DEVELOPMENT OF DATA BASE OF BLOOD BANK AND DONOR

PROGRAMME MANAGER
(BAN-BCT) WHO

DGHS, MOHAKHALI, DHAKA-1212

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Introduction:

A database is a collection of persistent data that is used by the application systems of a given enterprise. Traditional databases are organized by fields, records, and files. A field is a single piece of information; a record is one complete set of fields; and a file is a collection of records. To access information from a database, we need a database management system (DBMS). This is a collection of programs that enables the service providers and clients to enter, organize, and select data in a database. Presently in Bangladesh 113 Safe blood transfusion centers are providing safe blood to the clients. The effective management of blood transfusion program encompasses a good number of areas and one of the areas is development of data base for the safe blood transfusion centers and also for the donors. The development of a data base always needed good documentation. Documentation provides the ability to trace prospectively and retrospectively all steps in all procedures, dating from collection of the blood to monitoring techniques, component preparation, laboratory testing, issue and transfusion of blood. An effective record system helps to judge the performance of the blood transfusion service traces any donated unit of blood from its source to the final fate and also helps in legal or investigational purposes. The safe blood transfusion authority in Bangladesh already developed some document with an aim to maintain records of different activities which are not sufficient for meeting the future challenge for upholding quality and accessibility to the services. The developed system is operating without the help of any developed software

except the central reference laboratory. The main focus of this document is on the different input needed for the development of a data base for the blood transfusion centers and donors. A group of expert on blood transfusion medicine contributed for the preparation of this document. The future challenge of the SBT program is to recruit more non remunerated blood donors and also to maintain the existing donor. So we need to develop and implement an appropriate computer based “Blood Donor Tracking System” including donor database in order to significantly enhance data accuracy, efficiency and effectiveness, to reduce on the risks of incorrect identification of donors and blood units, and ensure blood safety. The authority of SBT program already recognized the need for developing an effective, structured and quality data base for different level of blood transfusion centers and also donor for ensuring safe blood to patents.

Objectives of Data base

- To develop and maintain an appropriate integrated blood donor tracking database system for the efficient and effective recording and management of blood donor data and blood donor retention
- To significantly improve the quality of recording and management of information about blood donors to facilitate the effective tracking of repeat blood donors and the establishment of a reliable pool of regular repeat blood donors
- To significantly improve the accuracy, efficiency and effectiveness of tracking information on blood donations, and ensure blood safety through accurate labeling and identification of blood units at every stage
- To ensure sustainability through capacity building, staff skills training and the integration of plan and operations.
- Obtain the best available information on blood transfusion services in the country
- Assess the country situation on blood safety
- Monitor trends and progress
- Identify problems and needs in order to provide appropriate technical assistance
- Identify the areas and issues for providing support.

Area of documentation needed for developing data base

1. Donor records including details of donor information, rare donor panels, donor deferrals and adverse donor reactions.
2. Record of results and interpretation of all laboratory tests.
3. Patient's record (for all patients and specifically important in patients with multiple transfusions, previous transfusion reactions, presence of unexpected antibodies or cross-match problems).
4. Record of component preparation.
5. Inventory of blood, blood components, reagents and consumables, etc.
6. Record of compatibility testing.
7. Record of discarded blood units.
8. Record of issue of blood.
9. Quality control record (which helps in taking corrective actions to improve the performance of any procedure or working of any equipment and reagents).

Record and documents also help to identify possible sources of error in any technique. The results of manually performed tests should be recorded carefully in a clean and easily understandable way i.e. as the laboratory worksheet. Laboratory worksheets should be preserved as permanent record of the test performed and the readings obtained. Records of the reagents and kits used for a particular test with their batch no., lot no. and expiry dates should be maintained so that in case of any problem, it is easier to find the source of error. All records must include the date and signature of the laboratory staff performing the test. Records should be retained for at least 5 years and kept confidential. Computers are being widely employed in maintaining the records. With the growing demand for improving the efficiency, accuracy and effectiveness it has become imperative to introduce computers in the blood transfusion service.

Computers can help the functions of a blood transfusion service in -

- Donor identification / registration
- Donor blood collection
- Processing of blood
- Maintenance of records of laboratory testing
- Inventory management
- Issue & labeling of blood

Data base software of Blood bank transfusion system

The Blood Bank Transfusion System consists of seven separate but interrelated application software modules:

- Blood Processing
- Patient Processing
- Inventory Management
- Recipient History
- Reports
- Purge Processing
- File Maintenance

Blood donation, also called blood banking, refers to the process of collecting, testing, preparing, and storing whole blood and blood components intended primarily for transfusion. Blood registry refers to the collection and sharing of data about donated blood and donors. Donors who have been determined to be temporarily or permanently ineligible to donate blood are listed in a confidential national data base known as the Donor Deferral Register. A possible definition is that a database is a collection of records stored in a computer in a systematic way, so that a computer program can consult it to answer questions. For better retrieval and sorting, each record is usually organized as a set of data elements (facts). The items retrieved in answer to queries become information that can be used to make decisions. The computer program used to manage and query a database is known as a database management system (DBMS). The central concept of a database is that of a collection of records, or pieces of knowledge. Typically, for a given database, there is a structural description of the type of facts held in that database: this description is known as a schema. The schema describes the objects that are represented in the database, and the relationships among them. There are a number of different ways of organizing a schema, that is, of modeling the database structure: these are known as database models (or data models). Strictly speaking, the term database refers to the collection of related records, and the software should be referred to as the database management system or DBMS.

Database management systems are usually categorized according to the data model that they support: relational, object-relational, network, and so on. The data model will tend to determine the query languages that are available to access the database.

Blood Bank Management Software

Blood Bank Management Software, readily scalable and adaptable to meet the complex need of Blood Banks Who are Key Facilitator for the Healthcare Sector, it also supports all the functionalities of Blood Bank

Features of Blood Bank Management Software

- Generating reports on Stocks-Blood Group wise, Area wise and Expiry date wise.
- Donor Database-Blood Group wise and Area wise
- Maintain and update Unique Donor Identifications.
- Complete Key Consumables Inventory Management.
- Track and maintain all the Donor Types-Voluntary, Exchange and Directed.
- Improve the Effectiveness and efficiency of Blood Bank-Faster Response Time and Better Control
- Accurate database/Record Management.
- Blood Cross Match and Result Storage Facility.
- Digital Record archival backup and restoring facility-Better House keeping and Record Maintenance.
- Rejected Donor Database for Donor Control and Identification-Blood Transfusion related disease control and prevention.
- Searched Facility for Destroyed and Expired Blood.
- Comprehensive Donor database with Search Facility.
- Unique Donor ID and Patient record ID for managing future list.
- Improve Blood Bank processes by providing efficient and continuous software support

Development of database of blood bank and donor

Area of database:

- **Donor area**
- **Service area**
- **Logistics (Consumables) & supplies**
- **Organization**

Donor area:

1. Objective

a. To see the demographic status of blood donors for donor identification and safe donor selection.

b. To categories the donation wise blood donor such as voluntary, directed, replacement, autofocus and aphaeresis donor for strengthening blood donor pool.

c. To acknowledge particular donor such as first time, regular and differ donor for donor education, motivation, recruitment and donor retention program.

d. To know the serological and Transfusion Transmissible infections (TTIs) markers of blood donors for donor counseling and updating national database.

e. Research and development in the donor area.

2. Identification of variables

A. For blood donor:

It includes complete record of donors with updating and deletion facility;

- **Personal particulars of the blood donors:**
  - Name, ID number, address, age, occupation, sex, phone No, Mobile No,E-mail address etc;

- **Health related information:**
  - Medical/health history, diagnosis, lab results, treatment;
  - Where the donor is volunteer or not
  - Information about the medical condition of the donor (vital signs or biological indicators, temperature, pulse, blood sugar level, blood pressure).
  - The doctor or the administrator will mainly retrieve information.

- **History of previous donation:**
  - Whether donated previously or not, if donate whether any adverse reaction occur or not during or after reaction.
- **Vaccination status:**
  - Donor is recently vaccinated or not.
- **History of hepatitis or jaundice:**
  - Donor is suffering from hepatitis, jaundice or close contact with this type of patient.
- **History of Surgery:**
  - Surgery done on the donor either major or minor.
- **History of taking transfusion clotting factor**
- **History of tooth extraction**
- **History of fever, sore throat, boil, erysipelas etc.**
- **History of suffering from vital organ disease such progressive heart** disease, constrictive or restrictive lung disease, liver and kidney disease
- **History of suffering from malaria, syphilis, HIV and hepatitis**
- **In case of female:**
  - History of pregnancy, labor and menstruation.
- **Whether the donor is?**
  - First time donor, regular donor, Voluntary or directed donor.
- **Consent of the donor:**
  - Written consent of donor.

b. Blood grouping.

ABO and RhD grouping:

The following information should be stored:

- The sample number;
- The test results,
- Date and time test performed, identity of person(s) entering/validating results,
- Technique used for performance of test.

c. Blood screening.

Routine mandatory blood screening shall be done as per Safe Blood TransfusionAct-2002. The following information should be stored:

- The sample number;
- The test results,
- Date and time test performed, identity of person(s) entering/ validating results,
- Technique used for performance of test
- Confidentiality of test results,
- Disposal positive/reactive samples.

d. Compatibility testing.

- ABO group red cell required special authorization.
- For components other than red cell it should be possible to define criteria locally with regard to ABO and RhD acceptability.
- The system should allow a definable reservation period for cross- matched units and produce a return to stock list. The reservation date must not exceed the expiry date of the components.
- The system should allow results to be entered against each unit cross-matched. Whatever the method of entry the following information must be stored.
  - Date and time test performed.
  - Identify of person (s) entering /validating results.
- After verification of results a compatibility report and labels must be produced.
- The cross-match record should retain information on both compatible and incompatible units.
- The facility should exist to allow the issue under password control of ABO-compatible, but serologically incompatible units in exceptional circumstances. All such units must be appropriately labeled.

B. Component preparation Entry: -

The entry of all blood components prepared is done in this form by just clicking the donor number.

The following information must be captured for each individual unit:

- Unique donation identifier(Unit No/Bag No);
- ABO and RhD type and
- Compatibilities required between the patient and the product;
- component code (full product name for printing on reports);
- expiry date (life span of the product for calculating expiration date);
- Date & time of collection;
- Date & time of preparation;
- Signature of authorized person;

Additional information:

- Indicator of the product being a red cell product, plasma product, platelet product or others);
- Indicator of the product being a pooled type ;
- Routine screening and CMV negative;
- Irradiated ;
- Transfer from.

Mandatory information:

- Unique donation number(Unit No/Bag No)
- Number & nature of unit and special characteristics;
- Date and time of receipt;
- Date of expiry and time where appropriate;
- Date and time of issue;
- Patient(s) to whom unit was previously allocated;
- Details of patient to whom unit was transfused;
- The date of transfusion;
- Reason for discard if not transfused (received damaged, out dated, inappropriate storage, other);
- Stock movements.

C. Deferred donor Entry:-

The deferred details are entered in this form i.e.

- Temporary or permanent deferral,
- Reasons of deferral,
- Whether the donor is first time or regular donor,
- Voluntary or replacement donor,
- Counseling done by authorized person.

D. Stock of blood and blood component:

- Daily stock of whole blood as bag no with group wise
- Date of collection
- Sign of haemolysis present or not.
- Daily, monthly stock of blood components with group wise including negative blood group.
- Expiry date (Life span of the product for the calculation of expiration date)
- Signature of authorized person with date.

E. Voluntary blood donor list:

Group wise blood donor list such as

- Voluntary,
- Directed
- First time
- Regular donor

F. Monthly Blood screening report:

Monthly blood screening report contain

- % of voluntary, replacement and professional blood donor.
- % of TTI markers among voluntary, replacement and professional blood donor.

LOGISTICS & SUPPLIES

1. Objectives:

a. To assess yearly requirements of blood bags, kits/reagents, glass slides, test tubes, pipette, beaker, blood grouping reagents, AHG and others as per need of the individual centre.

b. To assess nationwide requirements of the consumables for budgeting and smooth supply to the centers.

c. To monitor and evaluate the standard of the centers on the basis of consumables used.

d. Research and development in the specified area.

2. Identification of variables:

Serological regents, Kits for TTIs, Na Hypochlorite, Copper sulphate, Blood bags, 70% alcohol, Lancets, glass slides, leucopour, adhesive tapes, cotton, gauze, markers, gloves, disposal buckets', soap, tissue box, toilet paper, normal saline, distilled water,

ORGANIZATION

Objectives:

a. To assess organizational structure that defines need for manpower, space required section-wise

b. To see presence of quality section or identified work area in each blood centre from which quality activities can be coordinated

c. To monitor and evaluate the culture of quality through management focus

d. To assess the status of documentation system that ensures traceability of all BTC activities i.e. quality manual, SOP, maintenance of complete and accurate records

e. Comprehensive, appropriate and effective training is required for all BTC staff and healthcare professionals involved in blood transfusion.

f. Research and development in the specified area.

IDENTIFICATION OF REGISTER AND FORMS:

Register:

a. DONOR GROUPING REGISTER

Date	Sl. No	Blood donor I.D. No	Blood donor name	ABO Grouping							Rhesus Grouping			Blood donor Group	Sign (MT-Lab)	Comment
				Anti-A	Anti-B	Anti-AB	A-Cell	B-Cell	O-Cell	Result	Anti-D	Anti-D	Result.			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

b. Blood Donor Register

Date	SL No	Time of collection	Time taken for collection	Unit/Bag No	Donor Name, Address & phone	Donor ID.No	Age	Sex	Weight	Ist time or Regular donor	Blood grouping	Type of donor (Voluntary/ Replacement)	Comment
1	2	3	4	5	6	7	8	9	10	11	12	13	14

c. SCREENTNG REGISTER

Date	Sl. No.	Donor I.D. No/ Bag No	Blood Group		HBsAg	HIV	HCV	MP	VDRL /RPR	Others	Signature (MT-Lab)	Signature (Doctor)	Comment
			ABO	Rhesus									
1	2	3	4	5	6	7	8	9	10	11	12	13	14

d. Compatibility Register:

Date	Sl. No	Pt's Name	Pt's Regi No	Ward /Bed/ Unit	Hospital's Name	Blood group	Donor/ Bag. No	Blood Group	Cross matching			Done by	Supervised by	Comment
									S	A	IAT			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

e. Daily Component preparation Register.

Date	Unit No	Bag No	Grouping	Time of collection	Time of preparation	PRC	FFP	PC	Cryo	Screening for TTIs	Prepared by	Supervised by
1	2	3	4	5	6	8	9	10	11	12	13	14

f. Component Stock Register

Component's Name	Blood Group								Total	Signature . of MT(Lab)	Sign. of MO	Comment
	A+	B+	AB+	O+	A Neg	B Neg	AB Neg	O Neg				
1	2	3	4	5	6	7	8	9	10	11	12	13
PC												
FFP												
Cryo												
CPP												

g. BLOOD STOCK REGISTER

Date	Sl. No	Date of donation	Bag No	Source of blood			Blood Group		Amount of blood	Haemolysis		Signature	Comment
				Voluntary	Relative	Others	ABO	Rhesus		Yes	No		
1	2	3	4	5	6	7	8	9	10	11	12	13	14

h. Blood Group wise Vol. Donor List

Date	Sl. No	Donor name & address	Blood group		Signature	Comment
			ABO	Rhesus		
1	3	3	4	5	6	7

i . Donor Deferral Register

Date	Sl. No	Donor Name &Address	ID.No	Age	Sex	1st time or Regular Donor	Vol/ Rep	Reason for deferral	Temporary or Permanent	Counseled by	Comment
1	2	3	4	5	6	7	8	9	10	11	12
	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										

Forms:

a. Medical Assessment of Blood Donor Form

i³ `vZvi wbeÜb c Î

Medical Assessment of Blood Donor Form

(GB d‡g D‡jwLZ welqmgn fvjfv‡e covi ci DËi w`b| †Kvb wel‡q ewSevi Rb¨ mswkó Wv³vi/bv‡mi mvnvh¨ wbb|)

i³`vZvi ÁvZe¨ welqt

1 Avcwb wK KL‡bv Awbixw¶Z (Unscreened) i³ ev i‡³i Dcv`vb MnY Kwiqv‡Qb?

2 Avcwb wK †Kvb cKvi †bkvh³ Jla †me‡b A_ev wkivq wb‡Z / c‡ek KivB‡Z Af¨¯—?

3 Avcbvi GKwaK Aiw¶Z †hŠbwgj‡bi Af¨vm Av‡Q wK?

Dc‡iv³ KviY¸‡jvi GKwUI hw` Avcbvi †¶‡Î c‡hvR¨ nq Z‡e Avcwb †hŠb†ivM GBPAvBf (GBWm)/ †ncvUvBwUm BZ¨vw` msµg‡Yi Rb¨ SwKcY weavq i³`vb t_‡K wb‡R‡K weiZ ivLb| g‡b iwL‡eb `vbKZ i³ Avcbvi AvcbRb‡KB †`lqv nB‡e|

1| bvg .....

2| wcZvi/¯vgxi bvg .....

3| eqm ..... ermi|

4| wj½ ..... ci"l/gwnjv|

5| ˆeewnK Ae¯v ..... weewnZ/Awweewn Z|

6| †ckv .....

7| eZgvb wVKvbv I †Uwj‡dvb bs .....

8| ¯vqxwVKvbv .....

9| ceeZx i³`vb t Zwi L ..... †Kv_vq .....

10| i³`vZvi m¤ú‡K ÁvZe¨ t

10.1	c‡e ev eZgv‡b Avcwb wK Avµvš nBqv‡Qb ?	n¨v	bv
10.2	†ncvUvBwUm (RwÛm)		
10.3	g¨v‡jwiqv		
10.4	gMx †ivM		
10.5	ü` †ivM		
10.6	Wvqv‡ewUm (eûgÎ)		
10.7	†hŠb †ivM		

10.8	G¨vRgv / kvmKó		
10.9	GKwRgv (Pg‡ivM)		
10.10	D”P i³ Pvc (nvBcvi‡Ubkb)		
10.11	wKWbx †ivM		
10.12	wUwe (h¶‡v)		
10.13	cvBjm		
10.14	K¨vÝvi		
10.15	‡ccwUK Avjmvi		
10.16	UvBd‡qW		
10.17	evZ Ri		
10.18	Wmwdwjm		
10.19	i³ Avgvkq		
10.20	i³ RwYZ †ivM		
10.21	AvbW‡j›U wdfvi		
10.22	wgwRjm / gv¤úm		
10.23	mv¤cwZK IRb Kwgqv hvIqv		
10.24	*eZgv‡b Avcwb wK?*		
(K)	Mfe¯vq?		
(L)	¯b¨`vbKvix gv?		
(M)	Gwm‡Ki Ae¯vq ?		
10.25	*Avcbvi wK?*		
(K)	6 gv‡mi g‡a¨ †gRi Acv‡ikb nBqv‡Q?		
(L)	4 mßv‡ni g‡a¨ `vZ DVv‡bv nBqv‡Q?		
(M)	4 mßv‡ni g‡a¨ †fKwmb ev wUKv †bIqv nBqv‡Q?		
10.26	***Avcwb wK?***		
(K)	i³ ev i‡³i Dcv`vb MnY Kwiqv‡Qb?		
(L)	1 mßv‡ni g‡a¨ Gmwcwib RvZxq Jla` †meb Kwiqv‡Qb?		
(M)	gv`Kvm³?		
(N)	†Kvb †bkvh³ Jla / gv`K `e¨ MnY Kwiqv‡Qb?		
(O)	we‡`‡k åkY K‡ib?		
(P)	eZgv‡b †Kvb cKvi Jla MnY K‡ib?		

(Q)	wbqwgZ †¯"Qvq i ³ `v‡b AvMnx?		
(R)	GLb m¯ †eva Kwi‡Z‡Qb?		
(S)	Lvevi MnY Kwiqv‡Qb?		
(T)	AvKcvsPvi / Kvb d‡Uv Kwiqv‡Qb?		

11| i ³ `vZvi kvixwiK Dch ³ Zv t

1 nx‡gv‡Mweb ..... Mvg / †Wwmwj Uvi (%)

2 eqm ..... ermi

3 IRb ..... †KwR

4 i ³ Pvc .....wgt wgt cvi`

5 bvoxi MZ ..... cwZ wgwb‡U

6 †`‡ni Zvcgv Îv ..... 0 †mjwmqvm / dv‡ibnvBU

7 i‡³ i M"c ÔG we lÔ ..... wimvm (wW)

i ³ `v‡bi Rb¨	
wbewPZ	cZ¨vL¨vZ

ZwiL ..... Wv ³ v‡ii ¯v¶i

**i ³ `v‡bi m¤§wZcÎ t**Awg digwU cwoevi ci ¯Áv‡b I †¯"Qvq i ³ `v‡b B"QK| Avgvi i‡³ i AIDS mn c‡qvRbxq Ab¨vb¨ cix¶v-wbix¶v Kwievi Rb¨ AbgwZ c`vb KwiqwQ| Awg b¨vkbvj e-vW UvÝwdDkb mwf‡mm (National Blood Transfusion Services) -Gi i ³ `vb KgmPx‡Z i ³ `vb m¤úwKZ hveZxq wel‡q ÁvZ nBqv †¯"Qvq i ³ `vb Kwijvg| i ³ `vb cieZx †Kvb RwUjZvi D™e nB‡j AÎ cwZôv‡bi KZe¨iZ e¨w ³ ev cwZôvb `vqx _wK‡e bv| GB i ³ c‡qvR‡b †h †Kvb mgq †h†Kvb †ivMxi Rb¨ e¨envi Kiv hvB‡e|

i ³ `vZvi ¯v¶i
bvg .....

ZwiL .....

b. Serological Report Form:

1 Patient's Name. …… Age….....….Sex…… M / F

2 OPD/Ward/Cabin.....….Bed No……..…Unit……..Reg. No.……...

3 Referred by.....Date.....

Name of Test	Result
ABO Grouping	
Rhesus Typing	
Direct Coombs' Test. (DCT)	
Indirect Coombs' Test (ICT)	
Antibody Detection	
Antibody titre	
Rhesus Phenotype	
Most Probable Genotype	
Haemolysin Test	
A B H Secretor status	
Auto Antibody (Warm/Cold)	
HBV	
HCV	
HIV (1 & 2)	
CMV	
HLA/Tissue Typing	
Others	

Comments:

Medical Technologist Doctor

c. COMPATIBILITY/CROSS MATCH REPORT

SL. No..... Date: Lab./ Ref. No……..

Patient's Name.....Age…….....Sex…...M/F, Reg. No.....

Blood Group of Patient.

ABO…….....Rhesus(D)….....……..
□□ Donor Blood Group.

ABO…….Rhesus(D).....Bag No…...……
□□ Donor Blood Sample (Bag No. .....) is found Compatible

With Patient's Blood Sample (Lab/Ref. No…….....…)

□□ Supplied on.....at.....
□□ Blood Sample of the supplied Bag was tested for
.....

Medical Technologist Duty Doctor

1| G wi‡cv‡Ui Z_¨w`i mv‡_ cwimÂvj‡bi c‡e Aek¨B e¨v‡Mi Mv‡q †jLv Z_¨w` wgwj‡q wbb|

2| KwÎgfv‡e i³ e¨vM Mig Kiv DwPZ bq|

3| i³ e¨v‡Mi g‡a¨ A_ev †m‡U †Kvb iKg Jla †gkv‡bv m¤úY wbwl×|

d. Blood Screening Report Form

evW ¯'bxwbs Gi gvwmK cwZ‡e`b

‡K‡›`i bvg t i ³ cwimÂvjb ..... ‡dvb bs ..... †m›Uvi ‡KvW bs ..... gvm ..... ermi .....

µwgK bs	ZwiL	‡¯'Qvq i ³ `vZv						AvZ¥xq i ³ `vZv						‡ckv`vi i ³ `vZv						¯'bxwbsKZ †gvU †Wvbvi	ewZjKZ †Wvbvi
		¯'bxwbsKZ evWvi-G¨vKvUf/cwRvUf †Wvbvi					¯'xwbsKZ †gvU †Wvbvi	¯'bxwbsKZ evWvi-G¨vKvUf/ cwRvUf †Wvbvi					¯'xwbsKZ †gvU †Wvbvi	¯'bxwbsKZ evWvi-G¨vKvUf/ cwRvUf †Wvbvi					¯'xwbsKZ †gvU †Wvbvi		
		HIV 1 & 2	HBsAg	HCV	RPR	MP		HIV 1 & 2	HBsAg	HCV	RPR	MP		HIV 1 & 2	HBsAg	HCV	RPR	MP			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1																					
2																					
3																					
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me†gvU																					

* cwZ gv‡mi eøvW ¯'bxwbs Gi cwZ‡e`b cieZx gv‡mi 19 Zwi‡Li g‡a¨ cvVv‡Z n‡e|

¯v¶i

wefvMxq cavb/BbPvR

ZwiL .....

¯v¶i

‡gwW‡Kj †UK‡bvjwRó (j¨ve)

Service area

1. Objective

a. Provide blood and blood component to the patient or service recipient as per required to ensure safe transfusion practice.

b. To arrange the need assessment of blood and blood component of the locality, region or country for national planning and budgeting.

c. To arrange voluntary blood donation in a locality, region or country to ensure safe blood transfusion affordable & accessible to all in order to reduce the burden of disease and improve the quality of national health.

d. To assess the statistics of discarded blood and blood product for the minimization wastage of blood and blood product.

e. Research and development in the service area for better transfusion management.

2. Identification of variables

Blood request entry:-

It includes complete record of patient with updating;

- Patient name,
- Patient sex,
- Hospital name,
- Hospital ward/ Bed /Unit
- Hospital Registration No,
- Date & time that the request was made
- Request type (group and cross-match and lab. test),
- Number of unit/Bag required.
- Time of transfusion,
- Reason for request,
- Requesting doctor.

If blood components are requested then other mandatory data are required;

- Type of component including special requirements.
- Number of units is required,
- Date &time that component is required.

The following additional information is desirable;

- Blood group,
- Previous transfusion (Y/N),
- Pregnancy history (parity, antibodies, haemolytic disease of newborn),
- Presence of known antibodies, high-risk indicator**.**

Stock of blood and blood component:

- Daily stock of whole blood as bag no with group wise
- Date of collection
- Whether sign of haemolysis is present or not.
- Daily, monthly stock of blood components with group wise including negative blood group.
- Expiry date (Life span of the product for the calculation of expiration date)
- Signature of authorized person with date.

Daily blood and blood component issue Entry: - It includes issue entry,

- As per bag no,
- Group-wise,
- Component- wise and
- Date and time of issue
- Name of the patient
- Hospital name,
- Hospital ward/ Bed /Unit
- Hospital Registration No,
- Signature of supplier
- Signature of receiver
- Generation of receipts of bag issued.

Blood and blood component discard Entry:- The discard details are entered in this form from i.e.

- The positive test details,
- Leakage,
- Damaged,

- Inappropriate storage,
- Out dated,
- Insufficient
- Expired and other.
- Date of discard
- Bag no, Unit no
- Name of the hospital
- Name of blood and blood component
- Signature of authorized person

Monthly statement for blood component:

It includes

- Name of the hospital, institution, Blood transfusion center,
- Name of the month,
- Total unit of blood collected,
- Units of component produced,
- Units of component demand,
- Units of component supplied,
- Units of component rejected/discarded,
- Signature of Medical Technologist (Lab)
- Signature of In charge/Head of the department.

Documentation of special laboratory testing such as:

- Antibody Screening and identification, Titration,
- Genotype & Phenotype,
- Du Test,
- Haemolysin test,
- Detection of cold Antibody and secretor status etc.

Antibody Screening and identification:

- The methodology used should be stored with the result.
- There should be the facility to enter more than one antibody specificity and the date of identification for each separate antibody should be stored.

- There should be a facility to allow for comments, e.g.
    * Of no clinical significance.
    * Of clinical significance.
    * Phenotype of patients' red cells, etc.

Direct antiglobulin test (DAT)

- When entering results on DAT, the computer should record the type of sample tested. There should be available space for computer to be added.
- It should be possible to enter results obtained with mono specific AHG reagents.

Investigation of Transfusion reactions

- It should be possible to store the results of serological testing performed in the case suspected transfusion reaction.

Identification of register and forms

a. Blood Request Register

Date &time	Pt's Name	Ward/ Bed/ Unit	Hospital's Name	Reg No	Blood Group	No of unit/bag required	Time of Transfusion	Request for					Req for Lab test	Signature
								RCC	PC	FFP	Cryo	CPP		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

b. BLOOD STOCK REGISTER

Date	Sl. No	Date of donation	Bag No	Source of blood			Blood Group		Amount of blood	Haemolysis		Signature	Comment
				Voluntary	Relative	Others	ABO	Rhesus		Yes	No		
1	2	3	4	5	6	7	8	9	10	11	12	13	14

c. Component Stock Register

Component's Name	Blood Group								Total	Signature. of MT(Lab)	Sign. of MO	Comment
	A+	B+	AB+	O+	A Neg	B Neg	AB Neg	O Neg				
1	2	3	4	5	6	7	8	9	10	11	12	13
PC												
FFP												
Cryo												
CPP												

d. Daily Blood Issue Register.

Date	Time	Bag No	Blood group	Name of blood component	Patient's name	Regi No	Ward /Cabin	Bed/ Unit	Name of hospital	Blood Group	Signature of supplier	Signature of receiver
1	2	3	4	5	6	7	8	9	10	11	12	13

e. Discard Register

Date	Unit/ Bag No	Reason for Discard				Comp. Discarded						Discarded by	Supervised by
		Exp	Insufficient	TTI reactive	Others	WB	RCC	PC	FFP	CPP	Cryo		
1	2	3	4	5	6	7	8	9	10	11	12	13	14

f. Monthly statement of blood component:

Month…….. Name of centre …….. Code no……

Date	Total units of blood collected	Units of component produced				Demand of units of component				Units of component supplied				Units of component rejected / discarded
		RCC	FFP	PC	Cryo-Precipitate	RCC	FFP	PC	Cryo-Precipitate	RCC	FFP	PC	Cryo-Precipitate	

Signature of Medical Technologist Signature of In-charge/ Head of the Department

g. Serological Investigation Register:

Date	Sl. No	Lab.Ref.No/ Pt. No	Patient's name & address	Name of hospital / Clinic	Ward/ Bed /Unit.	Regi .No	Name of investi gation	Investigation done- Method	Result			Done by	Supervised by	Comment
									Posi	Neg	Equi			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Forms:

a. REQUEST FOR INVESTIGATION

Patient's Name ..... Age..... Sex…….....

OPD/Ward.....Bed.....Reg. No…….....

Refd. by Prof./Dr. .....Date…….....

1 ABO Grouping & Rhesus typing

2 Cross Matching (Groups & others as required).

3 Direct Coombs' Test

4 Indirect Coombs' Test

5 Antibody Detection

6 Antibody titre

7 Rhesus factor C/c/D/E/e

8 Rhesus Genotype & Phenotype

9 Haemolysin Test

10 A B H Secretor Status

11 Auto Antibody (Warm/Cold)

12 VDRL/RPR

13 TPHA

14 HBsAg (Screening)- Rapid / ELISA

15 HCV (Screening) - Rapid / ELISA

16 HIV (Screening) - Rapid / ELISA

17 CMV

18 HLA/Tissue Typing

19 Others

Date ..... Prof./Dr.....

(Requested by)

DATA BASE FOR BLOOD BANK

QUALITY AREA:

1. Objective-

a) To provide blood or blood components those are safe, pure, potent &effective.

b) For quality control, it includes

- Assessment of the accuracy & responsibility of test
- Assessment of the equipment or instrument used to perform a test whether they function properly
- Assessment of the reagent used in test to determine if they have maintained their specificity & sensitivity.

c) For quality assurance it includes

- Entire process of providing patient care
- The process includes pre analytic, analytic & post analytic segment

d) Continuous quality improvement includes

- Reviewing & monitoring the process of providing patient care.
- To reduce rework, wastage& inappropriate care, corrective action is taken

e) Utilization review includes

- Monitoring the appropriateness of transfusion of blood or blood components to the patient (peer review)

2. Identification of variables -

- Process
- Procedure- SOP
- Equipment and reagent
- Personnel performing the test

3. Formation of format on the basis of variables -

For process- (Quality assurance monitor)

- **Donor records**
  - Pre donation history
  - Physical examination result

- Consent
- Interpretation of infectious disease markers
- Confirmatory testing result
- Notification to donors who are permanently deferred
- Temporary and permanent donor deferral logs mentioning the reason for deferral

- **Donor collection monitor**
  - Donor arm preparation technique
  - Donor history & physical examination
  - Number of short drawn / inadequate venepuncture
    - Donor reaction
    - Number/ indication of therapeutic procedures
- **Component processing**
  - Mislabeled units released
  - Inappropriate release of components
  - Quarantine and release records
  - Final disposal
- **Shipping record**
  - Date and time
  - Identity of units shipped
  - Name of person performing the task
  - Receiving facility, name, address
  - Temperature maintained
  - Incorrect component shipped
- **Patient information**
  - Adverse reaction to transfusion including investigation and follow up
  - Notification of potential exposure to infectious disease
- **Utilization review**
  - Number of cases of infectious disease transmission
  - Number of transfusion reaction reported
  - Number of hemolytic transfusion reaction
  - Cross match: transfusion ratio
  - Wasted units

- Outdated units
- Reissue
- Emergency issue, including physician request
- Use of uncross matched blood
- Percentage of red cells used
- Number of autologous units collected
- Number of autologous units transfused
- Indication of transfusion documented in pts record
- Pts response to transfusion documented in pts record
- Blood transfusion where:

Hct>24,Hb >8 gm/dl and MCV is normal
Platlet count> 20,000/ml
FFP given where APT<60 ,Pt < 16
Blood used in cardiac surgery
Number of donor exposure per patient

For procedure (SOP)

Recommended elements of a procedure manual:

- Title
- Principle
- Specimen collection, patient preparation
- Reagents, standards, control
- Instrumentation, calibration
- Step- by -step direction
- Control testing
- Expected values
- Method limitation
- Method validation
- References
- Effective date and review schedule
- Distribution
- Author / source

For equipment and reagent

- Equipment monitoring:
  - Calibration and standardization of equipment

- Quality control testing of:
  - Reagent
  - Component
  - Proficiency

- Reagent and supplies:
  - Date of receipt
  - Lot number
  - Supplier
  - Expiration date

For Personnel performing the test

- Sample performance standards for a medical technologist:
  - 35% perform routine pre transfusion testing of patient specimens and donor units
  - Complete typing and screening of 6 patient specimens within 45 minutes
  - Stat type and cross match for 2 units of red blood cells complete within 30 minutes of receipt of specimen
  - All procedures performed according to procedures manual instructions
  - No more than one valid occurrence report filed per year concerning communication with patient care personnel.

4. Use of form ,format ,and frequency

- Information required on a form
  - Title descriptive of the use of the form
  - Facility identification
  - Identity of patient, unit number, lot number, and/ or specimen
  - Identity of person performing each significant step
  - Result or reading
  - Interpretations
  - Date and time activity was performed

- Frequency of equipment monitoring

Each day of use:

-Temperature recorder

-Refrigerated what kind of sitting arrangement

5. Other facilities

a. Proper ventilation

b. Proper lighting

c. Air condition of the lab

d. Water supply with wash basin

e. Patient toilet

6. Manpower status with Qualification

Category of Manpower	Number	Qualification and experience

7. Training need of the Service Provider

Category of Manpower	Type of training need	Why the training needed

8. Type of Service delivery offered by the institution

Category	Available		Reason for Non Available
	Yes	No	
ABO grouping and Rh typing			
Cross Matching			
Direct Coombs test			
Indirect Coombs test			
Antibody detection			
Antibody titer			
Rhesus factor C/c/D/E/e			
Rhesus Genotype and phenotype			
Haemolysin test			
ABH Secretor Status			
Auto antibody			
VDRL/RPR			
Hbs Ag (Screening)			
HCV			
HIV			
CMV			
HLA/Tissue typing			
Others			

9. Status of the Quality Control System

Activities to maintain Quality	Done Properly	Not done properly	Not done at all	Reason
Recording of Blood sample collection with date				
Recording of blood sample exam with date				
Recording of reagent in respect of product no, and date of expiry				
Recording of supervision with date				
Temperature monitoring of incubator water bath and refrigerator				
Safe disposal of infected blood with recording				
Proper calibration of the used equipment				

10. Safety measure maintained in the blood transfusion unit

Name of the activities	Done properly	Not done properly	Not done at all	Remarks
a. Wearing apron				
b. Use of gloves				
c. Needle recapping				
d. Daily cleaning with disinfectant of lab and equipment				
e. Hand washing				
f. visitor control				
g. Restriction of food, smoking in lab				
h. Disposal of lab waste:				
General waste				
Non infected clinical waste				
Infected clinical waste				
Liquid waste				

11. Procedural practice

Name of the test/Screening activities	Done properly	Not done properly	Not available	Remarks
Preparation of normal saline				
Collection of blood sample				
Cell washing and preparation of cell washing				
ABO grouping				
Rhesus typing				
Cross match				
Emergency cross match				
Coombs test				
Preparation of the red cell reagent				
Screening:				
HBV				
HCV				
HIV				
Malaria				
Syphilis				

12. Blood transfusion management

Activities	Done properly	Not done properly	Not done at all	Reason
a. Blood donor recruitment				
● Visual assessment				
● History taking				
● Medical exam				
●Lab investigation				
b. Preservation of blood bag				
● Blood bag preservation				
● Monitoring of temperature				
● Cold chain for blood bag				

13. Equipment and logistic state

Name of the equipment and logistic	Available	Not available
Bench top centrifuge		
Refrigerator for storing reagent. ABO cell and sample		
Deep freezer for storing serum sample		
Light box on white tile		
Water bath at 37 degree centigrade on incubator		
Containers for saline		
Plastic wash bottle		
Thermometer		
Pasteur pipette		
Glass tube for indirect anti-globulin test(75X12mm)		
Tube for grouping (50X7mm)		
Rack for test tubes		
Glass microscope slide		
Wooden applicator sticks		
Waterproof marker for glass and plastic tube		
Hand lens (2X5)		
PH indicator paper		
Microscope		
Weight machine		
Grouping rack		
Hot air oven		

14. Supervision and monitoring

Category of supervisee	Category of supervisor	Frequency of supervision	Feedback/On–job training received from supervisor	
			Feed back	On-job

15. Source of blood collection (last one year time period)

Total no of bag collected ----------

1. From relative----------
2. Voluntary ----------
3. Professional ----------

16. Donor retention

List of donor exist Yes -------- No ----------

17. Service charge for blood transfusion

a. Blood bag with transfusion set ----------TK
b. Blood screening ---------- TK
c. Blood grouping ---------- TK
d. Cost of blood ---------- TK

18. a. Is there any institution based campaign program for development of awareness in respect of blood donation?

Yes ---------- No ----------
If yes then activities 1.
2.
3.
4.

b. Is there any provision of donor registration card
Yes ---------- No----------

19. Information about wastage of blood

Available ---------- Not available----------
If available then percentage ----------

20. Supply status of Reagent

Name of the reagent	Any shortage supply		Supply shortage time (Month)
	Yes	No	

21. Documentation review

Name of the form and registers	Properly maintained	Partially maintained	Not maintained	Remarks
Blood request form				
Medical assessment of blood donor form				
Cross match report form				
Patient register				
Blood grouping register (patient)				
Blood grouping register (Donor)				
Screening register (Donor register)				
Cross match register				
Blood supply register				
Blood stock register				
Blood bag discard register				
Group wise voluntary donors list				
Daily component preparation register				
Daily component supply register				

DATA BASE FOR BLOOD BANK

PATIENT ENTRY:

1. **Objective –**
   - To identify the patient properly
   - For record keeping of all about patient
   - For management of patient if there is any complication.
2. **Identification of variables –**

   Blood request form which should include:
   - Patient sur name:
   - Patient fore name:
   - Sex:
   - Date of birth:
   - Patient address:
   - Hospital number:
   - Request for:
   - Reason for request:
   - Clinical diagnosis:
   - Unique request reference number:
   - Consultant responsible for this patient:
   - Date and time of request:
   - Requesting doctor:
   - If blood group known:
   - If previous transfusion given:
   - If previous transfusion reaction occur:
   - If there is history of pregnancy:
   - Presence of known antibody:
3. **Formation of format**
   - Blood request form
4. **Use of form, format & frequency-**
   - Blood request form for each unit of blood transfusion to the patient

5.Inflow of information-

- Documentation of special laboratory tests
  - -Antibody screening and identification
  - -Antibody titration
  - -Genotype& Phenotype
  - -Weak D or Partial D (D^U) test
  - -Hemolyisn test
  - -Detection of cold antibody
  - -Secretor status
  - -Other red cell antigen typing
  - -HLA typing
  - - If component required
  - -Component name
  - -Number of unit
  - -Date and time that component is required

DATABASE ON BLOOD SAFETY

According to WHO

SECTION 1: ADMINISTRATIVE INFORMATION

Information provided by:

Name of the organization	
Address	
Country	
Tel. no.	
E-mail	
Date	

Please provide data for the period January to December of the reporting year:

Data provided for the year (please tick ☒ appropriate box):

The information given applies to blood programmes at the following level:

☐ National level ☐ State/regional/provincial level ☐ Other (please specify) ☐

If not national, what percentage of your country's blood programme does this report cover? ☐ %

Total number of whole blood units collected in the reporting year: ☐

SECTION 2: ORGANIZATION AND MANAGEMENT

	YES	IN PROCESS	NO
Is there a unit within the Ministry of Health (or other government department) with responsibility for the *national blood programme*[1]?	☐	☐	☐
Is there a designated national blood programme manager?	☐	☐	☐
Is there a *national blood authority/commission*[2] (or equivalent)?	☐	☐	☐
Is there a *national blood policy*[3]?	☐	☐	☐
If yes, year of adoption:			☐
Is there a national blood plan for the implementation of the blood policy?	☐	☐	☐
If yes, has it been implemented?	☐	☐	☐
Is there national legislation covering blood transfusion?	☐	☐	☐
Is there a national advisory committee/expert panel on blood transfusion?	☐	☐	☐
Is there a *national blood transfusion service*[4] (NBTS)?	☐	☐	☐
If yes, in which year was the NBTS established?			☐
Is there a national director/chief executive officer for the NBTS?	☐	☐	☐
Is there an NBTS management committee?	☐	☐	☐
Has the government delegated any responsibility for the NBTS/*blood transfusion services*[5] to a nongovernmental organization?	☐	☐	☐

If yes:

Name of the organization(s): ☐

Role of the organization(s): ☐

How is the responsibility for the operation of the NBTS/*blood transfusion services*[5] distributed? For each category, please indicate the number of different types of blood centre.

Government		Non-governmental/non-profit organizations		Commercial (for profit) organizations	
MANAGEMENT RESPONSIBILITY	**BLOOD CENTRES THAT COLLECT, SCREEN, PROCESS AND DISTRIBUTE BLOOD**	**HOSPITAL-BASED BLOOD CENTRES THAT COLLECT, SCREEN, PROCESS AND ISSUE BLOOD**	**HOSPITAL BLOOD BANKS THAT STORE, CHECK COMPATIBILITY AND ISSUE BLOOD ONLY**		**OTHERS**
Government (**total**)	☐	☐	☐		☐
▪ Ministry of Health	☐	☐	☐		☐
▪ Other government department(s)	☐	☐	☐		☐
▪ University/ teaching hospitals	☐	☐	☐		☐
Non-governmental/ non-profit organizations (**total**)	☐	☐	☐		☐
▪ Red Cross/Red Crescent Society	☐	☐	☐		☐
▪ Other non-governmental organizations	☐	☐	☐		☐
▪ University/ teaching hospitals	☐	☐	☐		☐
Please specify the role of any non-governmental/non-profit organizations:			☐		
Commercial (for profit) organizations (**total**)	☐	☐	☐		☐
▪ Commercial blood centres	☐	☐	☐		☐
▪ Private hospitals	☐	☐	☐		☐
▪ Others (please specify their role):	☐	☐	☐		☐

	YES	IN PROCESS	NO
Does any international agency/organization/institution provide **technical** support to NBTS/blood transfusion services?	☐	☐	☐
If yes, name of agency:			
Does any international agency/organization/institution provide **financial** support to NBTS/blood transfusion services?	☐	☐	☐
If yes, name of agency:			

	YES	IN PROCESS	NO
Is there a system of centralized data collection and analysis for the NBTS/blood transfusion services?	☐	☐	☐
Is there a mechanism for calculating the costs of the operation of the NBTS/blood transfusion services?	☐	☐	☐
What is the approximate cost of producing a unit of whole blood/red blood cells (including donor recruitment, blood collection, testing, processing, storage and distribution)?			
Is a specific national budget provided for the NBTS/blood transfusion services?	☐	☐	☐
Is there a national cost recovery system for the NBTS/blood transfusion services?	☐	☐	☐
Are there national standards for the collection, storage, processing and issue of blood and blood products?	☐	☐	☐
Is there a designated national *quality manager*[6] for blood transfusion services?	☐	☐	☐
What percentage of blood centres use standard operating procedures[7] (SOPs) or local written instructions for relevant functions?			
▪ Blood donor recruitment			☐ %
▪ Blood donor selection			☐ %

▪ Blood collection and donor care	%
▪ Screening for transfusion-transmissible infections	%
▪ Blood group serology	%
▪ Blood component preparation	%
▪ Blood storage and transportation/distribution	%
▪ Compatibility testing (cross-matching)	%
▪ Issue of blood and blood components	%
▪ Administration of blood and blood components	%

What percentage of blood centres maintain records of the following:	MANUAL SYSTEM	ELECTRONIC SYSTEM
▪ Blood donor recruitment	%	%
▪ Blood donor selection	%	%
▪ Blood collection and donor care	%	%
▪ Screening for transfusion-transmissible infections	%	%
▪ Blood group serology	%	%
▪ Blood component preparation	%	%
▪ Blood storage and transportation/distribution	%	%
▪ Compatibility testing (cross-matching)	%	%
▪ Issue of blood	%	%
▪ Patients receiving blood transfusion	%	%
▪ Patients with transfusion reactions	%	%

	YES	IN PROCESS	NO
Is there a system of *audit* in the NBTS/blood transfusion services?	☐	☐	☐
Is there a national *external quality assessment scheme* for blood group serology?	☐	☐	☐
Is there a national *external quality assessment scheme* for transfusion-transmissible infections?	☐	☐	☐
Is there a mechanism for the bulk procurement of consumables for the NBTS/blood transfusion services?	☐	☐	☐

If yes, which of the following consumables are procured in bulk at various levels?

TYPE OF CONSUMABLE	NATIONAL LEVEL	STATE/PROVINCIAL/ REGIONAL LEVEL	INDIVIDUAL BLOOD CENTRE/ HOSPITAL
Blood bags	☐	☐	☐
Test kits	☐	☐	☐
Reagents	☐	☐	☐
Others (please specify): ☐	☐	☐	☐

Did stocks of any of the following consumables run out in the reporting year -			
Blood bags	☐		
Test kits	☐		
Reagents	☐		
Others (please specify): ☐	☐		
Are there national guidelines for waste management in blood transfusion services?	☐	☐	☐
Is there an educational programme in blood transfusion medicine/science leading to a nationally-recognized university degree/diploma?	☐	☐	☐
Is there a system of regular training of staff?	☐	☐	☐

Please indicate the types of training available for the following categories of staff.

STAFF CATEGORY	IN-SERVICE TRAINING	SHORT COURSES/ WORKSHOPS	FORMAL COURSES (IN COUNTRY)	FORMAL COURSES (OUTSIDE COUNTRY)
Medical officers	☐	☐	☐	☐
Administrative staff	☐	☐	☐	☐
Quality officers	☐	☐	☐	☐
Blood donor education/ recruitment staff	☐	☐	☐	☐
Blood collection/donor care staff	☐	☐	☐	☐
Blood donor counsellors	☐	☐	☐	☐
Blood component preparation staff	☐	☐	☐	☐

Laboratory technical staff	☐	☐	☐	☐
Clinicians who prescribe blood	☐	☐	☐	☐
Nurses who administer blood	☐	☐	☐	☐

		YES	IN PROCESS	NO
Is there a national *haemovigilance*[10] system?		☐	☐	☐
Is there a mechanism for the regulation of the NBTS/blood transfusion services?		☐	☐	☐
	If yes, is there a system of regular inspection of the NBTS/blood transfusion services?	☐	☐	☐
	Do the inspectors have specialized training in blood transfusion?	☐	☐	☐
	Is there a national regulatory authority?	☐	☐	☐
	If yes, name of regulatory authority:			
Is there a mechanism for the regulation of fractionated plasma products?		☐	☐	☐
	If yes, is there a system of regular inspection of plasma fractionation facilities?	☐	☐	☐
	Do the inspectors have specialized training in plasma fractionation?	☐	☐	☐
	Is there a national regulatory authority?	☐	☐	☐
	If yes, name of regulatory authority:			
What percentage of blood centres have direct access to:				
Personal computers				%
Internet?				%

		YES	NO
Would the NBTS/blood transfusion services benefit from external training or technical support?		☐	☐
	If yes, please specify areas:		
Could the NBTS/blood transfusion services in your country provide training or technical support to other countries?		☐	☐
	If yes, please specify areas:		

SECTION 3: BLOOD DONORS AND BLOOD COLLECTION

		YES	IN PROCESS	NO
Is there a unit designated for the national blood donor recruitment programme?		☐		☐
Is there a designated national blood donor recruitment officer?		☐		☐
Is a specific national budget provided for the blood donor recruitment programme?		☐		☐
Was World Blood Donor Day 2004 celebrated in your country?		☐		☐
Are information and education materials available for blood donors?		☐	☐	☐
What percentage of blood centres have trained donor recruitment staff?				%
What percentage of blood centres have trained blood collection/donor care staff?				%
Are there national criteria for assessing the suitability of donors for blood donation?		☐	☐	☐
	If yes, what percentage of blood centres have a system for assessing the suitability of donors based on the national criteria?			%
	What percentage of blood centres have a system of pre-donation counselling for blood donors?			%
What percentage of blood donors have a haemoglobin/haematocrit estimation done before blood donation?				%
what percentage of donors were deferred after being assessed as unsuitable to donate blood? (in the reporting year)				%
Is there a register/database of blood donors?		☐	☐	☐
	If yes, at what level is the register/database of blood donors maintained?			
	▪ National	☐		
	▪ State/provincial/regional	☐		
	▪ Individual blood centre or hospital	☐		

In the reporting year how many units of whole blood were collected from the following types of *blood donors*?				
		Nº		%
▪ Voluntary non-remunerated donors				%
▪ Family/replacement donors				%
▪ Paid donors				%
▪ Autologous donors				%
	How many units of whole blood were collected from the following types of voluntary non-remunerated *blood donors*[11]?			
		Nº		%
	▪ New voluntary donors			%
	▪ Lapsed voluntary donors			%
	▪ Regular voluntary donors			%
	What was the approximate percentage of all donations from:			
	▪ Male donors			%
	▪ Female donors			%
What percentage of blood centres collect whole blood units in sterile, disposable, plastic blood collection bags?				%
What is the average volume of a whole blood unit?				ml
What percentage of blood centres have a system of recording adverse blood donor reactions?				%

	YES		NO
Is the prevalence of transfusion-transmissible infections monitored in the blood donor population?	☐	☐	☐
What percentage of blood centres have a system of post-donation counselling of blood donors who test positive for transfusion-transmissible infections?			%
What percentage of blood centres have a system to maintain the confidentiality of blood donors?			%
What percentage of blood centres have a system to obtain feedback and complaints from donors?			%

SECTION 4: SCREENING FOR TRANSFUSION-TRANSMISSIBLE INFECTIONS

	YES	IN PROCESS	NO
Is there a national strategy for screening donated blood units for transfusion-transmissible infections?	☐	☐	☐

what percentage of donations were screened for transfusion-transmissible infections? Which assay systems were used? (in the reporting year)

INFECTION	MARKER(S) TESTED	YES	DONATIONS TESTED	EIA	SIMPLE/RAPID	MOLECULAR (e.g. NAT, TMA)
HIV I/II	▪ Ab	☐	%	☐	☐	☐
	▪ Ag	☐	%	☐	☐	☐
	▪ Combined Ag + Ab	☐	%	☐	☐	☐
	▪ DNA/RNA	☐	%	☐	☐	☐
HBV	▪ HBsAg	☐	%	☐	☐	☐
	▪ Anti-HBc	☐	%	☐	☐	☐
	▪ Others	☐	%	☐	☐	☐
HCV	▪ Ab	☐	%	☐	☐	☐
	▪ Ag	☐	%	☐	☐	☐
	▪ Combined Ag + Ab	☐	%	☐	☐	☐
	▪ DNA/RNA	☐	%	☐	☐	☐
Syphilis	▪ Ab	☐	%	☐	☐	☐
	▪ Others	☐	%	☐	☐	☐
Chagas' disease	▪ Ab	☐	%	☐	☐	☐
	▪ Others	☐	%	☐	☐	☐

Malaria	▪ Ab	☐	%	☐	☐	☐
	▪ Ag	☐	%	☐	☐	☐
	▪ DNA/RNA	☐	%	☐	☐	☐
	▪ Others	☐	%	☐	☐	☐
HTLV I/II	▪ Ab	☐	%	☐	☐	☐
	▪ Others	☐	%	☐	☐	☐
Other (please specify)		☐	%	☐	☐	☐
Other (please specify)		☐	%	☐	☐	☐

	YES	NO
In the reporting year was blood ever issued without screening due to the non-availability of test kits/reagents?	☐	☐

In the RY what was the prevalence (in percentage) of infection in donated blood units from different types of blood donor?

INFECTION	ALL DONORS	TOTAL VOLUNTARY DONORS	NEW VOLUNTARY DONORS	LAPSED VOLUNTARY DONORS	REGULAR VOLUNTARY DONORS	FAMILY/ REPLACEMENT DONORS	PAID DONORS
HIV	%	%	%	%	%	%	%
HBV	%	%	%	%	%	%	%
HCV	%	%	%	%	%	%	%
Syphilis	%	%	%	%	%	%	%
Chagas disease	%	%	%	%	%	%	%
Malaria	%	%	%	%	%	%	%
HTLV	%	%	%	%	%	%	%
Other (please specify) ☐	%	%	%	%	%	%	%
Other (please specify) ☐	%	%	%	%	%	%	%

From which tests are prevalence data obtained?	YES	NO
▪ Screening tests	☐	☐
▪ Confirmatory tests	☐	☐

What percentage of blood centres store frozen samples of donor plasma for look-back testing?	%
what was the total percentage of blood discarded after screening for transfusion-transmissible infections?	%

SECTION 5: BLOOD GROUP SEROLOGY AND COMPATIBILITY TESTING

	YES	IN PROCESS	NO
Is there a national strategy for testing donated blood units for blood groups?	☐	☐	☐

What percentage of donations are tested for blood group and by which methodology?

TEST PERFORMED	PERCENTAGE TESTED	MANUAL METHOD	SEMI-AUTOMATED	FULLY AUTOMATED
ABO cell grouping	%	☐	☐	☐
ABO serum grouping	%	☐	☐	☐
RhD antigen testing	%	☐	☐	☐
Antibody screening	%	☐	☐	☐
Other blood groups	%	☐	☐	☐

	YES	IN PROCESS	NO
Are there national guidelines on compatibility testing?	☐	☐	☐

What percentage of blood units are issued annually without compatibility testing?	%
What percentage of hospital blood banks use electronic cross-matching?	%

SECTION 6: BLOOD COMPONENT PREPARATION, STORAGE AND TRANSPORTATION

What percentage of blood centres prepare blood components?	%
What percentage of blood centres have the following equipment?	
Blood bank refrigerator with temperature monitoring system and alarm	%
Plasma freezer	%
Platelet agitator/incubator	%
Refrigerated centrifuge	%
Standby generator	%
Blood transport boxes	%
In 2004, what percentage of whole blood units were separated into components?	%

Which blood components are prepared?

COMPONENT	PREPARED FROM WHOLE BLOOD	PREPARED BY APHERESIS
Red cell preparations	☐	☐
Platelet concentrates	☐	☐
Plasma	☐	☐
Fresh frozen plasma	☐	☐
Cryoprecipitate	☐	☐
Inactivated plasma	☐	☐
Small paediatric units	☐	☐
Leucocyte-reduced units	☐	☐
Peripheral blood stem cells	☐	☐
Others (please specify)	☐	☐

What percentage of blood centres prepare blood components by apheresis?	%

	YES	IN PROCESS	NO
Is there a surplus of plasma in excess of national needs?	☐		☐
If yes, how is surplus plasma utilized?			
▪ Donated to another country/organization	☐		☐
▪ Sold to another country/organization	☐		☐
▪ Discarded	☐		☐
▪ Other (please specify) ☐	☐		☐
Are there national guidelines on the storage of blood and blood components?	☐	☐	☐
Are there national guidelines on the transportation of blood and blood components?	☐	☐	☐

What percentage of blood centres store blood and blood components in temperature-monitored equipment with an appropriate alarm?	%
What percentage of blood centres use domestic refrigerators for blood storage?	%
What percentage of blood centres transport blood and blood components in temperature-monitored equipment?	%
What percentage of blood centres store reagents in temperature-monitored equipment?	%
What percentage of blood centres have a system of separate blood storage areas for *quarantine*[13] and the issue of blood components?	%

	YES	IN PROCESS	NO
Is there a national system of blood stock management?	☐	☐	☐

what were the number and percentage of blood units discarded due to the following causes?

	Nº	%
▪ Faulty blood collection		
▪ Positive for transfusion-transmissible infection		
▪ Date expiry		
▪ Processing failure		
▪ Storage and transportation problems		
▪ Other causes (please specify) ☐		
▪ Total		

SECTION 7: THE CLINICAL USE OF BLOOD AND BLOOD COMPONENTS

	YES	IN PROCESS	NO
Are there national guidelines on the appropriate clinical use of blood?	☐	☐	☐
In reporting year what percentage of blood was transfused as whole blood?		☐ %	
In reporting year approximately how many patients received a transfusion of blood or blood components?			
▪ Total patients transfused		☐	
▪ Male patients transfused		☐	
▪ Female patients transfused		☐	
What percentage of hospitals have a functioning hospital transfusion committee?		☐ %	
What percentage of hospitals follow a *maximum surgical blood ordering schedule* (MSBOS) for routine surgery?		☐ %	
What percentage of hospitals have a system for monitoring clinical transfusion practice?		☐ %	
What percentage of hospitals have a system for monitoring post-transfusion **reactions**?		☐ %	
What percentage of hospitals have a system for monitoring post-transfusion **infections**?		☐ %	

SECTION 8: FRACTIONATED PLASMA PRODUCTS

	YES	IN PROCESS	NO
Is there a national strategy for the provision *of fractionated plasma products*[15]?	☐	☐	☐
If yes:			
Imported from abroad	☐	☐	☐
Fractionated within the country	☐	☐	☐
Public/not-for-profit sector	☐	☐	☐
If yes, please specify the name of the organization: ☐			
Private/for-profit sector	☐	☐	☐
Contract fractionation:	☐	☐	☐
If yes, please specify: ▪ Name of the organization: ☐ ▪ Country: ☐			
What is the total volume of plasma designated nationally for fractionation in a year?			
▪ Recovered plasma		☐ litres	
▪ Apheresis plasma		☐ litres	
▪ Not applicable		☐	
Which products are manufactured by fractionation within the country?			
▪ Albumin	☐		
▪ Immunoglobulin	☐		
▪ Factor VIII	☐		
▪ Factor IX	☐		
▪ Others (please specify): ☐	☐		
Is there a surplus of fractionated plasma products in excess of national needs?	☐		☐
If yes, how are these products utilized?			
▪ Donated to another country/organization	☐		☐
▪ Sold to another country/organization	☐		☐
▪ Discarded	☐		☐
▪ Other (please specify): ☐	☐		☐
What is the percentage of different types of plasmapheresis donors?			
▪ Voluntary non-remunerated plasma donors		☐ %	
▪ Paid plasma donors		☐ %	
▪ Other plasma donors (please specify): ☐		☐ %	

Blood Transfusion Management System

(Blood Bank Software)

By and large, current documentation and reporting system of blood transfusion activities appear to be incompatible with present need to ensure safe blood. So, Blood Transfusion Services needs improvements in this area in respect to laboratory testing, blood donor profile, quality assurance and other routine management services in order to provide effective patient care in the hospitals.

A comprehensive application software called **Blood Transfusion Management System** is required to implement by incorporating blood screening data, blood donor profile, valid documentation of laboratory testing , schedule for regular blood donation and motivational camp, schedule for training program, management of routine blood supply, monitoring of transfusion hazard, quality control of blood and its product, procurement and finance related activities. By establishing networking system between the centers will enhance optimum use of information and data exchange to oversee, monitor and evaluate the quality of the services of the centers from a National Reference Center and dissemination of collective information world wide through Website on Safe blood Transfusion Program of Bangladesh.

Software features

To fulfill the entire need of computer based operation , the following application modules to be developed and implemented in each computer c enter of the department :

- Donors Health Profile Management Module
- Recipient Health Profile Management Module
- Blood Screening Data Management Module
- Cross-Matching Data Management Module
- Medicine Inventory Control Management Module
- Blood Stock Inventory Management Module
- Check-List Management Module
- Investigation and Surgical Management Module
- And other module as required

Estimated costing of customized Blood Bank Software

Taka in Lakh

Sl No	Software description	No of Item	Unit Cost	Total Cost	Comments
1	**Web Based Blood Bank Management Software**	**1**	**10.00**	**10.00**	

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