HIV) infection especially in several European countries have brought to public consciousness questions about the safety of the nation's blood supply. Whereas other diseases have been known to be transmissible through blood, none has proven to be as threatening as AIDS. But, while international agencies like the World Health Organization (WHO) have repeatedly called for better safety in the conduct of blood banking and have issued guidelines to improve safety, there is still a wide variance in actual practice across countries such that the threat of transfusion-acquired diseases remain relatively high.

Cases of malaria transmitted through blood transfusions have been detected in Cebu¹. One or two cases have also been reported in Metro Manila². As of January 1994, the National AIDS Registry has 5 documented cases of blood transfusion AIDS/HIV infections in its cumulative list³: all received blood transfusions abroad, most in 1987-88.

The study was undertaken between 28 September 1993 to 15 January 1994 to answer the question, "how safe is the blood banking system in the Philippines?". It had the following objectives:

1. To document current practices of blood banks in relation to:
 - 1.1. donor-related activities
 - 1.2. blood processing and screening and
 - 1.3. blood distribution and use
2. To make an inventory of blood bank facilities and compare these with government and WHO standards
3. To identify unsafe practices and reasons for their perpetuation

It was also thought that identification of the specific strengths, problems and weaknesses within the system can help identify ways of improving the safety and the management of the blood transfusion services.

The study was conducted in close collaboration with the Department of Health (DOH), especially the Bureau of Research and Laboratories (BRL) and the Field Epidemiology Training Program (FETP); and with the cooperation of the Philippine National Red Cross (PNRC), the Philippine Blood Coordinating Council (PBCC) and many other groups active in blood banking and blood transfusion.

2.0. STUDY DESIGN AND METHODOLOGY

The study was divided into three major components. The first component was an **overview of the blood banking system in the Philippines**. Using documents review and interviews with key people in the system, this component sought to reconstruct historical developments in Philippine blood banking, to identify regulatory mechanisms and guidelines that cover the blood banking system and to establish the current status of supply and demand of blood from statistical data available at the BRL.

The second component was a **nationwide survey of blood banks** to document their practices and make an inventory of their facilities. This component utilized two data gathering methods: **interview of the medical staff in charge of the blood bank's day-to-day operation and a checklist of facilities, equipments and records**.

Aside from the medical/ paramedical staff, the survey personnel were instructed to also interview any blood donor who happened to be at the bank at the time of the survey using a separate donor interview questionnaire. Donors were selected at random. Moreover, free-standing blood bank owners and outlet operators who were available and willing were also to be interviewed using an owner-interview questionnaire. Field researchers also carried out an ocular inspection of the facilities in the blood bank ticking off items in the prepared checklist as they observed them. The number of blood banks for which the checklists were completed exceeded the sample for the interview because the field personnel decided in some instances to go ahead with their observations even when no interview could be done for lack of an available respondent. The data reviewed covered the blood bank's operation for the month of September 1993.

To determine which blood banks to include in the survey, all blood banks listed by the BRL were classified into four categories: **PNRC blood centers, government hospital-based blood banks, private hospital-based blood banks and free-standing blood banks**. The free-standing blood banks pertain to "commercial blood banks" which are run as private business enterprises not directly attached to a hospital.

Government hospitals were further classified into regional, provincial and district while private hospitals were grouped into large and small depending on their bed capacity.

It was decided that the sample for the field survey will include the following on a per region basis (for a total of 14 regions):

- 1. all free-standing blood banks**
- 2. one of each type of government hospital-based blood banks**
- 3. one of each type of private hospital-based blood banks**
- 4. all PNRC blood centers**

At the National Capital Region (NCR) where a large number of hospitals had blood banks, two of each type of government and private hospital were targeted. The actual hospitals to be visited were drawn at random. An alternate list was also drawn in case any of the targeted hospitals can not be visited. The expected sample size was 135 blood banks.

"Outlets" of blood banks - both free-standing and hospital-based outlets - were also targeted for visits and possible interviews but they were not included in the four categories of blood banks enumerated above because they did not operate as regular blood banks. The study aimed to gather basic information about their operations. Based on BRL records, 27 such outlets were duly-registered.

The third component was laboratory testing of samples from blood banks. In this section, blood samples obtained from banks were retested for the four diseases that are routinely screened for, namely hepatitis B, syphilis, malaria and HIV. The hypothesis of the study was that contamination rate of the sample will be less than the population contamination rate of unscreened blood (with any of these 4 blood-transmissible diseases: malaria, syphilis, hepatitis B and HIV) determined from past study to be around 4%.

The sampling procedure that was used to determine sample size for this component was Lot Quality Assurance Sampling (LQAS)⁴. The lots were the four categories of blood banks (PNRC, government hospital-based, private hospital-based and free-standing). Referring to the appropriate LQAS table and allowing only one "defective sample" (d) in each lot, we determined the needed sample size per lot to be 109. This means that if the laboratory testing detects more than 1 contaminated sample in a lot, we conclude that the contamination rate of that specific lot is not less than the population contamination rate of 4% for any of the blood transmissible diseases routinely screened for, as mentioned above. In an ideal situation, contamination rate should be as close as possible to zero. The target total sample size was 436, or 109 samples per lot. Blood obtained from outlets were to be included in the free-standing lot.

Two workshops were conducted in the course of designing the second and third components of the study. The first workshop was a consultative meeting with experts in blood banking where the technical working group (TWG) for the study presented the proposed methodologies for the field survey and the laboratory testing for comment and suggestions. The second workshop presented preliminary results of the field survey to a group of experts in the different blood banking sectors to elicit their suggestions for improvement of the blood banking system.

3.0. FINDINGS

3.1. OVERVIEW

The complete results of the overview component of the study are included as Annex F-1 of this report. Highlights of the overview findings present the following picture of the blood banking system in the Philippines:

- 1. While an estimated 600,000- 650,000 standard units of blood (450 ml per standard unit) is needed annually, BRL records show that the total blood collected in 1992 was only 402,937 units - or a shortfall of 33% of projected need.**
- 2. Of these blood units collected, 64% were supplied by free-standing blood banks, 15% by PNRC, 14% by government hospital-based blood banks, and 7% by private hospital-based blood banks.**
- 3. The sourcing of blood in the country is heavily reliant on paid donation systems. Paid donors account for 99.6% of blood donors among free-standing blood banks which supply more than half of the blood needs of the country.**

PNRC relies heavily on voluntary donation (99.8% of PNRC donors) but is able to supply only 15% of total blood needs.

- 4. BRL records show that paid donors are three times more likely to test positive for any of the blood-transmissible diseases routinely screened for as mandated by law, namely HIV, syphilis, malaria and hepatitis B.**
- 5. BRL records show that there is a high rejection rate of potential donors. Of 600,377 potential donors examined only 365,764 (61%) were bled. Among those who were rejected, 17.6% tested positive in laboratory tests. The majority (83%) were positive for hepatitis B. Other donors were rejected because of low hemoglobin, low blood pressure or low weight.**
- 6. Free-standing and hospital-based blood banks tend to concentrate in more urbanized areas and regions. The NCR has 48% of all the free-standing, 16% of government hospital-based and 20% of private hospital-based blood banks. Region VI has 16% of free-standing, 11% of government hospital-based, 8% of private hospital-based blood banks. In contrast, Region IX has no free-standing blood bank, 2% of government hospital-based and 3% of private hospital-based blood banks.**
- 7. PNRC has a comparatively more even distribution of blood centers nationwide. Region X has the highest number of blood centers (7) while Region XI has the lowest (1) but the range in the distribution across regions is much narrower than the free-standing (0-11), government hospital-based (2-16), and private hospital-based (3-20) blood banks.**

8. Whole blood is the most frequently transfused accounting for 44.5% of total units collected. Packed red blood cells (RBC) was second at 17.6%, followed by platelet concentrate at 5.9%.

3.2. FIELD SURVEY

Field personnel for the second and third components were divided into two groups: those who covered Luzon and those who covered the Visayas and Mindanao. The Luzon team conducted the survey in the period between October 21 to November 14, 1993. The Visayas-Mindanao team, on the other hand, completed field work in the period between October 26 to November 14, 1993.

Table F-1 shows the regional distribution of the blood banks whose data and interviews were actually analyzed compared with the study's original targets.

Table F-1: Distribution of Blood Banks Studied, by Category and Region, Target vs. Actual

Region	PNRC		Government Hospital		Private Hospital		Free-standing		Percentage	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	No.	(%)
CAR	3	2	3	3	2	3	2	2	10	(100)
I	2	2	3	4	2	2	0	0	8	(114)
II	1	2	2	3	2	1	0	0	6	(120)
III	6	6	3	5	2	5	1	0	16	(133)
IV	2	1	3	4	2	3	1	1	9	(112)
V	3	2	3	3	2	3	0	0	8	(100)
VI	5	4	3	4	2	1	4	3	12	(86)
VII	2	2	3	3	2	2	2	2	9	(100)
VIII	2	1	3	1	2	2	0	0	4	(50)
IX	3	2	2	1	1	2	1	1	6	(86)
X	7	5	3	3	2	1	1	1	10	(77)
XI	5	4	3	3	2	1	1	1	9	(82)
XII	2	2	2	3	2	2	2	2	9	(112)
NCR	2	2	5	4	4	4	11	10	20	(91)
Total	45	37	41	44	29	32	26	23	136	(98)
% of target		82%		107%		110%		88%		

A total of 147 blood banks were actually visited (equivalent to 55% of the total registered blood banks [269]) but only 136 data sets were eventually included in the analysis: 37 PNRC blood centers, 44 government hospital blood banks, 32 private hospital blood banks, and 23 free-standing blood banks.

Three blood banks classified in the BRL registry as private hospital blood banks (one each in Regions IX, X and XII) were found to really be free-standing blood banks. One bank classified by BRL as free-standing in the NCR (FEU-NRMF) had to be reclassified as a private hospital blood bank because it provides blood only through the Far-Eastern University Hospital.

In general, there were more hospital-based blood banks visited than those targetted because the field interviewers also visited alternates in their lists. Eighty-two percent of the targeted PNRC blood centers and 88% of free-standing blood banks were visited and interviewed. Eleven free-standing and 6 hospital-based outlets (63%) - out of the 27 registered outlets - were visited. The overall and regional coverage of the target was good, except in Region VIII, where most Samar-based blood banks could not be visited because of peace and order problems.

Annex F-2 is a masterlist of the blood banks visited and not visited. The reason for the field personnel's failure to complete the target of 100% coverage of PNRC and free-standing blood banks were the following:

1. refusal of the staff;
2. physical inaccessibility. Owing to time limitations, the PNRC blood centers in Masbate, Palawan and Mindoro were not visited;
3. the blood center was no longer operational;
4. the facility was closed at the time of the visit.

A total of 136 medical/ paramedical staff, 17 blood bank owners/ operators, and 79 donors were interviewed. Interviews were conducted with 11 outlet owners. Others either refused to be interviewed or were not available at the time of visit.

Following the objectives of the study, the field survey findings are divided into:

1. Practices in relation to donor recruitment and selection; blood collection, screening, and processing; and blood distribution and use
2. Identification of unsafe practices

3.2.1. PRACTICES RELATED TO DONOR RECRUITMENT AND SELECTION:

Blood Supply:

Data from 129 blood banks with adequate information on the number of units of blood collected in September 1993 were analyzed, table F-2.

**Table F-2: Number of Blood Units Collected by Category,
September 1993, Inventory Data**

CATEGORY OF BLOOD BANK	NO. OF UNITS COLLECTED (450ml/unit)	NO. OF UNITS PER BANK		PERCENTAGE
		mean	(range)	
PNRC	4,686	151.1	(0-934)	16.0
Government Hospital	3,064	69.6	(0-682)	10.5
Private Hospital	500	14.3	(0-101)	1.7
Free-standing blood banks	20,975	1,104.0	(0-4335)	71.8
TOTAL	29,225	226.6	(0-4335)	

Note: Includes only those with complete information: total number = 129 (PNRC = 31; government hospital = 44; private hospital = 35; free-standing blood banks = 19)

Four free-standing blood banks were excluded from this table because two blood banks in the Cordillera Administrative Region (CAR) which were registered with the BRL as free-standing blood banks actually did little donor bleeding and operated mainly as outlets of NCR-based blood banks; one in NCR is phasing out; and the other in Pagadian City did not supply the necessary information.

Compared with table 4 of the Overview document, Annex F-1, this table confirms the major contribution of free-standing blood banks to the overall blood supply of the country; and the relatively very active donor bleeding in free-standing/ commercial blood banks.

Donor Recruitment and Screening:

Among the free-standing blood banks, there was no apparent systematic campaign to recruit donors, yet, especially in the NCR, the free-standing blood banks recorded the highest numbers of donors bled; one as high as 4,335 donors in one month. And there were always many potential donors milling around the premises. Free-standing donors said they heard about blood donation as a way to earn quick money by word of mouth from friends and relatives who have donated before. Interviews of blood bank owners corroborated this finding when they reported that they relied on walk-in and on regular donors. Some reported asking their regular donors to spread the word about paid donation to their neighborhoods.

Most blood donors in PNRC blood centers are voluntary (99.8%). Red Cross blood centers had a more established voluntary donor recruitment system in the form of mass blood letting campaigns. The target populations for these campaigns are military establishments, industrial organizations, schools and government offices. Usually, the PNRC office would write solicitation letters to heads of these organizations to get their cooperation. But the average number of donors bled per bank in September 1993 was only 185 (range = 0 -

934), or less than 10 donors a day. PNRC blood centers also have blood replacement programs where patients who obtained blood are requested to bring donors to replace the blood units used. Those who were interviewed at the PNRC premises fell under this category. In theory, this sounds fine, but in practice, some patients end up paying donors to replace PNRC blood. This is one of the most common means by which paid blood donations get into the PNRC blood supply. The practice of paid donation at PNRC was observed in places where there were no active free-standing blood banks.

Hospital blood banks as a rule did not have active donor recruitment programs. There are a few exceptions such as the National Kidney Institute (NKI) in the NCR and, perhaps, the Cotabato Regional Hospital. Both government and private hospitals relied primarily on free-standing blood banks; and secondarily on the PNRC blood centers for blood.

In the hospital-based blood banks studied (76), the number of units procured far exceeded the number of donors bled in 75% of the banks. Eighty-four per cent bled less than 5 donors a day. For September 1993, the average number of donors bled is 90 (range = 0-682). There is heavy reliance on free-standing blood banks whose donors (99.6%) are mostly paid for their blood donation. The lack of active donor recruitment and the reliance on commercial sources and on PNRC facilities implied that hospital-based blood banks, with very few exceptions, did not perform real blood banking. This was verified by field personnel who met difficulties in buying blood units for testing from most hospital-based blood banks because they only acted as repositories of blood that were "owned" by specific patients.

Table F-3 is a list of selected government hospital-based blood banks. These were selected to illustrate the actual operations of blood banks. Group A in the table are those with relatively active donor bleeding; while group B are those with very little bleeding of donors.

Table F-3: Blood Banking Operations in Selected Government Hospital Blood Banks, September 1993

HOSPITAL	DONORS BLED	BLOOD UNITS PROCURED
GROUP A:		
National Kidney Institute	682	None recorded
Bicol Regional Hospital	274	14
Aparri District Hospital	59	0
GROUP B:		
Davao Medical Center	6	860
Zamboanga City Medical Center	30	309
Jose Fabella Memorial Hospital	0	659

Group A blood banks have at least found local sources of blood and are utilizing their blood bank better than the second group. Throughout the country, there were a number of hospital-based blood banks that showed active donor bleeding and did not appear to rely on procurement of blood units to meet their requirements. Group B blood banks are purchasing most, if not all, of their blood from commercial sources. However, it can not be concluded based on this data that the relatively self-sufficient hospitals were free from the paid donation system which characterized blood collection from free-standing sources. In at least three of these hospitals, it was found in the interviews that donors were directly paid by the relatives of patients and that these donors were well known as regular donors like those who donate at free-standing banks. Two factors may still adversely affect the blood supply in group A blood banks: (1) hospitals with active donor bleeding may also have mostly paid rather than voluntary donors; and (2) hospitals, especially small district hospitals like the Aparri District Hospital, may not have enough capability to do all the required disease screening tests.

The need to assure the safety of the blood supply of the Jose Fabella Memorial Hospital (JFMH), the biggest maternity hospital in the country, cannot be over-emphasized. Its blood bank not only relies too much - completely last September - on external and commercial sources of blood, it also does not do any other test, except blood typing, on the blood it procures.

In hospitals, donors brought by relatives of patients were only a minor contributor to the blood supply in hospital-based blood banks. Most donors are recruited by "middlemen" or intermediaries between potential donors and the relatives of patients needing blood. This type of donor recruitment activity occurs mostly outside of Metro Manila. Middlemen are usually previous or current employees of the hospital themselves, a guard and a supply officer were mentioned by the interviewers. Middlemen were also reported to operate in PNRC blood centers. They charged exorbitant fees from the relatives while they paid a much smaller amount to the actual donor. The activities of middlemen were usually known to hospital and Red Cross personnel but the staff were unable to stop the practice. In a government hospital in Region V, the middleman was derisively referred to as a "pimp" by hospital personnel. In Aparri, they described their main source of blood donation as "walking blood banks," people who were known to engage in the practice of blood donation for a fee and who were contacted by the members of the hospital staff when blood was needed.

Two hospital-based blood banks who were operated by companies for their employees relied on their employees as donors. In one such hospital, a roster of potential donors was kept and considered on call for blood donation when the need arises. These donors were paid by the patient's family in cash and in kind. During the workshop, a medical technologist representing a big private hospital in Metro Manila confirmed that their hospital has a list of regular paid donors. When a blood recipient contracted malaria, the hospital treated all of their donors with anti-malarial drugs and since then, has been following up the health condition of their "stable of donors".

The standard basic procedure for donor screening was through the use of a questionnaire that asked for the patient's medical history. In a number of free-standing blood banks, these forms have been pre-filled with appropriate answers. Most forms were patterned after the old PNRC medical history questionnaire but with little regard for organization and content so that these forms made little sense.

Profile of Blood Donors:

Most of the information on donors were obtained from the interviews. A total of 79 donors were interviewed from all over the country. Of these, 28 (35%) were PNRC donors, 30 (38%) were donors in free-standing blood banks and 21 (27%) were donors in hospital-based blood banks. Their characteristics are presented in table F-4.

Table F-4: Characteristics of Donors
by Type of Facility

CHARACTERIS- TICS	PNRC (n=28)		HOSPITAL-BASED BLOOD BANKS (n=21)		FREE-STANDING BLOOD BANKS (n=30)		TOTAL (n=79)	
	No.	%	No.	%	No.	%	No.	%
EDUCATIONAL ATTAINMENT :								
College graduate	7	25.0	3	14.3	1	3.3	11	13.9
College under- graduate	3	10.7	4	19.0	2	6.7	9	11.4
High school graduate	7	25.0	4	19.0	5	16.7	16	20.2
High school undergraduate	8	28.6	2	9.5	12	40.0	22	27.8
Elementary	3	10.7	8	38.1	10	33.3	21	26.6
WORKING:								
Yes	15	58.4	11	52.4	15	50.0	41	51.9
No	13	46.4	10	47.6	15	50.0	38	48.1
AGE:								
Mean	27.74		28.0		28.17		28	
S. D.	8.06		7.31		8.11		8	
GENDER:	1 female		All males		1 female		2 females	
FIRST TIME DONOR	10	35.7	8	38.1	3	10.0	21	26.6

WHERE LAST DONATED:								
Free-standing	1	3.6	1	4.8	26	86.7	28	35.4
PNRC	14	50.0	0		1	3.3	15	19.0
Hospital	2	7.1	11	52.4	0		13	16.5
No last donation	10	35.7	8	38.1	3	10.0	21	26.6
No answer	1	3.6	1	4.8	0		2	2.5
HOW COMPENSATED FOR DONATION:								
Money	5	17.9	7	33.3	30	100.0	42	53.2
Food	5	17.9	0		0		5	6.3
Both	1	3.6	0		0		1	1.3
None	12	42.8	11	52.4	0		23	29.1
No answer	5	17.9	3	14.3	0		8	10.1
MONTHS SINCE LAST DONATION:								
<1	1	3.6	0		2	6.7	3	3.8
1-3	4	14.3	1	4.8	7	23.3	12	15.2
4-6	2	7.1	1	4.8	5	16.6	8	10.1
7-12	3	10.7	4	19.0	2	6.7	9	11.4
> 12	8	28.6	6	28.6	9	30.0	23	29.1
No past donation	10	35.7	8	38.1	3	10.0	21	26.6
No answer	0		1	4.8	2	6.7	2	2.5
REASON FOR DONATING BLOOD:								
For money	6	21.4	4	19.0	25	83.3	35	44.3
Relative needs	12	42.9	7	33.3	0		19	24.0
blood	6	21.4	3	14.3	0		9	11.4
Asked by friend	3	10.7	5	23.8	0		8	10.1
To help others								
Help others and	0		0		5	16.7	5	6.3
earn some money	1	3.6	2	9.5	0		3	3.8
No answer								

In general, blood donation appeared to be a male-dominated activity. Donors on the average were in their late 20s and were as likely to be employed as to be unemployed. PNRC donors tended to have higher educational attainment than either free-standing or hospital-based donors. In terms of types of occupation, the higher level of education of PNRC donors is reflected in the number of white collar and professional workers like an engineer, a manager while the low level of education of free-standing blood bank donors was reflected in the predominance of farmers and laborers (e.g. dishwasher, construction worker, driver). There were more first timers among hospital (43%) and PNRC (36%) donors than free-standing (10%) ones although across the three types of facility, repeat donors were more common than first timers. These repeat donors were more likely to have donated in the same facility as the current one.

Reasons for Donating Blood:

As expected, monetary reward was the prime motivating factor for free-standing donors. A few added that they also wanted to help others while they earned a little money. Among PNRC and hospital-based donors, the most common reason was that a relative needed blood or that they were asked by a friend, in most cases because that friend had a relative who needed blood. But, paid donation was not confined to free-standing blood banks as can be inferred from the number of donors who received money. A number of PNRC and hospital donors reported that they were also motivated by monetary considerations. In all, 44.3% of the interviewed donors donated blood for financial reasons. Asked how they were compensated for their donation, 54% reported that they received money from the relatives of the patient who needed blood. Presumably, even those who said they were not primarily motivated by money also received payment. Because of the financial reward for donating blood, some donors gave blood more frequently than needed. Among free-standing donors, 30% last donated 3 months or less from the date of the interview. One high school student was described by a field interviewer as being pale as a result of too frequent bleeding, the last one less than a month before the interview. This boy reported that he donated blood to augment his allowance for school expenses. One PNRC donor likewise last donated less than a month before the interview date.

3.2.2. BLOOD COLLECTION, SCREENING AND PROCESSING:

Disease Screening:

Screening of blood for four diseases (HIV, malaria, syphilis and hepatitis B) as mandated by law is designed to countercheck or validate the donor's eligibility for donation. Most blood banks, except during mass bleeding of PNRC, test the donors before they are bled.

There are discrepancies between the apparent capability of the blood bank to do the disease screening tests - as observed and based on the inventory of available facilities - and the actual tests reported to have been done based on the interviews. Table F-5 compares the results of the observation and inventory with those of the interview. Only consistent and regular quality control can reconcile these differences.

In general, the interview data suggest that actual disease screening operations could be less than the capability as measured by the inventory checklist. Some field team members report that even though they saw HIV kits during the visits in some banks, they did not see these used during the time they were around.

In both data-gathering methods, screening for all four required diseases are unacceptably low, especially considering that such are "mandated" tests. PNRC centers have the least number and percentage of facilities able to do all disease screening tests; while free-standing blood banks have the highest relative percentage.

**Table F-5: Comparative Results on Disease & HIV Screening Capability:
Inventory Data vs. Interview Responses**

DISEASE SCREENING TESTS DONE	DATA FROM INVENTORY OF FACILITIES (n=136)		DATA FROM INTERVIEW (n=125)	
	No.	%	No.	%
Can do all tests:				
PNRC	9	24.3	3	8.3
Government hospital	20	45.4	10	23.8
Private hospital	12	37.5	9	34.6
Free-standing blood bank	16	69.6	10	47.6
TOTAL	57	43.5	32	25.6
Can do HIV testing:				
PNRC	20	54.1	8	22.0
Government hospital	22	50.0	18	43.0
Private hospital	14	43.8	11	42.0
Free-standing blood bank	17*	73.9	13	62.0
TOTAL	73	55.7	50	40.0

* One additional free-standing blood bank can do HIV testing but only upon request.

Of the banks not able to do all tests, various permutations were observed: some screened for two, others three diseases.

Based on inventory data, only a total of 73 blood banks (out of 131 with complete laboratory data) can do HIV testing; or 55.7%. But field evaluators reported observing HIV testing in only 22% of PNRC centers; 43% of government hospital blood banks; 42% of private hospital blood banks; and 62% of free-standing blood banks.

The capability of the sample blood banks to perform HIV screening was also assessed by asking if the respondent, who was the person directly in charge of the laboratory procedures in the blood bank has had HIV proficiency training. Table F-6 shows the proportion of respondents who reported having received this kind of training. The free-standing blood banks had the highest proportion (38%); followed by government hospital-based (26%); PNRC blood centers (18%); and last, the private hospital-based blood banks (9%).

**Table F-6: Proportion of Interview Respondents who had
Training on HIV Testing**

	PNRC		GH		PH		FSB		TOTAL	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
With training	7	(19)	11	(26)	3	(9)	8	(38)	29	(22.3)
Without training	26	(72)	29	(69)	29	(88)	12	(57)	96	(73.8)
No answer	3	(8)	2	(5)	1	(3)	1	(5)	5	(3.8)

A number of those who did not routinely screen for HIV said they would send out the sample to a laboratory that could perform the procedure if the patient (or his doctor) requested for it. Tables F-7 and F-8 illustrate the diversity of capabilities of the various blood banks for screening for malaria, syphilis and hepatitis B.

**Table F-7: Blood Screening for Malaria, Syphilis and Hepatitis B
by Type of Facility,
Based on Inventory Data**

LABORATORY CAPABILITY	GH (n=44)	PH (n=32)	PNRC (n=37)	FSB (n=23)	TOTAL (n=136)	
					No.	(%)
Can do HBsAg tests	29	23	30	21	103	(75.7)
Can do SY tests	26	20	30	23	99	(72.8)
Do not do malarial smears	15	16	22	4	57	(41.9)
Cannot do any disease screening tests	10	12	4	0	26	(19.1)
No answer	1	2	1	0	4	(2.9)

Based on interviews, six PNRC blood centers screened for malaria only; in three of these centers, malaria was screened for only if the donor was reported to have come from an endemic area. Hospital-based blood banks were most likely to drop malaria from the list of diseases they screened for. Over-all, this implied that blood that is eventually transfused is likely to have undergone incomplete screening.

**Table F-8: Blood Screening for Malaria, Syphilis and Hepatitis B
by Type of Facility
Based on Interview Data**

DISEASES SCREENED FOR	PNRC		GOVERNMENT HOSP		PRIVATE HOSP		FREE- STANDING	
	No.	%	No.	%	No.	%	No.	%
HIV, Hep B, syphilis	2	5.6	6	14.3	2	7.7	2	9.5
HIV, malaria, syphilis	0		0		0		1	4.8
HIV, Hep B, malaria	0		1	2.4	0		0	
Hep B, malaria, syphilis	2	5.6	4	9.5	7	26.9	2	9.5
HIV, Hep B	2	5.6	0		0		0	
HIV, syphilis	1	2.8	1	2.4	0		0	

Hep B, syphilis	3	8.3	1	2.4	1	3.8	5	23.8
Hep B, malaria	0		2	4.8	0		0	
Malaria, syphilis	0		0		0		1	4.8
Malaria	3	8.3	3	7.1	0		0	
Malaria if donor from endemic area	3	8.3	3	7.1	0		0	
Syphilis	5	13.9	0		0		0	
Hep B	10	27.8	1	2.4	1	3.8	0	
No screening	2	5.6	12	28.5	6	23.1	0	
No answer	0		1	2.4	0		0	

Some hospitals in the NCR reported routinely rescreening blood and having standing arrangements with their favorite suppliers for blood replacement at no cost should the unit received turn out to be potentially infective. Inventory of records showed that about 28.9% of hospital-based blood banks rescreen purchased blood units. But the proportion of hospitals in the total sample that reported screening for all four diseases was so low that, even if they all retested, a substantial proportion of blood would still escape complete screening. Among government hospitals, one logistical problem commonly cited which further compromised their screening capability was the shortage of supplies particularly of reagents. In cases when no reagents were available, the common response was to stop screening altogether. Some hospitals required the patient to sign a waiver attesting to his receiving unscreened blood with his knowledge and consent because the blood was urgently needed.

Blood Component Preparation:

The BRL has classified blood banks into three categories based on their capability to perform functions beyond the basic ones of donor screening and selection, blood collection, storage and transport. Blood banks that performed only these basic functions were classified as primary; secondary and tertiary blood banks were so categorized based on their capability to prepare blood components, the former could prepare packed RBC, plasma and platelet-rich plasma while the latter could prepare the same plus all other components (please see table 1 of the Overview document, Annex F-1). Table F-9 summarizes the capability of blood banks to prepare the blood components based on inventory data.

In all, only 15% of blood banks (most of which are free-standing) can prepare all or almost all blood components. An additional 18% can prepare packed RBC, majority by manual methods. This very limited capability helps perpetuate the continued use of whole blood.

Table F-9: Component Preparation by Category

COMPONENTS PREPARED	GH	PH	PNRC	FSB	TOTAL	
					No.	(%)
All / almost all components	5	5	4	7	21	(15.4)
Packed RBC only	7	9	9	0	25	(18.4)
None	32	18	24	15	92	(67.6)
Unknown	0	0	0	1	1	(0.7)
TOTAL	44	32	37	23	136	

Complete Blood Banking Services:

When all blood banking services are taken together - i.e. the capability for component preparation and disease screening are considered in combination as when a blood bank is fully functional - the following are observed, table F-10.

Table F-10: Total Blood Banking Services, by Category

SERVICES PROVIDED	GH	PH	PNRC	FSB	TOTAL	
					No.	(%)
CAN PREPARE ALL BLOOD COMPONENTS						
* Do all lab tests	4	4	1	7	16	(11.8)
* Do not do malarial smears	1	0	3	0	4	(2.9)
* No answer	0	1	0	0	1	(0.7)
CAN PREPARE PACKED RBC						
* Do all lab tests	5	5	5	0	15	(11.0)
* Do only some disease screening tests	2	2	4	0	8	(5.9)
* Cannot do any disease screening test	0	2	0	0	2	(1.5)

CANNOT SEPARATE BLOOD COMPONENTS						
* Do all lab tests	11	3	3	9	26	(19.1)
* Do only some disease screening tests	10	8	16	6	40	(29.4)
* Cannot do any disease screening test	11	6	4	0	21	(15.4)
* No answer	0	1	1	0	2	(1.5)
CAPABILITY TO PREPARE BLOOD COMPONENTS NOT KNOWN (No answer)	0	0	0	1	1	(0.7)
TOTAL	44	32	37	23	136	

Note: One private hospital blood bank which can prepare packed RBC also tests for hepatitis C. One free-standing blood bank which cannot prepare blood components but can do all laboratory tests does HIV testing only upon request.

If the standards for licensing are upgraded so that only fully functional blood banks - that is, blood banks which can prepare all blood components and perform all required laboratory and disease screening tests (which should really be a basic requirement) - then, only about 12% of the banks will pass the licensing regulations.

A comparison was made between the classification in the BRL registry of the blood banks studied and the classification based on actual operations as found by the survey, table F-11.

Table F-11: Classification of Blood Banks Studied, BRL Registry vs. Survey Inventory Data

CATEGORY	BRL REGISTRY				SURVEY INVENTORY DATA			
	GH	PH	FSB	TOTAL	GH	PH	FSB	TOTAL
Primary	33	25	15	73	21	11	12	44
Secondary	3	2	6	11	7	9	0	16
Tertiary	2	2	1	5	5	5	7	17
Unknown	11	9	1	21	10	6	1	17
No donor					6	7	3	16
TOTAL	49	38	23	110	49	38	23	110

Note: One PNRC blood center (the National Blood Center in NCR) is classified as a tertiary blood bank in the BRL registry. The rest (45 blood centers) were unclassified.

In the survey, blood banks which can prepare at least packed RBC was classified as secondary; and banks which can produce all the other components were classified as tertiary. This was done because this seemed to be the more realistic grouping among the banks. It should be emphasized that the classification was based on actual operations;

banks which have equipments but kept these in the lockers (which was said of some regional hospitals) were not counted.

In the BRL classification, an overwhelming number perform only the most basic functions according to the current BRL standards. A significant percentage (19%) are still unclassified, not to mention 45 other Red Cross blood chapters all over the country.

The survey data, because of the change in the classification standard as mentioned above, listed more banks doing secondary and tertiary level activities; but found that about 16 blood banks (14.5%) did not have blood donors in September, which raises the question of whether or not these banks should be licensed at all. A cursory review of equipments and supplies indicated that the presence of a refrigerated centrifuge, a plasma freezer and of multiple blood bag collectors largely affect the capability to prepare the various blood components. Free-standing blood banks have stated that they perform blood component separation when requested by their clients and that the clients provide the multiple bag collectors.

Biosafety in Blood Banks:

Basic precautions in handling blood and blood products are not followed in many blood banks. Table F-12 shows that less than 50% of blood banks and outlets were seen to have staff wearing laboratory gowns and gloves; and masks are worn in only about 20% of the blood banks. The study did not measure whether the use of the protective devices were consistent or uniform among the staff.

Table F-12: Number of Blood Banks Where Staff Were Noted to Use Gloves, Masks and Laboratory Gowns, by Category

CATEGORY	USE GLOVES (n=135)		USE MASK (n=121)		USE LAB GOWN (n=138)	
	No.	%	No.	%	No.	%
PNRC	17	53	4	14	12	35
Government Hospital	24	48	8	18	21	43
Private Hospital	11	46	5	23	18	69
Free-standing	8	40	6	32	8	42
Outlets	5	56	1	12	5	50
TOTAL	64	47	24	20	64	46

Written manuals on standard operating procedures were noted by the evaluators in only 61% of the blood banks; and health and safety sections were found in only 50% of these manuals.

Table F-13 lists the number of rooms used for blood banking in the different categories of blood banks. In general, about 64% conduct blood banking activities in 1-2 rooms. Most of those with only one room are the hospital-based blood banks. About 35% of PNRC blood centers are housed in 3 rooms, but there are activities other than blood banking and laboratory testing in these rooms. The biggest blood center among those studied was the National Blood Center of the PNRC in the NCR which occupy about 6 rooms. The physical facilities are major considerations in upgrading blood banks to meet the standards of good manufacturing practices.

Table F-13: Number of Rooms Used for Blood Banking Activities, by Category

NO. OF ROOMS	PNRC	GH	PH	FSB	Outlets	TOTAL
1	7	19	11	7	1	45
2	7	15	14	2	1	39
3	12	8	2	5	3	30
4	7	5	0	3	0	15
5	0	0	0	0	1	1
6	1	0	0	0	0	1
TOTAL	34	47	27	17	6	131

The study did not include bacterial culture of blood samples.

3.2.3. BLOOD DISTRIBUTION AND USE:

Sources of Blood:

To determine patterns in distribution of blood from the free-standing and PNRC blood banks, the hospital-based blood banks were asked to name the facilities which supplied their blood requirements and to describe the arrangement they had with them regarding supply of blood units. The results are shown in table F-14.

Table F-14: Specific Sources of Blood, Interview Data (As mentioned by Hospital-Based Blood Banks)

REG	CATEG	HOSP	FREE-STANDING	RED CROSS
1	GH	Ilocos Regional	People's BB	None
1	GH	Ilocos Norte Provincial	None	PNRC Laoag
1	GH	San Carlos District	None	None
1	PH	St. James Hospital	Recor BB	None
1	PH	Bethany H (La Union)	People's, Blue Cross	None
2	GH	Cagayan Valley Reg.	People's	PNRC Tuguegarao
2	GH	Aparri District	None	None

2	PH	Cagayan Valley Sanit.	People's outlet	None
2	PH	Nueva Vizcaya Prov.	People's	PNRC Nueva Vizcaya
3	GH	JB Lingad Regional	Avenue	Pampanga Blood Center
3	PH	VL Makabali Memorial	Fatima, Avenue outl	Pampanga Blood Center (rarely)
3	GH	San Jose General Hosp	None	None
3	GH	Bulacan Prov Hosp	Manila blood banks	PNRC Bulacan
4	GH	Batangas Regional	People's	None
4	PH	Morong Doctors' Hosp	Blue Cross	None
4	GH	Lipa District	Avenue	None
4	PH	Sn Pablo Drs Hosp	Blue Cross, Phil. BB	None
4	GH	Don Manuel Lopez Dist	None	None
4	PH	Mt. Carmel Hospital	People's	None
4	GH	Laguna Provincial	People's	PNRC Laguna
5	GH	Camarines Norte Prov	None	PNRC Camarines Norte
5	GH	Bicol Regional	People's outlet	None
5	GH	Irosin District	Avenue outlet	PNRC in the area
5	PH	Lourdes Hospital	People's outlet	None
5	PH	Immaculate Conception	People's	None
5	PH	Ago General Hospital	People's	PNRC Legaspi
5	PH	Sto. Nino Hospital	FS outlets in area	PNRC Camarines Norte
6	GH	C. Montelibano Mem.H	Blood bank in area	PNRC Bacolod
6	GH	Misamis Occ. Prov	None	PNRC Oroquieta
6	PH	Bacolod Sanitarium	Jara, Villanueva BB	PNRC Negros Occidental
6	GH	W. Visayas Medical	St. Elizabeth	PNRC Iloilo City
6	GH	Roxas Memorial Prov	None	PNRC Roxas City
7	PH	Perpetual Succor	Hospital BB	None
7	PH	Silliman University	None	PNRC Negros Oriental
7	GH	Gov. Toribio Memorial	Hospital BB	PNRC Tagbilaran
7	GH	V. Sotto Memorial	Hospital BB	PNRC Tagbilaran
8	PH	Bethany H (Tacloban)	None	PNRC Tacloban City
8	GH	E. Visayas Regional	None	PNRC Regional Blood Center
8	PH	Divine Word Hospital	None	PNRC Tacloban City
9	PH	Infante Hospital	None	PNRC Basilan
9	GH	Zamboanga City MC	None	PNRC Zamboanga City
9	PH	Zamboanga AE Com. H	None	PNRC Zamboanga City
10	PH	Philips Memorial	None	None
10	GH	Surigao del Norte Prov	Filsaver, Hospital BB	PNRC Surigao City
10	GH	Gingoog District	None	PNRC Gingoog City
10	GH	Northern Mindanao Trg	None	
11	PH	Howard Hubbard Mem	None	PNRC Gen. Santos City
11	GH	Davao Med Center	City BB	PNRC Davao City
11	GH	Davao del Sur Prov	None	PNRC Digos
11	GH	Davao Regional Hospital	None	PNRC Tagum
12	GH	Cotabato Regional Hosp	None	PNRC Cotabato
12	GH	Kidapawan Provincial	City BB	PNRC Davao City
12	GH	Lanao del Norte Prov	Gozo BB, Hospital BB	PNRC Tubad
12	PH	Kabacan Doctors' Hosp	City BB	PNRC Cotabato
12	PH	St. Joseph Hospital	None	PNRC Digos
CAR	GH	Baguio General Hospital	SLU BB, Benguet Lab	PNRC Baguio
CAR	GH	Bontoc General Hosp	People's	PNRC Baguio
CAR	GH	Abra Provincial	None	None
CAR	PH	Seares Family Clinic	None	PNRC Bangued
CAR	PH	Sto. Nino Hospital	None	None
NCR	GH	National Kidney Inst	None	None
NCR	GH	Phil Children's Med	Fatima BB	None
NCR	GH	Quezon City General	Holy Redeemer	PNRC Port Area

NCR	GH	Dr. Jose Fabella Mem	Mother Seaton BB	PNRC Port Area
NCR	PH	UST Hospital	Recor, Phil. BB	None
NCR	PH	FEU Hospital	Holy Redeemer	PNRC Port Area
NCR	PH	San Juan de Dios	People's, Blue Cross	PNRC Port Area

NCR-based free-standing blood banks supply the entire Luzon area, from Cagayan to Bicol through either direct delivery of blood units to the client hospital or delivery to branches or outlets of the NCR-based main bank. The reliance of most hospital-based blood banks in Luzon on the supply coming from the NCR-based free-standing facilities was indicated by the discrepancy between donors bled and number of units procured in 75% (24 out of 32) of our hospital-based sample from Luzon (CAR, Regions I to V). Usually, number of units procured far exceeded number of donors bled. The traffic of commercial blood was not limited to the free-standing supplying the hospital-based. One Manila-based free-standing blood bank which, based on the interview, had the most extensive network for supplying blood all over Luzon, appeared to be a customer of other free-standing blood banks also. In the NCR, those that relied on the PNRC were the government-based blood banks. Hospitals in provinces further north from Manila also relied on PNRC. In general, hospital-based facilities that mentioned both commercial and PNRC sources emphasized that commercial sources were the main suppliers of blood; PNRC was only a second alternative.

Regions VI and VII in the Visayas were also covered by the free-standing blood banks within the region. In addition, one free-standing blood bank in Region VII supplied blood to Lanao del Norte in Region 12 and Surigao in Region 10. In the Mindanao regions, free-standing blood banks within the region also supplied the hospitals in the area but were not mentioned by as many hospitals unlike the NCR-based ones. Apparently, their supply could not meet most of the demand.

In regions where there were no commercial blood banks or there was only one in the entire region, the hospitals mentioned sourcing their blood from the local PNRC facility. This was true particularly for Regions VIII and XII respectively.

In Region VI, the PNRC seemed the most active in blood collection despite the presence of three free-standing blood banks. One hospital also appeared to be self-reliant in its blood requirements. On the other hand, an NCR-like pattern of free-standing blood banks having the highest numbers of donors bled was observed in Region VII while Region VIII's blood needs seemed underserved having neither an active Red Cross center, free-standing facility nor hospital-based blood bank.

In the Mindanao Regions, Region IX had one fairly active PNRC center but the rest of the blood banks in the region registered little donor bleeding activity. Region XII was in a similar state despite the presence of two free-standing blood banks. In this region, a government hospital appeared the most active. Seemingly, these regions' needs were underserved. Regions X and XI both had active PNRC chapters which outperformed the free-standing facilities in the area.

The various sources of blood are illustrated in Figure F-1, which shows areas

which are relatively underserved (i.e. arbitrarily set at less than 1,000 units collected or purchased for the entire region). Areas with "multiple sources" are really dominated by free-standing blood banks.

Reviewing the data on blood distribution patterns, one conclusion that can be drawn is that most of the blood utilized in the country actually comes from commercial blood banks. While this has already been shown in the overview findings, the result of the field survey provided a clearer picture of the distribution system by which blood from commercial blood banks reach hospitals even outside of their region. Based on the findings it is misleading to reckon the number of blood banks in the country by the BRL list because, as proven by the data, most hospital-based blood banks actually obtained their supply from commercial facilities.

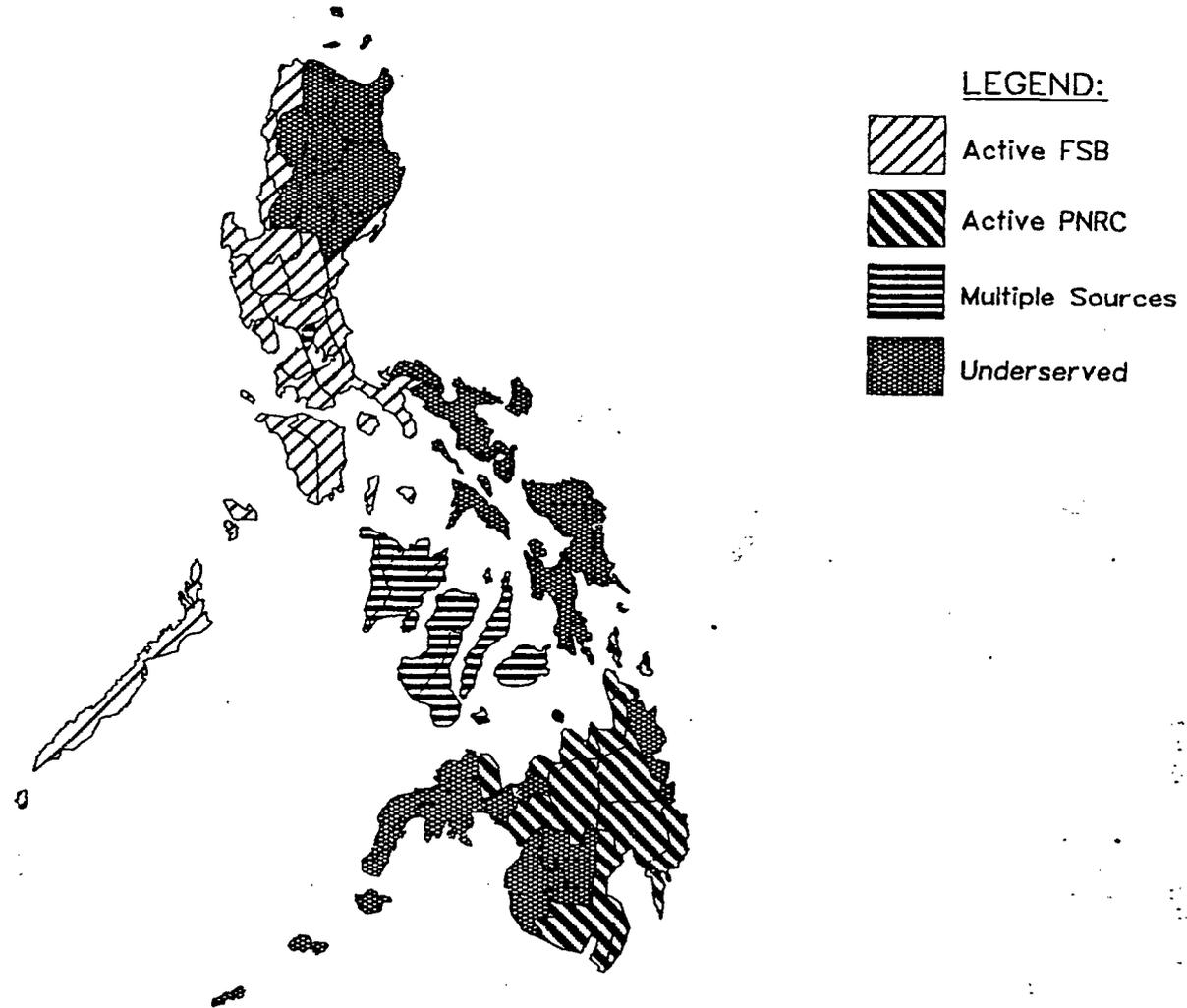
Outlets:

Because there are no operating guidelines for outlets, their facilities tended to be nothing more than a household refrigerator with blood units inside it. Some were operated as part of a drug store, a sari-sari (variety) store or a studio; and were manned by untrained storekeepers or their helpers. In these free-standing outlets, blood was sold like common merchandise. A hospital respondent complained that when they bought blood from one of these outlets, the person who dispensed the blood was the young son of the owner, who gave them the wrong blood type, which they did not notice until later, so the unit had to be returned. One evaluator noted that this was the same outlet which discards unused blood into a creek behind his house. There were also respondents who said that one of the owners of such an outlet used to be a supply officer in the government hospital, but was asked to resign because he was found to have blank blood labels, in which case the Pathologist suspected him to be relabeling expired blood. Since the study did not focus on the outlets too much, there were really no other information on the outlets aside from testimonials like these. Such unethical practices would also be quite difficult to confirm.

Other outlets operated as part of a hospital, usually private hospitals. Table F-14 also suggests that even government hospital blood banks seem to be acting as outlets. The JFMH, for instance, buys mostly from one particular blood bank only.

Among the NCR-based commercial blood banks, one blood bank appeared to have the most extensive network of outlets and direct deliveries having been mentioned as the main source of blood most often and by hospitals as far north as Cagayan and as far south as Bicol. This blood bank was noted to procure additional blood from other commercial blood banks to meet the demand from its outlets. There are apparently many hospital blood banks that seem to be "unofficial, unregistered" outlets of specific commercial blood banks. One operator of a free-standing blood bank complained about the unethical marketing practices of some commercial banks which are suspected of paying commissions to the medical technologist (or the Pathologist) for every blood unit bought from their bank. This is one practice which the Philippine Association of Blood Banks tried to curtail.

Figure F-1: Regional Distribution
Major Sources of Blood Supply



As already mentioned, two free-standing blood banks in CAR were found to be operating more as outlets of NCR-based commercial blood banks, doing little blood collection and relying on the NCR-based bank for the blood units they eventually sold.

Payment Arrangements:

The procedures followed for supplying blood from commercial sources were varied across hospitals but these could all be characterized as designed for the convenience of the hospital which used the blood unit. Some hospitals received blood units on consignment, others had long-standing arrangements whereby the blood bank delivered phoned-in orders on a cash-on-delivery basis or billed the hospital on a regular basis for blood that has been used by that facility. Sometimes, prescriptions for blood units were filled-in at the hospital and the patient's relative sent to the blood bank to purchase the blood directly.

Blood obtained from PNRC facilities were most commonly obtained by relatives of patients direct from the local center. Unlike the commercial blood banks, PNRC facilities did not provide as convenient an arrangement for supplying blood. It was usually up to relatives of a patient to either find (and pay for) donors for replacement of the blood units provided by PNRC or to buy it if the facility sold blood.

Blood Transport and Use:

Free-standing facilities packed blood procured from them in different ways depending on the distance the blood unit was going to be transported to. The most common procedure was to put the blood bag in a plastic bag with ice for delivery to the hospital by the facility's messengers or hand-carried by people who bought the unit. When the unit was needed nearby, ice was not used. Blood that had to be transported over a considerable distance was packed with cold dogs.

All facilities visited reported that whole blood was the most commonly transfused blood component. The usual doctor's prescription is for "fresh whole blood" - the term "fresh" not really making much sense. The lack of capability of the majority of blood banks to produce blood components is one link in the cycle that creates the demand for mostly whole blood for transfusion. The absence of blood transfusion committees (in 72.4% of the hospital-based blood banks in the sample) to monitor blood use and the deficiency in the training of physicians on the proper and efficient use of blood are two other factors that contribute to the inappropriately high demand for whole blood. Although blood transfusion reactions such as jaundice or chills are usually noted, the usual response is only a repeat compatibility testing. Little is done in terms of investigating the underlying circumstances or giving feedback to the free-standing or Red Cross blood bank that supplied the blood. There are also no consolidated reports on all of these transfusion reactions.

Waste Disposal System:

In the interview segment, questions about procedures for disposal of discarded blood and of waste in general were asked. The field researcher also checked the actual set-up for waste disposal.

The interview respondents described four broad categories for disposal of blood: disposal in a regular trash can for collection with other wastes (55%); burying (52%); incineration (19%); and draining of discarded blood into the sink, the toilet bowl (4%) or into canals or creeks adjacent to the facility (0.7%). PNRC chapters most commonly buried their waste (60%), including blood. Free-standing and hospital-based blood banks run the whole range of disposal options. Generally, once waste is dumped in a trash can with the other wastes of the facility, the staff of the facility did not know where the blood bank waste products eventually ended up.

3.2.4. IDENTIFICATION OF UNSAFE PRACTICES:

At least eight practices were identified to be "unsafe" because these allow or increase the risk of disease transmission through blood transfusion. These are:

1. **Buying and selling of blood:** Paid donation tends to attract donors motivated by monetary rewards. The very low compensation given to these donors (P150 per 450 ml of blood donated) attracts a segment of the population who are at higher risk for diseases because of their poor socioeconomic condition.
2. **Poor donor screening:** Paid donors are most likely to conceal personal information that will increase the possibility of their being rejected as blood donors, hence, the use of medical history forms are of dubious value under a paid donation scheme. Moreover, given the educational background of most paid donors, there is a high likelihood that they may not be aware of the nature of their past illnesses or of their medical history in general, or the implications of these on their blood donation.
3. **Inadequate blood screening:** The numerous combinations observed in screening for the four diseases mandated by law gives credence to common fears that the blood supply of the country is not safe because screening is not strictly observed. The differences between capability and actual practices highlight the need for a closer monitoring and quality control of blood screening. Cost-cutting measures especially in business enterprises can affect the quality of screening, some banks reporting pooling of blood in hepatitis and HIV tests. There is a need to adopt a more accurate malaria screening test.

The results of the laboratory testing of blood units which are supposedly ready for transfusion clearly show that disease transmission through blood is very probably occurring. Malaria transmission has already been documented in several studies in Cebu and some cases have been detected in Metro Manila.

Hepatitis B transmissions must be occurring but are most probably just inadequately documented because of weaknesses also in disease monitoring. It is very likely that HIV transmission through blood has not yet been reported only because the prevalence of AIDS at this time is still quite low in the local population. There is little doubt that if the present blood banking services are allowed to continue as they are, HIV will easily leak into the transfusion system.

4. **Inadequate monitoring of blood screening:** The practice of not performing screening for all four diseases as a matter of routine calls attention to the inadequacy in monitoring of blood screening both within the facility and by the concerned government body tasked with this function. It is particularly difficult to understand why blood banks which cannot or do not do all the required disease screening tests are licensed or allowed to operate at all. Responsibilities, accountabilities and procedures to document these have to be clearer. The possibility that untested blood get transfused is higher in a situation where concerned groups assume that other groups will do the test - the usual "finger-pointing" in passing on accountabilities.
5. **Presence of unsupervised free-standing outlets which are not subject to regulations:** Allowing free-standing blood banks to open branches that are not subject to the same regulatory standards as the regular blood bank invites many unsafe practices in these facilities. Suspicions that blood units which test positive are sent to these outlets continue to persist. Although the assessment of outlets is still very superficial in the study, testimonies of mistakes in dispensing of blood and of discarding of blood into a creek, and of poor cold storage and handling of blood should already alert the authorities to this particularly obvious weakness in the system.
6. **Lack of blood transfusion committees in hospitals:** Without a body of experts to review blood transfusion practices in hospitals, there is no monitoring of physician practice in relation to blood transfusion. This contributes to the high and wasteful demand for whole blood even when blood components would have been better. Disease transmissions and other adverse blood transfusion reactions need to be documented and traced more closely.
7. **Unsafe waste disposal system:** The practice of disposing of discarded blood like ordinary waste poses hazards to the community especially if these are contaminated wastes. What is more alarming is the apparent indifference of the staff to the possibility that their discarded waste can be dangerous to others.
8. **Weak overall quality control and quality assurance system:** As mentioned earlier, written manuals on standard operating procedures were noted in only 61% of the blood banks, and these manuals had varying contents. About 74% claimed that the tasks were clearly delineated in these manuals, but different sections were noted in varying percentages: blood screening (60%); health and safety (50%); equipment use and maintenance (57%); and administrative procedures (60%).

Records of different blood banking activities also varied considerably in content and format and were found only in the following proportions: donor screening records (90%); list of donors bled (83%); list of donors rejected with reasons for rejection (51%); blood screening records (86%); blood inventory records (77%); procurement records (47%); disbursement records (73%); equipment repair and maintenance records (60%); records of doctor's indications (43% of hospitals); records of transfusion reactions (18-23% of hospitals).

Weaknesses in the monitoring of blood screening, donor monitoring and blood use have been highlighted above. In addition, a bigger, more comprehensive quality assurance scheme that will make sure that procedures are done according to standards and guidelines is sorely lacking. There is a lot of work waiting in terms of making sure that all relevant facilities have clear and readily accessible manuals of standard operating procedures and that all crucial steps are counterchecked and clearly documented.

The root causes of these unsafe practices are the commercialization of blood banking, the lack of effective monitoring and the ignorance of the general public regarding blood donation and the hazards of paid donations. Because blood banks that supply the bulk of the country's requirements are commercially-run facilities, their primary motivation is profit rather than safety. Profit and safety are not truly incompatible goals but can conflict with each other. In a mature market, those blood banks that have unsafe practices should eventually lose out in open market competition. But ours is an imperfect system and blood is not a commodity like any other.

The presence of regular paid donors outside of the free-standing blood banks' operations, such as those found in hospitals and in some PNRC chapters indicates that in Philippine society the practice of voluntary unremunerated blood donation is not quite accepted. Moreover, the responses to the interviews give the impression that there is a belief that anyone who gives as precious a commodity as blood must be compensated in some way. Popular beliefs and attitudes regarding blood and blood donation were not explored in the study. Likely, there is a need to look into these so that alternatives to paid donation systems that will be acceptable to the population can be devised. After all, it is this general population that will provide the voluntary unpaid donors that are considered ideal.

3.3. LABORATORY TESTING

The original study design for the testing of blood from the different types of blood banks called for 109 blood units for each of the four blood bank categories (4 lots), for a total sample of 436. These were to be purchased from the facilities in our field survey sample. In the course of the study, it became evident that there were no major differences between the government and private hospital-based blood banks in terms of the sources of blood, hence, the two hospital categories were combined into one lot - for a revised blood sample target of 327.

In all, we were able to obtain 426 blood samples from all over the country, 168 of these were from the Visayan and Mindanao regions; while the rest were from Luzon. The blood units were tested in two laboratories: at the BRL in Manila for Luzon samples; and at the Regional Laboratory No. XI, Davao City, for Visayas and Mindanao samples. All the blood samples that tested positive and 10% of the negatives were sent to the Research Institute for Tropical Medicine (RITM) for confirmatory testing.

Of the 426 blood units, thirteen tested positive for hepatitis B, distributed among the 3 lots. Two tested positive for HIV, both from the Visayas/Mindanao batch - one from a government hospital-based bank and the other from a PNRC blood center. This means that contamination of the blood supply occurs at a rate of "at least" 4%.

The two blood banks where the HIV positive blood samples came from were fully capable of doing all disease screening tests based on inventory of facilities. It seems then that the present blood screening had not weeded out potentially infective blood.

VALIDATION OF LABORATORY FINDINGS

Tests for hepatitis B and HIV were validated by the Research Institute for Tropical Medicine; while VDRL validation was done by the Bureau of Research and Laboratories. Validation of the laboratory tests came after the printing of this report. The following are the validated laboratory results as of 18 February 1994:

Positive for HBsAg	13	Hospitals = 7
		Free-standing blood bank = 4
		PNRC = 2
AIDS	1	Hospital = 1
Syphilis	1	Hospital = 1

Regardless of these minor changes, the conclusions of the laboratory tests remain the same: that the three lots tested have to be rejected because their contamination rate - which is "at least 4%" - is not acceptable.

4.0. DISCUSSION AND CONCLUSION

The Philippine blood banking and blood transfusion system has turned out to be one which the WHO precisely cautioned against: "uncoordinated and uncontrolled establishment and maintenance of blood banks of dubious quality and ethics". This situation came about mainly because of gaps in the national structures that are supposed to plan and manage the blood transfusion system as a whole.

Prevailing legal provisions and regulations allowed the operation of commercial blood banks, which have remained unchecked for many years. In spite of the provision that blood banks be "non-profit", commercial blood banking has developed into a lucrative business, dislocating the slower developing voluntary blood donation program led by the PNR. The dominance of paid blood donation and the absence of a truly effective and functional quality assurance scheme make the current Philippine blood transfusion services unsafe. There are also inadequacies, inequities, gaps and much waste of meager resources.

There are many significant barriers that hinder the improvement of the situation. Much more difficult to solve are political rather than technical barriers. The groups actively involved in blood banking do not have an effective venue to thresh out differences. There is distrust as personalities are accused, rightly or wrongly, of close-mindedness and turf protection.

The WHO, in its technical paper on the "Management of Blood Transfusion Services" which the study team cited in its overview, described several ways of organizing blood banking services, as gathered from the experiences of many countries. The scandals of HIV transmission through blood in France, Germany, and other countries, where blood transfusion services are much, much more organized than in the Philippines, provide invaluable insight into the many loopholes in existing systems.

There are basically 4 general ways of organizing or arranging blood transfusion services:

- (1) Full delegation of blood transfusion services to a non-government organization like the Red Cross; in some countries, private companies also manufacture blood products;**
- (2) Full control of blood transfusion services by the government through creation of government-run institutes or blood centers;**
- (3) Government-coordinated blood banking and blood transfusion services involving multiple agencies; or**
- (4) Numerous, independent uncoordinated blood banks.**

The main difference between the third and fourth options is that in the third arrangement, many activities and services are shared. For instance, donor recruitment,

blood screening and blood component preparation are assigned to different participating sectors which in turn service other sectors. One such arrangement could be as follows: the Red Cross may be assigned to recruit, educate and bleed voluntary donors, but they submit the blood they collect to government laboratories for disease screening. Non-infective blood may either be distributed to hospitals; or sent to a central or regional specialized laboratory for component separation and later distribution. Blood which tested positive may be sent to a plant for production of vaccines or typing sera and other biologicals. In the fourth arrangement, many independent blood banks do all steps of the blood transfusion process: recruit donors, bleed donors and test their blood; prepare the blood components, transfuse the blood and dispose of unused blood. There is little or no coordination among banks at all. Table D-1 lists the advantages and disadvantages of each arrangement.

**Table D-1: FOUR MAJOR POSSIBLE ARRANGEMENTS
OF BLOOD TRANSFUSION SERVICES**

POSSIBLE SERVICE ARRANGEMENT	ADVANTAGES	DISADVANTAGES
<p>Full delegation of blood transfusion services to an NGO (usually the Red Cross)</p> <p>Examples: Japan, Australia, Canada</p>	<p>*NGOs can be more efficient, more effective</p> <p>*NGOs can raise additional funds to explore innovative incentive and health education schemes</p>	<p>*It will be difficult for government to impose targets and regulations on a volunteer NGO (eg. US government had to get court injunction to make the American Red Cross follow Federal Blood Banking Standards)</p>
<p>Full government control of blood transfusion services</p> <p>Example: France</p>	<p>*Government can immediately impose its own values, targets and regulations</p>	<p>*Will demand more resources to establish new institutes or centers</p> <p>*Usually suffers from lack of funds, too much red tape, and inefficient management</p>
<p>Government- coordinated multiple agency system</p>	<p>*Most beneficial arrangement for all concerned because there is maximum use of resources and equitable distribution of supplies and blood</p>	<p>*Needs cooperation from many sectors thus will proceed only after consensus building</p> <p>*Relatively more demanding to coordinate compared with single entity arrangements</p>
<p>Numerous, independent blood banks</p> <p>Example: Philippines</p>	<p>*There is no "monopoly"</p> <p>*Hospital blood banks can more quickly respond to changing clinical needs</p> <p>*Private-run blood banks can be efficient in blood collection, screening, component preparation and processing</p>	<p>*Difficult to manage especially to control & assure quality and safety</p> <p>*Usually results in competition for donors and unbalanced collection of blood</p> <p>*Commercial blood banks undermine voluntary donor programs</p>

The current situation in the Philippines apparently fits the fourth arrangement - or rather, lack of arrangement - where there are numerous independent blood banks with very little linkage with each other. Indeed, all of the disadvantages in table D-1 have been detected in the overview, survey and laboratory findings.

For years, the planning and programming of a nationwide blood transfusion program did not receive adequate attention. The PNRC was left much on its own, and its development was not planned according to the increasing needs of the country. Today, many PNRC blood centers are not licensed; a good number have not even applied for a BRL license. PNRC, perhaps because of its voluntary, non-government nature, has also not been conscious of meeting the increasing national demand for blood.

The Bureau of Research and Laboratories seems to be suffering from an "identity crisis": should it remain a purely regulatory body or should it try to become the planner and manager of the national blood services program in its effort to fill this gap? But there are inherent difficulties in combining regulatory with programming functions. In the first place, both tasks carry enormous responsibilities. There are still many unresolved regulatory and technical problems which BRL has barely attended to. In the second place, program planning and management can conflict with regulatory functions. A regulatory body cannot effectively police itself or check one's own plans and decisions.

Table D-2 summarizes the status of selected essential components of the Philippine blood program and lists crucial issues and questions related to them.

Table D-2: SELECTED COMPONENTS OF THE PHILIPPINE BLOOD PROGRAM STATUS, ISSUES AND QUESTIONS

ESSENTIAL COMPONENTS	ISSUES AND QUESTIONS
<p>No common operational plan with set targets & commitments especially on number of blood units or voluntary donors</p>	<p>*PNRC still implementing own "national" blood program as mandated in 1948 *1992 DOH NBSP plan is just an indicative plan which has to be translated into clear-cut operational plans; other groups feel NBSP plan has been "imposed" on them</p>
<p>No real policy-making body that is accepted by and actively participated in by involved sectors</p>	<p>*Decision-making in PNRC? *Decision-making and programming in the DOH? o Hospital Management Units o Regulatory Units o Disease Control Units</p>
<p>No consensus on what blood transfusion arrangements should be in the country: *What is the role of commercial banks? *Multiple, independent banks? Or coordinated services?</p>	<p>How to build consensus? Important Agreements So Far: *No paid donation *Screening for 4 diseases: SY, malaria, hepatitis B and HIV *BRL to license and regulate blood banks</p>

How should the PNRC national blood program be updated and supported, and its blood centers upgraded? What are the processes of decision-making in the PNRC national headquarters? At the local chapters? How about the program management and decision-making processes in the Department of Health? Which section of the DOH should anchor the national blood program: the hospital group? the regulatory group? the disease control groups? or the Office of the Secretary? How should consensus building proceed when the different groups involved have very varied interests and concerns? Are the groups running commercial blood banks correct when they say the situation will be worse without them? Can a voluntary blood donation program thrive if paid donation is still tolerated? Can the Filipinos - majority of whom are in very poor socio-economic conditions - eventually learn to generously give blood for free?

The laboratory findings indicate that potentially infective blood is leaking into the system. The finding that some blood banks are not capable of doing some of the disease screening tests casts serious doubt that such tests have truly been done. If tests have been done, then issues such as poor reagent quality, inconsistent medical technologist proficiency, poor equipment calibration, pooling of sera, and so forth all point to the need of a better overall quality control and assurance scheme within the blood transfusion system.

The major challenge for the Philippines is to re-organize blood transfusion services into one that is truly self-sufficient, equitable and safe. This must be achieved within the next 3 years. This can only happen if everyone involved - including the potential donors and blood enterprises - will reset their goals towards the common good.

5.0. RECOMMENDATIONS

Given the strengths and weaknesses of the current blood transfusion services in the country, how must we proceed in improving and reorganizing the system?

The study team's recommendations are divided into two (2) major groups: the first group includes urgent measures that can be - MUST BE - executed immediately to quickly plug the safety leaks in the existing blood transfusion system in the Philippines; and the second group includes medium and long term reforms that will take some time to put into effect and to complete but must likewise be initiated as soon as possible.

5.1. IMMEDIATE AND URGENT MEASURES

Some of these are easily implementable needing mainly DOH political will and directive:

- 1. BRL rules and regulations should be revised to include more details and to be more strict on required procedures for donor recruitment, donor screening and donor selection, including the use of one national blood donor form and a uniform format for donor reporting and steps for follow-up. More information on the types of donors, their profile and own social practices and medical histories should be collected and analyzed periodically. The revised and updated criteria for selection and rejection of donors should include the prohibition of payment of donors and should be effectively implemented.**
- 2. Laboratory tests and disease screening methods should be specified and the quality should be controlled by the BRL with priorities set on the accuracy and speed of the method. Cost is an important consideration, but must not be the major one. Cost considerations seem to have prevented the long overdue necessary reforms in the screening of malaria. There should be improved tests for malaria and quicker, less expensive tests for HIV. The registration of one such test is pending in the Bureau of Food and Drugs, which is still awaiting test results of RITM. Meanwhile, HIV-untested blood could be transfused, very much like what happened in France while they awaited the registration of the French test kits. RITM should immediately submit the product tests. Quick, easy and inexpensive tests will benefit the PNRC and government blood banks most.**

Serum pooling in the screening tests for blood intended for transfusion must be immediately stopped through a BRL directive. BRL should also stop teaching this method to blood banks. This does not mean that serum pooling cannot be done in field studies or for disease surveillance purposes.

- 3. Screening for blood-transmissible diseases should be assigned only to designated laboratories. Establishments that sell blood should not be allowed to do the screening tests themselves because the very nature of a business enterprise will result in the use of cheap and poor quality reagents and in other cost cutting measures such as**

pooling of blood. Attached is a list of laboratories which are capable of doing all the necessary disease screening tests, Annex R-1. The list includes among others the Health Laboratories in public Regional Hospitals which should again start to act as reference laboratories within the Regions. In addition, almost all private hospitals in Metro Manila can do all tests. Aside from the RITM and the BRL, other reference laboratories should be developed such as the National Blood Center of the PNRC, and other selected hospitals.

Designation of selected laboratories will make monitoring and quality control quickly manageable and will avoid, if not completely stop, the practice of retesting of blood in the hospitals.

4. Free-standing blood outlets such as those in drug stores or sari-sari (variety) stores should be phased out immediately. These can easily be replaced by hospital-based outlets - which actually already exist - and should be subject to strict standards and regulations.
5. The DOH should initiate talks among blood bank owners about a more equitable, more effective and properly maintained cold storage, distribution and transport of blood and blood products.
6. Hospital Blood Transfusion Committees, which should review transfusion practices and component therapy, should be immediately established in all hospitals: government and private. Legal requirements may be needed. In other countries, such committees are required as part of hospital licensure, medicare reimbursement and professional accreditation schemes. These can also be done in the Philippines.
7. The waste disposal system in blood banks and outlets should be standardized according to WHO recommendations and disposal of contaminated waste should be monitored more closely by the BRL.

5.2. MEDIUM AND LONG TERM MEASURES

Long term system-wide changes depend so much on the decisions and actions made now by the top government managers. Reforms will not be easy.

The motivation to improve the safety of the system would be greatest within the Health Department because any disease transmission especially of AIDS through blood - whether this be through the Red Cross, or private or public blood banks - will be blamed on Health authorities who should be leading, supervising and regulating blood transfusion services in the country. Thus, much of the recommendations in this study are directed at the top managers of the Department of Health.

In the previous chapter, four possible arrangements of blood transfusion services were presented in table D-1. Given the existing conditions, which option will be best for the Philippines?

The long term goals in developing the Philippine blood transfusion system should be self-sufficiency and adequacy, safety and efficiency. The ideal system is one that meets the following WHO guidelines:

1. the system should be able to respond adequately to all needs for blood and blood products on a "regular" basis and should provide for such needs equitably throughout the whole country;
2. the system should operate at a minimum cost and wastage but with optimum safety and efficacy.

Considering the existing situation where there are many groups already involved in blood transfusion, the study team feels that the third option - where the government closely coordinates carefully-planned services of multiple agencies - is the best option for the Philippines. We propose that the level of sharing and coordination be closely organized at the Regions, with national linkages through a common directional and operational plan and quality assurance scheme. Table R-1 lists some additional considerations which guided the formulation of this recommendation.

Table R-1: ADDITIONAL CONSIDERATIONS IN SELECTING THE BEST BLOOD TRANSFUSION SERVICE ARRANGEMENT FOR THE PHILIPPINES

POSSIBLE SERVICE ARRANGEMENTS	ADVANTAGES	DISADVANTAGES
Full delegation of blood transfusion services to an NGO (usually the Red Cross)	*The PNRC has a well-established reputation and people are used to donating blood in PNRC-sponsored campaigns	*PNRC is quasi-government which also suffers from lack of resources & fast turnover of skilled manpower *PNRC now is already unable to meet - perhaps even unwilling to be subjected to - government regulations and standards
Full government control of blood transfusion services	*Government is still the body ultimately responsible and motivated to do the best for the country at large.	*Government does not have the resources to establish new institutes or centers *Government still has to put its act together and sustain its plans and projects

<p>Government-coordinated multiple agency system</p>	<p>*Most beneficial arrangement for all concerned if managed properly *Can maximize resources and distribute supplies equitably</p>	<p>*Major political and personal barriers exist *No emerging effective national program manager</p>
<p>Numerous, independent blood banks</p>	<p>*There are a few hospital blood banks able to run an acceptable system *Hospitals might be highly-motivated to improve the system because they are the main users of the system *There are private-run blood banks able to supply significant quantities of blood *PNRC blood banks can supplement the blood supply</p>	<p>*BRL will have much difficulty in monitoring numerous banks *Will not really stop the practice of paid donation which would be difficult to detect</p>

The national plan should identify the reference and blood screening laboratories, the blood component preparation units, the vaccine and sera production plants, and blood collection and donor recruitment units. The common quality assurance scheme should clearly define the standards and procedures, the levels of accountability, and the monitoring and supervision requirements and processes.

We feel that the above-named option is best because not one agency - neither the PNRC, the government or private hospitals, nor the commercial blood banks - are fully capable individually of providing all the services that will be needed by the country. Together, however, with discipline and consideration for mutual benefit, much can be accomplished.

Many blood centers of the PNRC have been successful in recruiting voluntary donors and they can teach these skills to other sectors within the system. Their major weakness, however, is the lack of medical and paramedical manpower which is reflected in their relatively weaker blood screening capability. The government, on the other hand, has pathologists and medical technologists in every region and in most hospitals. What prevents tie-ups right now? PNRC cannot afford to pay the consultancy services of pathologists. The government, in turn, has not offered the services of their pathologists for free; neither was this requested by PNRC.

The major weakness of commercial blood banks is their use of paid donors, and this practice definitely has to be stopped as soon as possible. But they, however, have developed skills in efficient blood collection, testing, component preparation and distribution. Can they also efficiently and effectively obtain voluntarily-donated blood? With the good of the country and its citizens as a common goal, there may be roles which commercial blood banks can play, especially in underserved communities. The Secretary of Health is in a key position to get people to look at wider perspectives and to work towards common goals sharing meager resources which include facilities, manpower, information and skills.

To reach the above-stated goals, the study team puts forward the following specific suggestions:

5.2.1. LEGISLATION:

The buying and selling of blood must be stopped by legally banning direct payment of donors for blood - whether this be in cash or kind. This means that even commercial blood banks should be "required to provide only blood from voluntary blood donors". This will not only improve the safety of the blood supply but would also decrease the ultimate cost of blood considering the decrease in overhead costs. This, however, should be complemented with an organized program that promotes and coordinates voluntary blood donation and educates the general public.

As recommended by WHO, the Code of Ethics of the International Society of Blood Transfusion and the guidelines on good manufacturing practices of WHO can be incorporated in local legislations.

5.2.2. NATIONAL PLANNING AND PROGRAMMING:

National Blood Transfusion Task Force and National Blood Transfusion Council:

The Secretary of Health is in a key position to initiate the formation of a National Blood Transfusion Task Force (NBT Task Force) and, eventually, a National Blood Transfusion Committee or Council (NBT Council). An NBT Task Force will be needed to translate the indicative plans of the existing NBSP into more defined operational plans and strategies. Such a Task Force must include the DOH, the PNRC, and the various professional and other non-government organizations involved in the system.

This Task Force is necessary not merely for planning but also for consensus building so that involved sectors can start real dialogue and cooperation with each other based on mutual trust. Not one agency must impose its plans on another, not even the DOH. This can be a painful process but a necessary one. To be successful, the Task Force should be facilitated by objective, independent management expert teams.

The creation of the Task Force can also be initiated at the Office of the President.

A National Blood Transfusion Council should be established after the dissolution of the NBT Task Force to carry on with the tasks of continuing policy formulation and revisions, national programming and resource mobilization. The Council members need not come only from the DOH, the PNRG or the professional and non-government organizations active in blood transfusion. An NBT Council member can be any Filipino citizen who is aware of the problems and demands in the blood banking and blood transfusion services and has extensive experience in policy-making, national programming and management of national programs. A Council member should serve for at most 6 years to prevent anyone from "overstaying" and thus controlling the Council. As in the creation of the Task Force, the NBT Council can be initiated at the Office of the President.

Resource Mobilization:

The Secretary of Health is also in a key position to mobilize resources that will be needed to implement the National Blood Transfusion Program Operational Plan which will be generated by the NBT Task Force. Government subsidies to the Red Cross, which is done in many countries, should be seriously considered.

5.2.3. QUALITY ASSURANCE AND REGULATION OF BLOOD TRANSFUSION SERVICES:

The BRL should perfect its regulatory and quality assurance scheme and continuously gather objective, data-based feedback based on field monitoring. It will need all the support, manpower and legal clout necessary to install a truly effective quality assurance scheme. As mentioned earlier, the choice of the arrangement of blood transfusion services - whether this be handled by a single entity or by multiple agencies - will greatly affect the burden and effectivity of the BRL.

The full range of work which BRL should brace itself for is overwhelming. To start the process, BRL has to review its categories of blood banks. The primary, secondary and tertiary levels of classification of blood banks currently in use should be revised to better reflect the more natural differentiation of blood banking operations rather than theoretical unrealistic divisions.

The licensing process also needs to be reviewed. No blood bank should be licensed unless it can do all mandated laboratory and disease screening tests. A blood bank which can prepare most of the blood components should be developed in each of the major cities and provinces.

To update its registration, BRL has to visit and reassess all the banks and reclassify them according to revised criteria. Important criteria for licensing should include: (a) ability to do all laboratory and disease screening tests; (b) staff proficiency; (c) appropriate and adequate facilities, equipments and supply especially for blood storage, handling and distribution; (d) appropriate practices and procedures for

donor and blood screening, blood processing, handling and use, including biosafety precautions.

Renewal of license should include an additional requirement to have at least 10 voluntary donors a day. Licensed blood banks should be subclassified based on the size of the regular active voluntary donor population to reflect the actual magnitude of the blood bank operations.

Blood banks which do not meet all of the above-stated criteria - whether they apply for a license or not - should not be allowed to bleed donors unless they enlist themselves as blood collection centers. Blood collection centers should be just that - where only blood collection is done. Testing and processing of the blood they collect should be done in a fully-equipped, licensed blood bank. No untested blood should be released to a hospital or a patient. Testing shall be the sole responsibility of the blood bank which released the blood.

In another level, the hospitals should document and investigate all transfusion reactions, which should, in turn, be included in the disease surveillance reports of the provinces and regions for inclusion in the national sentinel surveillance system.

BRL monitoring and reporting forms are confusing and need to be evaluated and revised. The current forms need to have more indicators that will reflect the actual operations in each blood bank. One such addition could be reporting of monthly donor examination, bleeding and blood purchases. This will tell BRL which banks are really active and which are only acting as outlets for other banks. An important step towards developing more useful and updated monitoring and reporting forms is regular analysis of the reports. Report analysis will point out the limitations and needed revisions in these forms.

Such reports should also be used to guide supervisors and inspectors, and to give program managers ideas on the developments and status of the services in their specific catchment areas.

5.2.4. BLOOD BANKING OPERATIONS OF THE PHILIPPINE NATIONAL RED CROSS:

The services and facilities of the PNRCC have to be supported, upgraded and updated to achieve the following standards:

Manpower:

Each blood center should have at least two registered medical technologists and a consultant Pathologist who will come to the center at least once a week and will be on call for any problems. The pathologist, being the supervisor of the medical technologists, can be the Quality Control Officer, who can also see to the proper training and proficiency of the technologists.

No that PNRC can afford the services of a pathologist, the BRL should designate all Regional pathologists as pathologists of PNRC blood centers within their respective regions. A reasonable honorarium could be given or the services can be given for free.

No underboard medical technologists should be allowed to conduct the laboratory tests in PNRC blood centers.

No PNRC blood center should be without at least one physician who shall be present within the premises every time there are donors. Donations can thus be scheduled according to the doctor's availability.

Licensing and Standards:

No PNRC blood center should be allowed to operate without a BRL license. PNRC chapters which do not fulfill all the requirements of a full-fledged blood bank should be clearly listed as blood collection centers which should also be subject to specific rules and regulations including the requirement to present linkage agreements with laboratory testing centers which will routinely screen the blood they collect. No untested blood should be released to a hospital or a patient.

All safety precautions in the handling of blood - such as wearing of gloves, gowns and masks - should be followed; and decontamination of potentially infective wastes should follow WHO recommendations. This means that PNRC blood centers should have at least one small autoclave each.

Blood Distribution:

The blood collected by PNRC, after proper testing, should be distributed to different hospitals - no longer to individual patients - either on a consignment basis or by automatic reimbursement of costs. A consignment arrangement means that unused blood still belongs to PNRC and may be returned to PNRC and redistributed to other hospitals when necessary. PNRC also disposes of unused blood. Automatic reimbursement assumes that the hospital has consumed all the blood given to it and disposal of unused bags becomes the hospital's responsibility.

Promotion of Regular Active Voluntary Blood Donation:

The government should assist PNRC in promoting and encouraging voluntary blood donation through mass media campaigns, information, education and communication (IEC) materials and funds.

Joint community education activities should be undertaken together with the hospital receiving blood from PNRC.

The experiences of well-developed blood centers which have been successful especially in the blood replacement program should be documented and disseminated to other chapters and sectors active in voluntary donor recruitment.

Mass bleeding should be discouraged and should no longer be conducted as it has traditionally been done. Instead, commitments for a specific targetted number of bags should be planned and bleeding can be done either in the donors' workplace or in the blood center.

Paid donors should not be accepted in the blood replacement program.

Only selected blood centers - preferably those located in underserved areas - should be developed into blood banks which can separate all blood components. These centers should be fully developed with adequate equipments, facilities, supplies and manpower. Blood centers which are in areas where there are government facilities with adequate laboratory and blood component separation capability need not duplicate the same facilities. As already mentioned, priority should instead be given to centers in underserved areas.

Finally, PNRC should coordinate with Regional Health Directors and Chiefs of Hospitals for the appropriate setting of targets for voluntary blood donors in the region.

5.2.5. BLOOD TRANSFUSION PRACTICES AND HOSPITAL BLOOD OPERATIONS:

The hospital services will have to be scrutinized and upgraded to meet not only blood transfusion requirements and standards but also those for general surgical, obstetrical and medical care where blood use will be significant. Basic attitudes will have to be changed and new alliances will have to be formed in order to create effective systems for estimating the demands for blood and blood products, for scheduling and coordinating donor bleeding with blood distribution, and for monitoring disease transmission. .

A technical manual on blood transfusion practices for medical practitioners and health professionals is sorely lacking. A Philippine version of selected chapters of the manual of the American Association of Blood Banks (AABB) can be produced by a technical committee with representatives from various professional groups active in blood transfusion medicine. This manual should then be used in the training of undergraduate doctors, nurses and medical technologists and postgraduate residents in medicine, surgery, obstetrics and other fields engaged in blood transfusion medicine.

Questions in professional licensing can include those on blood transfusion. Medicare reimbursements and hospital accreditation can require proper use of blood and blood products and proper review of blood transfusion practice by active blood transfusion committees.

A decision on whether to encourage the development and upgrade of numerous government hospital-based blood banks or not is a major one. Such a decision will have lasting effects on the future of the total blood banking system in the country. Therefore, a thorough discussion of the advantages and disadvantages of such a system must precede any such decision.

In addition to the disadvantages listed in table D-1 of a system with numerous hospital blood banks, the following should be noted:

WHO stated that while hospital blood banks have the advantage of dealing directly with donors and recipients of blood, of doing laboratory investigations of donor and recipient blood in the same laboratory, and of responding more quickly to changing clinical needs, they suffer from several disadvantages among which are:

1. Blood donor recruitment is often not sufficiently appreciated in the hospital atmosphere;
2. The hospital premises may make the voluntary healthy donor apprehensive;
3. The existence of numerous, independent, small blood banks results in competition for donors and in unbalanced collection of blood.

This study points out other important issues regarding hospital blood banks in the Philippines:

1. It must be emphasized that the desirable improvement in a hospital blood bank is not only an increase in the number of donors but a qualitative change in the kind of donors from paid to voluntary donors. Philippine medical technologists and doctors do not appreciate the real dangers of paid blood donation and tend to wrongly believe that laboratory tests are adequate or are even more important than carefully selecting the donor in assuring the safety of blood. Such a notion will not bring about the essential changes truly needed in hospital-based blood banks.
2. Mainly because of this notion, but also because of rigid hospital procedures and schedules, few hospitals - government or private - have actually initiated active voluntary donor recruitment on their own. Recruitment of truly voluntary donors will require that hospital-bound staff exert an extra effort to reach out to surrounding communities. Overworked and underpaid hospital personnel - after perhaps a good initial show - will degenerate towards old, more comfortable and less strenuous arrangements, and will thus revert back to buying blood from other banks or to looking the other way when relatives of patients and "pimps" bring in paid donors. After all, it is no longer their role to police relatives and "pimps".

3. **The need to dismantle this informal "pimp" system in the blood transfusion services should be one reason to phase out hospital blood banks. The "pimp" system will be very hard to detect and therefore dismantle if many hospital blood banks are allowed to continue in the country.**
4. **The study has shown that waivers have been asked of patients when the hospital's supply of reagents run out. Such a practice will be difficult to detect and control if there are numerous such banks in the country.**
5. **Numerous hospital blood banks will continue to demand intensive attention and monitoring. This will put too much strain on the regulatory bodies and will make it difficult to put into effect a truly effective quality control and quality assurance scheme.**
6. **Programming and planning for good quality hospital banks should take into account the actual needs of each hospital. This can be easier said than done. Some provincial and district hospitals are markedly under-utilized so that blood is needed only in very few instances and donors are bled only when the need arises. The hospital needs are also largely affected by the presence - or absence - and the fast turnover of surgeons, hematologists, oncologists or other doctors who use blood relatively more often.**
7. **Concerns that have to be dealt with at the national or regional levels - such as the establishment of reference laboratories and the production and distribution of reagents and selected blood components and derivatives - will also be better organized and maximized in a region-wide system rather than a multiple hospital blood banking system.**

In view of the above-named considerations, the study team agrees with WHO that a carefully coordinated medium-sized regional level blood transfusion service is still more satisfactory than a system of numerous hospital blood banks. The initial phases of installing a region-wide system may seem to be more tedious or difficult but the long-term results will be more beneficial for all concerned.

In the team's proposed region-wide blood banking system, the following will be the key activities at the local hospital level:

1. **Careful, regular blood inventory to avoid shortages and outdating of blood and blood products:**
2. **Careful coordination of ordering schedule and distribution arrangements with the supplier of blood: Blood can be distributed on consignment basis or by direct reimbursement schemes.**

5.2.6. OTHER ISSUES:

Pilot projects: Region-wide medium-sized blood transfusion services have been tried before and such efforts are really not new. But these failed because of strong resistance mostly from groups with well-established existing operations. Much awareness-raising and dialogue among relevant regional-level groups will be needed. Improved coordination and relations at the regional level will be greatly facilitated if political obstacles are effectively removed at the national level. Directors of the DOH Field Health Service Units and of the counterpart PNRC Blood Centers can spearhead the planning and programming process at the Regional levels. Pilot projects can be carried out to precipitate the coordination and team work processes. Such projects will also generate the much-needed detailed local information which will be useful in firming-up national and local level operational plans.

5.2.7. FUTURE CONCERNS:

Future actions which may be pursued following a carefully prepared National Blood Services Program Plan are:

- (a) the designation and upgrade of additional national reference laboratories for the screening of blood transmissible diseases.
- (b) the initiation of plans for the establishment of national blood processing plants which can do fractionation of plasma and production of special blood derivatives; the establishment of blood reagent production plants, and of hepatitis B vaccine production plants.

We reiterate that all of the above measures must be planned and implemented within an organized national blood program which must include the active participation of all groups and agencies concerned. This is mainly because the necessary long term changes cannot be expected to be completed within any one administration. The blueprints for the sought after reforms must, therefore, be well-documented; must be very clear and accepted well; and must be passed on to subsequent generations of health and other relevant agency administrators. Otherwise, the efforts and reforms will not be truly effective nor long-lasting.

The managers of blood transfusion services and operators of blood banks in the Philippines may not completely realize the real magnitude of the dangers the public are exposed to in the present blood transfusion system. What are heard are cries and pleas by bleeding and needy patients. Only a selfless and concerted effort by everyone concerned - including the business sectors - can change a system that carries the risk of disease and death into one that truly delivers the blood of life.

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- 3. Management of Blood Transfusion Services, WHO Geneva, 1990.***
- 4. Technical Manual, American Association of Blood Banks, 1990.***

LIST OF ANNEXES

- F-1** **Overview of the Philippine Blood Banking and Blood Transfusion Services (updated as of 31 January 1994)**
- F-2** **Masterlist of Blood Banks Visited and Not Visited**

OVERVIEW OF THE PHILIPPINE BLOOD BANKING AND BLOOD TRANSFUSION SERVICES

Updated as of 31 January 1994

INTRODUCTION

This overview presents the overall picture of the the blood banking activities in the Philippines and in other countries - the historical developments; the organizations, groups and main actors involved; the demand, supply and sources of blood; the costs to patients; the efforts of supervision, regulation and program planning; and aspects that need closer study.

This overview was arrived at through a review of existing documents, listed in annex 1, and statistical reports mostly from the Bureau of Research and Laboratories (BRL) which have been submitted by licensed blood banks. Much of the information also came from the interview of key persons active in the blood banking and blood transfusion services.

HISTORICAL DEVELOPMENTS

Local Developments

The beginnings of the present day blood banking and blood transfusion services in the Philippines can be traced to the formal launching in July 1948 of a National Blood Program operated by the Philippine National Red Cross (PNRC), which at that time was considered as the only organization that can implement the program on a mass scale.

The program involved major government officials, directors of large hospitals and clinics in Manila and prominent members of the medical profession and representatives of the medical societies. The first blood donor was then President Elpidio Quirino. Actresses and actors were involved in the mass media dissemination of the program.

The objective of the National Blood Program was "to maintain a constant and ready supply of whole blood or plasma at least for emergency cases". This was done through registration of voluntary donors, establishment of blood centers in various parts of the country and networking with hospitals.

In June 1956, a law regulating the operations of blood banks was enacted (RA 1517). The law allowed the establishment and operation by licensed physicians of blood banks and blood processing laboratories. The responsibility for standardization, licensing and regulation of these banks was given to the Secretary of Health. The section of the Blood Plasma Dehydration Laboratory of the then Division of Laboratories of the Department of Health (DOH) was given the actual tasks of defining the rules and regulations and of enforcing the law.

The Bureau of Research and Laboratories was not established until 1958. In 1963, a system was set in motion linking the laboratories at the regional, provincial and peripheral levels in the country in an Integrated Laboratory System. By 1966, the law regulating clinical laboratories (RA 4688) gave the BRL additional police powers to regulate clinical laboratories.

In 1971, a Licensure Section was created within BRL tasked with the enforcement of the licensure requirements for blood banks as well as clinical laboratories. Guidelines were revised (AO 156 s. 1971) and this triggered a more strict enforcement of the Blood Banking Law, characterized by frequent spot checks, immediate suspension and communication of such suspensions to hospitals, more systematic record-keeping and frequent communication with blood banks through monthly information bulletins.

By the 1980s, however, the frequency of supervisory visits declined due to financial constraints. The unit "leaned more on the ethical practices of all concerned". (V. Basaca-Sevilla, 9th L. Gomez Mem. lecture).

In 1983, the Philippine Blood Coordinating Council (PBCC) was established by a small group of hematologists and pathologists concerned with the safety of blood and with improvements in the National Blood Program especially in increasing voluntary donation of blood, in having more rational use of blood among the doctors, and in coordinating the activities of the various actors in the blood banking services.

In 1989, there was another revision of Blood Banking Guidelines (AO 57 s. 1989). This revision classified banks into primary, secondary or tertiary, depending on the services they provide. The standards were then adjusted according to this classification, for instance, floor area requirements varied according to the classification level. The new guidelines also included the requirement to do hepatitis B and HIV testing; that the bank be headed by a pathologist or a hematologist; and a few adjustments on age, weight and hemoglobin level of donors. Details comparing AO 156 s. 1971, the WHO suggested guidelines and AO 57 s. 1989 are in table 1.

In 1989, nine Manila-based free-standing blood banks organized themselves into a self-regulating and coordinating body which they called the Philippine Association of Blood Banks (PABB).

In 1992, Department of Health Administrative Order No. 118-A institutionalized the National Blood Services Program (NBSP) naming the BRL as the "central office primarily responsible for the NBSP" and creating a committee that will "implement" the NBSP. The committee included representatives of Bureaus and Services within the DOH, the PBCC, and professional associations and non-government organizations concerned with blood donation and blood transfusion. Regional Blood Councils were also mandated to be formed.

TABLE 1: Comparison of Blood Services Guidelines: AO 156 (1971), WHO and AO 57 (1989)

	Administrative Order 156	Recommended by WHO	Administrative Order 57
ISSUANCE	September 23, 1971	Resolution WHA 28.72 28th WHA, 29 May 1975	January 3, 1989
BASIC LICENSE REQUIREMENTS	Any person, firm or corporation desiring to operate a blood bank submits sworn petition or application.	No license mentioned	Any person, firm or corporation desiring to operate a blood bank submits sworn petition or application
CATEGORIES OF BLOOD BANKS	Hospital or commercial	Hospital-based Red Cross-run Centralized government blood services Government coordinated blood services	Hospital-based or free-standing Red Cross-run Primary Secondary Tertiary
CAPABILITIES	All blood banks: screening, processing, storage and distribution of blood Hospital-based: to include cross-matching and blood transfusion	Screening, processing, storage, distribution Transfusion Investigation of reactions	PRIMARY CATEGORY: 1. Donor screening and selection 2. Collection and processing of blood 3. Storage of blood 4. Transport and issuance of blood 5. Compatibility-testing (hospitals) 6. Transfusion (hospitals) SECONDARY CATEGORY: All services of the primary category and: 1. Provision of packed RBC, plasma, and platelet-rich plasma 2. Investigation of transfusion reactions (hospital) TERTIARY CATEGORY: All services of the primary and secondary categories and: 1. Provision of blood component products and derivatives not included in the secondary category 2. Investigation of incompatibility of cross-matches (hospital)

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TABLE 1: Comparison of Blood Services Guidelines: AO 156 (1971), WHO and AO 57 (1989)

	Administrative Order 156	Recommended by WHO	Administrative Order 57
PERSONNEL			
Head	Certified Pathologist or licensed Physician with training in blood banking	Licensed physician with special training in blood transfusion	Pathologist or Hematologist
Registered Medical Technologist	At least one	Variable number	Primary category: at least 1 Secondary category: at least 2 Tertiary category: at least 2
PHYSICAL PLANT	No specific floor area Separate area for: waiting, bleeding, and laboratory	No specific floor area; separate areas for: waiting room bleeding room laboratory	Primary hospital-based: 20 sqm Primary free-standing: 30 sqm Secondary hospital-based: 30 sqm Secondary free-standing: 40 sqm Tertiary hospital-based: 40 sqm Tertiary free-standing: 50 sqm
EQUIPMENTS	Blood pressure apparatus Stethoscope Weighing scale Hematocrit/ hemoglobin determination apparatus Clinical thermometer Bleeding tables/ beds Blankets Tourniquet Disposable plastic bag donor's set Emergency medical tray Blood collection scale Refrigerator used exclusively for blood (2-8 degrees C) Clinical centrifuge Microscope Shaking machine Autoclave/ hot air oven	All required equipments	Primary: Blood pressure apparatus Stethoscope Weighing scale Thermometer: clinical and laboratory Clinical centrifuge or serofuge Microscope Blood collection equipments/ instruments bleeding tables spring scale tube sealer Emergency medical kit Refrigerator, 4-6 degrees C, used for blood only Secondary: All of those for a primary category and: water bath, 37 degrees C Rh viewer Plasma extractor Tertiary: All of those for a primary and secondary category and: Refrigerated centrifuge Storage freezer (-70 degrees C) ABO typing sera Rh typing sera Giemsa stain Reagent kits to test: syphilis HBsAg HIV Crossmatching reagents

TABLE 1: Comparison of Blood Services Guidelines: AO 156 (1971), WHO and AO 57 (1989)

	Administrative Order 156	Recommended by WHO	Administrative Order 57
DONOR	Age: 18-55 years old	18-65 years old	16-65 years old
QUALIFICATIONS	Mouth temperature: 37.3 deg C Hgb level: 12 g/100 ml Hematocrit: 36% CuSO4: 1:053 BP: 100-160/not over 100 Pulse rate: not mentioned Weight: at least 110 lbs Other conditions precluding blood donation	37.5 degrees C Female: 12.5 g/100 ml Male: 13.5 g/100 ml Female: 38% Male: 42% - 90-160/50-100 50-100/ minute 50 kg and above Other conditions precluding blood donation	37.5 degrees C 12.5 g/100 ml 160/100 less than 100 but not less than 40 45 kg and above Other conditions precluding blood donation
LABORATORY SCREENING	Viral hepatitis Malaria Syphilis	Hepatitis A, B, C Malaria HIV Syphilis & yaws	Malaria Syphilis HBsAg HIV (Bur. Order 9 s. 1991)
COST OF BLOOD (rates)	Latest amendment: Types A, B, and O main bank: P140 outlet: P150 Type AB: main BB: P150 outlet: P160 Rates include all costs of laboratory screening; blood should be sold at cost	Non-remunerable	Whole blood: P400 Packed RBC: P450 Fresh Frozen Plasma: P300 Plasma: P250 Platelet-rich Plasma: P400 Platelet concentrate: P500 Cryoprecipitate: P600 Washed RBC: P600 Leucocyte-poor RBC: P600 Rh-negative blood: P50 (additional) (rates include all costs for laboratory screening; blood should be sold at cost)
TYPE OF DONATIONS	Voluntary donations Paid donations	Voluntary, non-remunerable donations	Voluntary, non-remunerable donations Paid donations Blood Replacement
MONITORING	Inspections Quality Assurance Procedures	Internal and external quality assurance procedures	Inspections External and Internal Quality Assurance Procedures
WASTE MANAGEMENT & BIOSAFETY	Autoclaving and sterilization of reusable instruments	Autoclaving Disinfection Decontamination of reusable instruments	Autoclaving, sterilization of reusable instruments, use of gloves, mask, etc.
APPROPRIATE USE OF BLOOD	For therapeutic purposes: not mentioned For reagent preparation: not mentioned	Mentioned Mentioned	Mentioned Not mentioned

International Developments

Many of the developments in the local scene can be correlated with the developments in the international scene. The launching of the National Blood Program in the Philippines was clearly a response to the resolution adopted by the League of Red Cross Societies in 1948 during their XVIIth International Conference recommending voluntary donation of blood as the ideal system to meet the needs for blood.

In 1975, the World Health Organization was asked through a resolution passed during the 28th World Health Assembly (Resolution WHA28.72) to increase its assistance in the development of blood transfusion services.

In 1979, the Acquired Immune Deficiency Syndrome (AIDS) was first described and in 1982, the first case of transfusion-associated AIDS was described in an infant.

Safety in blood and blood products rapidly became a global concern. In 1980, the International Society of Blood Transfusion (ISBT) formulated the Code of Ethics for Blood Donation and Transfusion. By 1983, a postgraduate course was started to train directors and leading experts of national blood transfusion services on the management of blood transfusion services.

In 1984, the ISBT drafted a model for a national blood policy outlining certain principles that should be taken into consideration; and by 1985, the ISBT disseminated guidelines requiring AIDS testing of blood and blood products for transfusion.

In 1990, WHO started to publish a series of technical papers on blood transfusion: Management of Blood Transfusion Services (1990); Guidelines on the Organization of a Blood Transfusion Service (1992); and Guidelines on Quality Assurance Programs for Blood Transfusion Services (1993). Also in 1990, the American Association of Blood Banks published a Technical Manual on Blood Transfusion especially helpful for clinicians.

CURRENT SITUATION

Blood Transfusion Services in Other Countries

Blood collection, storage, processing and distribution have been arranged in different ways in different countries. Usually, many organizations are involved such as the Red Cross, the government, hospitals, non-profit organizations other than the Red Cross, and commercial enterprises. Only in a few countries is there a national blood program run by just one organization. Blood collection, processing and distribution have been entrusted to the Red Cross, or Red Crescent in Islamic countries, in more than 20 countries.

Currently, there are four main types of arrangement of national blood programs and blood transfusion services.

The first type are those run by the Red Cross or Red Crescent Societies. These are in different stages of development. Examples of effectively-run programs are in table 2.

Table 2: Examples of Effective Red Cross-run Blood Programs Management of Blood Transfusion Services, WHO, 1990

Large Scope, well-developed, advanced technology, high use of components	Modest technology Modest scope	Small scale Modest technology
Australia	Hong Kong	Burundi
Belgium	Indonesia	Nepal
Canada	Korea	Nicaragua
Finland	Thailand	Papua New Guinea
Japan		Rwanda
Netherlands		Somalia
Switzerland		

The second type consists of a network of blood transfusion services under the direct supervision of the health authorities. Examples of the well-functioning ones are in France, Hungary, Ireland, New Zealand, and the United Kingdom.

The third type consists of relatively centralized, state-run blood transfusion services. Those government services that are well-organized and are making good progress, some despite economic difficulties, exist in Barbados, Cuba, Egypt, Islamic Republic of Iran, Kenya, Jamaica, Malaysia, Myanmar, Senegal, Singapore, Sri Lanka, Uruguay and Venezuela.

The fourth type is based mostly, if not entirely, on hospital-based blood banks. A few countries like Denmark and Sweden have developed efficient systems of this type. Many countries have no national blood programs and have left hospitals to solve their own problems by themselves.

In general, many countries have government services supplemented by an input from national Red Cross Societies and other voluntary organizations. In a few countries like the United States, Brazil and Zimbabwe, community-based, non-profit organizations other than the Red Cross are actively involved especially in the recruitment of voluntary donors.

Major Actors in the International Scene

There are a good number of agencies and organizations working on different aspects of the blood transfusion services, table 3.

Table 3: International Agencies Active in Blood Transfusion Services, WHO, 1990

1. Agencies which deal directly with the promotion of blood transfusion services and with the problems involved:
 - o International Society of Blood Transfusion (ISBT)
 - o League of Red Cross and Red Crescent Societies (LORCS)
 - o World Health Organization (WHO)
 - o Council of Europe (Committee of Experts on Blood Transfusion and Immuno-haematology) (but restricted to geographical representation)
2. Agencies which deal only with special aspects of blood transfusion:
 - o International Federation of Blood Donor Organizations (IFBDO)
 - o International Society of Haematology (ISH)
 - o International Society of Thrombosis and Haemostasis (ISTH)
 - o World Federation of Haemophilia (WFH)
3. Agencies which are concerned with aspects of standardization within the blood transfusion practice:
 - o International Committee for Standardization in Haematology (ICSH)
 - o International Organization for Standardization (ISO)
4. Agencies which can be sources of funding for special projects:
 - o United Nations Development Programme (UNDP)
 - o United Nations Children's Fund (UNICEF)
 - o United Nations Industrial Development Organization (UNIDO)
 - o World Bank

Blood Transfusion Services in the Philippines

Blood Supply

It is estimated that around 600,000 - 650,000 standard units of blood (a standard unit is about 450 ml) will be needed annually nationwide. Annual blood bank statistical reports submitted to BRL show that in 1992, only about 402,937 standard units of blood were collected from around 365,764 donors, or 1.1 units per donor. This means that about 33% of the estimated needs are not met.

Sources of Blood

Of the blood units collected in 1992, 64.4% were supplied by free-standing or commercial blood banks; 14.5% by the PNRC; 13.7% by government hospital-based blood banks; and 7.4% by private hospital-based blood banks, table 4.

Table 4: Sources of Blood Supply,
Blood Bank Annual Report, BRL 1992

Type of Blood Bank	Number of units	Percentage
Free-standing	259,436	64.4
PNRC	58,334*	14.5
Government Hospital	55,375	13.7
Private Hospital	29,792	7.4
TOTAL	402,937	

Note: PNRC collected around 105,001 units of blood but these were mostly 250 ml.

Calculating the number of units per bank and noting that there are only 24 "registered or licensed" free-standing blood banks throughout the country, we see that each commercial blood bank produces five times more blood than the Red Cross and 15 times more than the government banks, table 5. This emphasizes the heavy reliance of the Philippines on commercial sources of blood.

Table 5: Units of Blood Collected per Blood Bank
by Category, Blood Bank Annual Report, BRL 1992

Type of Blood Bank	Total No. of Banks	Number of units collected/bank
Free-standing	24	10,810
PNRC	45	1,296
Government Hosp.	72	769
Private Hosp.	83	359

Types of blood donors

Table 6 shows the types of blood donors in each category of blood bank. Almost all of the blood donors in commercial blood banks (99.6%) and most of those in private hospitals (77.0%) are paid donors, that is, the donors receive remuneration for donating blood; while the PNRC donors are mostly voluntary. About 25% of blood donors in government hospitals are also paid for their blood donation.

Table 6: Types of Donors by Category of Blood Bank
Blood Bank Annual Report, BRL 1992

Type of Blood Bank	Paid Donor	Voluntary Donor	Total
Free-standing	258,377 (99.6%)	1,059 (0.4%)	259,436
PNRC	175 (0.2%)	104,826 (99.8%)	105,001
Government Hosp	13,948 (25.2%)	41,427 (74.8%)	55,375
Private Hosp	22,927 (77.0%)	6,844 (23.0%)	29,792

Establishment and Creation of Blood Banks

Table 7 shows the number of registered banks from 1986 to 1992. This table shows that there was no additional registered free-standing blood bank since 1986 while there is about 23-25% increase in the number of hospital-based and PNRC-run blood banks.

Table 7: Number of Registered Blood Banks
Blood Bank Annual Reports, BRL 1986 and 1992

Type of Blood Bank	1986	1992	Percentage Increase
Free-standing or commercial	24	24	0
Hospital-based	128	155 (Govt = 72 Priv = 83)	23%
PNRC	36	45	25%
Total	188	224	19%

In 1970, BRL records list 73 registered blood banks. This reflects a 157% increase from 1970 to 1986, which means that most of the existing blood banks were registered between 1970 - 1986, coinciding with the creation of the Licensure Section in 1971 and the more aggressive enforcement of the law during those years.

Geographical Distribution of Registered Blood Banks

Table 8 shows the distribution of registered/licensed blood banks in different regions. This data shows that 18.7% of the total number of blood banks are located in the National Capital Region (NCR): 48% of the free-standing banks, 16% of government hospital banks, and 20% of private hospital banks.

Table 8: Regional Distribution of Registered Blood Banks by General Category, Blood Bank Annual Report, BRL 1992

Region	Free- Standing	Govt hosp based	Priv hosp based	PNRC	Total
CAR	2	6	3	3	14
I	0	7	7	2	16
II	0	10	4	1	15
III	1	7	9	6	23
IV	1	13	10	2	26
V	0	7	6	3	16
VI	4	11	8	5	28
VII	2	3	11	2	18
VIII	0	5	3	2	10
IX	0	2	3	3	8
X	0	6	4	7	17
XI	1	3	5	5	14
XII	2	3	7	2	14
NCR	12	16	19	2	50
TOTAL	25	99	99	45	269

Inter-island distribution shows that there is a concentration of blood banks in Luzon (160 banks or 60%). There are only about 56 banks (21%) in the Visayas and another 53 (20%) in Mindanao.

Blood Screening

Of 600,377 donors examined, only 365,764 (61%) were bled. Of those rejected, 41,208 (17.6%) were rejected because of positivity in the laboratory tests, table 9.

Table 9: Donors Rejected Due to Positive Laboratory Tests
Blood Bank Annual Report, BRL 1992

Infection	Number positive	Percentage
Syphilis	6,657	16.2%
Malaria	432	1.1%
Hepatitis B	34,100	82.8%
HIV	19	0.05%
Total	41,208	

This puts the donor rejection rate due to positive laboratory tests at 6.3%. Many are rejected due to hepatitis B.

Of the 19 HIV positive donors, 17 (89.5%) were detected in NCR and 14 (73.7%) were detected in free-standing blood banks. This underscores the higher tendency for high risk donors to go to the commercial blood banks. All cases have been reported to the National AIDS Registry.

Of 449,583 units of blood collected and tested, 10,995 (2.4%) were found positive in the laboratory tests, table 10.

Table 10: Collected Blood Found Positive in Laboratory Tests
Blood Bank Annual Report, BRL 1992

Infection	Number positive	Percentage
Syphilis	1,883	17.1%
Malaria	260	2.4%
Hepatitis B	8,847	80.5%
HIV	5	0.04%
Total	10,995	

Use of Blood

Of 449,583 units of blood collected, 200,239 (44.5%) were transfused as whole blood, 79,328 (17.6%) as packed red blood cells, 12,528 (2.8%) as plasma, 26,612 (5.9%) as platelet concentrate, and 8,143 (1.8%) as cryoprecipitate.

A total of 14,550 units (3.2%) were not transfused due to the following reasons, table 11.

Table 11: Reasons for Not Transfusing Blood
Blood Bank Annual Report, BRL 1992

Reason for Not Transfusing Blood	Quantity Not Transfused	Percentage
Expired	9,038	62.1%
Contaminated or spoiled	375	2.6%
Positive laboratory test	3,512	24.1%
Others/ unknown	1,625	11.2%
Total	14,550	

Blood which has been found positive for hepatitis B, especially those from PNRC, are sent to the Research Institute for Tropical Medicine for research purposes.

Cost of Blood

As per BRL Order No. 9 s. 1991, the maximum rates for blood are as follows, table 12.

Table 12: Maximum Rates for Blood
BRL Order No. 9 s. 1991

Blood/ Blood Products	Cost per unit
Whole blood	- P400.00
Packed RBC	- P450.00
Fresh frozen plasma	- P300.00
Plasma (liquid or frozen)	- P250.00
Platelet-rich plasma	- P400.00
Platelet concentrate	- P500.00
Cryoprecipitate	- P600.00
Washed RBC	- P600.00
Leucocyte-poor RBC	- P600.00
Rh negative blood	- P 50.00 additional

The above-stated rates include charges for ABO grouping, testing for hemoglobin content, and screening for malaria, syphilis, hepatitis B and HIV antibody.

Blood banks and hospitals are allowed to charge fees for actual costs of expenses for recruiting donors, collection, processing, storing and transportation of blood with reasonable allowance for spoilage and professional services rendered. Other charges may be collected upon approval of application for such from the BRL. This Order has resulted in a wide variation of costs among blood banks, table 13.

Table 13: Cost of Whole Blood, Packed RBC and Plasma
Different Blood Banks in Metro Manila, 1993

Blood Bank	Cost per Unit (in pesos)		
	Whole Blood	Packed RBC	Plasma
Avenue Blood Bank	400	450	-
Blue Cross Blood Bank	400	450	-
Doctor's Blood Center	400	450	-
Dr. German Castillo BB	400	450	-
FEU-NRMF Blood Bank	400	450	-
Hermoso Diagnostic Ctr/BB	400	450	-
Holy Redeemer Blood Bank	400	450	555
Mother Seaton Blood Bank	400	450	300
Our Lady of Fatima BB	400	450	550
People's Blood Bank	400	450	-
Philippine Blood Bank	400	450	-
Re-cor Blood Bank	400	450	-
Capitol Medical Center	760	760	-
Cardinal Santos Med. Ctr	350	500	369
Chinese General Hospital	400	450	-
De los Santos Med. Ctr	1,001	1,200	-
Makati Medical Center	1,620	1,670	1,705
Manila Doctors' Hospital	1,200	1,200	1,200
Manila Sanitarium and Hosp	400	425	-
Medical Center Manila	400	470	-
Metropolitan Hospital	830	850	-
Our Lady of Lourdes Hospital	1,100	1,200	-
San Juan de Dios Hospital	1,170	1,195	-
Santo Tomas University Hosp	600	650	-
St. Lukes Medical Center	1,400	1,400	-
The Medical City Gen. Hosp	720	865	-
The Polymedic Gen. Hosp	620	565	-
UERM Medical Center	911	911	-
AFP Medical Center	160	-	-
Bureau of Correction	FREE		
East Avenue Medical Center	160	160	-
Fort Bonifacio Gen Hosp	420	470	-
Jose Fabella Memorial Hosp	FREE		
Jose R. Reyes Mem. Med. Ctr		400	
Lung Center of the Phil	730	730	740
National Kidney Institute	850	850	-
Ospital ng Maynila	400	450	-
Philippine Children's Med Ctr	650	650	-
PGH Blood Transfusion Service	485	485	-
Philippine Heart Center	1,055	1,095	-
Philippine Orthopedic Center	400	450	-
Quirino Memorial Med Ctr	400	450	-
Veterans' Medical Center	FREE		

* In private hospitals, costs do not include retesting

PNRC banks collect a handling fee of ₱ 100-175 per unit of whole blood and ₱ 150-300 per unit of blood components.

Main Actors in the Local Blood Banking and Blood Transfusion Scene

In the Philippines, blood banking and blood transfusion services are arranged in four different ways: Red Cross-run blood centers, government-run blood services, private hospital blood banks, and commercial blood enterprises.

The Philippine National Red Cross (PNRC)

Since the launching of the National Blood Program under the PNRC in 1948, it has continued to open chapters in different parts of the country. To date, it has 46 blood centers nationwide: 1 national blood center, 3 regional blood centers, and 42 chapter blood centers.

Aside from the blood centers, PNRC has blood stations which just issue blood, and blood extension services which collect, store and issue blood but do not process them and instead send them to the nearest blood center. PNRC has around 24 extension services and 15 blood stations.

The Blood Program is just one of six service programs of the PNRC. The other services are: Disaster Preparedness and Relief Service, Safety Services, Nursing Service, Red Cross Youth and Social Services.

PNRC obtains most of its blood by doing mass bleeding campaigns throughout the year. These campaigns are often sponsored by military, civic or religious organizations. The PNRC mass bleeding activities occur throughout the year, with peaks during the Blood Donors' Week in July. A person who donates blood becomes a registered blood donor and is given a certificate of donation.

A person who has donated one gallon of blood automatically becomes a member of the "Blood Galloner's Club". Most of the members of this club are military men since the army considers blood donation a major annual project. President Fidel V. Ramos, the honorary president of PNRC, is a blood galloner.

The following steps are followed in the distribution of PNRC blood since 1968:

The Red Cross furnishes all hospitals with "Request for Blood" forms, which is accomplished by the attending physician and signed by the Director of the hospital. The duly-accomplished form is brought by the patient's relative to the PNRC blood bank. The patient's relative is asked to bring along one donor for every 250-300 ml blood issued to replace the blood issued for the patient.

According to the 1992 BRL Registry, only 8 PNRC blood centers have been officially registered nationwide: 1 national blood center, 2 regional blood centers and 5 chapter blood centers. There are 32 applications for license renewal and one new application, all awaiting inspection by BRL staff. However, 4 chapter blood banks cannot be licensed yet because of inability to meet some requirements, mostly in physical facilities.

For 1992, the Blood Bank Annual Report of BRL shows that the following accomplishments have been reported by PNRC, table 14.

Table 14: PNRC 1992 Accomplishments
Blood Bank Annual Report, BRL 1992

Total number of donors examined:	114,885	
Donors rejected:	61,743	(53.7%)
Number of units collected:		
Mostly 250 ml/ unit:	120,625	(2.3/donor)
(If converted to 450 ml standard units:	67,013)	
Type of donors:		
Paid:	15,799	(13.1%)
Voluntary:	104,826	(86.9%)
Number of units transfused:		
Whole blood:	29,316	
Packed RBC:	254	
Plasma:	6	
Platelet concentrate:	830	
Number of units not transfused:	1,543	(1.3%)
Expired:	689	(44.6%)
Contaminated/ spoiled:	123	(8.0%)
Positive laboratory test:	626	(40.6%)
Unknown:	105	(6.8%)
Number of donors with infection:	2,680	(2.5%)
Syphilis:	146	(5.4%)
Malaria:	84	(3.1%)
Hepatitis B:	2,629	(98.1%)
HIV:	1	(0.04%)
Number of blood units tested:	90,204	(41 blood centers)
Syphilis:	428	(0.5%)
Malaria:	107	(0.1%)
Hepatitis B:	4,569	(5.1%)
HIV:	0	

PNRC supplies about 1/4 of the blood supply in the country, or about 100,000 units annually. PNRC's monthly blood supply shows this to be stable at about 7,000 - 9,000 units per month.

The National Blood Center, located in Manila, shows that about 44.2% of requests for blood were unserved in 1992. The highest percentage of unserved requests were those for platelet concentrates. Replacement of blood was completed only in 28.4% of cases.

In 1992, only 10 PNRC blood centers were able to perform HIV screening tests, thus only 34.1% of its blood supply was tested for HIV. To date, at least 20 more centers have medical technologists already trained on HIV testing. However, there is a rapid turnover of trained medical technologists.

Four blood centers (1 national and 3 regional blood centers) can process blood components.

The national, regional and chapter blood centers are asked to report their services monthly to the Director of the National Blood Program but not all centers do so regularly. Each chapter is relatively independent, but are also supervised by the Regional Chapter heads.

In 1991, PNRC had access to a budget of ₱ 74 million, of which around ₱ 10 million (13.7%) were spent on the Blood Program.

Free-standing or Commercial Blood Banks

As mentioned earlier, many of the blood banks were registered between 1970 - 1986. This does not mean, however, that they only started operations when they were registered. No one can be really certain that there are no illegal blood banks anymore. Each registered bank is allowed to have at least 4 "outlets", i.e., the equivalent of the PNRC blood stations.

Commercial blood banks pay donors for giving blood at varying rates between 50 - 150 pesos. Because of this arrangement, many of the donors who come are poor, often students who need cash immediately. And since they need money, these donors are not usually honest about their medical or social history. The claim that paid donors usually have a higher risk of having blood-transmissible infections is confirmed by the data in table 15.

Table 15: Percentage of Donors Found Positive With Either Syphilis, Malaria, Hepatitis B or HIV, by Category of Blood Bank, Blood Bank Annual Report, BRL 1992

Type of Blood Bank	Total Donors Examined	Donors Found Positive*	Percentage
Free-standing	393,928	33,172	8.4%
Government Hosp.	80,415	3,399	4.2%
Private Hosp.	60,178	1,777	2.9%
PNRC	114,885	2,860	2.5%
Total	649,406	41,208	6.3%

* For any of the following: syphilis, malaria, hepatitis B, HIV

Donors coming to free-standing blood banks are about 3 times more likely to have any of the four tested infections than the donors coming to PNRC.

Breaking this data down into diseases per type of bank, we see the following, table 16.

Table 16: Donors Found Positive by Type of Bank and Type of Infection, Blood Bank Annual Report, BRL 1992

Type of Bank	DONORS EXAMINED	Number and Percentage Positive by Type of Disease			
		SYPHILIS	MALARIA	HEPATITIS B	HIV
Free-standing	393,928	6,062 (1.5%)	47 (0.01%)	27,049 (6.9%)	14 (0.004%)
Gov Hosp	80,415	233 (0.03%)	126 (0.2%)	3,038 (4%)	2 (0.002%)
Priv Hosp	60,178	216 (0.4%)	175 (0.3%)	1,384 (2.3%)	2 (0.003%)
PNRC	114,885	146 (0.1%)	84 (0.07%)	2,629 (2.3%)	1 (0.0009%)
TOTAL	649,406	6,657 (1%)	432 (0.07%)	34,100 (5.2%)	19 (0.003%)

In all types of banks, the highest positive reaction is for hepatitis B; followed by syphilis. The low malaria detection can be due to either a low overall malaria prevalence since the donors are usually city-based; or the poor sensitivity of the direct malarial smear technique; or omission of the malarial smear screening as was admitted by PNRC staff.

Considering that the tests done now are only for those diseases we know about - AIDS being an unknown and thus not tested until recently - and even assuming that these tests are done religiously, blood from healthy voluntary donors who give true medical and social histories are about three times much safer than blood from paid donors.

A regular-sized commercial blood bank sees around 70 prospective donors daily. There are no problems in finding donors, many come to the bank on their own. Officially, operators claim that about half of the donors are rejected because of medical reasons such as low hemoglobin levels, poor nutritional condition, or of having just been recently bled. Officially also, the commercial blood banks claim they test each prospective donor with all the required screening tests before and everytime they are bled. In Metro Manila, at least, all the commercial blood banks claim they routinely do HIV testing since 1991.

Blood from commercial banks are usually distributed to government or private hospitals when blood is requested. Many have on-going business arrangements. Many hospitals have their favorite blood bank which can deliver blood within minutes. Such convenience from Free-standing banks makes PNRC procedures - which asks for blood replacement and for handling costs anyway - quite tedious and, for patients in dire need, quite slow.

In 1991, the commercial banks in Manila pooled together blood for HIV testing, tested about 36,000 units and discovered 6 cases of HIV, all males, which were reported to the AIDS surveillance unit. Of these, only one was followed up, a homosexual, and followed-up only once.

Metro Manila-based commercial blood banks have organized themselves as the Philippine Association of Blood Banks. This group tries to discuss common issues and problems and come up with voluntary agreements. Issues include ethical or equitable marketing practices or business arrangements with hospitals, for instance, the practice of paying "commissions" to hospital medical technologists for blood orders; and standardization of testing methods, among others.

The Association has also sponsored training by BRL of their medical technologists on HIV testing to facilitate the otherwise slow process. It centralized HIV testing initially to meet the testing requirements while the medical technologists of other banks still have to be trained. Members of the Association can also tap the facilities of the other members such the ELISA testing for hepatitis B in some banks; or reagents when supplies run low.

When the Association started in 1989, it had 9 members out of 12 NCR-based commercial banks. Membership has dwindled down to 7 since some of the banks refuse to make or follow agreements.

Owners and proprietors of commercial banks know they supply the bulk of the country's blood supply. They do not see any reason for phasing out their establishments especially since there are so far no alternative sources of adequate blood supply.

Hospital-based Blood Banks

Hospital needs for blood can be met in four different ways: (a) Red Cross blood can be requested; (b) a blood donor can be brought by the patient, usually a relative; (c) blood can be bought by the hospital from a free-standing blood bank; (d) blood may be solicited from voluntary blood donors. What actually happens in about 80% of the time is that blood is bought from commercial sources.

Some hospitals re-test the blood, some do not. Many do not have projects to solicit voluntary donations, but the several who do, usually are able to get blood from their own staff or from students in their attached schools of medicine, nursing, midwifery or others.

It has been noted by BRL supervisors that government-run blood banks frequently run out of reagents. When they do, they ask the patients to waive the blood tests and declare that blood is urgently needed.

Doctors: the Users of Blood

According to the 1992 BRL Annual Report, whole blood is transfused in about 45% of the cases. This may be an underestimate. Many Filipino doctors are not yet fully trained to on the specific indications for blood component transfusion. They are not aware of the lack of blood supply and do not feel the need to adjust their practices and use of blood and blood products. It also does not matter so much to them where the blood comes from.

The General Public

There are many cultural barriers that discourage voluntary blood donation. Except among selected sectors such as the military, voluntary blood donation is not very popular among most Filipinos. Even relatives of patients find various excuses not to donate blood. Some patients would rather buy blood from a stranger than be indebted for life to a relative. Misconceptions and fear abound. There is even a religious sect which forbids blood transfusion among its members regardless of the patient's condition.

Management of Blood Banking and Blood Transfusion Services NBSP

Since 1948, the PNRC has been operating a Blood Program through its blood centers, extension services and chapters, many times in cooperation with other civic or religious organizations. Commercial and hospital-based blood banks were established independently in response to the demand that could not be adequately met by PNRC. Aside from distributing blood to hospitals through the patient's relatives, there is really little interaction or shared activity or plans between PNRC and the hospitals. PNRC has nothing whatsoever to do with commercial blood banks.

The DOH for its part played mainly the role of the regulator, defining standards and guidelines for all blood banks and licensing them. It did little in terms of planning or organizing the different groups involved in blood banking and blood transfusion.

Regulation and licensing usually proceed as follows:

1. An application for license is submitted by the blood bank owner to BRL. If no application is sent, BRL will not know about the existence of the blood bank unless they receive reports of such.

2. The BRL staff will then conduct an inspection visit.
3. If the visit is satisfactory, the license can be issued already. If the visit shows deficiencies, mostly on physical facilities, the bank is given time to remedy the situation. If at the second visit the deficiencies are still there, BRL issues a warning. If on the third visit the deficiencies have remained unattended to, the bank's operation is then suspended.

BRL also sends blood to the blood banks for reading by their medical technologists in order to test their laboratory technical skill. Those who fail the test are retrained.

The National Blood Service Program of 1989

The DOH began to be involved in planning and organizing blood bank services only in 1989, upon the approval of the National Blood Service Program only.

The NBSP's overall goal is adequacy, accessibility, affordability and equitable distribution of safe blood and blood products. The following are the stated specific objectives of the NBSP:

1. To increase the number of blood donation through the promotion of voluntary blood donation;
2. To provide facilities for the recruitment, screening and collection of blood from the regional to the district level;
3. To upgrade laboratory facilities at national and regional levels for the processing, distribution and transfusion of blood;
4. To promote the maximum utilization of limited blood resources;
5. To encourage research in various aspects of blood donation, processing and utilization.

The adoption of a National Blood Service Program in 1992 was a major step towards the right direction, but there is still a big gap between what is on paper and what is actually happening. For instance, the NBSP states that "commercial blood bank outlets shall be phased out". This is far from reality. There are also no clear steps to be taken how to reach this objective. People who were supposed to be major actors in the NBSP feel they did not have enough participation in the development of this program. This results in lack of awareness or acceptance of their supposed role in the program.

DISCUSSION

Based on the foregoing data, the following areas present complicated problems that will need further study and documentation:

1. Program planning, policy development and coordination
2. Legal provisions and how these are actually followed
3. Lack of blood supply
4. Facility management and Upgrade
5. Training and development of blood bank staff
6. Supervision and quality control

This overview has revealed much of the existing situation, and has raised even more questions in the process. There is need to fully understand the interactions and implications of alternative actions so that practical and acceptable solutions can be arrived at once and for all.

ANNEX 1
LIST OF MATERIALS REVIEWED

RA 95	22 Mar 1947	An Act to Incorporate the PNRC
RA 1517	16 June 1956	An Act Regulating the Collection, Processing and Sale of Human Blood, and the Establishment and Operation of Blood Banks and Blood Processing Laboratories
AO 156	23 Sept 1971	Revised Rules and Regulations Governing the Collection, Processing and Sale of Human Blood and the Establishment and Operation of Blood Banks and Blood Processing Laboratories, as amended by Administrative Order No. 144-32 series of 1973 (amendments AO 144-32)
DC 99	18 Aug 1987	Declaring Basic Policies on Blood and Describing Measures in Support of Such
AO 57	3 Jan 1989	Revised Rules and Regulations Governing the Collection, Processing and Provision of Human Blood and the Establishment and Operation of Blood Banks
BO 5	15 Jan 1990	Technical Standards Governing the Collection, Processing and Operation of Blood Banks in the Philippines
BO 6	16 Jan 1990	Administrative Standard Operating Procedures for Application and Licensure of Clinical Laboratories and Blood Banks
BO 7	16 Jan 1990	Procedures and Guidelines for the Regional Clinical Laboratory and Blood Bank Inspection Team of the Regional
BC 1	1 July 1990	Disposal of Hepatitis B Surface Antigen (HBsAg) and Human Immunodeficiency Virus (HIV) Antibody Positive Units of Blood
BC 2	1 July 1990	Screening of All Blood Units for Hepatitis B Surface Antigen (HBsAg), Human Immunodeficiency Virus (HIV) Antibody, Malaria and Syphilis
BO 9	15 May 1991	Maximum Rates to be Charged for Blood for Transfusion and Its Products
BC 1	19 June 1991	Exemption from the Requirement of Screening of Units of Blood for Hepatitis B Surface Antigen (HBsAg) and Human Immunodeficiency Virus (HIV) Antibody by Blood Banks Prior to Issuance to Hospitals
BC 2	21 Nov 1991	Reporting of (+) HIV Confirmed Blood Donors
AO 118-A	1992	The National Blood Services Program
AO 122	25 May 1992	Hepatitis B Surface Antigen (HBsAg) and Human Immunodeficiency Virus Antibody (HIV Ab) Positive Units of Blood: DOH Policy, Procedures to be Followed and Sanctions for Violations

Speech by Dr. Virginia Basaca-Sevilla during the Ninth Liborio Gomez Memorial Lecture, 27 February 1987, 36th annual convention of the Philippine Society of Pathologists, Lung Center of the Philippines

Management of Blood Transfusion Services, WHO Geneva, 1990

Technical Manual, American Association of Blood Bank, 1990

Guidelines for the Organization of Blood Transfusion Services, WHO Geneva, 1992

Guidelines for Quality Assurance for Blood Transfusion Services, 1993

ANNEX 2

LIST OF KEY PERSONS INTERVIEWED

PNRC

Dr. Rogelio R. Velicaria, Director, National Blood Program
Dr. Cecilia Fernandez, coordinator for special projects on AIDS and Street Children

PBCC

Dr. Carmen Narciso, past President

PABB

Mrs. Ellen Garcia, secretary

Galloner's Club

Mr. Manuel Chua, past President

Manila Central University (MCU) Hospital

Dr. Antonia Basa, Pathologist

Jose R. Reyes Memorial Hospital

Dr. Acela Tanchongco, Pathologist

MASTERLIST OF BLOOD BANKS VISITED

Annex F-2

REGION	CATEGORY	BLOOD BANK	REGION	CATEGORY	BLOOD BANK
1	GH	Ilocos Regional Hospital	6	PNRC	W. Visayas Reg. (Iloilo) BC
1	GH	Gov. Teofilo Sison Prov Hosp	6	FSB	St. Elizabeth BB
1	GH	Ilocos Norte Prov Hosp	6	GH	Corazon Montelibano Mem Hospital
1	GH	San Carlos District Hospital	6	PNRC	Capiz BC
1	PNRC	Laoag Ilocos Norte BC	6	FSB	Jara BB
1	PNRC	Pangasinan(Dagupan) BC	6	FSB	Villanueva BB
1	PH	St. James Hosp	6	GH	Misamis Occ. Provincial Hosp
1	PH	Bethany Hosp (La Union)	6	PH	Bacolod Sanitarium & Hosp
2	GH	Cagayan Valley Regional Hospital	6	GH	Western Visayas Medical Center
2	GH	Aparri District Hospital	6	PNRC	Kalibo BC
2	PH	Cagayan Valley San. & Hosp	6	GH	Roxas Mem. Prov Hosp
2	PNRC	Nueva Vizcaya (Bayombong) BC	6	PNRC	Negros Occidental(Bacolod) BC
2	GH	Nueva Vizcaya Prov Hosp	7	FSB	Hospitals BB
2	PNRC	Cagayan Valley BC	7	GH	Gov. Celestino Gallares Hospital
3	GH	JB Lingad Regional Hospital	7	FSB	Lifeline BB
3	PNRC	Bataan BC	7	PNRC	Negros Oriental(Dumaguete) BC
3	PNRC	Olongapo City BC	7	PH	Perpetual Succor Hosp
3	PNRC	Bulacan (Malolos) BC	7	PH	Silliman University Med. Ctr
3	PNRC	Nueva Ecija(Cabanatuan) BC	7	GH	Gov. Torritio Mem. Hosp
3	PH	Angeles University Foundation MC	7	GH	V. Sotto Mem. Med. Ctr
3	GH	PJ Garcia Hospital	7	PNRC	E. Visayas Reg. (CebuCity) BC
3	PNRC	Tarlac BC	8	PH	Bethany Hosp (Tacloban)
3	GH	Tarlac Prov Hosp	8	GH	Eastern Visayas Regional and MC
3	PNRC	Pampanga(Sn Fernando) BC	8	PH	Divine Word Hosp
3	PH	VL Makabali Mem. Hosp	8	PNRC	Tacloban City(Leyte) BC
3	PH	Good Samaritan Hosp	9	PNRC	Zamboanga City BC
3	PH	Central Luzon Doctors' Hosp	9	PNRC	Pagadian City BC
3	GH	San Jose General Hospital	9	PH	Infante Hosp
3	PH	Talon General Hospital	9	GH	Zamboanga City Medical Ctr
3	GH	Bulacan Provincial Hospital	9	PH	Zamboanga AE Community Med Ctr
4	FSB	University Physician's BB	9	FSB	Pagadian City Diagnostics & BB
4	PNRC	Laguna BC	10	PNRC	Mind. Reg. (Cag. de Oro) Bld Ctr
4	GH	Batangas Regional Hospital	10	FSB	Fil-Saver BB
4	PH	Morong Doctors' Hosp	10	PNRC	Ozamis BC
4	GH	Lipa District Hosp	10	PH	Phillips Memorial Hospital
4	PH	San Pablo Doctors' Hosp	10	PNRC	Gingoog BC
4	GH	Don Manuel Lopez Mem. Dist. Hosp	10	PNRC	Butuan City BC
4	PH	Mt. Carmel Hosp	10	GH	Surigao del Norte Prov Hospital
4	GH	Laguna Prov Hosp	10	GH	Gingoog District Hospital
5	GH	Camarines Norte Prov Hosp	10	GH	Northern Mindanao Trg Hosp
5	GH	Bicol Regional Hospital	10	PNRC	Mis. Occ. (Oroquieta) BC
5	PNRC	Legaspi City BC	11	PNRC	Davao City BC
5	GH	Irosin District Hospital	11	FSB	City BB
5	PNRC	Daet (Cam. Norte) BC	11	PNRC	Tagum BC
5	PH	Lourdes Hosp	11	PNRC	Digos BC
5	PH	Immaculate Conception Hosp	11	PNRC	General Santos BC
5	PH	Ago General Hosp	11	PH	Howard Hubbard Mem. Hosp
5	PH	Sto. Nino (Daet)	11	GH	Davao Medical Center

MASTERLIST OF BLOOD BANKS VISITED

REGION	CATEGORY	BLOOD BANK			
11	GH	Davao del Sur Prov Hosp	HOSPITAL-BASED OUTLETS		
11	GH	Davao Regional Hospital	1	PH-O	Pangasinan Medical Ctr
12	GH	Cotabato Regional Hospital	1	PH-O	Urdaneta Sacred Heart Hosp
12	FSB	F. Abellanosa BB	3	PH-O	Ramos Gen Hosp
12	GH	Kidapawan Prov Hosp	4	PH-O	Cavite Medical ctr
12	PNRC	Cotabato City BC	4	PH-O	Our Savior Hosp
12	GH	Lanao del Norte Prov Hosp	CAR	PH-O	Bangued Christian Hospital
12	PNRC	Iligan City BC	FREE-STANDING OUTLETS		
12	FSB	Family Medical Clinic BB	LC Diagnostics		
12	PH	Kabacan Doctors' Hosp	Dan's Studio		
12	PH	St. Joseph Hosp	Farmacia Navarro		
CAR	GH	Baguio General Hospital	Avenue BB (Sorsogon)		
CAR	GH	Bontoc General Hospital	Peoples' BB (Daraga)		
CAR	GH	Abra Provincial Hospital	Farmacia San Jose		
CAR	PH	Seares Family Clinic	Cataniag Pharmacy		
CAR	PNRC	Abra BC	Peoples' BB (Batangas)		
CAR	PH	Sto. Nino (Philex) Hosp	JRD Drugmart		
CAR	PNRC	Baguio City BC	Perpetual Help Pharmacy		
CAR	FSB	Benguet Blood Bank	Avenue BB (Lipa City)		
CAR	FSB	St. Louie Univ. BB	OTHERS: visited but data not analyzed		
NCR	FSB	Mother Seaton BB	1	GH	Mariano Marcos Hosp
NCR	FSB	Our Lady of Fatima BB	1	GH	Dna. Gregoria Mem. Hosp
NCR	FSB	Doctors' BB	1	GH	Gabriela Silang Gen. Hosp
NCR	FSB	Peoples' BB	1	GH	Bacarra Medical Center
NCR	FSB	Hermoso BB	1	PH	Lorma Medical Center
NCR	FSB	Holy Redeemer BB	1	PH	Virgen Milagrosa Medical
NCR	FSB	Avenue BB	1	PH	Lahoz Hospital
NCR	GH	National Kidney Institute	1	PH	Luzon Med Center Specialist Group
NCR	PNRC	National Blood Center (Manila)	1	PH	Pres. Magsaysay Mem Hosp
NCR	PNRC	Quezon City BC	3	GH	San Marcelino District Hosp
NCR	FSB	Blue Cross BB	3	PH	St. Jude Family Hospital
NCR	GH	Philippine Children's Medical Center			
NCR	FSB	Re-cor BB			
NCR	GH	Quezon City General Hospital			
NCR	PH	University of Sto. Tomas Hosp			
NCR	PH	FEU Hospital			
NCR	GH	Dr. Jose Fabella Memorial Hosp			
NCR	FSB	German Castillo BB			
NCR	PH	San Juan De Dios Hosp			
NCR	PH	De Los Santos Hospital			

PNRC BLOOD CENTERS NOT VISITED

1. Rizal, Pasig Blood Center
2. Palawan, Puerto Princesa Blood Center
3. Surigao del Norte, Surigao City Blood Center
4. Benguet, La Trinidad Blood Center
5. Dipolog, Zamboanga del Norte Blood Center
6. Catarman, Northern Samar Blood Center
7. Mati, Davao Oriental Blood Center
8. Prosperidad, Agusan del Sur Blood Center
9. Masbate, Masbate Blood Center

FREE-STANDING BANKS NOT VISITED

Region 1 Dagupan City Blood Bank
Region 3 Olongapo City Lions Blood Bank
Region 6 The Doctors' Blood Bank
Region 12 Iligan City Doctors' Blood Bank
NCR Philippine Blood Bank

FREE-STANDING OUTLETS NOT VISITED

Region	Outlet	Mother Blood Bank
2	a) Farmacia Carsal, Tuguegarao, Cagayan	Doctors' Blood Ctr Manila
	b) Bernardo's Pharmacy, Bayombong, Nueva Vizcaya	Hermoso Blood Bank Manila
3	c) Rural Drugstore, Sn Fernando Pampanga	Avenue Blood Bank Manila
	d) Remson Drug, Sn Fernando, Pampanga	Our Lady of Fatima Blood Bank, Manila
7	e) Hospital BB outlet, Tagbilaran	Hospital Blood Bank Cebu City
8	f) R & J Pharmacy, Ormoc City	Hospital Blood Bank Cebu City
10	g) Hospital BB outlet, Surigao City	Hospital Blood Bank Cebu City
12	h) Hospital BB outlet, Iligan City	Hospital Blood Bank Cebu City

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