End Project Evaluation of GFATM Financed NGO Run Blood Bank Services

FINAL REPORT

September 16, 2008

SoSec Consulting Services
PAKISTAN-UK

Acronyms

AJK	Azad Jammu Kashmir
CCM	Country Coordinating Mechanism
CI	Confidence Interval
ELISA	Enzyme-Linked Immunosorbent Assay
GFATM	Global Fund for AIDS TB and Malaria
HBsAg	Hepatitis B Surface Antigen
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
IDI	In-depth interview
NACP	National AIDS Control Program
NGO	Non-Governmental Organization
NWFP	North West Frontier Province
OPs	Operating Procedures
PACP	Provincial AIDS Control Program
PR	Principal Recipient
QA	Quality Assurance
SOP	Standard Operating Procedure
SPSS	Statistical Package for Social Sciences
SR	Sub- Recipient/s
TORs	Terms of References
TTIs	Transfusion Transmissible Infections

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EXECUTIVE SUMMARY

1. *Introduction*. Country Coordinating Mechanism (CCM) of Pakistan secured financing from the Global Fund in Round 2 for HIV. One of the key objectives under the HIV and AIDS component was "to improve screening of blood and blood products for HIV and other blood borne infection in the NGO run blood banks from baseline of 20% to 95% by 2006". National AIDS Control Program (NACP) was Principal Recipient (PR) for the Global Fund Round 2 grant, while Hussaini Blood Bank, Karachi assumed the role of Sub-Recipient (SR) for this component".

2. Provision of safe and adequate blood is the responsibility of the government. Since its initiation in 2003, the Enhance HIV/AIDS Control Program started providing supplemental quantities of test kits to the public sector blood banks for improving the screening of blood and blood products against HIV, HBV and HCV. To improve screening practices in the NGO run blood banks, Global Fund under Round 2 invested resources during 2004/07 in the training of blood bank staff along with supply of test kits for screening blood against HIV, HBV and HCV. This End Project Evaluation Report summarizes the outcome of 4-years investment in the selected blood banks.

3. *Sample size*. A sample of 48 blood banks out of a universe of 157 was chosen at 98% CI and screening prevalence of 60% of donated blood. Field visit revealed that four blood banks were found permanently closed and one had shifted its premises but not started working at the new premises. Therefore, the study findings are based on the review of 43 blood banks in line with the ToRs.

4. *Study design*. ***SoSec*** Consulting Services designed research tools for data collection from the blood banks covering the following areas: general information; review of anti-HIV, HBsAg and anit- HCV testing based on Standard Operating Procedure (SOP); review of optimum storage of test kits, reagents & consumables based on the SOP; review of preventive maintenance of equipment; calibration of equipment; incident reporting arrangements; implementation of universal precautions; assessment of waste management arrangements; status of screening of blood bags and donors; and review of essential blood bank supplies for screening of donated blood. In-depth interview of PR and SR and review of blood banks/SR relations was also carried out.

5. *Recruitment and training of Research Associates*. A three days orientation session was organized for three medical graduates. The training was tailored to familiarize them with study objectives, undertake pre-testing of research tools, ensure accuracy and quality of data and minimize errors while collecting data.

6. *Data collection, data entry and data analysis*. Pre-coded research tools were used for interviews, direct observations, and review of records. Screening procedures were put in place (revisits, quality checks, etc.) to ensure high quality data from the field. A standard package was developed for data entry. Data was analyzed using SPSS.

STUDY FINDINGS

General Information about the Working of Blood Banks

7. R*ange of services*. Most of the blood banks were providing wide range of services. All blood banks were doing blood grouping, cross matching and screening blood and blood products, 38 in collection of blood donations, 20 undertaking component separation, and 18 doing therapeutic transfusion.

8. *Working shifts.* About 3/4th blood banks (n = 32) were functioning on three-shift basis and 19% (8) in two-shifts. Provision of wide range of services and working on 2-3 shift basis by most of the blood banks is a proxy indicator of proper selection criteria developed by the PR and its partners for the selection of beneficiary blood banks.

9. *In-service training*. About 3/4th of blood banks (n=32) had not institutionalized in-service training of their staff, either in-house or outside.

10. *Methods of screening donated blood*. All blood banks confirmed testing individual blood samples for HIV, HBsAg and HCV. Screening by pooling several samples was also reported by two blood banks, an un-acceptable practice. None of the blood bank stated issuing blood bags without screening for HIV, HBV and HCV.

11. *Strategy for initial testing of blood for HIV, HBV and HCV*. Respondents from 22 blood banks stated accepting the reactive test results, while remaining were repeating the test. The testing strategy adopted by nearly half of the blood banks was found at variance with the protocols prescribed by the National AIDS Control Program. National policy needs to be widely circulated to ensure uniform policy for screening of donated blood.

12. *Notification of reactive test results to donors* for HIV, HBsAg and HCV was practiced by majority of the blood banks. This practice indicates the absence of guidelines by the provincial Blood Transfusion Authorities and/or NACP and PACPs on the issue of notification of reactive HIV test results to the donors, and raises ethical concerns.

13. *Notification of positive screening results for HIV within the health* system was practiced by 16 blood banks (37%). Current practice indicates the absence of guidelines on the system of reporting results to agency/ies within or outside the health system.

14. *Record of discarded blood*. Only 46.5% (n=20) blood banks were keeping record of discarded blood, more commonly in sindh province followed by Punjab province.

Application of SOPs for blood screening for HIV/HB/HCV and quality assurance

15. *Use of SOPs for blood screening and quality assurance* had not been introduced in the surveyed blood banks. Blood bank staff used their own unwritten operating procedures for blood screening (e.g. manufacturers' instructions) and managing the quality of blood bank services. Such unwritten procedures didn't permit assessing and comparing the standards used by different blood banks. SOPs for anti-HIV, HBsAG and anti-HCV testing were available in three facilities, SOP for optimum storage of

kits/reagents/consumables and that for calibration of equipment in one blood bank each, and SOPs for preventive maintenance of equipment in two blood banks. None of the blood banks had SOP for incident reporting.

16. Since most of the blood banks were providing services without the application of SOPs, the research associates objectively assessed technical contents of services and graded them in terms of adequate or inadequate with regard to: (i) scope and application of unwritten operating procedures (OPs); (ii) responsibility for the results; (iii) reference for comparing results; (iv) required materials for four OPs (anti-HIV, HBsAg, anti-HCV testing and optimum storage of kits/reagents/consumable); (v) procedures specific to each OP; (vi) documentation; and (vii) staff orientation.

17. The overall *scope and application of seven operating procedures* (OPs) was assessed as adequate in little over half of (56%) of the sample blood banks. Assigning the *responsibility* for implementing various written and unwritten OPs was found adequate in nearly six out of 10 of blood banks (59%).

18. The knowledge of r*eference documents for implementing operating procedures* was found very low, particularly with reference to preventive maintenance of equipment (30% blood banks), calibration of equipment (9% blood banks) and mechanisms for prevention and correction of errors and incidents (5% blood banks).

19. *Materials required* for blood screening for HIV, HBV and HCV. The blood bank staff had full knowledge of materials required as technicians were routinely screening the donated blood or donors for the detection of three blood borne viral infections.

20. Knowledge of *procedures to implement three* OPs was also found quite low i.e. preventive maintenance of equipment, calibration of equipment and incident reporting. In the other four OPs related to direct screening of blood and blood products, the knowledge to implementing the procedures was quite high, in the range of 78-91% of blood banks.

21. *Documentation* required for OPs e.g. expiry date of kits, reactive tests, maintenance of records and files, and etc was grossly inadequate with respect to all OPs.

22. *Orientation of blood bank staff on use of OPs* had remained a neglected field. This was particularly true for preventive maintenance of equipment, calibration of equipment and incident reporting. However, 77 -79% of blood bank staff had adequate orientation in blood screening for HIV, HBV and HCV, and optimum storage of kits and reagents.

23. *Overall rating of blood banks in implementing OPs and quality assurance*. Even in the absence of SOPs, the aggregate quality of services related to screening of blood and quality assurance standards was found highly satisfactory in 2/3rd of sample blood banks (average score >70%) and satisfactory (average score 50-70%) in the remaining 1/3^{rd,} using a composite scoring system. However, one should take this finding with caution as implementation status of three quality assurance standards was found quite inadequate i.e. preventive maintenance of equipment, calibration of equipment and incident reporting.

Blood banks implementing universal precautions

24. *Staff training*. Most of the staff from nearly 86% of blood banks had been trained in the past in preventive epidemiology, modes of transmission and prevention of HIV and other blood-borne infections. In universal precautions against body fluids, technical staff from 81% of blood banks (n=35) had received such training in the past.

25. *Use of apron* on regular basis in the working environment was found a less common feature. The culture of wearing apron always or sometimes was observed on an average in nearly $2/5^{th}$ (39.5%) of blood bank staff.

26. *Use of gloves*. Staff from 30 blood banks was found working with donors at the time visit. Use of gloves while working with blood donors was less commonly practiced (in 12 out of 30 blood banks). Not wearing gloves while working with blood donors is a serious neglect of universal precautions against blood/body fluids and exposes the staff to the hazards of acquiring infection.

27. *Hand washing* was not universally practiced by all blood bank staff. Hand washing after removal of gloves was practiced by the staff in only 26% of blood banks, while hand washing by necessity or convenience by 74% of blood bank staff.

28. *Disinfectant and its use*. As a standard practice, every blood bank should use disinfectant for cleaning workplace when spoiled with blood or blood products, and for mixing with discarded blood and blood products before final disposal. About 84% blood banks (n=36) had disinfectant in their stock; all except one were using it for cleaning the workplace while nine were also mixing it with discarded blood before final disposal.

29. *Reuse of lancet*. Six blood banks (14%) were re-using the lancet. Further, staff from only 60.5% blood banks (n=26) was following the protocol of recapping the used needles after donation procedures.

30. Written policy on *post exposure procedures* and maintaining record on occupational exposures (needle pricks, sharp injury) was only available in 5% blood banks (n=4). None of the blood banks had SOP on safety and infection control measures.

31. On the basis of *composite scoring index*, 65% blood banks (n=28) achieved a "highly unsatisfactory or unsatisfactory" rating in terms of application of universal precautions within the blood bank environment.

Assessment of waste management standards

32. *Segregation of blood bank waste* for separately collecting kitchen, hazardous and infectious wastes was found uncommon practice. Only 11.6% blood banks (n=5) were collecting hazardous and infectious waste in separate containers. *Disinfection of infectious waste* materials was not practiced by 76% blood banks.

33. For *disposal of reactive samples and discarded blood bags*, different and multiple practices were followed. The disposal methods practiced by most blood banks were highly unsatisfactory; only two blood banks were emptying them in the sink or a drain with disinfectant – the most acceptable disposal method.

34. *Final disposal of waste*. Nearly half of the sample blood banks (46.5%, n=20) were disposing off the waste by dumping it in the municipal waste – an unacceptable practice. Proper disposal method was adopted by the remaining blood banks by way of landfill (21%, n=9) and incineration (33%, n=14).

35. *SOP for waste management*. None of the blood banks had SOP for the management of blood bank related hazardous and infection waste.

36. *In terms of overall rating,* on the basis of composite scoring index, none of the blood banks had a satisfactory waste management system.

Status of blood bank supplies for testing of donated blood

37. On aggregate basis, the sample blood banks had 75% of essential equipment, 85% of materials and glassware, and 60% of reagents at the time of field visit. Two blood banks in NWFP had stock outs of test kits. Using composite scoring method, 40 blood banks have been rated highly satisfactory (score >70%) or satisfactory (score 50-70%) in terms of availability of equipment, glassware/materials, and reagents including test kits.

Screening of donated blood before transfusion

38. Blood donors screening load of 16.3% (n = 7) blood banks could not be assessed, either because of lack of access to the official record, lack of maintenance of record or partial maintenance of record. Slightly less than half of the blood banks (48.8%) had a quarterly donor screening load of <500 blood bags in 2007 or in the range of 1-6 blood bags per day, 9.3% in the range of 500-999 blood bags, 9.3% between 1000 -1999, and 2000 or more blood bags in 16.73% blood banks. All 36 blood banks had fully screened the donated blood for HIV, HBV and HCV and their performance has been rated as highly satisfactory in terms of full screening of blood donors or donated blood.

PR-SR working relationship

39. Overall working relationships between PR and SR were smooth and based on mutual trust. According to the SR, it had capacity problems during early part of Phase I of the project, which with induction of the new staff were addressed. The overall response time from the PR was prompt and generally answered SR on telephone within 24 hours followed by a letter. The transfer of funds to SR was timely, but linked with timely submission of the reports and adherence to the approved work plan. The SR cited the PR staff as well trained having problem solving attitude. The PR and SR worked with the mandate of being a facilitative body rather than an implementer. Both PR and SR had good understanding of GFATM rules and procedures.

Provision of test kits to blood banks

40. Over 89% of the blood banks, who had SR trained staff in place, confirmed having received the diagnostic test kits. However, a little over 2/3rd beneficiary blood banks were not satisfied with the quantity of supplies and expected supply of test kits over a longer period of time. With respect to quality, a large majority of beneficiary blood banks (85%) were satisfied with the quality of diagnostic test kits.

Conclusions

41. ***From a sample of 43 GFATM funded NGO run blood banks, the overall quality of services was found: (i) highly satisfactory in only four blood banks – 9.3%***; **(ii)** ***satisfactory in 29 blood banks (67.4%)***; (iii) unsatisfactory in four blood banks (9.3%); and (iv) highly unsatisfactory in the remaining six blood banks. Although there is absence of a baseline for comparison, but the overall output of services by 77% of blood banks can be considered acceptable. The two poor performing areas comprised: non-availability and use of SOPs for screening of blood and blood products against blood borne infections – aggregate score of 4.3%; and safe disposal of hazardous and infectious blood bank wastes - aggregate score of 10.7%.

42. Training of blood bank staff was delayed that led to delays in implementing the planned activities. Further, certain topics were not properly addressed in the training curricula like SOPs on screening of blood and blood products, quality assurance system, blood bank waste management and monitoring & records maintenance; and the related gaps clearly came out in the study findings. Some of test kits procured were not user friendly in the absence of follow-up training.

43. Large majority of trained blood bank staff (about 90%) considered technical contents of the training in line with the practical work, useful in application and for improving the quality of services. There was a good mix of training pedagogy except that bench work should have been compulsory part of all training modules. The trainers' skills were rated as good or excellent by the trained staff.

END PROJECT EVALUATION OF GFATM FINANCED BLOOD BANK SERVICES

1. INTRODUCTION

1. Millions of lives are saved each year through blood transfusions. This has a particular impact on women as a consequence of pregnancy-related complications, children (malnutrition, malaria and severe life-threatening anaemia), and trauma victims.

2. The emergence of HIV in the 1980s highlighted the importance of ensuring the safety and adequacy of national blood supplies. In low income countries including Pakistan, many recipients remain at risk of transfusion-transmissible infections (TTIs) as a result of poor blood donor recruitment and selection practices and the use of untested blood.

3. Blood-borne transmission remains a key component of the HIV epidemic in Pakistan. At 19% of reported HIV infections through blood and blood products, Pakistan's level of blood-borne disease is clearly in excess of the worldwide transmission of 5-10%. The enormity of the situation is validated by findings of high prevalence of Hepatitis C in donors (12-20% among various groups – Karachi AIDS Surveillance Centre Study, 1998), which is a surrogate marker for blood-borne transmission of HIV. Furthermore, only about 60% of annual transfusions were estimated to be screened for HIV in the resent past in Pakistan.

4. Pakistan has been facing a serious problem of transmission of hepatitis B and C viruses through the transfusion of blood and blood products. According to current estimates approximately 1.5 million bags are transfused annually in Pakistan, with at least 10% of this being donated by professional donors. More than 60% transfusions are carried out in the private sector. Not all transfused blood undergoes the required tests for the screening of communicable infective agents like HIV, Hepatitis B and C viruses.

5. The provision of safe and adequate blood is the responsibility of the government of Pakistan. Since its initiation in 2003, the Enhance HIV/AIDS Control Program started providing supplemental quantities of test kits to the public sector blood banks for screening of blood and blood products against HIV, and to some extent for HBV and HCV. To improve screening practices in the private sector blood banks, the government of Pakistan under financing from Global Fund Round 2 invested resources over a period of four years (2004-2007) in the training of private sector blood bank staff backed by provision of test kits for screening blood against HIV, HBV and HCV.

2. SAMPLE SIZE FOR END PROJECT EVALUATION

6. The population of the universe – private sector blood banks receiving support under Round-2 of Global Fund – was obtained from the Principal Recipient. The sample size at 98% confidence interval (CI) and screening prevalence of 60% of donated blood

Table 1: Sample Size of Blood Banks for End Project Assessment

Region	Domain		CI 98%
	Number	Percent	P=60
AJK	1	0.6	1
Balochistan	9	5.7	7
NWFP	21	13.4	11
Sindh	17	10.8	9
Punjab	109	69.4	20
Total	**157**	**100.0**	**48**

was used to calculate the sample size. Thus a sample of 48 blood banks out of a universe of 157 blood banks was chosen and further distributed proportionally to various provinces using sampling fraction n÷N (see table 1). Selection of individual blood banks to be surveyed for assessment was done using a random number. The selected blood banks were kept confidential and only made available to the field researcher.

7. Thus a total of 48 facilities with blood bank services or blood banks were visited by the research associates in the country for the assessment of their services in line with the ToRs. However, the end project evaluation findings are based on the survey of 43 blood banks as four blood banks were found permanently closed and one had shifted its premises but not started working at the new premises[1]. The distribution of 43 blood banks include two located in the tertiary care hospitals, 14 in the private hospitals and 27 as standalone blood banks or in the diagnostic laboratories. The distribution of sample by type of facility and location is given in the enclosed table 2, while complete detail is given at annex 1.

Table 2: Location of Beneficiary Blood Banks who Completely Filled Form

Province/ Area	Located in		Total Sample
	Hospital	Private blood bank/ laboratory	
AJK		1	1
Balochistan	2	4	6
NWFP	5	5	10
Punjab	8	9	17
Sindh	1	8	9
Total	16	27	43

3. DEVELOPMENT OF RESEARCH TOOLS, PRE-TESTING, TRAINING AND DATA COLLECTION

3.1 Development of Research Tools

8. ***SoSec*** designed research tools for data collection (questionnaire) from the sample blood banks. The questionnaire is attached as annex 2. The draft questionnaire covers the following 12 areas, comprising: Part A – general information from the sample blood banks; part B – review of Anti-HIV testing based on Standard Operating Procedure (SOP); Part C – review of HbsAG testing based on SOP; Part D – review of Anti- HCV testing based on SOP; Part E – review of Optimum Storage of Test Kits, Reagents & Consumables based on the SOP; Part F – review of Preventive Maintenance of Equipment; Part G - Calibration of Equipment; Part H - Incident Reporting arrangements; Part I – Implementation of Universal Precautions; Part J – Assessment of Waste Management arrangements in blood banks; Part K – status of screening of blood bags and donors for HIV, HBV and HCV; and Part L –review of essential blood bank supplies for testing of donated blood for HIV, HBV and HCV.

[1] Allah Hoo Blood Bank and Laboratory, Lahore; Umer clinical Laboratory, Muzzargarh; Jan Clinical Laboratory Rajanpur; Baloch Hospital, Turbat; and Thelasemia Blood Transfusion Centre, Bannu (premises changed but not functioning at new premises).

3.2 In-Depth Interview of Principal Recipient (PR) and Sub- Recipient/s (SR) and Review of Blood Banks/SR Relations

9. The field researchers also arranged in-depth interview (IDI) of PR and SR. The main themes discussed during IDI, in line with the study TORs, comprised:

- Review of the written roles and responsibilities of PR and SR in support of implementation of blood safety component of Round-2 project and discussion on how effectively these responsibilities were discharged.
- Assessment of technical skills of PR and SR in supervision and monitoring the implementation of blood safety component of Round-2 project.
- Assessment of criteria developed and applied in the selection of beneficiary blood banks.
- Assessment of criteria developed and applied in skill development of the blood bank staff.
- Assessment of criteria developed and applied in the provision of diagnostic test kits to the beneficiary blood banks
- Quality and usefulness of training provided by the SR to the beneficiary blood bank staff during the project life was also assessed through a structured questionnaire (see annex 2).

3.3 Recruitment and Training of Research Associates and Pre-testing of Assessment Tool

10. Before starting the actual fieldwork, the Team Leader, with support from the supervisor, recruited three (3) research associates. The Team Leader organized a three day orientation session for the application of approved research tools/questionnaire at the sample blood banks**.** The training was tailored to ensure accuracy and quality of data and minimize errors while collecting data. Day-1 was spent to familiarize the research associates with study objectives and detailed discussion on the contents of assessment tools, suitability of questions, construction of language, and to ensure the comprehensiveness in relation to the TORs. The discussion was followed by pre-testing on day-2 of the research tools. On day-3, the research associates under the guidance of the Team Leader and supervisor revised the research tools based on pre-test lessons to make the tools context specific and ready for printing.

11. The training also covered confidentiality of sample and field information. Guidelines were also given to the research associates for filling-in the questionnaires and survey instruments, and necessary instructions related to interpersonal communication. The research associates were provided comprehensive instructions for the completion of the questionnaire and survey instruments.

3.4 Data Collection, Data Entry and Data Analysis

12. ***SoSec*** collected data from the sample blood banks over a period of three weeks covering training, pre-testing and actual data collection from the selected blood banks. Pre-coded research tools were used for interviews, direct observations, and review of records. Screening procedures were put in place (revisits, quality checks, etc.) to ensure high quality data from the field. A standard package was developed and used for data entry. Data was analyzed using standard software like SPSS. The core team critically reviewed the generated data to draw findings in line with evaluation ToRs.

4. STUDY FINDINGS

4.1 General Information about the Working of Blood Banks

4.1.1 Range of services provided by the blood banks

13. The service delivery areas of only blood bank from AJK comprised collection of blood donations, screening of blood, blood grouping and cross matching, and therapeutic transfusion. From a sample six in Balochistan province, all were undertaking screening of blood for HIV/HBV/HCV, and blood grouping and cross matching; five blood banks (83%) were working on donation of blood, two (33%) were performing therapeutic transfusion and one (17%) also doing component preparation. In NWFP, the service areas were more broader since 100% (n=10) were doing screening, blood grouping, cross matching, and therapeutic transfusions; while eight (80%) were working on donation of blood, and seven (70%) in component preparation. The type of services provided by the blood banks in the province of Punjab included donation of blood by 15 (88%), screening of blood by 16 (94%), blood grouping and cross matching by all (100%), component preparation by six (35%) and therapeutic transfusion by three blood banks (18%). In the province of Sindh, all the nine blood banks were screening the blood, collecting donation of blood, and doing blood grouping and cross matching; only six (67%) were engaged in component preparation, and two (22%) were involved in therapeutic transfusion,.

14. In summary all sample blood banks were doing blood group and cross matching , all except one were screening blood and blood products, 38 collection blood donations, 20 doing component separation, and 18 therapeutic transfusion. Province and area wise type of services the blood banks were providing is summarized in table 3 given below.

Table 3: Activities of Blood Banks

Activities	AJK		Balochistan		NWFP		Punjab		Sindh		Total	
	%age	#	%age	#	%age	#	%age	#	%age	#	%age	#
Donation	100.0	1	83.3	5	80.0	8	88.2	15	100.0	9	88.4	38
Screening	100.0	1	100.0	6	100.0	10	94.1	16	100.0	9	97.7	42
Component preparation			16.7	1	70.0	7	35.3	6	66.7	6	46.5	20
Blood grouping and cross matching	100.0	1	100.0	6	100.0	10	100.0	17	100.0	9	100.0	43
Therapeutic transfusion	100.0	1	33.3	2	100.0	10	17.6	3	22.2	2	41.9	18

4.1.2 Working shifts

15. Blood bank services were also assessed in terms of number of shifts they provide services. About 74% blood banks (n = 32) were functioning on three-shift basis and 19% (8) in two-shifts. The results are displayed in the table 4. The three shift pattern of services was more common in Sindh and Punjab provinces. Provision of wide range of services and working on 2-3 shift basis by most of the blood banks is a proxy indicator of proper selection criteria developed by the PR and its partners for the selection of beneficiary blood banks.

Table 4: Number of Shifts the Blood Banks Operate

Province/ Area	One shift	Two shift	Three shift	Total Sample Blood Banks
AJK			100.0	1
Balochistan		50.0	50.0	6
NWFP	10.0	30.0	60.0	10
Punjab	5.9	11.8	82.4	17
Sindh	11.1		88.9	9
Total	7.0	18.6	74.4	43

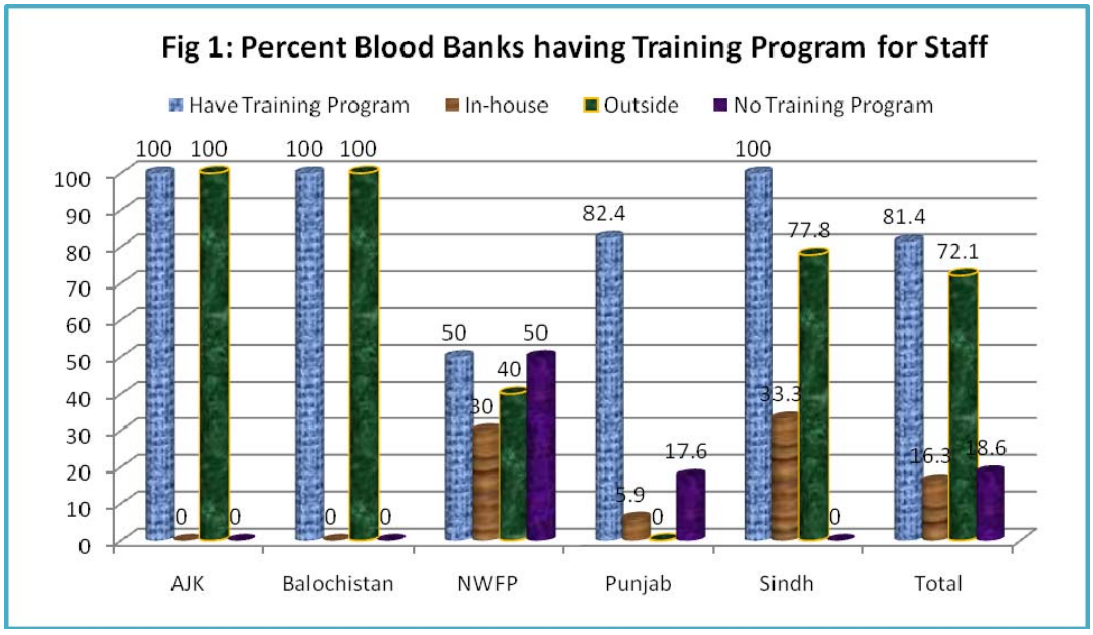
16. **Training program for blood bank staff**, including testing for HIV, HBsAg, and HCV, was reviewed through verbal inquiry. All sample blood banks except eight (five in NWFP and three in Punjab province) stated having arrangements for training their staff, either in-house or outside or both. When outside training arrangements were reviewed and analyzed, it was revealed that 24 out of 32 blood banks (AJk 1, Balochistan 6, NWFP 1, Punjab 11 and Sindh 5) were referring to one-time training conducted by Husseini Blood Bank under Round-2 project of Global Fund financing and as such should not be considered as an institutionalized system of staff training. Therefore, in summary74.4% blood banks (n=32; 24 blood banks who received one-time training from Husseini Blood Bank and eight having no training program) had not made any institutionalized arrangement for in-service training of their staff, either in-house or outside. Further, the institutional arrangements made by the remaining 11 blood banks[2] for the staff training (in-house, outside or both) could not be verified for their correctness. Province or area wise information, as provided by the respondents, is summarized in text table 5 and figure 1.

Table 5: Blood Banks who have Training Program for Staff

Province/ Area	Have training program		In-house		Outside		No training program		Total Number
	%age	#	%age	#	%age	#	%age	#	
AJK	100.0	1			100.0	1			1
Balochistan	100.0	6			100.0	6	0.0	0	6
NWFP	50.0	5	30.0	3	40.0	4	50.0	5	10
Punjab	82.4	14	5.9	1	82..4	14	17.6	3	17
Sindh	100.0	9	33.3	3	77.8	7	0.0	0	9
Total	81.4	35	16.3	7	72.1	*32	18.6	8	43

* 24 Blood banks were referring to one-time training conducted by Husseini Blood Bank under Global Fund financed round-2 project.

[2] The 11 blood banks include three from Punjab province (Ghurki Trust Teaching hospital, Lahore; Fatmid Foundation, Multan; Al-Raee Hospital & Blood bank, Gujranwala), four from NWFP (Fatmid Foundation, Peshawar; Welfare Hand Blood Services Organization, Peshawar; Dua Lab. & Welfare Hospital, Peshawar; Frontier Welfare Foundation Hospital, Kohat), and four from Sindh province (Fatmid Foundation, Karachi; JPMC Blood Bank, PAF, Karachi; Muhammadi Blood Bank, Karachi; & The Blessing foundation, Sukkur.

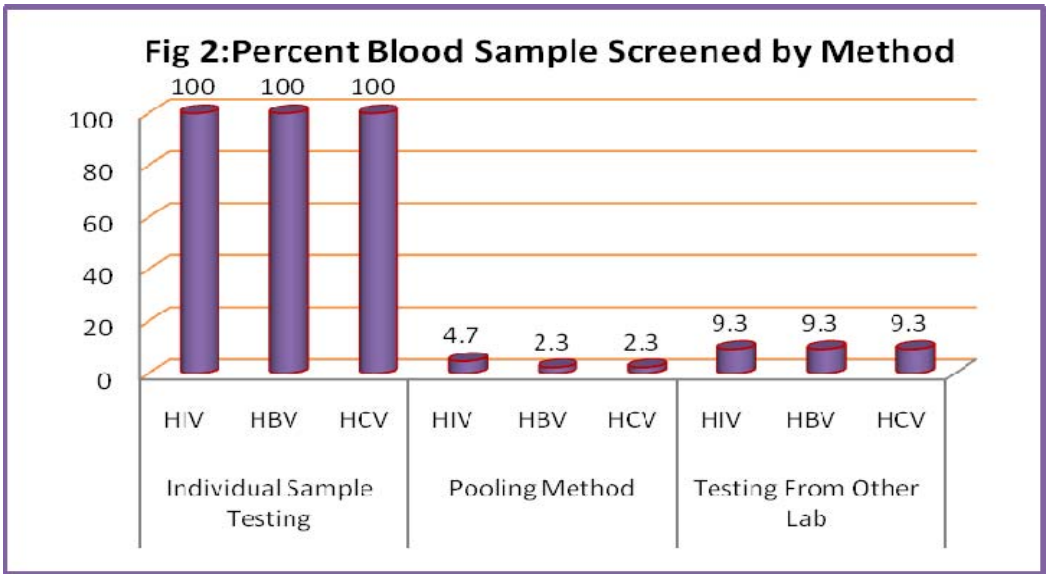


4.1.3 Methods for screening the donated blood

17. Any inquiry on screening of blood samples was made using four options: a) testing of individual samples, b) pooling of several samples, c) sending samples to other laboratories for screening and d) issue blood without testing. Interviewees were encouraged to give multiple answers based on actual practice. Figure 2 below shows that all blood banks (n = 43) confirmed testing individual blood samples for HIV, HBsAg and HCV. Screening by pooling several samples was uncommon; only one blood bank in NWFP reported pooling samples for HIV, HBsAg and HCV testing at camps during blood donation campaigns, and another blood bank from Sindh province also reported pooling several samples for testing for HIV. Testing by pooling method is considered as un-acceptable practice. Four blood banks from NWFP also reported sending blood samples to other laboratories for testing against HIV, HBV and HCV – either for testing through ELISA technique (three blood banks) or confirmation of results (one blood bank). None of the blood bank stated issuing blood bags without screening for HIV, HBV and HCV. Provincial variations are captured in the table 6 given below.

Table 6: Percent Blood Samples Screened for HIV, HBV and HCV, By Province (N=43)

Province/ Area	Individual Sample Testing			Pooling Method			Testing From Other Laboratory			Blood Issued Without Testing		
	HIV	HBV	HCV	HIV	HBV	HCV	HIV	HBV	HCV	HIV	HBV	HCV
AJK (N=1)	100	100	100	-	-	-	-	-	-	-	-	-
BLN (N=6)	100	100	100	-	-	-	-	-	-	-	-	-
NWFP (N=10)	100	100	100	10	10	10	40	40	40	-	-	-
Punjab (N=17)	100	100	100	-	-	-	-	-	-	-	-	-
Sindh (N=9)	100	100	100	11	-	-	-	-	-	-	-	-
Average	100	100	100	4.7	2.3	2.3	9.3	9.3	9.3	0	0	0



4.1.4 Strategy for testing blood for HIV, HBV and HCV

18. Interviewees from the sample blood banks were invited to explain the option they choose for a blood sample that turns out initially reactive for HIV, HBV or HCV i.e. repeat the test or accept the results for the purposes of screening of blood bags. Respondents from all blood banks of AJk, Balochistan and Punjab except two (n = 22) stated accepting the reactive test results, while others (n=21) were repeating the test. The testing strategy adopted by nearly half of the sample of blood banks was found at variance with the protocols prescribed by the National AIDS Control Program[3]. National policy needs to be widely circulated to ensure uniform policy for screening of donated blood by the blood banks. The province/area wise information is given in the enclosed table 7.

Table 7: Fate of Initially Reactive Test

Province/ Area	Accept Result	Repeat Test	Total Sample
AJK	1	0	1
Balochistan	6	0	6
NWFP	0	10	10
Punjab	15	2	17
Sindh	0	9	9
Total	22	21	43

4.1.5 Notification of reactive test results to donors

19. Notification to the donors of reactive screening results for HIV, HBsAg and HCV was practiced by majority of the blood banks (51% for HIV, n = 22), and 100% for HBV and HCV with n = 43). The responses from the blood banks indicate the absence of guidelines by the provincial Blood Transfusion Authorities and/or NACP and PACPs on the issue of notification of HIV results to the donors in case of initially reactive tests, which raises ethical concerns. Summary information is shown in the table 8 given below.

[3] The National Guidelines: Laboratory Diagnosis of HIV/AIDS, NIH and NACP, Ministry of Health, Second Edition, 2004

Table 8: Blood Banks Who Notify Donors of Reactive Test Result							
Province/ Area	HIV		HBsAg		HCV		Total Sample
	Yes	Percent	Yes	Percent	Yes	Percent	
AJK	0	0.0	1	100.0	1	100.0	1
Balochistan	2	33.3	6	100.0	6	100.0	6
NWFP	10	100.0	10	100.0	10	100.0	10
Punjab	1	5.9	17	100.0	17	100.0	17
Sindh	9	100.0	9	100.0	9	100.0	9
Total	22	51.2	43	100.0	43	100.0	43

4.1.6 Notification of positive screening results for HIV within the health system

20. The system of notifying initially reactive or positive HIV test results to the higher level management or the health system was poorly practiced by the blood banks. Only 25% (n=11) blood banks were found reporting HIV reactive or positive results to NACP/PR, and three of them were also reporting to SR – one each from Punjab, NWFP and Balochistan. The system of reporting to SR was even less common as only 19% (n=8) blood banks were following such practice. In summary 37% (n=16) blood banks were notifying initially reactive or positive HIV test results to NACP/PR or SR or both. In NWFP four blood banks were only reporting to their own higher level management. The current practice indicates the absence of guidelines on the system of reporting results to agency/ies within or outside the health system. The province/region wise results are summarized in the table 9 given below.

Table 9: Blood Banks Who Stated Notifying HIV Reactive Test Results to					
Province/ Area	NACP/PR		Sub-recipient		Total Sample
	No.	%	No.	%	
AJK	0	0.0	0	0.0	1
Balochistan	1	16.7	1	16.7	6
NWFP	3	30.0	1	10.0	10
Punjab	1	5.9	5	29.4	17
Sindh	6	66.7	1	11.1	9
Total	11	25.6	8	18.6	43

4.1.7 Record of discarded blood

21. Maintaining record of discarded blood was not uniformly practiced by all blood banks. Only 46.5% (n=20) blood banks were keeping record of discarded blood, more commonly in Sindh province followed by Punjab province.

4.2 Application of standard operating procedures (SOPs) for blood screening for HIV, HBV and HCV and quality assurance standards

4.2.1 Guidelines adhered for blood screening and quality assurance

22. The ***SoSec*** Consulting Services understands that screening for HIV, HBV and HCV has the following five objectives: (i) screening for blood transfusion; (ii) screening for donation safety; (iii) disease surveillance; (iv) diagnosis; and (v) epidemiological, clinical, virological or other related studies. The ***SoSec*** also understands that the focus of the study is only on "screening for blood transfusion". Further, ***SoSec*** adhered to the recommended practices for screening of blood and blood products while undertaking evaluation:

- Pre-and post-test counselling is not required while screening blood donors.

- On initial screening, all non-reactive blood samples are considered as negative and blood and blood products are clear for transfusion.
- All reactive or intermediate blood samples, on initial screening, are considered positive and blood and blood products are to be discarded according to the laid down procedures.
- Screening means "screening of donated blood" and not that of the donor.
- Screening results will not be notified to the donor.
- In case of reactive test, the donor if identifiable is to be informed about the unsuitability as a donor without disclosing the screening results. The blood bank could, however, offer confirmation for confirmation test including counselling at an identified referral centre.

23. For the purposes of evaluation, the evaluation team adhered to the testing methodology given in the enclosed table 10 for selection of assay for anti-HIV, HBV and HCV screening of blood and blood products in the sample blood banks. Hospitals or blood banks equipped with enzyme-linked immunosorbent assay (ELISA) and if using ELISA even when the number of donors was fewer was considered OK and vice versa. Each sample tested individually was accepted as qualifier under the evaluation and pooling of samples was counted under 'not tested'.

Table 10: Method of Anti -HIV Testing in Blood Banks

Average Samples/week	Test
1-35	Rapid/Simple Assay
35-60	Particle Agglutination Test
>60	ELISA or Particle Agglutination Test

4.2.2 Standard operative procedure for anti-HIV, HBV and HCV testing

24. The evaluation team looked for SOP for anti-HIV, HBV and HCV testing in each blood bank falling within the sample. In blood banks where SOP was in use, was reviewed by the field researchers for the information based on the following nine criteria: (i) location of SOP in the blood bank; (ii) unique number of SOP; (iii) date of effectiveness of SOP; (iv) name and signature of author; (v) distribution of SOP; (vi) version of SOP; (vii) number of pages; (viii)) name and signature of person who approved the SOP; and (ix) name and signature of person who had authorized the use of SOP. For technical contents, the SOPs were reviewed under the topics as given in the enclosed text table 11.

Table 11: Technical Contents of SOP for HIV,HBV and HCV Testing

1. Scope and application
2. Responsibility
3. Reference
4. Materials required
5. Procedures covering principle, method, validation & interpretation
6. Documentation
7. Staff orientation

4.2.3 Blood banks implementing SOPs on quality assurance

25. The field researchers assessed every blood bank in the sample for the availability and application of SOPs on quality assurance as given in the enclosed table 12. The contents and application of these protocols were assessed using reference SOPs given in the publication of the Ministry of Health, Government of Pakistan "Model Standard Operating Procedures for Blood Transfusion Services, 2007".

Table 12: SOPs/OP on Quality Assurance Reviewed during Evaluation

1.Optimum storage of consumables, reagents & kits
2.Preventive maintenance of equipment
3. Calibration of equipment
4. Incident reporting

4.2.4 Use of SOPs for blood screening and quality assurance.

26. The summary results indicate that the use of SOPs in the blood bank services had not been introduced in the surveyed blood banks. Staff of every blood bank, based on their knowledge and skills, used their own unwritten operating procedures for anti-HIV, HBV and HVC testing and managing the quality of blood bank services. Such unwritten procedures didn't permit assessing and comparing the standards used by different blood banks.

27. As seen from the summary table 13 given below, SOP for anti-HIV, HBsAG and anti-HCV testing was available in three the facilities of Sindh province only. SOP for optimum storage of kits/reagents/consumables, and that for calibration of equipment was found in one blood bank in Sindh. SOPs for preventive maintenance of equipment was seen in two blood banks – one each in Sindh and NWFP. None of the 43 blood banks had SOP for incident reporting.

Table 13: No. of Blood Banks Who Had Operating Procedures For

SOP for	Number of Blood Banks					
	Punjab	Sindh	NWFP	Bln	AJK	Total
Anti-HIV testing	0	3	0	0	0	3
HBsAg Testing	0	3	0	0	0	3
Anti-HCV testing	0	3	0	0	0	3
Optimum storage of kits, reagents & consumables	0	1	0	0	0	1
Preventive maintenance of equipment	0	1	1	0	0	2
Calibration of equipment	0	1	0	0	0	1
Incident reporting	0	0	0	0	0	0

28. Since most of the blood banks were providing services without the application of SOPs in all seven areas mentioned in the table 13 above, the research associates objectively assessed technical contents of services in the following seven areas and made rating in terms of adequate or inadequate with regard to: (i) scope and application of unwritten operating procedures (OPs); (ii) responsibility for the results; (iii) reference for comparing results; (iv) required material related to four OPs i.e. anti-HIV/HBsAg/anti-HCV testing, and optimum storage of kits/reagents/consumable ; (v) procedures specific to each OP e.g. procedures covering principle, method, validation and interpretation with regard to anti-HIV, HBsAg and HCV testing OP; (vi) documentation; and (vii) staff orientation.

4.2.5 Scope and application of operating procedure

29. The overall scope and application of seven OPs was assessed as adequate in little over half of (56%) of the sample blood banks, as seen in table 14 given below. The scope and application of written and unwritten OPs was highly inadequate in blood banks from NWFP, followed by those in the province of Balochistan.

Table 14: % Blood Banks Having Adequacy of Operating Procedures with Reference to Scope and Application						
Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	100	10	100	100	79
HBsAG	100	100	20	100	100	81
Anti-HCV testing	100	100	20	100	100	81
Optimum storage of kits, reagents & consumables	100	100	30	94	100	81
Preventive maintenance of equipment	100	0	10	53	67	40
Calibration of equipment	0	0	0	18	56	19
Incident reporting	0	0	0	12	22	9
Average in percent	71	57	13	68	78	56

4.2.6 Responsibility for implementing operating procedure

30. Assigning the responsibility for implementing various written and unwritten OPs was found adequate in nearly six out of 10 (59%) of blood banks as seen from the table 15. Adequacy for assigning responsibility was found especially low in blood banks reviewed in NWFP and much higher than the average in blood banks from the provinces of Sindh Punjab.

Table 15: Responsibility for Implementing Operating Procedures – Adequacy						
Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	100	70	100	100	**93**
HBsAG	100	100	70	100	100	**93**
Anti-HCV testing	100	100	70	100	100	**93**
Optimum storage of kits, reagents & consumables	100	100	40	94	89	**81**
Preventive maintenance of equipment	100	0	10	47	44	**33**
Calibration of equipment	0	0	0	18	33	**14**
Incident reporting	0	0	0	12	11	**7**
Average in percent	**71**	**57**	**26**	**67**	**68**	**59**

4.2.7 Reference documents used while implementing operating procedures

31. The knowledge of reference documents for implementing operating procedures was found very low, particularly with reference to preventive maintenance of equipment (30% blood banks), calibration of equipment (9% blood banks) and mechanisms for prevention and correction of errors and incidents (5% blood banks). The lowest level of knowledge of reference documents was found in the staff from blood banks of NWFP (10% blood banks) and Sindh province (40% blood banks). Relatively better knowledge of reference documents with respect to mostly four unwritten operating procedures in the provinces and AJK was because of the fact that most respondents were referring literature that comes with the test kits. Details are given in table 16.

Table 16: Reference Documents Used for Comparing Results– Adequate Source						
Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	100	20	100	56	**74**
HBsAG	100	100	10	100	56	**79**
Anti-HCV testing	100	100	20	100	56	**77**
Optimum storage of kits, reagents & consumables	100	100	20	100	44	**79**
Preventive maintenance of equipment	100	0	0	47	44	**30**
Calibration of equipment		0	0	18	11	**9**
Incident reporting	0	0	0	12	11	**5**
Average in percent	**71**	**57**	**10**	**69**	**40**	**50**

4.2.8 Materials required for four OPs

32. The main materials which formed the basis for assessment for blood screening for anti-HIV, HBsAG and anti-HCV testing comprised reagents, test kits, micropipettes, disposable pipette tips, timer, ELISA reader and washer, incubator, vortex mixer, glassware and distilled water. Materials for optimum storage generally comprised stock register or stock card, domestic refrigerator, blood bank refrigerator, deep freezer and generator.

33. The respondents from the blood banks had high level of knowledge of materials that required are for anti-HIV, HBsAG and anti-HCV testing and for optimum storage of kits/reagent/consumables. This higher level of knowledge was due to the fact blood bank technicians were routinely screening the donated blood or donors for the detection of three blood borne viral infections and had full knowledge materials required for testing and storage of materials. Details are given in table 17 below.

Table 17: Knowledge for Materials Required to Implement Operating Procedures –Adequacy						
Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	100	100	100	100	**100**
HBsAG	100	100	100	100	100	**100**
Anti-HCV testing	100	100	100	100	100	**100**
Optimum storage of kits, reagents & consumables	100	100	80	100	67	**88**
Average in percent	**100**	**100**	**96**	**100**	**92**	**98%**

4.2.9 Procedures for implementing OPs

34. The basis for assessing knowledge related to: blood screening for HIV, HBV and HCV comprised procedures covering principle, method, validation and interpretation. Optimum storage of kits, reagents and consumables covered areas falling under donor area and TTI laboratory; and those related to preventive maintenance of blood bank equipment were maintenance overview, maintenance schedules, service contracts, breakdown reports, and repair and maintenance overdue. The procedures for calibration of blood bank equipment were taken as the calibration items, calibration limits,

calibration schedules, reference standards, and calibration and performance check procedures. Finally, procedure related to incident reporting was limited to display of a flow chart in each section of the blood bank describing incident reporting process.

35. Knowledge of procedures to implement operating procedures, as seen in the table 18 below, was also found quite low with respect to three operating procedures and comprise: preventive maintenance of equipment, calibration of equipment and incident reporting. In the other four operating procedure related to direct screening of blood and blood products, the knowledge to implementing the procedures was quite high in the range of 78- 91% of blood banks.

Table 18: Knowledge of Procedures to Implement Operating Procedures –Adequacy

Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	83	90	94	89	91
HBsAG	100	100	80	94	78	86
Anti-HCV testing	100	100	90	94	78	86
Optimum storage of kits, reagents & consumables	100	100	80	94	78	88
Preventive maintenance of equipment	0	0	0	12	22	9
Calibration of equipment	0	0	0	18	22	12
Incident reporting	0	0	0	12	0	5
Average in percent	57	55	49	60	52	55

4.2.10 Documentation

36. Verbal inquiry from the respondents revealed that documentation required for OPs e.g. in terms of expiry date of kits, reactive tests, maintenance of records and files, and etc was found grossly inadequate with respect to all operating procedures, as seen in the table 19 below.

Table 19: Documentation to Implement Operating Procedures –Adequacy

Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sind n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	0	0	0	18	22	12
HBsAG	0	0	0	12	22	9
Anti-HCV testing	0	0	0	12	22	9
Optimum storage of kits, reagents & consumables	0	0	10	12	22	12
Preventive maintenance of equipment	0	0	0	12	22	9
Calibration of equipment	0	0	0	18	11	9
Incident reporting	0	0	0	12	0	5
Average in percent	0	0	1	23	24	9

4.2.11 Orientation of blood bank staff on use of operating procedures

37. Field researchers also made a verbal inquiry to assess the orientation level of blood bank staff about the seven operating procedures in terms of who did orientation and when. From the table 20 given below, it appears that orientation of blood bank staff in the application of operating procedures had remained a neglected field. This was particularly true for preventive maintenance of equipment either through external system or in-house arrangements, calibration of equipment and incident reporting. About 77 - 79% of the blood bank staff had adequate orientation in screening of blood for HIV, HBV and HCV, and optimum storage of kits/reagents/consumable. Staff orientation was quite low in blood banks from NWFP; and this observation coincides with findings from the SR/NGOs questionnaire as five out of 10 blood banks at the time of visit by the research associates were managed by the technicians not trained by the SR. Details are given in table 20.

Table 20: Staff Orientation to Implement Operating Procedures – Adequacy

Name of OP	AJK n=1	Balochistan n=6	NWFP n=10	Punjab n=17	Sindh n=9	Total n=43
	Percent Blood Banks					
Anti-HIV testing	100	100	50	94	67	**79**
HBsAG	100	100	50	94	67	**79**
Anti-HCV testing	100	100	50	94	67	**79**
Optimum storage of kits, reagents & consumables	100	100	40	94	67	**77**
Preventive maintenance of equipment	0	0	20	18	67	**26**
Calibration of equipment	0	0	0	18	33	**14**
Incident reporting	0	0	0	12	11	**7**
Average in percent	**57**	**57**	**30**	**61**	**54**	**51**

4.2.12 Overall rating of blood banks on the basis of implementing operating procedures and quality assurance standards

38. Most of the blood banks were providing services without the application of SOPs for (i) screening of blood and blood products against HIV, HBV and HCV, and (ii) four essential quality assurance standards. The objective assessment by the research associates of technical contents of various services under each written or unwritten operating procedure resulted in their rating in terms of adequate or inadequate services, and finally using the composite scoring index, as shown illustrated in table 21 below, painted a reasonable result of the evaluation. Even in the absence of SOPs, the aggregate quality of services related to

Table 21: Rating of Blood Banks Based on Adequately Implementing Unwritten Quality Assurance Standards

Province/ Region	Highly satisfactory Performance (Score > 70)		Satisfactory Performance (Score 50-70)		Total Sample
	Percent	Number	Percent	Number	
Punjab	94.1	16	5.9	1	17
Sindh	55.6	5	44.4	4	9
NWFP	10.0	1	90.0	9	10
Balochistan	100.0	6	0.0	0	6
AJK	100.0	1	0.0	0	1
Total (% and No.)	67.4	29	32.6	14	43

screening of blood and quality assurance standards was found highly satisfactory in 2/3rd of sample blood bank and satisfactory in the remaining 1/3rd. However, one should take this finding with caution as implementation status of three quality assurance standards was found quite inadequate (preventive maintenance of equipment, calibration of equipment and incident reporting). Secondly blood banks from NWFP compared less favourably to other provinces.

4.3 Blood banks implementing universal precautions

39. Universal precautions, as the evaluation team perceives, are a set of precautions designed to prevent transmission of HIV and other blood borne pathogens while providing healthcare services. Under universal precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV and other blood borne pathogens.

40. Universal precautions require the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which reduce the risk of exposure of the health worker's skin or mucous membrane to potentially infective materials. Healthcare workers are also required to take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices. The background information, to facilitate review of universal precautions, was provided to the field researchers.

41. For evaluation purposes, universal precaution covered the following areas.: (i) use of apron and gloves by the blood bank officers and technicians; (ii) disposal of syringes, needles and gloves; (iii) any blood bank staff having exudative lesions or weeping dermatitis while being on duty in the blood bank; (iv) staff training in epidemiology, mode of transmission and prevention of HIV including other blood borne infections; (v) hand washing practices; (vi) cleaning of working table; (vii) availability of disinfectants and their use; (vii) method of disposal of discarded blood and blood products; and (ix) method of disposal of needles and syringes. Each of these areas was reviewed in detail and summary results are presented in the paragraphs that follow.

4.3.1 Staff training in HIV epidemiology

42. Research associates made an inquiry if blood bank officers and technicians had been trained in the past in preventive epidemiology, modes of transmission and prevention of HIV and other blood-borne infections. The response was encouraging as in 86% of blood banks most of the technical staff had received such training in the past. However, in NWFP staff from nearly half of the blood banks was not exposed to such training. Information by area/province is given in the enclosed table 22.

Table 22: Blood Banks where Technical Staff was Trained in Epidemiology and Prevention of HIV, HB and HCV

Province/ Area	Staff Trained		Total Sample
	%	Number	
AJK	100.0	1	1
Balochistan	100.0	6	6
NWFP	50.0	5	10
Punjab	94.1	16	17
Sindh	100.0	9	9
Total	86.0	37	43

4.3.2 Staff training in universal precautions against body fluids

43. Research associates also made an inquiry if blood bank officers and technicians had been trained in the past in routine use of universal blood and body fluid precautions. The response revealed that in 81% (n=35) of blood banks technical staff had received such training in the past. However, in NWFP staff from fewer blood banks (four out of 10) confirmed having received such training. The response of blood bank staff to training in HIV epidemiology (discussed above) and universal precautions against blood/body fluid precautions was slightly different from NWFP and Sindh; could be the two trainings had been organized on different timings, or the training event was one but the respondent staff was unable to recall or had missed that particular session. Information by province/area is given in the enclosed table 23.

Table 23: Blood Banks where Technical Staff was Trained in Routine Use of Universal Blood/Body Fluid Precautions

Province/ Area	Staff Trained		Total Sample
	%	Number	
AJK	100.0	1	1
Balochistan	100.0	6	6
NWFP	40.0	4	10
Punjab	94.1	16	17
Sindh	88.9	8	9
Total	81.4	35	43

4.3.3 Observation of staff having exudative lesions/weeping dermatitis on hands

44. In none of the blood banks, staff on duty had exudative lesions and/or weeping dermatitis on hands and forearms.

4.3.4 Use of apron

45. Use of apron on regular basis in the working environment was found a less common feature. The culture of wearing apron always or sometimes was observed on an average in nearly 2/5th (39.5%) of blood bank staff. It was observed to be relatively more common in Sindh (66.6%) and not practiced in AJK blood banks. The province/area wise information is summarized in the enclosed text table 24.

Table 24: Blood bank Staff Wearing Apron: Information by No. of Blood Banks

Province/ Area	All staff		Some Staff		Total Sample
	Percent	No.	Percent	No.	
AJK	0.0	0	0.0	0	1
Balochistan	16.7	1	0.0	0	6
NWFP	10.0	1	30.0	3	10
Punjab	35.3	6	0.0	0	17
Sindh	44.4	4	22.2	2	9
Total	27.9	12	11.6	5	43

4.3.5 Use of gloves

46. Research associates observed as well as made indirect inquiry to find out if blood bank staff used gloves while working with blood donors. Staff from 30 blood banks was found working with the donors at the time visit by the research associates. The observation by research associates, as summarized in the text table 25, revealed that use of gloves while working with the blood donors was less commonly practiced (in 12 blood banks out of 30 or 40% of all blood banks). The use of gloves was more commonly practiced in the blood banks from the province of Punjab (7 out of 11 or close

to 2/3rd). Not wearing gloves while working with the blood donors is a serious neglect of universal precautions against blood/body fluids and exposes the blood banks staff to hazards of acquiring infection.

Table 25: Blood Bank Staff Wearing Gloves: Information by No. of Blood Banks							
Province/Area	**Wearing Gloves**		**Not Wearing Gloves**		**Not Working with Blood Donor at the Time of Visit**		**Total Sample**
	Percent	**Number**	**Percent**	**Number**	**Percent**	**Number**	
AJK	0.0	0	100.0	1	0.0	0	1
Balochistan	33.3	2	66.7	4	0.0	0	6
NWFP	10.0	1	40.0	4	50.0	5	10
Punjab	41.2	7	23.5	4	35.3	6	17
Sindh	22.2	2	55.6	5	22.2	2	9
Total	27.9	12	41.9	18	30.2	13	43

4.3.6 Hand washing

47. Hand washing was not universally practiced by all blood bank staff. Hand washing after removal of gloves was practiced by the staff in only 26% of blood banks, while hand washing by necessity or convenience by 74% of blood bank staff. The only method practiced by the blood bank staff in AJK and Balochistan was hand washing by necessity or convenience. Summary information by province/area is given in table 26.

Table 26: Hand Washing Practices of Blood Bank Staff: Information by No. of Blood Banks					
Province/Area	**Every Time After Removal of Gloves**		**Whenever Necessary or Convenient**		**Total Sample**
	Percent	**Number**	**Percent**	**Number**	
AJK	0.0	0	100.0	1	1
Balochistan	0.0	0	100.0	6	6
NWFP	40.0	4	60.0	6	10
Punjab	35.3	6	64.7	11	17
Sindh	11.1	1	88.9	8	9
Total	25.6	11	74.4	32	43

4.3.7 Cleaning the top of working table

48. Inquiry was also made by the research associates to assess the practice of cleaning the top of the working table in the blood banks by the technicians. The proper cleaning was not universally practiced since 70% blood banks cleaned the top of working table when spoiled with blood or blood products. Large number of blood banks from the provinces of Punjab and Balochistan were following healthy practice of cleaning the working table top after being spoiled with blood and blood products. Detailed information on the pattern of cleaning the top of the working table by province/area is given in the text table 27.

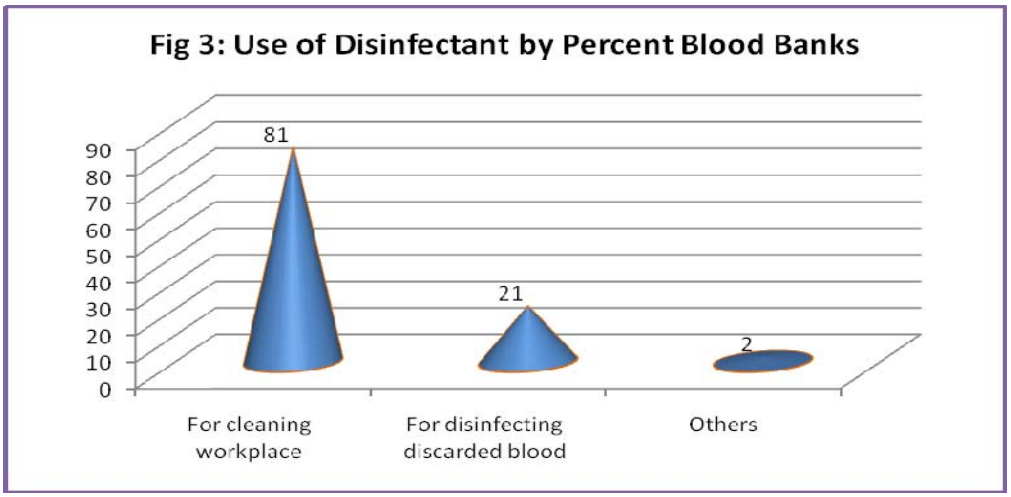
Table 27: Cleaning of Working Space: Information of No. of Blood Banks							
Province/ Area	When it is Spoiled by Blood and Blood Products		Every Day in the Morning		Other Responses		Total Sample
	Percent	Number	Percent	Number	Percent	Number	
AJK	0.0	0	100.0	1			1
Balochistan	83.3	5	16.7	1			6
NWFP	60.0	6	20.0	2	20.0	2	10
Punjab	82.4	14	17.6	3			17
Sindh	55.6	5	44.4	4			9
Total	69.8	30	25.6	11	4.7	2	43

4.3.8 Availability of disinfectant and its use

49. Research associates, at the time of visit to the blood banks, also collected information on the availability and use of disinfectant. On an average, 84% blood banks had disinfectant in their stock. All blood banks located in the province of Punjab had disinfectant in their stock, but fewer in Balochistan. Information about the availability of disinfectant in the blood banks by province/area is given in the enclosed table 28.

Table 28: Availability of Disinfectants and Its Use: Information by No. of Blood Banks			
Province/ Area	Disinfectant Available		Total Sample
	Percent	No.	
AJK	100.0	1	1
Balochistan	33.3	2	6
NWFP	80.0	8	10
Punjab	100.0	17	17
Sindh	88.9	8	9
Total	83.7	36	43

50. The use of disinfectant for different purposes revealed that among those 36 blood banks having disinfectant in their stock, all except one were using it for cleaning the workspace while nine of them were also mixing it with discarded blood and blood products before final disposal. As part of standard practice, every blood bank should use disinfectant for cleaning workspace when it is spoiled with blood and blood products, and for mixing with discarded blood and blood products before final disposal. Current practices of blood banks for use of disinfectant are shown in the figure 3 below.



4.3.9 Disinfection of vein puncture site

51. Staff in all blood banks was disinfecting the puncture site by either 70% alcohol (23.3%, n=10)), Betadine (4.7%, n=2) and other means (72%, n=31).

4.3.10 Reuse of lancet

52. Enquiry on reuse of lancet revealed that 14% blood banks (n = 6) – one from NWFP and five from Sindh - were using the lancet on more than one donor while the remaining majority were following the standard practice of using one lancet for one donor.

4.3.11 Recapping of needles

53. The information was also collected about recapping the needles after donation procedure. Staff in about 60.5% blood banks (n=26) was following the protocol of recapping the used needles after donation procedures. Lack of adherence to this procedure was observed in some blood banks from all provinces. Details are given in table 29 below.

Table 29: Recapping of Needles After Donation Procedure: Information by No. of Blood Banks

Province/Area	Recap		Don't recap		Missing information		Total Sample
	Percent	Number	Percent	Number	Percent	Number	
AJK	100.0	1					1
Balochistan	50.0	3	50.0	3			6
NWFP	80.0	8	20.0	2			10
Punjab	52.9	9	23.5	4	23.5	4	17
Sindh	55.6	5	44.4	4			9
Total	**60.5**	**26**	**30.2**	**13**	**9.3**	**4**	**43**

4.3.12 Post exposure procedures

54. Written policy on post exposure procedures was available in only in 5% blood banks (n = 4), two tertiary care hospitals, and one each in district hospital and private blood banks. Maintaining record on occupational exposures like needle pricks, sharp injury, and etc was also uncommon among the sample blood banks. Only 5% (n = 4) blood banks were maintaining such record.

4.3.13 SOP on safety and infection control

55. None of the blood banks had SOP on safety and infection control measures. Further none had maintained record on occupational exposure of staff. In addition there was not a single blood bank which had either a written policy or SOP for post exposure procedures.

4.3.14 Rating of blood banks based on implementation of universal precautions

56. On the basis of composite scoring index, 65% blood banks (n = 28) achieved a "highly satisfactory or satisfactory" rating in terms of application of universal

precautions within the blood bank environment. Unsatisfactory or highly unsatisfactory performance was more pronounced in blood banks located in Balochistan followed by NWFP and Sindh. More details appear in the text table 30 given below.

Table 30: Rating of Blood Bank Services Based on Implementation of Universal Precautions

Province/ Area	Highly satisfactory (Score > 70)		Satisfactory (Score 50-70)		Unsatisfactory (Score 40-<50)		Highly unsatisfactory (Score < 40)		Total Sample
	Percent	No.	Percent	No.	Percent	No.	Percent	No.	
Punjab	17.6	3	64.7	11	17.6	3			17
Sindh	11.1	1	55.6	5			33.3	3	9
NWFP			50.0	5	20.0	2	30.0	3	10
Balochistan	16.7	1	16.7	1	33.3	2	33.3	2	6
AJK			100.0	1			100.0		1
Total	**11.6**	**5**	**53.5**	**23**	**16.3**	**7**	**18.6**	**8**	**43**

4.4 Assessment of waste management standards

4.4.1 Blood banks undertaking safe disposal of hazardous and infectious wastes

57. The research associates assessed sample blood bank for their adherence to safety precautions through observation on the day of visit and by verbal enquiry. The questions used for waste management comprised (i) use of containers for collection of various wastes; (ii) method of disinfection of special wastes; and (iii) method of final disposal of blood bank waste. Assessment of each area is summarized in the next few paragraphs.

4.4.2 Use of containers for segregation of blood bank waste

58. Use of containers for separately collecting kitchen, hazardous and infectious wastes was found uncommon practice in the sample blood banks. Only 11.6% blood banks (n = 5, one from Punjab and four from Sindh province) were collecting hazardous waste in separate container, and same number the infectious waste (two from Punjab and three from Sindh province).

4.4.3 Disinfection of infectious wastes

59. In 76% blood banks, the system of disinfection of infectious materials was not practiced. Sodium hypo chlorite solution was used for disinfection of infectious materials in only 21% blood banks (n=9), while micro waving by one blood bank. The response given by the blood banks for disinfection of infectious waste should be read with caution as only five blood banks stated collecting infectious waste in separate containers, meaning thereby that five out of 10 respondents were overstating the facts. Province/area wise information on disinfection of infectious waste appears in table 31 below.

Table 31: Method of Disinfection of Hazardous and Infection Waste: Information by No. of Blood Banks							
Province/Area	**None**		**Disinfection with Sodium Hypo chlorite solution (Bleach)**		**Microwave**		**Total Sample**
	Percent	**Number**	**Percent**	**Number**	**Percent**	**Number**	
AJK	100.0	1					1
Balochistan	100.0	6					6
NWFP	70.0	7	20.0	2	10.0	1	10
Punjab	82.4	14	17.6	3			17
Sindh	55.6	5	44.4	4			9
Total	76.7	33	20.9	9	2.3	1	43

4.4.4 Disposal of reactive samples and discarded blood bags

60. Research associates also explored the method of disposal of reactive blood samples and blood units. Different and multiple practices were followed by the blood banks; their responses in descending order were as follows: (i) discard in the general waste – 49% (n=21); (ii) send to another facility for incineration or buried – 28% each (n=12), (iii) incinerate at facility level 14% (n=6), (iv) bags opened and emptied in the sink – 7% (n=3), and (v) bags opened and emptied with disinfectant in the sink – 4.7% (n=2). Respondents from NWFP and Sindh province stated using multiple options for the disposal of reactive samples and discarded blood bags, especially the NWFP. The disposal methods were highly unsatisfactory as the most acceptable method for disposal of reactive samples and discarded blood bags was to empty them in the sink with disinfectant. Province/area wise information is given at table 32 below.

Table 32 : Treatment with Reactive Sample and Blood Units: Information by No. of Blood banks												
Province/Area	**AJK**		**Bln**		**NWFP**		**Punjab**		**Sindh**		**Total**	
	%age	**#**	**%age**	**#**	**%age**	**#**	**%age**	**#**	**%age**	**#**	**%age**	**#**
Discard in general waste			33.3	2	40.0	4	70.6	12	33.3	3	47.7	21
Autoclave and incinerate at facility level			16.7	1	20.0	2	11.8	2	11.1	1	13.6	6
Send to another hospital for incineration					40.0	4	17.6	3	55.6	5	27.9	12
Buried	100.0	1	50.0	3	40.0	4	5.9	1	33.3	3	27.9	12
Bag opened and emptied in the sink					20.0	2			11.1	1	6.8	3
Bag opened and emptied with disinfection in sink					20.0	2					4.5	2

4.4.5 Method of final disposal of waste

61. Nearly half of the sample blood banks (46.5% and n=20) were disposing off the waste by dumping in the municipal waste, especially in Punjab province – an unacceptable practice. Proper disposal method was adopted by the remaining blood banks by way of landfill (21%, n=9) and incineration (33%, n=14). Province/area wise details are given in table 33 below.

Table 33: Method of Final Disposal of Blood Bank Waste: By No. of Blood Banks							
Province/Area	**Municipal waste**		**Landfill**		**Incineration**		**Total Sample**
	Percent	**Number**	**Percent**	**Number**	**Percent**	**Number**	
AJK			100.0	1			1
Balochistan	33.3	2	50.0	3	16.7	1	6
NWFP	30.0	3	40.0	4	30.0	3	10
Punjab	64.7	11	5.9	1	29.4	5	17
Sindh	44.4	4			55.6	5	9
Total	**46.5**	**20**	**20.9**	**9**	**32.6**	**14**	**43**

4.4.6 SOP for waste management

62. None of the blood banks had an SOP for the management of blood bank related hazardous and infection waste.

4.4.7 Rating of Blood Banks on Waste Management Standards.

63. The calculation of composite scoring index revealed that none of the blood banks had a satisfactory waste management system. All blood banks earned less than 40% score. The waste management arrangements were found equally poor in all provinces. Details by province appear in the enclosed text table 34 given below.

Table34: Rating of Blood Banks Based on Waste Management Standards			
Province/ Region	**Highly unsatisfactory (Score < 40)**		**Total Sample**
	Percent	**Number**	
Punjab	100.0	17	17
Sindh	100.0	9	9
NWFP	100.0	10	10
Balochistan	100.0	6	6
AJK	100.0	1	1
Total	100.0	43	43

4.5 Status of blood bank supplies for testing of donated blood

4.5.1 Availablity of equipment

64. Blood bank supplies were separated in to equipment, glassware and supplies, and reagents. Nine equipment were reviewed and their average availablity in descending order is summarized in the enclosed text table 35. On aggregate basis, the sample blood banks had 75% of equipment in place, although Elisa reader and washer are not considered essential for the blood banks having lesser workload. Blood banks in Punjab province were relatively better equipped followed by those in Balochistan province, while blood banks from NWFP were least equipped. It is interresting that two blood banks in NWFP were working without a refrigerator, an essential item for storage of blood bags, test kits and reagents.

Table 35: Status of Essential Equipment: Information by No. of Sample Blood Banks												
Name of Equipment	**AJK**		**Bln**		**NWFP**		**Punjab**		**Sindh**		**Average for Sample**	
	%	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**	**%**	**No**
Water bath 37C	100.0	1	100.0	6	90.0	9	100.0	17	100.0	9	97.7	42
Refrigerator	100.0	1	100.0	6	80.0	8	100.0	17	100.0	9	95.3	41
Centrifuge < 5000 rpm	100.0	1	100.0	6	100.0	10	100.0	17	55.6	5	90.7	39
Interval timer	100.0	1	100.0	6	70.0	7	100.0	17	66.7	6	86.0	37
Incubator	100.0	1	83.3	5	40.0	4	94.1	16	88.9	8	79.1	34
Shaker for micro titre plates	100.0	1	83.3	5	70.0	7	76.5	13	55.6	5	72.1	31
Health block for micro titre plates	100.0	1	83.3	5			88.2	15	66.7	6	62.8	27
Elisa Reader			33.3	2	**40.0**	4	41.2	7	77.8	7	46.5	20
Elisa washer			33.3	2	30.0	3	41.2	7	77.8	7	44.2	19
Average availability	77.8		79.6		58.9		82.3		74.1			74.9

65. Overall availability of **materials and glassware** at the time of visit to the blood banks is summarized in the enclosed text table 36. On aggregate basis, blood banks had 85% of listed materials and glassware at the time of field visit by the research associates. The pattern of availability of materials and glassware was found almost similar in all the provinces. The three least available supplies were tissue paper roll, syringe and needle cutter, disposal gloves, and recording data sheet.

Table 36: Status of Availability of Material and Glassware: Information by No. of Blood Banks												
Material/Glassware	**AJK**		**Bln**		**NWFP**		**Punjab**		**Sindh**		**Total**	
	%	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**
Disposal gloves	100.0	1	66.7	4	80.0	8	70.6	12	77.8	7	74.4	32
Recording data sheet	100.0	1	83.3	5	80.0	8	100.0	17	55.6	5	83.7	36
Disposable syringe	100.0	1	100.0	6	100.0	10	100.0	17	100.0	9	100.0	43
Syringe and needle cutter	100.0	1	66.7	4	50.0	5	58.8	10	100.0	9	67.4	29
Tissue paper roll			50.0	3	80.0	8	58.8	10	88.9	8	67.4	29
Micropipettes	100.0	1	100.0	6	90.0	9	100.0	17	77.8	7	93.0	40
Disposable pipette tips	100.0	1	100.0	6	90.0	9	100.0	17	77.8	7	93.0	40
Distilled water	100.0	1	100.0	6	100.0	10	100.0	17	100.0	9	100.0	43
Average availability	87.5		83.3		83.7		86.0		84.7		84.9	

66. The overall status of availability of **reagents and kits** was found less favourable at the time of visit to the blood banks. The average availability of reagents was in the range of 60%, while blood banks in Balochistan hade even more limited availability of reagents. Two blood banks in NWFP had even stock outs of test kits. Province wise summary information appears in the table 37 given below.

Table 37: Status of Availability of Reagents: Information by No. of Blood Banks												
Reagents	**AJK**		**Bln**		**NWFP**		**Punjab**		**Sindh**		**Total**	
	%	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**
Diagnostic test kits	100.0	1	100.0	6	80.0	8	100.0	17	100.0	9	95.3	41
Sodium hypochlorite			33.3	2	50.0	5	47.1	8	77.8	7	51.2	22
Sulphuric acid			33.3	2	30.0	3	52.9	9	44.4	4	41.9	18
Alcohol			16.7	1	60.0	6	58.8	10	55.6	5	51.2	22
Average	25.0		45.8		55.0		64.7		69.4		59.9	

4.5.2 Rating of Blood Banks on the Availability of Essential Blood Bank supplies

67. Using composite scoring method applied on the availability of essential equipment, materials and glassware, and reagents including test kit, the blood banks were classified in to four categories. If an aggregate score of >70% by a blood bank is taken as an index for rating it highly satisfactory, score of 50-70% for satisfactory rating, <50-40% for unsatisfactory rating and <40% score for labelling a blood bank having highly unsatisfactory status of supplies, the analysis revealed that three blood banks from Sindh province and NWFP that have been categorized as highly unsatisfactory or unsatisfactory with respect to the availability of equipment and supplies. Province wise summary information is presented in the table 38 given below.

Table 38: Rating of Blood Banks Based on Availability of Essential Blood Bank supplies									
Province/ Region	**Highly satisfactory Performance (Score > 70)**		**Satisfactory Performance (Score 50-70)**		**Unsatisfactory Performance (Score 40-<50)**		**Highly unsatisfactory Performance (Score < 40)**		**Total Sample**
	%	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	
Punjab	64.7	11	35.3	6					17
Sindh	77.8	7			22.2	2			9
NWFP	70.0	7	20.0	2			10.0	1	10
Balochistan	66.7	4	33.3	2					6
AJK	100.0	1							1
Total (% & No.)	69.8	30	23.3	10	4.7	2	2.3	1	43

4.6 Screening of donated blood before transfusion

4.6.1 Screening load of blood banks

68. GFATM during the year 2006-07 provided support to 157 selected private sector blood banks under round-2 project to streamline and rationalize screening of donated blood against HIV, HBV and HCV. The Global Fund financing also provided training to the selected blood banks staff and supplied limited quantities of test kits for screening blood donor for HIV, HBC and HCV.

69. Research associates collected data from the blood banks related to blood donors screening for HIV, HBV and HCV covering one quarter of 2007. Blood donors screening load of 16.3% (n = 7) blood banks could not be assessed, either because of lack of access to the official record, lack of maintenance of record or partial maintenance

of record – five falling in NWFP and one each from Punjab and Sindh provinces. Slightly less than half of the blood banks (48.8%) had a quarterly donor screening load of <500 blood bags or in the range of 1-6 blood bags per day, 9.3% in the range of 500-999 blood bags, 9.3% between 1000 -1999, and 2000 or more blood bags in 16.73% blood banks. Screening load of >1000 blood bags per quarter was mostly observed in blood banks from Punjab, NWFP and Balochistan provinces. Except seven blood banks for whom record was not available or partially made available, all the remaining 36 blood banks had fully screened the donated blood for HIV, HBV and HCV. Province/area wise blood donors screening load appears in the table 39 given below, while blood bank wise information appears at annex 3.

Table 39: HIV,HBV and HCV screening load of blood banks : Average No. of donors in Fully Screened in One Quarter of 2007

Range of Donors	No. of Blood Banks by Province/Area					Total	
	AJK	Bln	NWFP	Punjab	Sindh	No	%
<100	0	2	0	1	1	4	9.3
100-499	1	3	4	9	0	17	39.5
500-999	0	0	0	2	2	4	9.3
1000-1999	0	1	0	2	1	4	9.3
2000 and above	0	0	1	2	4	7	16.3
No record/ record not shown/partial record	0	0	5	1	1	7	16.3
Total blood banks	1	6	10	17	9	43	100

4.6.2 Performance rating of blood banks on the basis of donor screening

70. Blood banks, based on blood donors screening status, were classified in to two categories comprising: highly satisfactory as those who had fully screened all blood donors, and highly unsatisfactory as those who had partially screened the donors or record was not maintained/shown to the research associates at the time of visit. Using this criterion, performance of 83.7% of blood banks (n=36) has been rated as highly satisfactory. Province/area wise performance rating status, as given in the enclosed text table 40, reflects that half of the sample blood banks from NWFP obtained a highly unsatisfactory performance rating.

Table 40: Rating of Blood Banks Based on Blood Bags/Donors Screened for HIV, HBV and HCV

Province/ Area	Highly satisfactory Performance		Highly unsatisfactory Performance		Total Sample
	%	No.	%	No.	
Punjab	94.1	16	5.9	1	17
Sindh	88.9	8	11.1	1	9
NWFP	50.0	5	10.0	5	10
Balochistan	100.0	6	0.0	0	6
AJK	100.0	1	0.0	0	1
Total (%/No.)	83.7	36	16.3	7	43

5. Relationship between Principal Recipient (PR) and Sub Recipient (SR)

71. National AIDS Control Program (NACP) was the sole PR for Global Fund Round 2 grant, while Hussaini Blood Bank, Karachi assumed the responsibility of Sub-recipient for the component*" To improve screening of blood and blood products for HIV and other blood borne infection in the NGO run blood banks from baseline of 20% to 95% by 2006"*.

72. ***SoSec*** study team conducted in-depth interview (IDI) of PR and SR staff separately. The main themes discussed during the IDIs, included:

- Review of written roles and responsibilities of PR and SR in support of implementation of blood safety component of Round-2 project and how effectively these responsibilities were discharged.
- Assessment of technical skills of PR and SR in supervision and monitoring the implementation of blood safety component of Round-2 project.
- Assessment of criteria developed and applied in the selection of beneficiary blood banks under the project.
- Quality and usefulness of training provided by the SR during the project life was assessed using questions directly administered to the individual blood banks falling in the sample.

5.1 Findings from IDIs

73. *Review of the written roles and responsibilities of PR and SR in support of implementation of blood safety component of Round-2 project and how effectively these responsibilities were discharged*. Assessment revealed that the office of the PR followed the GFATM guidelines on the roles and responsibilities between PR and SR. There were specific guidelines developed for financial management and procurement. At the time of the interview copies of all documents were available with the PR and the SR. According to the guidelines the roles were clearly defined and the same were adopted as a standard for guidance in discharge of responsibilities. All activities were verified through available record and also during the assessment of the SR. The following were the key activities carried out for strengthening the SR capacity for smooth implementation of the project activities:

- Training of SR in grant management, both administrative and financial, through initial and refresher workshops.
- Procurement related training was organized on regular basis to ensure transparency and accuracy.
- Development of 'plan of action' for grant implementation in line with agreed objectives and targets.
- Timely release of funds to the SR ensuring implementation of activities in line with the work plan
- Capacity building of the SR in monitoring and evaluation.
- Development of Quality Assurance guidelines for Blood Transfusion Services; and SR in turn trained more than 500 doctors and lab technicians on Quality Assurance guidelines.

74. **Challenges** in implementation comprised:

- Training of blood bank staff was delayed that led to delays in implementing the planned activities.
- Staff turnover of SR resulting in some capacity constraints.
- Lack of country specific written guidelines for PR and SR on grant execution.
- The QA guidelines failed to cover important topics like blood bank waste management and its disposal, infection control measures, and monitoring and record keeping
- SOPs for blood screening and quality assurance were not available in most of the blood banks.

75. *Assessment of technical skills of PR and SR in supervision and monitoring the implementation of blood safety component of Round-2 project.* The PR didn't develop 'Monitoring and Evaluation Framework' specific to the grant. However, National M & E Framework developed by the NACP was taken as a standard document for guiding the process. The SR followed the monitoring plan and timely reported to the PR. The following are the key findings:

- Detailed monitoring plan for all activities identified under the approved work plan was developed through a consultative process with the SR (copies available with both PR and SR along with report of the consultative workshop).
- A detailed quarterly activity plan was developed by the SR ensuring timely implementation of the activities defined under each sub-objective and agreed with the PR.
- Quarterly monitoring visits were organized to the SR by the PR to gauge progress as per targets including some site visits and spot checks.
- Quarterly report submission by the SR on agreed format.
- Selective visits to the blood banks by the PR

76. **Challenges,** as identified by the study tem, in implementation comprised:

- Structured training of blood bank staff on monitoring and supervision was not carried out by the SR.
- Monitoring of blood banks by the SR was sporadic and not done as a routine.
- Lack of follow-up of the activities of the blood banks by the SR on routine basis.
- Training of blood bank staff on monitoring and record keeping was not done by the SR resulting in inadequate record keeping at blood banks level.
- Staff turnover in the beneficiary blood banks in the absence of refresher training created challenges for maintaining the quality.

77. *Assessment of criteria developed and applied in the selection of beneficiary blood banks under the project.* As per the project document, the NGO run blood banks identified in the National Survey, 2005 were eligible for receiving the screening kits for HIV, and hepatitis B & C. Further, the blood banks were selected on the basis of their annual workload, meeting the minimum criteria in terms of QA standards and availability of requisite number of key staff. The kits provided to each blood bank were calculated on the basis of annual workload of the blood banks as identified in the "Pakistan National Blood Banks Survey Report, 2005". The requirement of kits was calculated on the policy that during the first year the number of kits to be provided would be 80% of the total workload and then gradually declining over time. The key findings include:

- The criteria for selection of kits were developed by the PR through a consultative process with key transfusion medicine experts.
- The blood banks were identified in each province as per agreed protocol.
- A Memorandum of Understanding was signed with the participating organizations.
- Criteria for selection of staff for skill development of project blood bank staff was applied in most cases
- The diagnostic kits were not always selected and procured in line with the

types of kits used by the individual blood banks. However, kits were procured in line with the national guidelines.

78. The key **challenges** comprised:

- There was some turnover of the trained staff in the beneficiary blood banks.
- The beneficiary blood banks were not consulted in selecting the diagnostic test kits and blood bags. This led to problems as some of the test kits were not user friendly in the absence of follow-up training.
- Written material in shape of protocols and guidelines on the use of the kits were not made available to the blood banks by the SR.

6. Management of blood bank by the sub-recipient

6.1 Training of blood bank staff by sub-recipient

79. *Staff trained by Sub-recipient.* A total of 37 out of 43 blood banks (86%) confirmed that their staff had been trained in the past on Safe Blood Transfusion techniques by the SR organization. The research associates found six (6) blood banks where technicians not trained by the SR organization were working at the time of visit; their distribution comprised five (5) from NWFP[4] and one from Punjab province. Province/area wise information is given in enclosed table 41.

Table 41: Staff Trained on Safe Blood Transfusion Techniques by SR Organization: Information by No. of Blood Banks

Province/ Area	Trained Technician		Total Blood Bank
	Percent	Number	
AJK	100.0	1	1
Balochistan	100.0	6	6
NWFP	50.0	5	10
Punjab	94.1	16	17
Sindh	100.0	9	9
Total	86.4	37	43

80. *Relationship of training with practical work.* Large majority of trained blood bank staff (89.5%, n=34) considered technical contents of training in line with the practical work and useful in application. There were three odd trained technicians who either didn't respond to the question (2) or voiced about the practicability of the training (1). Province/area wise details are summarized in table 42.

[4] (i) Al-Ibrahimi Welfare Trust, Peshawar; (ii) Bay Bay Welfare Trust, Mardan; (iii) Dua laboratory and Welfare Hospital, Peshawar; (iv) Kuwait Hospital, Peshawar; (v) Yahya Welfare Trust, Haripur; and (vi) Fatima Medical Centre, Faisalabad.

Table 42:Relationship of Training with Practical work: Information by No. of Blood Banks							
Province/ Area	Training was Practical		Training was not Practical		Did not Respond		Total respondent
	Percent	No.	Percent	No.	Percent	No.	
AJK	100.0	1	0.0	0	0.0	0	1
Balochistan	100.0	6	0.0	0	0.0	0	6
NWFP	100.0	5	0.0	0	0.0	0	5
Punjab	87.5	14	0.0	0	12.5	2	16
Sindh	80.0	8	10.0	1	10.0	0	9
Total	89.5	34	2.6	1	7.9	2	37
Respondent from Noor-ul Ain Blood Bank, Chiniot; and Fatmid Foundation, Multan; did not respond ; while respondent from Mohammadi Blood Bank opined that the training was not practical.							

81. *Important and useful part of training*. The blood banks staff trained by the SR organization were given a menu to identify the most important and useful parts of training from their perspective. Majority of participants (57%) considered "Principles and types of screening techniques" as most important and useful topic, followed by "screening of infectious diseases". It may be possible that the responding participants were less knowledgeable in these areas prior to their training by the SR. Summary information by province/area is given in the table 43 below.

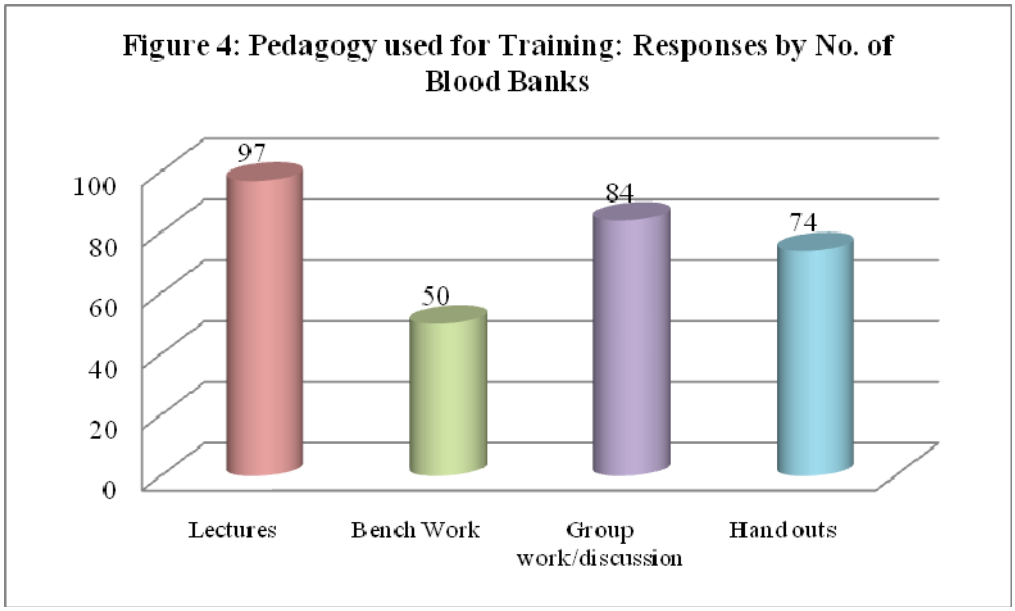
Table 43: Training Topics Identified as Most Important and Useful: Response by No. of Blood Banks												
Training Topics	Provinces/Area										Total Respondent	
	AJK		Bln		NWFP		Punjab		Sindh			
	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Blood transfusion Risks			16.7	1	40.0	2					8.1	3
Pre Transfusion testing							6.3	1	22.2	2	8.1	3
Principles and Types of Screening Techniques	100.0	1	83.3	5	20.0	1	87.5	14			56.8	21
Screening of Infectious Diseases					20.0	1	6.3	1	77.8	7	24.3	9
Others					20.0	1					2.7	1
Total sample	100.0	1	100.0	6	100.0	5	100.0	16	100.0	9	100.0	37

82. *Relevance of training with quality of work*. To a question on usefulness of training to improve the quality of blood bank services, most staff trained by the SR organization (95%) responded in affirmative. Only one respondent considered training as "partially

Table 44: Usefulness of Training to Improve Quality of Work; Responses by No. of Blood Banks							
Province	Useful		Partially Useful		Not Useful		Total Respondent
	%	No.	%	No.	%	No.	
AJK	100.0	1	0.0	0	0.0	0	1
Balochistan	100.0	6	0.0	0	0.0	0	6
NWFP	100.0	5	0.0	0	0.0	0	5
Punjab	100.0	16	0.0	0	0.0	0	16
Sindh	77.8	7	11.1	1	11.1	1	9
Total sample	94.6	35	2.7	1	2.7	1	37

useful" and the one representing Fatmid Foundation rated it "not useful". The latter response may be due to the reason that respondent from Fatmid Foundation might have been well trained by his/her own organization. Province/area wise information appears in the enclosed text table 44.

83. *Training methods*. The training methods used included lectures (97% respondent), group work / discussions (84%), handouts 74% and bench work (50%) as per recall by the respondents. The responses reflect a good mix of training pedagogy except that bench work should have a compulsory part of every training module. Some of the respondents informed having not received "handout and training material[5]. The summary is given in Figure 4 below.



84. *SOPs as part of training material*. Large majority of respondents (92%) confirmed not having received standard operating procedures (SOPs) as part of training material. Only trainees from three blood banks claimed having receiving SOPs and comprised: JPMC Blood Bank, Karachi; Ali Blood Bank Naushero Feroz; and Welfare Hand Blood Services Organization, Peshawar. Interestingly the representatives from latter two blood banks were not using SOPs in the actual setting nor were able to produce any SOP related to blood screening and quality assurance; there could be a lack of understanding of what does the SOP means. When linked with paragraph 65 and table 13 of the study, it becomes clear that the availability and use of SOPs related to blood screening and quality assurance had not been introduced in the sample blood banks, except some individual attempts.

[5] Staff from seven blood banks claimed that they didn't receive training material and handouts: KIDS Blood diseases Organization & Welfare Centre, Mansehra; Fatmid Foundation, Peshawar & Karachi; Mohammadi Blood Bank, Karachi; Ali Blood Bank, Naushero Feroz; Sindh Blood Bank, Badin; & Al-Murtaza Medical Centre Blood Bank.

85. *Trainers' skills*. Respondents from 83% of blood banks rated trainer's skills as good and 14% excellent. Excellent rating was done mostly by the respondents from the blood banks located in NWFP. None of the participating staff rated trainers' skills as poor or inadequate. Province/area wise responses are summarized in the enclosed text table 45.

Table 45: Assessment of Trainer skills: Response From Trained Blood Banks Staff

Province/ Area	Fair		Good		Excellent		Total Respondent
	%	No.	%	No.	%	No.	
AJK	0.0	0	100.0	1	0.0	0	1
Balochistan	0.0	0	80.0	4	20.0	1	5
NWFP	0.0	0	20.0	1	80.0	4	5
Punjab	0.0	0	100.0	16	0.0	0	16
Sindh	11.1	1	88.9	8	0.0	0	9
Total	2.8	1	83.3	30	13.9	5	36

86. *Rating of training conducted by SR*. On overall basis, training courses conducted by SR were rated as 'good by 86% of the trained staff, 8% rated the training course as 'excellent, while two from Sindh province considered it to be of fair quality. In general, trainees after a lapse of 1-2 years and while applying the knowledge so gained in actual field setting have considered the training received from SR organization as 'good or excellent'. Summary information is given in the enclosed table 46.

Table 46. Rating of Training Course: Response from Trained Staff o f Blood Banks

Province/ Area	Excellent		Good		Fair		Total
	%	No.	%	No.	%	No.	
AJK			100.0	1			1
Balochistan	33.3	2	66.7	4			6
NWFP	20.0	1	80.0	4			5
Punjab			100.0	16			16
Sindh		0	77.8	7	22.2	2	9
Total	8.1	3	86.5	32	5.4	2	37

6.1.1 Advocacy meetings and refresher training

87. One of the requisite activities under the project was holding advocacy meetings with local representatives, PACP and the beneficiary blood bank staff after completion of the initial training as part of the refresher training. However, 56% of the blood bank staff mentioned that no advocacy meetings had ever been held. Regular monthly and annual meetings were only held by 16% of blood banks as per details given in table 47.

Table 47: Frequency of Advocacy Meetings: Response by No. of Blood Banks

Province/ Area	AJK		Balochistan		NWFP		Punjab		Sindh		Total Sample	
	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.
Monthly			16.7	1	10.0	1	29.4	5			16.3	7
Quarterly	100.0	1							11.1	1	4.7	2
Six months					10.0	1			22.2	2	7.0	3
Annually			16.7	1	20.0	2	5.9	1	33.3	3	16.3	7
No meeting held			66.7	4	60.0	6	64.7	11	33.3	3	55.8	24
Total	100.0	1	100.0	6	100.0	10	100.0	17	100.0	9	100.0	43

6.2 Provision of test kits to blood banks

88. Blood banks, where staff trained by the sub-recipient was in place (n=37), were invited to confirm if they had received test kits under the GFATM round-2 Project after having been trained. Over 89% of the blood banks (n=33), who had SR trained staff in place, confirmed having receiving the diagnostic test kits. The four blood banks responding in negative were from the province of Sindh. Responses given by the blood banks staff are summarized in the enclosed text table 48.

Table 48: Test Kits Provided under GFATM Funding: Response from Trained Staff, by No. of Blood Banks

Province/ Area	Test Kits Provided		Test Kits not Provided		Total Respondent
	%	No.	%	No.	
AJK	100.0	1			1
Balochistan	100.0	6			6
NWFP	100.0	5			5
Punjab	100.0	16			16
Sindh	55.6	5	44.4	4	9
Total	89.2	33	10.8	4	37

Note: This question was only asked from blood bank who had trained staff in position at the time visit by the research associates.

89. *Quantity of Blood Bags and Test Kits*. A little over 2/3rd respondent blood banks, who received the test kits, were not satisfied with the quantity of supplies given under the project. In fact the respondent blood banks had an understanding of supply of test kits over a longer period of time. Province/area wise response from the blood banks is summarized in enclosed text table 49.

Table 49: Satisfied with the Quantity of Blood Bags and Test Kits provided: Response from Trained Staff, by No. of Blood Banks

Province/ Area	Satisfied		Total Respondent
	Percent	Number	
AJk	0.0	0	1
Balochistan	33.3	2	6
NWFP	80.0	4	5
Punjab	37.6	6	16
Sindh	0.0	0	5
Total	36.4	12	33

90. *Quality of test kits*. A large majority of blood banks (85%) who confirmed having received test kits for screening of blood and blood products for HIV, HBV and HCV were satisfied with the quality of supplies. However, some reservations were shown by the blood banks from the Sindh province. Province/ area wise responses from the blood bank staff are summarized in the enclosed text table 50.

Table 50: Satisfied with the Quality of Blood Bags and Test Kits provided: Response from Trained Staff, by No. of Blood Banks

Province/ Area	Satisfied		Total Respondent Blood Bank
	Percent	Number	
AJk	100.0	1	1
Balochistan	100.0	6	6
NWFP	100.0	5	5
Punjab	100.0	16	16
Sindh	0.0	0	5
Total	84.5	28	33

6.3 Monitoring and evaluation of beneficiary blood banks

91. *Quality assurance system*. It appears that PR and/or SR had not introduced post training or post supply of test kits the system of regular monitoring the screening of blood donors by the beneficiary blood banks or of the concepts provided under the training. A little over ¼th blood banks (27%) had introduced quality assurance system after being trained by the Sub Recipient. No specific reasons were cited by the blood bank failing to introduce the QA system. Province/area wise summary information is given in table 51.

Table 51:Introduction of Quality Assurance System After Training: Response from Trained Persons, by No. of Blood Banks

Province/ Area	Yes		Total Respondent Blood Bank
	Percent	Number	
AJK	0.0	0	1
Balochistan	16.7	1	6
NWFP	10.0	1	5
Punjab	37.3	6	16
Sindh	22.2	2	9
Total	27.0	10	37

92. *Monitoring reports*. To a question on the requirement to send post-training periods consolidated reports on the reporting format to the SR during the project life, only 42% blood banks (n=18) responded positively, mostly from the provinces of Sindh and NWFP. This shows the lack of clarity among the trained staff to regularly forward consolidated reports on the status of screening of blood donors to SR. Province wise information from the blood banks, who confirmed the requirement of sending a consolidated report, is summarized in the text table 52.

Table 52: Requirement to Send Consolidated Report to SR: Response by No. of Blood Banks

Province/ Area	Yes		Total Respondent blood Bank
	Percent	Number	
AJK	0.0	0.0	1
Balochistan	16.7	1	6
NWFP	20.0	2	10
Punjab	52.9	9	17
Sindh	66.7	6	9
Total	41.9	18	43

93. *Quality of reports*. Whereas 42% blood banks (n=18) acknowledged that they were required to send consolidated report on reporting format to SR, on record review only 34% (n=15) had actually prepared the report. Upon checking, the quality of 12 out of 15 reports was found satisfactory. Province wise information is given in table 53 below.

Table 53: Quality of Consolidated Report: Review by Field Researchers Based on Availability of Reports

Province/ Area	Satisfactory		Un Satisfactory		Report Not Provided		Total Blood Banks Surveyed
	%	No.	%	No.	%	No.	
AJK	0.0	0.0	0.0	0	100.0	1	1
Balochistan	0.0	0.0	16.7	1	83.3	5	6
NWFP	0.0	0.0	0.0	0.0	100.0	10	10
Punjab	50.0	9	0.0	0.0	50.0	9	17
Sindh	33.3	3	22.2	2	44.5	4	9
Total	27.3	12	6.8	3	65.9	29	43

94. *Maintenance of service record*. Among the sample blood banks, 88% (n=38) claimed that they were maintaining regular record of screening services and donations. Lack of maintenance of record was mostly observed in blood banks from NWFP. Province wise information is given in the table 54.

Table 54: Maintenance of Record of Services and Donation: Response by No. of Blood Banks

Province/ Area	Yes		No		Total Sample
	%	No.	%	No.	
AJK	100.0	1	0.0	0	1
Balochistan	83.3	5	16.7	1	6
NWFP	70.0	7	30.0	3	10
Punjab	94.1	16	5.9	1	17
Sindh	100.0	9	0.0	0	9
Total	88.4	38	11.6	5	43

95. *Impact of training on internal monitoring system*. Of the 43 blood banks, 55% respondents (n=23) claimed that their internal monitoring system has benefited from the training conducted by the SR, more so in the blood banks from the province of Sindh and Punjab. One blood bank respondent from the Punjab province was not sure about the benefit and didn't respond. Remaining 45% blood banks observed no change in their overall internal monitoring system after the training. Province wise information is summarized in table 55.

Table 55: Did your Own Monitoring System Benefit from Training: Response by No. of Blood Banks

Province/ Area	Yes		No		Total Sample
	%	No.	%	No.	
AJK			100.0	1	1
Balochistan	33.3	2	66.7	4	6
NWFP	40.0	4	60.0	6	10
Punjab	62.5	10	37.5	6	16
Sindh	77.8	7	22.2	2	9
Total	54.8	23	45.2	19	42

7. Conclusions: Overall quality of blood bank services

96. *Blood banks survey*. The overall survey of blood bank services, besides general information, covered six important parameters (labelled as areas) namely: (i) area 1 - availability of seven operating procedures on HIV/HVB/HCV testing and quality assurance (section **B to H** of the questionnaire), (ii) area 2 - implementation of written or unwritten operating procedures on HIV/HBV/HCV testing and quality assurance (section **B to H** of the questionnaire), (iii) area 3- implementation of universal precaution (section **I** of the questionnaire), (iv) area 4 - blood bank waste management standards (section **J** of the questionnaire), (v) area 5 - screening status of donated blood for HIV, HBV and HCV (section K of the questionnaire), , and (vi) area 6 -availability of glassware, equipment, reagents and supplies for HIV, HBV and HCV testing of blood donations (section **L** of the questionnaire). Each areas carried 100 score except 50 score for the waste management standards. The aggregate score of these six areas has been used for determining the overall quality of blood bank services for HIV, HBV and HCV testing of blood donations and of the donors. The overall services have been graded on a scale of 1 -4: highly unsatisfactory with a score of <40%, unsatisfactory with 40 – <50% score, satisfactory with 50% to 70% score, and highly satisfactory with >70% score.

97. ***From a sample of 43 GFATM funded non-profit private sector blood banks, the overall quality of services was found: (i) highly satisfactory in only four blood banks – 9.3% (one from Punjab province and three in Sindh province)***; **(ii)** ***satisfactory in 29 blood banks (67.4%)***; (iii) unsatisfactory in four blood banks (9.3%) – two each from

NWFP and Sindh province; and (iv) highly unsatisfactory in the remaining six blood banks (13.9%) – four situated in NWFP and one each in the provinces of Punjab and Sindh. Further, two blood banks (4.7%) rated as satisfactory (one each from NWFP and Balochistan province) were just at the borderline of satisfactory score of 50-52% and can be included under low performing banks. The overall performance of majority of private sector blood banks located in the provinces of Punjab and Sindh has either been rated as highly satisfactory or satisfactory. Although there is absence of a baseline for comparison, but the overall output of services by 72% of GFATM funded blood banks was considered acceptable.

98. The overall quality of services is summarized in the enclosed text table 56 while more details are given at annex 1.

Table 56: Rating of Blood Banks Based on Overall Performance

Province/ Area	Highly satisfactory Performance (Score > 70)		Satisfactory Performance (Score 50-70)		Unsatisfactory Performance (Score 40-<50)[6]		Highly unsatisfactory Performance (Score < 40)[7]		Total Sample
	Percent	No.	Percent	No.	Percent	No.	Percent	No.	
Punjab	5.9	1	88.2	15	0.0	0	5.9	1	17
Sindh	33.3	3	33.3	3	22.2	2	11.1	1	9
NWFP			40.0	4	20.0	2	40.0	4	10
Balochistan			100.0	6					6
AJK			100.0	1					1
Total (% and No.)	9.3	4	67.4	29	9.3	4	13.9	6	43

99. As seen from the text table 57 given below, two service areas had serious weakness in all the blood banks i.e. availability and use of SOPs for screening of blood and blood products against blood borne infections, area 1 – aggregate with score of 4.3%; and safe disposal of hazardous and infectious blood bank wastes, area 4 – with aggregate score of 10.7%. In three areas (adequate implementation of blood screening and quality assurance standards – area 2; screening of donors for HIV, HBV and HCV – area 5; and availability of essential blood bank supplies – area 6) province/area wise score of blood banks was quite high in the range of 72 - 84% except lower score by the blood banks from NWFP. Implementation status of universal precautions in the blood bank environment (area 3) was observed somewhere in the middle with an average score of 56%. Blood banks in NWFP, on overall basis, obtained a much lower rating (42.9% score).

[6] Blood banks having overall unsatisfactory performance comprised: Ali Blood Bank, Sindh; Murtaza Blood Bank Thalasaemai Centre, Larkana; Welfare Hand blood Services Organization, Peshawar; Dua Lab and Welfare Hospital, Peshawar.

[7] Blood Banks having highly unsatisfactory performance include: Fatima Medical Centre, Faisalabad; Al-Mustafa blood bank, Karachi; Al-Ibrahimi Welfare Centre, Peshawar; Bay Bay Welfare Trust, Mardan; Frontier FoundationWelfare Hospital, Kohat; Yahya Welfare Trust Hospital, Haripur.

Table 57: Quality of Services Provided by Sampled Blood Bank, Based on Composite Scoring Index - Score by Region							
Province/ Area	**Scores obtained for each Assessed Area in Percent**						**Average Score in Percent**
	Area 1	**Area 2**	**Area 3**	**Area 4**	**Area 5**	**Area 6**	
Punjab	0.0	78.7	62.4	9.8	94.1	81.0	59.3
Sindh	19.0	74.4	54.0	17.9	88.9	81.5	61.0
NWFP	1.4	57.1	51.1	6.7	50.0	69.5	42.9
Balochistan	0.0	75.4	49.4	9.3	100.0	74.6	56.1
AJK	0.0	79.2	53.6	11.1	100.0	71.4	57.3
Average score in percent	4.3	72.3	56.0	10.7	83.7	77.3	55.3

100. *PR-SR working relationship***.** Overall working relationships between PR and SR were smooth and based on mutual trust. According to the SR, it had capacity problems during early part of Phase I of the project, which with induction of the new staff were addressed. The overall response time from the PR was prompt and generally answered SR on telephone within 24 hours followed by a letter. The transfer of funds to SR was timely, but linked with timely submission of the reports and adherence to the approved work plan. The SR cited the PR staff as well trained having problem solving attitude. The PR and SR worked with the mandate of being a facilitative body rather than implementer. Both PR and SR had good understanding of GFATM rules and procedures.

101. In terms of implementation challenges, staff turnover in the beneficiary blood banks created some capacity gaps. Training of blood bank staff was delayed that led to delays in implementing the planned activities. Further, certain topics were not properly addressed in the training curricula like SOPs on screening of blood and blood products, quality assurance system, blood bank waste management and monitoring & records maintenance; and the related gaps clearly came out in the study findings. Some of test kits procured were also not user friendly.

102. *Training of blood bank staff.* Large majority of trained blood bank staff (about 90%) considered technical contents of the training in line with the practical work, useful in application and for improving the quality of services. There was a good mix of training pedagogy except that bench work should have been compulsory part of all training modules. The trainers' skills were rated as good or excellent by the trained staff. In general, trainees after a lapse of 1-2 years and while applying the knowledge so gained in actual field setting have considered the training received from SR organization as 'good or excellent'. However, large majority of respondents confirmed not having received SOPs (as part of training material) and refresher training/advocacy meetings. When linked with review of blood bank services, the availability and use of SOPs related to blood screening and quality assurance had not been introduced in the sample blood banks, except some individual attempts.

103. *Provision of test kits to blood banks*. . Over 89% of the blood banks, who had SR trained staff in place, confirmed having received the diagnostic test kits. However, a little over 2/3rd beneficiary blood banks were not satisfied with the quantity of supplies and expected supply of test kits over a longer period of time. With respect to quality, a large majority of beneficiary blood banks (85%) were satisfied with the quality of diagnostic test kits for HIV, HBV and HCV.

104. *Monitoring and evaluation of beneficiary blood banks*. Majority of blood banks (88%, n=38) claimed that they were maintaining record of screening services and donations. There was lack of clarity among the trained staff to regularly forward consolidated reports on the status of screening of blood donors to the SR. On record review, only 34% blood banks (n=15) had actually prepared the report. Upon checking, the quality of 12 out of 15 reports was found satisfactory. Of the 43 blood banks, 55% respondents (n=23) claimed that their internal monitoring system has benefited from the training conducted by the SR.

Quality of Services Provided by the Sampled Blood Banks Based on Composite Scoring Index

S. No	Name of Private Blood Banks	Scores obtained for each Assessed Area in Percent						Average score
		1	2	3	4	5	6	
1	Pakistan Red Crescent Society Punjab Provincial Branch, Lahore	0.0	99.0	78.6	16.7	100.0	90.5	69.9
2	Minhaj-ul-Quran Blood Bank, Lahore	0.0	79.2	53.6	5.6	100.0	61.9	54.6
3	Allah Hoo Blood Bank & Lab, Lahore	Blood Bank Closed						
4	Ghurki Trust Teaching Hospital, Lahore	0.0	76.0	67.9	11.1	100.0	100.0	64.5
5	Ali Zaib Blood Transfusion Services, Faisalabad	0.0	79.2	67.9	11.1	100.0	85.7	62.5
6	Mian Muhammad Trust Hospital, Faisalabad	0.0	75.0	57.1	5.6	100.0	76.2	57.1
7	National Hospital, Faisalabad	0.0	76.0	67.9	5.6	100.0	100.0	63.5
8	Khadija Mehmood Trust Hospital, Faisalabad	0.0	79.2	57.1	5.6	100.0	61.9	55.2
9	Fatima Medical Centre, 574-B, Faisalabad	0.0	64.6	46.4	5.6	0.0	61.9	32.4
10	Young Blood Donors Association (R), Gujranwala	0.0	75.0	50.0	5.6	100.0	57.1	52.3
11	Noor-ul-Ain Blood Bank, Jhang	0.0	81.3	64.3	11.1	100.0	100.0	64.8
12	M.A Jinnah Foundation, Sialkot	0.0	75.0	60.7	5.6	100.0	52.4	53.4
13	Fatmid Foundation, Multan	0.0	87.5	78.6	38.9	100.0	100.0	73.6
14	Nishter Lab, Near THQ, Multan	0.0	81.3	78.6	11.1	100.0	100.0	67.4
15	Faisal Hospital, Multan	0.0	75.0	57.1	5.6	100.0	71.4	56.2
16	Nancy Fulwood Blood Bank, Sahiwal	0.0	80.2	60.7	11.1	100.0	90.5	62.3
17	Shatac Blood Transfusion Service, Mandi Bahauddin	0.0	79.2	64.3	5.6	100.0	66.7	57.4
18	Umer Clinical Lab., Muzafargarh	Blood Bank Closed						
19	Jan Clinical Lab., Rajanpur	Blood Bank Closed						
20	Kashmir Blood Bank & Welfare Centre, Azad Kashmir	0.0	79.2	53.6	11.1	100.0	71.4	57.3
21	Fatimid Foundation, Karachi	85.7	84.4	67.9	33.3	100.0	100.0	85.7
22	JPMC Blood Bank (PAF), Karachi	42.9	84.4	67.9	27.8	100.0	95.2	76.0
23	Pak Blood Bank, Karachi	42.9	92.7	64.3	27.8	100.0	100.0	77.8
24	Muhammadi Blood Bank, Karachi	0.0	85.4	71.4	27.8	100.0	100.0	69.9
25	Ali Blood Bank, Mehrabpur	0.0	58.3	32.1	5.6	100.0	47.6	44.3
26	Sindh Blood Bank, Badin	0.0	67.7	57.1	5.6	100.0	81.0	56.6
27	Al-Mustafa Blood Bank, Karachi	0.0	64.6	25.0	16.7	0.0	90.5	57.3
28	Murtaza Blood Bank Thalassaemia Centre, Larkana	0.0	57.3	39.3	11.1	100.0	42.9	85.7
29	The Blessing Foundation, Sukkur	0.0	75.0	60.7	5.6	100.0	76.2	76.0
30	Fatimid Foundation, Peshawar	0.0	59.4	64.3	16.7	100.0	71.4	77.8
31	Welfare Hand Blood Services Org, Peshawar	0.0	62.5	60.7	11.1	0.0	90.5	69.9
32	Al-Ibrahimi Welfare, Peshawar	0.0	62.5	46.4	5.6	0.0	76.2	44.3
33	Abbotabad Medical Association, Abbotabad	0.0	71.9	64.3	11.1	100.0	85.7	56.6

S. No	Name of Private Blood Banks	Scores obtained for each Assessed Area in Percent						Average score
		1	2	3	4	5	6	
34	Bay Bay Welfare Trust, Mardan	0.0	50.0	28.6	5.6	0.0	23.8	57.3
35	Duaa Lab and Welfare Hospital, Peshawar	0.0	53.1	39.3	0.0	100.0	61.9	85.7
36	Frontier Foundation Welfare Hospital, Kohat	0.0	53.1	67.9	0.0	0.0	57.1	76.0
37	KBDO Hospital, Manshera	0.0	55.2	42.9	5.6	100.0	71.4	77.8
38	Kuwait Hospital, Jamrud Road	14.3	53.1	64.3	5.6	100.0	76.2	69.9
39	Thalassaemia Blood Transfusion Centre, Bannu	Blood Bank Closed						
40	Yahya Welfare Trust Hospital, Haripur	0.0	50.0	32.1	5.6	0.0	81.0	30.7
41	Pashtoon Khwa Blood Bank, Quetta	0.0	75.0	46.4	5.6	100.0	85.7	56.9
42	Al-Sadat Diagnostic Lab, Chagai	0.0	77.6	39.3	11.1	100.0	57.1	51.8
43	Baloch Hospital, Turbat	Blood Bank services Closed						
44	Children Hospital, Quetta	0.0	75.0	71.4	11.1	100.0	100.0	65.0
45	New Guil Lab and Blood Bank, Quetta	0.0	75.0	53.6	5.6	100.0	71.4	55.6
46	Arif Lab & Blood Bank, Loralai	0.0	75.0	39.3	11.1	100.0	61.9	52.2
47	Sabir Lab and Blood Bank, Zhob	0.0	75.0	46.4	11.1	100.0	71.4	55.3
48	Al Raee hospital and Blood Bank, Gujranwala	0.0	75.0	50.0	5.6	100.0	100.0	60.1
	Average score	4.3	72.3	56.0	10.7	83.7	77.3	55.3

Area	Description of Area	Maximum Score
Area 1	Section B to H of the Questionnaire: proportion of blood bank implementing standard protocols on quality assurance	100
Area 2	Section B to H of the Questionnaire: number of blood banks whose staff is adequately or inadequately implementing QA standards	100
Area 3	Section I of the Questionnaire: proportion of blood banks implementing universal precautions	100
Area 4	Section J of the Questionnaire: proportion of blood banks undertaking safe disposal of hazardous and infectious wastes of blood banks	50
Area 5	Section K of the Questionnaire: percent blood bags/donors screened for HIV/HBV/HCV	100
Area 6	Section L of the Questionnaire: availability of essential blood bank supplies for HIV, HBV and HCV testing of blood donations	100

END PROJECT EVALUATION OF PRIVATE BLOOD BANK SERVICES UNDER GLOBAL FUND FINANCING

Research Tool

(Blood Banks Services)

S.no	Description	Codes
01	Province: 1. AJK, 2. Balochistan, 3. NWFP/FATA 4. Punjab, 5. Sindh	
02.	District/Agency/Tehsil: _____	
03.	Name of NGO/Institution/Hospital/Blood bank: _____	
05.	Name of Respondent: _____	
06.	Designation: _____	
07.	Name of Researcher: _____	
08.	Date of Interview: _____	

***SoSec* Consulting Services**
Pakistan – UK

A. General Information of Blood Bank

No.	QUESTIONS		SKIP TO
A01	What are the activities of your blood bank?	Yes / No	
	Donation	1 / 2	
	Screening	1 / 2	
	Component preparation	1 / 2	
	Blood grouping and cro ss matching	1 / 2	
	Therapeutic transfusion	1 / 2	
A02	Number of shifts the blood bank operates:		
	One shift	1	
	Two shifts	2	
	Three shifts	3	
A03	Number of staff in each shift:		

Type of staff	Number of each shift		
	Morning	Afternoon	Night
Doctor – Specialist			
Doctor – Resident			
Doctor – General duty			
Technicians			
Nurses			

A04	Do you have training program for the staff (including HIV, HBs Ag, HCV)?		
	Yes	1	
	No	2 →	A06
A05	Where?	Yes / No	
	In the blood bank	1 / 2	
	Outside the blood bank (Specify) _____	1 / 2	
A06	How do you screen blood samples (prompt for multiple option)?		

Options	HIV		HBs Ag		HCV	
	Yes	No	Yes	No	Yes	No
Testing individual samples	1	2	1	2	1	2
Pooling of several samples	1	2	1	2	1	2
Send sample tubes to other lab for screening	1	2	1	2	1	2
Issue blood without testing	1	2	1	2	1	2
Others (specify)	1	2	1	2	1	2

A07	What do you do in case of initially reactive test results?		

Options	HIV		HBs Ag		HCV	
	Yes	No	Yes	No	Yes	No
Repeat the test	1	2	1	2	1	2
Result accepted	1	2	1	2	1	2

A08	Do you maintain record of discard blood units?		
	Yes	1	
	No	2	
	If Yes, please review the record and comment?		
	_____		
	_____		
A09	Do you routinely notify donors of positive screening results for HIV, HBs Ag, HCV?	Yes / No	
	HIV	1 / 2	
	HBs Ag	1 / 2	
	HCV	1 / 2	
A10	Do you report HIV positive or reactive results to:	Yes / No	
	NACP/PR	1 / 2	
	SR	1 / 2	
	Others (specify) _____	1 / 2	

B. Standard Operating Procedure (SOP) for Anti-HIV Testing in the Blood Bank

No.	AREAS TO BE REVIEWED		
B01	**Does blood bank have SOP for Anti-HIV testing?** Yes	1	
	No	2 →	B03
B02	**If testing SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
B03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):**		
	a. Scope and application: Anti-HIV antibodies testing should be carried out on all blood bags before release for transfusion. Pre-donation samples of pheresis donors are also tested. Adequate	1	
	Inadequate	2	
	b. Responsibility: It is the responsibility of TTI (transfusion transmissible infections) lab. technician to carry out test & report. Adequate	1	
	Inadequate	2	
	c. Reference: Should relate to (i) kit package insert and (ii) a reference manual (e.g. Technical Manual of American Association of Blood Banks, 13th Edition, 1999). Adequate	1	
	Inadequate	2	
	d. Materials required: *Reagent kit, Micropipettes & disposal pipette tips, Timer ,EIA Reader and Washer, Incubator 37C, Vortex Mixer, Glassware and Distilled water* Adequate	1	
	Inadequate	2	
	e. Procedures covering i) principle, ii) method, iii) validation & iv)interpretation: Adequate	1	
	Inadequate	2	
	f. Documentation: Entered in HIV register with date, name of kit, Lot No. & expiry date of kit, reactive unit marked in red, and signature of tech. & supervisor. Adequate	1	
	Inadequate	2	
	g. Staff Orientation: e.g. who did orientation and when and where (Specify)?..... ..... Adequate	1	
	Inadequate	2	

Note 1: If blood bank does not have an SOP for Anti-HIV Testing, Please fill-in relevant columns of question 3 based on inquiry.

C. Standard Operating Procedure (SOP) for HBsAG Testing in the Blood Bank

No.	AREAS TO BE REVIEWED		
C01	**Does blood bank have SOP for HBsAG testing?** Yes ..... No	 1 2 →	 C03
C02	**If HBsAG testing SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
C03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):**		
	a. Scope and application: Anti-HBV antibodies testing should be carried out on all blood bags before release for transfusion. Pre-donation samples of pheresis donors are also tested. Adequate..... Inadequate.....	 1 2	
	b. Responsibility: It is the responsibility of TTI (transfusion transmissible infections) lab. technician to carry out test & report. Adequate..... Inadequate.....	 1 2	
	c. Reference: Should relate to (i) kit package insert and (ii) a reference manual (e.g. Technical Manual of American Association of Blood Banks, 13th Edition, 1999). Adequate..... Inadequate.....	 1 2	
	d. Materials required: *Reagent kit, Micropipettes & disposal pipette tips, Timer ,EIA Reader and Washer, Incubator 37C, Vortex Mixer, Glassware and Distilled water* Adequate..... Inadequate.....	 1 2	
	e. Procedures covering i) principle, ii) method, iii) validation & iv)interpretation: Adequate..... Inadequate.....	 1 2	
	f. Documentation: Entered in register with date, name of kit, Lot No. & expiry date of kit, reactive unit marked in red, and signature of tech. & supervisor. Adequate..... Inadequate.....	 1 2	
	g. Staff Orientation: e.g. who did orientation and when and where (Specify)?..... Adequate..... Inadequate.....	 1 2	

Note 1: If blood bank does not have an SOP for HBsAG Testing, Please fill-in relevant columns of question 3 based on inquiry.

D. Standard Operating Procedure (SOP) for Anti HCV Testing in the Blood Bank

No.	AREAS TO BE REVIEWED		
D01	**Does blood bank have SOP for Anti HCV testing?** Yes	1	
	No.....	2 →	D03
D02	**If anti-HCV testing SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
D03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):**		
	a. Scope and application: Anti-HCV antibodies testing should be carried out on all blood bags before release for transfusion. Pre-donation samples of pheresis donors are also tested.		
	Adequate	1	
	Inadequate	2	
	b. Responsibility: It is the responsibility of TTI (transfusion transmissible infections) lab. technician to carry out test & report.		
	Adequate	1	
	Inadequate	2	
	c. Reference: Should relate to (i) kit package insert and (ii) a reference manual (e.g. Technical Manual of American Association of Blood Banks, 13th Edition, 1999).		
	Adequate	1	
	Inadequate	2	
	d. Materials required: *Reagent kit, Micropipettes & disposal pipette tips, Timer ,EIA Reader and Washer, Incubator 37C, Vortex Mixer, Glassware and Distilled water*		
	Adequate	1	
	Inadequate	2	
	e. Procedures covering i) principle, ii) method, iii) validation & iv)interpretation:		
	Adequate	1	
	Inadequate	2	
	f. Documentation: Entered in HIV register with date, name of kit, Lot No. & expiry date of kit, reactive unit marked in red, and signature of tech. & supervisor.		
	Adequate	1	
	Inadequate	2	
	g. Staff Orientation: e.g. who did orientation and when and where (Specify)?.....		
	Adequate	1	
	Inadequate	2	

Note 1: If blood bank does not have an SOP for Anti-HCV Testing, Please fill-in relevant columns of question 3 based on inquiry.

E. SOP for Optimum Storage of Kits, Reagents & Consumables in Blood Bank

No.	AREAS TO BE REVIEWED		
E01	**Does blood bank has SOP for optimum storage of test kits, reagents and consumables?** Yes ..... 1 No ..... 2 →		E03
E02	**If SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
E03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):**		
	a. Scope and application: All reagents used for various tests are stored according to the manufacturer's instructions as lapses in storage conditions reduce the effectivity of the reagents. Adequate..... 1 Inadequate..... 2		
	b. Responsibility: It is the responsibility of all staff members of different labs. to store all reagents and kits as per manufacturer's instructions. Adequate..... 1 Inadequate..... 2		
	c. Reference: See if reference is available e.g. Reagent Manufacturer's instructions, Indian Pharmacopoeia, Volume II, Annex 29 (A-29), 1996 Adequate..... 1 Inadequate..... 2		
	d. Materials required: e.g. domestic refrigerator, blood bank refrigerator, deep freezer, stock register or stock cards, generator Adequate..... 1 Inadequate..... 2		
	e. Procedures covering donor area and TTI laboratory: e.g. (i) donor room – store disinfectants for preparation of phlebotomy sites, blood collection bags and apheresis sets at room temperature, preferably 22 – 25C. Adequate..... 1 Inadequate..... 2		
	f. Documentation: e.g. stock register which shows entries of vials/kits received, name of manufacturer, batch number and expiry date, and issues from the stock register with date of issue. Adequate..... 1 Inadequate..... 2		
	g. Staff Orientation: e.g. who did orientation and when and where (Specify)? ..... Adequate..... 1 Inadequate..... 2		

*Note 1:**If the blood bank does not have an SOP for Optimum Storage of Kits, Please fill-in relevant columns of question 3 based on inquiry.***

F. SOP for Preventive Maintenance of Equipment in Blood Bank

No.	AREAS TO BE REVIEWED		
F01	**Does blood bank have SOP for preventive maintenance contracts and schedules?** Yes ..... No	 1 2 →	 F03
F02	**If SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
F03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):** **a. Scope and application:** This applies to all equipment and instruments used in the blood bank Adequate..... Inadequate.....	 1 2	
	b. Responsibility: It is the responsibility of the supervisor to prepare maintenance schedule of all equipment covering preventive maintenance, routine maintenance, extra maintenance, and cleaning & sanitation. All these requirements form part of the service contract. So look for maintenance schedules and service contract (if contractual arrangements have been made). Adequate..... Inadequate.....	 1 2	
	c. Reference: e.g. Technical Manual of American Association of Blood Banks, 13th Edition, 1999 (page 5); Quality Manual, International Federation of Red Cross and Red Crescent Societies, 1998, page 23-24; Gazette of India Extraordinary Notification GSR.245 (E), April 5, 1999, New Delhi Sec. (ii), page 40 Adequate..... Inadequate.....	 1 2	
	d. Procedures will relate to maintenance overview, maintenance schedules, service contracts, breakdown and repair and maintenance overdue. Adequate..... Inadequate.....	 1 2	
	e. Documentation: Maintenance of logbook of each equipment with entries of manufacturer's instructions, routine maintenance, trouble-shooting service calls, address of maintenance engineer and detail of repairs undertaken. Adequate..... Inadequate.....	 1 2	
	g. Staff Orientation: e.g. who did orientation and when (Specify)e.g. service engineer of contract firm?..... .... Adequate..... Inadequate.....	 1 2	

Note 1: ***If the blood bank does not have an SOP for Preventive maintenance of Equipment, Please fill the relevant columns of question 3 based on inquiry.***

G. SOP for Calibration of Equipment in Blood Bank

No.	AREAS TO BE REVIEWED		
G01	**Does blood bank have SOP for calibration of equipment?** Yes ..... 1 No ..... 2 →		G03
G02	**If SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SOP, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
G03	**Check technical contents of the SOP for the following areas in terms of adequacy or inadequacy (Consult reference protocol as a standard):**		
	a. Scope and application: Covers measures taken to ensure integrity, accuracy and reliability of measurement data for equipment and instruments used in the collection and storage of blood products. Adequate ..... 1 Inadequate 2		
	b. Responsibility: Responsibility of supervisor to (i) plan, organize, schedule and maintain calibration records of various equipment, (ii) ensure that equipment and instruments are continuously calibrated and (iii) train staff for performing calibration/performance checks Adequate ..... 1 Inadequate 2		
	c. Reference: Blood Program Quality Manual IFRRCS page 23. Adequate ..... 1 Inadequate 2		
	d. Definitions related to calibration, performance checks, accuracy, precision and measurement standard Adequate ..... 1 Inadequate 2		
	e. Procedures related to calibration schedules, reference standards and traceability, calibration limits, calibration and performance check procedures, and labelling Adequate ..... 1 Inadequate 2		
	f. Documentation related to maintenance of complete records for calibration and performance checks of all equipment and instruments Adequate ..... 1 Inadequate 2		
	g. Corrective action: i.e. conducting review if any measuring device is found to be out of calibration and requires adjustment, including corrective action. .... Adequate ..... 1 Inadequate 2		
	h. Relocation of instruments i.e. recalibration of equipment when relocated, especially non-portable. Adequate ..... 1 Inadequate 2		
	i. Staff Orientation: e.g. who did orientation and when and where (Specify)? Adequate ..... 1 Inadequate 2		

*Note 1:**If blood bank does not have an SOP for Calibration of Equipment, Please fill the relevant columns of question 3 based on inquiry.***

H. SOP for Incident Report in Blood Banks

No.	QUESTIONS		
H01	**Does blood bank have SOP for incident report?** Yes..... No.....	 1 2 →	 H03
H02	**If SOP is in use, look for the following information and check the relevant area**		
	01. Location of SOP in the blood bank (specify)	05. Distribution of SOP	
	02. Unique number of SO P, if any	06. Version of SOP (Number)	
	03. Date of effectiveness of SOP	07. Number of pages	
	04. Name and signature of author	08. Name & signature of person approving SOP	
	9. Name and signature of person who has authorized the use of SOP		
H03	**Check technical contents of the SOP for the following areas and comment on their adequacy or otherwise (Consult reference protocol as a standard):**		
	a. Scope and application: The procedure covers all incidents that would affect quality of blood products and services including adverse reactions. Adequate..... Inadequate.....	 1 2	
	b. Responsibility: Responsibility of all technical staff to report any incident or accident to the supervisor who will submit report in writing to the QA supervisor or designated person. The QA supervisor will review the report and implement remedial measures, if any. Adequate..... Inadequate.....	 1 2	
	c. Reference: e.g. Technical Manual of American Association of Blood Banks, 13th Edition, 1999 (pages 3, 14,15) Adequate..... Inadequate.....	 1 2	
	d. Definitions: e.g. definition of incident/s, incident reporting format, corrective actions, preventive actions. Adequate..... Inadequate.....	 1 2	
	e. Procedures e.g. a flow chart of incident reporting process displayed in each section of the laboratory in a blood bank. Adequate..... Inadequate.....	 1 2	
	e. Documentation: Record of all incidents on reporting format and detail of action/s taken. Adequate..... Inadequate.....	 1 2	
	g. Staff Orientation: e.g. who did orientation and when and where (Specify)?..... Adequate..... Inadequate.....	 1 2	

Note 1: ***If the blood bank does not have an SOP for Incident report, Please fill the relevant columns of question 3 based on inquiry.***

I. Blood Banks Implementing Universal Precautions

No.	QUESTIONS		
I01	Have Blood bank technician/s and blood bank officer been trained in the epidemiology, modes of transmission, and prevention of HIV and other blood-borne infections under GFATM Funding.		
	Yes (Give date)	1	
	No	2	
I02	Have Blood Bank technicians and blood bank officer been trained in routine use of universal blood and body-fluid precautions under GFATM Funding?		
	Yes (Give date)	1	
	Number Blood Bank Technician trained.....	2	
	Number Blood Bank Officers trained.....	3	
	No	4	
I03	Observe if any of the blood bank staff has exudative lesion or weeping dermatitis on hands and forearms?		
	Yes	1	
	No	2	
I04	Observe whether blood bank technician/s and blood bank officer are wearing apron?		
	Yes (all)	1	
	Yes (some)	2	
	No	3	
I05	Observe whether blood bank technician/s and blood bank officer working with blood donors are wearing gloves?		
	Yes	1	
	No	2	
	Not working in the blood donor at the time of visit	3	
I06	Enquire from blood bank technician when s/he washes hands?		
	Every time after the removal of gloves	1	
	Whenever, s/he feels necessary or convenient	2	
I07	When do you clean the space on the working table?		
	Don't clean	1	
	When it is spoiled with blood and blood products	2	
	Every Day in the morning.....	3	
	Other (specify) _____	4	
I08	Do you have any disinfectant?		
	Yes	1	
	No	2 →	I10
	Name the disinfectant: _____		
I09	Under what circumstances you use disinfectant?	Yes / No	
	For cleaning working place	1 / 2	
	For disinfecting discarded blood and blood products before disposal	1 / 2	
	Others (specify)_____	1 / 2	
I 10	Does staffs reuse lancets for more than one donor?		
	Yes	1	
	No	2	

No.	QUESTIONS		
I 11	Is vein puncture site disinfected? Yes ..... No	 1 2 →	 I13
I 12	What the staff use for disinfection 70 % alcohol..... Betadine..... Others (Specify) _____.....	 1 2	
I 13	Do staffs recap needles after the donation procedure? Yes ..... No	 1 2	
I 14	Is any record maintained on occupational exposures (e.g. needle stick or sharp injury)? See record, if yes. Yes (Based on record) ..... No	 1 2	
I15	Is there a written policy/SOP for post exposure procedure? Yes ..... No	 1 2	
I16	Do your have written guidelines/SOP on safety and infection control in the blood bank? Yes ..... No ..... If yes, please check and comment ---------- ----------	 1 2	

J. Assessing Waste Management in Blood Banks

Field researcher to ask these questions from the relevant management staff.

No.	QUESTIONS		
J01	Are containers used for collecting separately the three wastes namely kitchen waste, hazardous waste and infectious waste		
	Yes	1	
	No	2	
J02	Are containers of standardized colours?		
	a. Kitchen/general waste – Black colour bins/bags:		
	Yes	1	
	No	2	
	b. Hazardous waste (needle, syringes, blades, scissors)		
	Yes	1	
	No	2	
	c. Infectious or potentially infectious waste (blood, body fluids, dressings, bandages, etc – put in red bags)		
	Yes	1	
	No	2	
J03	What is done with reactive samples and blood units (could be multiple answers)?	Yes / No	
	Refer specimens for re-confirmation	1 / 2	
	Discard in general waste	1 / 2	
	Autoclave and incinerate at facility level	1 / 2	
	Send to another hospital for incineration	1 / 2	
	Buried	1 / 2	
	Bag opened and emptied in the sink	1 / 2	
	Bag opened and emptied with disinfectant in the sink	1 / 2	
	Other method (specify) _____	1 / 2	
J04	Method of disinfection of hazardous and infectious waste?		
	None	1	
	Disinfection with Sodium Hypo chlorite solution (Bleach)	2	
	Autoclave	3	
	Microwave	4	
J05	Method of disinfection of linen?		
	None	1	
	Hypochlorite solution (Bleach	2	
	Others (Specify) _____	3	
J06	Method of final disposal of waste:		
	Municipal waste	1	
	Landfill	2	
	Incineration	3	
	Others (Specify) _____	4	
J07	Ask if SOP is available for waste management and its disposal?		
	Yes	1	
	No	2	
	If yes, get a copy and comment linking it with above points ---------- ---------- ---------- ---------		
J08	Have Blood Bank staff been trained in waste management?		
	Yes	1 _____	
	Number trained _____		
	No	2	

K-A: Stock Position of HIV Tests Kits and Blood Bags Screened for HIV in Sample Blood Banks / Laboratories

2007

Month Wise Stock Position								
Month 2007	HIV tests in Stock[8]	HIV tests received from PR/SR	HIV tests purchased[9]		HIV tests consumed	Number of donors bled	*Number of Blood bags/donors screened for HIV	HIV reactive tests
			Donors	Hospital				
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								

Note: Number can be recorded in quarter as well, where there is no monthly record maintained. (Quarter means Jan-Mar is Qtr-1; April-June is Qtr-2, July-Sept is Qtr-3 and Oct-Dec is Qtr-4)

[8] *Please convert HIV test kits into number of HIV tests that can be performed.*
[9] *Includes purchased by the donor.*
** Also includes pre-donation samples of pheresis donor tests.*
Note 1: If a blood bank / laboratory/ hospital is testing for HIV by pooling method, indicate at the bottom of the page.

K-B: Stock Position of HBV Test Kits and Blood Bags Screened for HBV in Sample Blood Banks / Laboratories

2007

Month Wise Stock Position								
Month 2007	HBV tests in Stock[10]	HBV tests received from PR/SR	HBV tests purchased[11]		HBV tests consumed	Number of donors bled	*Number of Blood bags/donors screened for HBV	HBV reactive tests
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								

Note: Number can be recorded in quarter as well, where there is no monthly record maintained. (Quarter means Jan-Mar is Qtr-1; April-June is Qtr-2, July-Sept is Qtr-3 and Oct-Dec is Qtr-4)

[10] *Please convert HIV test kits into number of HIV tests that can be performed.*
[11] *Includes purchased by the donor.*
** Also includes pre-donation samples of pheresis donor tests.*
Note 1: If a blood bank / laboratory/ hospital is testing for HIV by pooling method, indicate at the bottom of the page.

K-C: Stock Position of HCV Test Kits and Blood Bags Screened for HCV in Sample Blood Banks / Laboratories

2007

Month Wise Stock Position								
Month 2007	HIV tests in Stock[12]	HCV tests received from PR/SR	HCV tests purchased[13]		HCV tests consumed	Number of donors bled	*Number of Blood bags/donors screened for HCV	HCV reactive tests
January								
February								
March								
April								
May								
June								
July								
August								
September								
October								
November								
December								

Note: Number can be recorded in quarter as well, where there is no monthly record maintained. (Quarter means Jan-Mar is Qtr-1; April-June is Qtr-2, July-Sept is Qtr-3 and Oct-Dec is Qtr-4)

[12] *Please convert HIV test kits into number of HIV tests that can be performed.*
[13] *Includes purchased by the donor.*
** Also includes pre-donation samples of pheresis donor tests.*
Note 1: If a blood bank / laboratory/ hospital is testing for HIV by pooling method, indicate at the bottom of the page.

L. Blood Bank Supplies: Checklist for HIV, HBV & HCV Testing of Blood Donations

Check availability of all items and tick relevant item

Supplies checklist					
Equipment	**Code**	**Material and Glassware**	**Code**	**Reagent**	**Code**
Elisa Reader		Disposal gloves		Diagnostic test kits	
Elisa Washer		Recording Data sheet		Sodium hypochlorite	
Centrifuge <5000rpm		Disposable syringe		Sulphuric acid	
Water bath 37^{o}C		Syringe and needle cutter		Alcohol	
Incubator		Tissue paper roll			
Health block for micro titre plates		Micropipettes			
Shaker for micro titre plates		Disposable pipette tips			
Timer		Distilled water			
Refrigerator					

Please write the appropriate number in the above accordingly:

1. In use
2. Functional, not in use
3. Out of order
4. Not available

END PROJECT EVALUATION OF PRIVATE BLOOD BANK SERVICES UNDER GLOBAL FUND FINANCING

NGOs/SR Evaluative Form

S.no	Description	Codes
01	Province: 1. AJK, 2. Balochistan, 3. NWFP/FATA 4. Punjab, 5. Sindh	
02.	District: _____	
03.	Name of NGO/Blood bank: _____	
04.	Address and Telephone number: _____ _____	
05.	Name of Interviewee: _____	
06.	Designation/duty type: _____	
07.	Duration of work with this organization _____	
08.	Name of Facilitator: _____	
09.	Date of Interview: _____	

SoSec Consulting Services
Pakistan – UK
2008

sNo.	Description		Skip
A. General Information			
A01	When your organization started working as a part of the Global Fund Blood Bank project? Year: _____		
A02	What types of services are offered by the blood bank? Donation ..... Yes 1 No 2 Screening ..... 1 2 Blood component preparation ..... 1 2 Others _____ ..... 1 2 (Specify)		
A03	What problems were encountered in coordination and partnership with SR/Partner? Communication ..... Yes 1 No 2 Training ..... 1 2 Feedback ..... 1 2 Technical support ..... 1 2 Monitoring ..... 1 2 Others _____ ..... 1 2 (Specify)		
B. Training component			
B01	Were you trained on safe blood transfusion techniques by the SR organization Yes ..... 1 No ..... 2 →		D01
B02	When? Month: _____ ..... Year: _____		
B03	Who trained you and for how many days? Name of trainer: _____ ..... Number of days: _____		
B04	What are the key training components? (i): _____ ..... (ii): _____ ..... (iii): _____		
B05	Was the training practical? Yes ..... 1 No 2		

sNo.	Description		Skip
B06	What was the most important and useful part of the training?		
	Blood transfusion Risks	1	
	Pre Transfusion testing	2	
	Principles and Types of Screening Techniques	3	
	Screening of Infectious Diseases	4	
	Others _____ (Specify)	5	
B07	Do you think that training was useful to improve the quality of your work?		
	Yes	1	
	Partially	2	
	No	3	
B08	What techniques were used in the training for your better understanding and practice?	Yes No	
	Role play	1 2	
	Lectures	1 2	
	Bench work	1 2	
	Group discussions	1 2	
	Hand outs	1 2	
	Others _____ (Specify)	1 2	
B09	Is the staffs trained under the project still working with your organization?		
	Yes	1	
	No	2	
B10	Did you have any knowledge about blood borne disease and infections before this training?		
	Yes	1	
	No	2	
B11	How good the trainer was in responding to your questions and requests during the training period?		
	Poor	0	
	Fair	1	
	Good	2	
	Excellent	3	
B12	Do you think any important part which was missed out during the training?		
	Yes	1	
	No	2	
B13	Specify: _____ _____		

sNo.	Description		Skip
B14	Were you being facilitated with training materials and handouts?		
	Yes	1	
	No	2	
B15	How would you rate the training?		
	Poor	0	
	Fair	1	
	Good	2	
	Excellent	3	
B16	Were the printed copies of SOPs for the blood unit shared with your organization, after the training?		
	Yes	1	
	No	2	
B17	After what time did you start implementing the SOPs in your organization?		
	Days: _____		
	Months: _____		
B18	Have you been called for any refresher workshop after the completion of first training course?		
	Yes	1	
	No	2	
C. Provision of Test Kits and Blood Bags			
C01	Did the project facilitate in provision of test kits?		
	Yes	1	
	Sometimes	2	
	No	3	
C02	Were blood bags or test kits for HIV, HBV, and HCV provided to your organization at the end of the training?		
	Yes	1	
	No	2	
C03	Are you satisfied with the quantity and quality of blood bags and kits provided by the project?		
	Quantity: Yes	1	
	Sometimes	2	
	No	3	
	Quality: Yes	1	
	Sometimes	2	
	No	3	
C04	Were the funds being transferred regularly on time for implementation to your organization?		
	Yes	1	
	Delayed	2	

sNo.	Description		Skip
D. Monitoring and Evaluation			
D01	Was a monitoring system introduced after being trained on QA system in your organization managed by blood banks?		
	Yes	1	
	No	2	
D02	Were the reports sent to SR on monthly, quarterly, six monthly or annual basis?		
	Monthly: Yes	1	
	No	2	
	Quarterly: Yes	1	
	No	2	
	Six monthly: Yes	1	
	No	2	
	Annually: Yes	1	
	No	2	
D03	Were you required to send the consolidated reports on the reporting format to the project office after being trained?		
	Yes	1	
	No	2 →	D05
D04	Get a copy of report and comment how it was prepared?		
	Satisfactory	1	
	Un-satisfactory	2	
D05	Do you maintain regular record of your services and donation?		
	Yes	1	
	No	2	
D06	Did you monitoring system benefit from training?		
	Yes	1	
	No	2	
D07	Do you share the results with donors and any other?		
	Yes	1	
	Yes (Specify Dept) _____	2	
	No	3	
D08	How often the advocacy meetings were held during the project?		
	Monthly	1	
	Quarterly	2	
	Six monthly	3	
	Annually	4	

sNo.	Description		Skip
D09	How many seminars, meetings and community orientation sessions were arranged during the project period? Seminars: _____..... Meetings: _____..... Community orientation sessions _____.....		
D10	Due to the contribution and efforts of the project staff, how did you consider the quality of performance in your blood bank now? Discuss here: _____ _____ _____		

Blood Donors Screening Workload of Blood Banks for HIV: One Quarter of 2007

Name of Blood Bank	Number of donors bled	HIV Tests consumed	No. of blood bags/ donors screened	Reactive tests
01. Pakistan Red Crescent Society Punjab Provincial Branch, Lahore	410	440	440	0
02. Minhaj-ul-Quran Blood Bank, Lahore	105	126	126	0
03. Allah Hoo Blood Bank& Lab, Lahore	Blood Bank Closed			
04. Ghurki Trust Teaching Hospital, Lahore	1660	1751	1751	0
05. Ali Zaib Blood Transfusion Service, Faisalabad	2798	2980	2980	2
06. Mian Muhammad Trust Hospital, Faisalabad	90	100	100	0
07. National Hospital, Faisalabad	687	732	732	0
08. Khadija Mehmood Trust Hospital, Faisalabad	70	75	75	0
09. Fatima Medical Centre, 574-B, Faisalabad	Record partially maintained			
10. Young Blood Donors Association (R), Gujranwala	119	129	129	0
11. Noor-ul-Ain Blood Bank, Jhang	674	740	740	0
12. M.A Jinnah Foundation, Sialkot	112	117	117	0
13. Fatmid Foundation, Multan	2910	3019	3019	0
14. Nishter Lab, Near THQ, Multan	1222	1309	1309	0
15. Faisal Hospital, Multan	149	165	165	0
16. Nancy Fulwood Blood Bank, Sahiwal	298	326	326	0
17. Shatac Blood Transfusion Service, Mandi Bahauddin	239	251	251	0
18. Umer Clinical Lab, Muzafargarh	Blood Bank Closed			
19. Jan Clinical Lab, Rajanpur	Blood Bank Closed			
20. Kashmir Blood Bank & Welfare Centre, Kashmir	296	302	302	0
21. Fatimid Foundation, Karachi	6616	6616	6616	9
22. JPMC Blood Bank (PAF), Karachi	9568	9568	9568	2
23. Pak Blood Bank, Karachi	1320	1320	1320	0
24. Muhammadi Blood Bank, Karachi	3079	3079	3079	0
25. Ali Blood Bank, Mehrabpur	81	81	81	0
26. Sindh Blood Bank, Badin	520	520	520	0
27. Al-Mustafa Blood Bank, Karachi	Record partially maintained			
28. Murtaza Blood Bank Thalassaemia Centre, Larkana	985	985	985	0
29. The Blessing Foundation, Sukkur	2850	2850	2850	0
30. Fatimid Foundation, Peshawar	2787	2787	2787	0
31. Welfare Hand Blood Services Org, Peshawar	Incomplete record			
32. Al-Ibrahimi Welfare, Peshawar	Record not maintained/shown			
33. Abbotabad Medical Association, Abbotabad	353	415	415	0
34. Bay Bay Welfare Trust, Mardan	Record not maintained			
35. Duaa Lab and Welfare Hospital, Peshawar	197	197	197	0
36. Frontier Foundation Welfare Hospital, Kohat	Record not maintained/shown			
37. KBDO Hospital, Manshera	339	339	339	0
38. Kuwait Hospital, Jamrud Road	159	159	159	0
39. Thalassaemia Blood Transfusion Centre, Bannu	Blood Bank Closed			

Name of Blood Bank	Number of donors bled	HIV Tests consumed	No. of blood bags/ donors screened	Reactive tests
40. Yahya Welfare Trust Hospital, Haripur	Record not maintained/shown			
41. Pashtoon Khwa Blood Bank, Quetta	1354	1354	1354	1
42. Al-Sadat Diagnostic Lab, Chaghai	79	88	88	0
43. Baloch Hospital, Turbat	Blood Bank Services Closed			
44. Chidren Hospital, Turbat	328	328	328	0
45. New Guil Lab and Blood Bank, Quetta	265	265	265	0
46. Arif Lab & Blood Bank, Loralai	59	64	64	0
47. Sabir Lab and Blood Bank, Zhob	112	123	123	0
48. Al Raee hospital and Blood Bank, Gujranwala	380	410	410	0

Blood Donors Screening Workload of Blood Banks for HBV: One Quarter of 2007

Name of Blood Bank	Number of donors bled	HBV Tests consumed	No. of blood bags/ donors screened	Reactive tests
01. Pakistan Red Crescent Society Punjab Provincial Branch, Lahore	410	440	440	10
02. Minhaj-ul-Quran Blood Bank, Lahore	105	126	117	5
03. Allah Hoo Blood Bank& Lab, Lahore	Blood Bank Closed			
04. Ghurki Trust Teaching Hospital, Lahore	1660	1751	1751	23
05. Ali Zaib Blood Transfusion Service, Faisalabad	2798	2980	2980	58
06. Mian Muhammad Trust Hospital, Faisalabad	90	100	100	2
07. National Hospital, Faisalabad	687	732	732	19
08. Khadija Mehmood Trust Hospital, Faisalabad	70	75	75	2
09. Fatima Medical Centre, 574-B, Faisalabad	Record partially maintained			
10. Young Blood Donors Association (R), Gujranwala	119	129	129	2
11. Noor-ul-Ain Blood Bank, Jhang	674	740	740	25
12. M.A Jinnah Foundation, Sialkot	112	117	117	1
13. Fatmid Foundation, Multan	2910	3019	3020	63
14. Nishter Lab, Near THQ, Multan	1222	1309	1309	15
15. Faisal Hospital, Multan	149	165	165	8
16. Nancy Fulwood Blood Bank, Sahiwal	298	326	326	9
17. Shatac Blood Transfusion Service, Mandi Bahauddin	239	251	251	7
18. Umer Clinical Lab, Muzafargarh	Blood Bank Closed			
19. Jan Clinical Lab, Rajanpur	Blood Bank Closed			
20. Kashmir Blood Bank & Welfare Centre, Kashmir	296	302	302	6
21. Fatimid Foundation, Karachi	6616	6616	6616	229
22. JPMC Blood Bank (PAF), Karachi	9568	9568	9568	366
23. Pak Blood Bank, Karachi	1320	1320	1320	16
24. Muhammadi Blood Bank, Karachi	3079	3079	3079	137
25. Ali Blood Bank, Mehrabpur	81	81	81	6
26. Sindh Blood Bank, Badin	520	520	520	14
27. Al-Mustafa Blood Bank, Karachi	Record partially maintained			
28. Murtaza Blood Bank Thalassaemia Centre, Larkana	985	985	985	54
29. The Blessing Foundation, Sukkur	2850	2850	2850	31
30. Fatimid Foundation, Peshawar	2787	2826	2787	39
31. Welfare Hand Blood Services Org, Peshawar	Incomplete record			
32. Al-Ibrahimi Welfare, Peshawar	Record not maintained/shown			
33. Abbotabad Medical Association, Abbotabad	353	462	462	32
34. Bay Bay Welfare Trust, Mardan	Record not maintained			
35. Duaa Lab and Welfare Hospital, Peshawar	197	197	197	0
36. Frontier Foundation Welfare Hospital, Kohat	Record not maintained/shown			
37. KBDO Hospital, Manshera	339	339	339	3
38. Kuwait Hospital, Jamrud Road	159	159	159	0
39. Thalassaemia Blood Transfusion Centre, Bannu	Blood Bank Closed			

Name of Blood Bank	Number of donors bled	HBV Tests consumed	No. of blood bags/ donors screened	Reactive tests
40. Yahya Welfare Trust Hospital, Haripur	Record not maintained/shown			
41. Pashtoon Khwa Blood Bank, Quetta	1354	1354	1354	115
42. Al-Sadat Diagnostic Lab, Chaghai	79	88	88	3
43. Baloch Hospital, Turbat	Blood Bank Services Closed			
44. Chidren Hospital, Turbat	328	328	328	29
45. New Guil Lab and Blood Bank, Quetta	265	265	265	31
46. Arif Lab & Blood Bank, Loralai	59	64	64	1
47. Sabir Lab and Blood Bank, Zhob	112	123	123	4
48. Al Raee hospital and Blood Bank, Gujranwala	380	410	410	6

Blood Donors Screening Workload of Blood Banks for HCV: One Quarter of 2007

Name of Blood Bank	Number of donors bled	HCV Tests consumed	No. of blood bags/ donors screened	Reactive tests
01. Pakistan Red Crescent Society Punjab Provincial Branch, Lahore	410	440	440	30
02. Minhaj-ul-Quran Blood Bank, Lahore	105	126	117	21
03. Allah Hoo Blood Bank& Lab, Lahore	Blood Bank Closed			
04. Ghurki Trust Teaching Hospital, Lahore	1660	1751	1751	91
05. Ali Zaib Blood Transfusion Service, Faisalabad	2798	2980	2980	236
06. Mian Muhammad Trust Hospital, Faisalabad	90	100	100	10
07. National Hospital, Faisalabad	687	732	732	45
08. Khadija Mehmood Trust Hospital, Faisalabad	70	75	75	5
09. Fatima Medical Centre, 574-B, Faisalabad	Record partially maintained			
10. Young Blood Donors Association (R), Gujranwala	119	129	129	10
11. Noor-ul-Ain Blood Bank, Jhang	674	740	740	66
12. M.A Jinnah Foundation, Sialkot	112	117	117	5
13. Fatmid Foundation, Multan	2910	3019	3019	109
14. Nishter Lab, Near THQ, Multan	1222	1309	1309	87
15. Faisal Hospital, Multan	149	165	165	16
16. Nancy Fulwood Blood Bank, Sahiwal	298	326	326	28
17. Shatac Blood Transfusion Service, Mandi Bahauddin	239	251	251	26
18. Umer Clinical Lab, Muzafargarh	Blood Bank Closed			
19. Jan Clinical Lab, Rajanpur	Blood Bank Closed			
20. Kashmir Blood Bank & Welfare Centre, Kashmir	296	302	302	1
21. Fatimid Foundation, Karachi	6616	6616	6616	250
22. JPMC Blood Bank (PAF), Karachi	9568	9568	9568	381
23. Pak Blood Bank, Karachi	1320	1320	1320	64
24. Muhammadi Blood Bank, Karachi	3079	3079	3079	150
25. Ali Blood Bank, Mehrabpur	81	81	81	18
26. Sindh Blood Bank, Badin	520	520	520	13
27. Al-Mustafa Blood Bank, Karachi	Record partially maintained			
28. Murtaza Blood Bank Thalassaemia Centre, Larkana	985	985	985	93
29. The Blessing Foundation, Sukkur	2850	2850	2850	52
30. Fatimid Foundation, Peshawar	2787	2819	2787	32
31. Welfare Hand Blood Services Org, Peshawar	Incomplete record			
32. Al-Ibrahimi Welfare, Peshawar	Record not maintained/shown			
33. Abbotabad Medical Association, Abbotabad	353	459	459	67
34. Bay Bay Welfare Trust, Mardan	Record not maintained/shown			
35. Duaa Lab and Welfare Hospital, Peshawar	197	199	191	2
36. Frontier Foundation Welfare Hospital, Kohat	Record not maintained			
37. KBDO Hospital, Manshera	339	339	339	7
38. Kuwait Hospital, Jamrud Road	159	159	159	0
39. Thalassaemia Blood Transfusion Centre, Bannu	Blood Bank Closed			

Name of Blood Bank	Number of donors bled	HCV Tests consumed	No. of blood bags/ donors screened	Reactive tests
40. Yahya Welfare Trust Hospital, Haripur	Record not maintained/shown			
41. Pashtoon Khwa Blood Bank, Quetta	1354	1354	1354	85
42. Al-Sadat Diagnostic Lab, Chaghai	79	88	88	9
43. Baloch Hospital, Turbat	Blood Bank Services Closed			
44. Chidren Hospital, Turbat	328	328	328	31
45. New Guil Lab and Blood Bank, Quetta	265	265	265	28
46. Arif Lab & Blood Bank, Loralai	59	64	64	5
47. Sabir Lab and Blood Bank, Zhob	112	123	123	11
48. Al Raee hospital and Blood Bank, Gujranwala	380	410	410	30