FOOD AND DRUGS AUTHORITY

GUIDELINES FOR LICENSING BLOOD FACILITIES AND BLOOD PRODUCTS LISTING

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FOREWORD

The Ghana Public Health Act 2012, Act 851 requires that Blood, Blood components and Blood products manufactured in Ghana meet acceptable standards of Quality, Safety and Efficacy and at the same time be assessed to have been collected, tested, processed and stored in facilities that comply with current Good Manufacturing Practice, Good Storage Practice and Good Distribution Practice.

This document is intended to provide guidance to applicants for the preparation of submissions in accordance with the Blood Facility Licensure and Product Listing requirements in Ghana.

The Food and Drugs Authority (FDA) license Blood Facilities involved in the collection, testing, process, store, release, and distribute Blood, Blood components and Blood products in Ghana and monitor their quality and safety profiles for Serious Adverse Blood Related Events (SABRE).

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1.0 INTRODUCTION

Blood and blood components are applied in life-threatening situations of severely ill patients. Coupled to this is the heightened public awareness of the Quality and Safety issues of blood, blood components and blood products. It is therefore recommended that high standards of quality and safety for blood and blood products are sustained through the application of the principle of Good Manufacturing Practice (GMP) during the collection, testing, processing, storage, dispatch, quality control, and quality assurance of the products.

The implementation of the principles of GMP by Blood Facilities, as well as the inspection of Blood Facility by the Food and Drugs Authority (FDA) is imperative to assure the quality and safety of blood and blood products manufactured in those Facilities.

These guidelines are intended to be used in conjunction with other established GMP guidelines to provide guidance on the requirements needed to license Blood Facilities (including apheresis facilities) and list Blood components and blood products. It will provide guidance for the collection, testing, processing, storage and distribution as well as the manufacturing and the quality control of blood, blood components and blood products.

PURPOSE

The purpose of this document is to provide guidance to owner and operators of Blood Facilities on the relevant regulatory requirements needed to maintain the compliance status of their operational activities. The document shall provide useful regulatory insight into the collection, preparation, storage, release, distribution, quality control and quality assurance of whole Blood, Blood component, and Blood products. Applicants are encouraged to familiarize themselves with the information contained in this document prior to applying for a license to operate as a Blood Facility.

1.1 Scope

In pursuance of Section 118 of the Public Health Act 2012, Act 851, these Guidelines are hereby made to provide guidance to applicants on the regulatory requirements for licensing a Blood Facility in Ghana.

1.2 Definition of Terms

In these guidelines, unless the context otherwise states:

‘Apheresis’ for the process by which blood drawn from a donor, after separating plasma or platelets or leucocytes, or red cells, is re-transfused simultaneously into the said donor;

‘Autologous Blood’ the blood drawn from the patient for re-transfusion unto himself later on;

‘Blood’ and includes whole human blood, drawn from a donor and mixed with an anti-coagulant;

'Blood Bank' a unit or institution which stores and distributes and may perform compatibility tests on blood and blood components exclusively for use in other health facilities;

'Blood Component' a drug prepared, obtained, derived or separated from a unit of blood drawn from a donor;

'Blood Establishment' any structure or body that is responsible for any aspect of the collection and testing of human blood or blood components, whatever their intended purpose, and their processing, storage, and distribution when intended for transfusion. This does not include hospital blood banks;

'Blood Facility' blood establishments, hospital blood banks, clinics, manufacturers and biomedical research institutions to which blood or blood components may be collected, tested, processed, labeled, stored, released and distributed.We consider hospitals that freeze, deglycerolize, wash, irradiate, rejuvenate, or reduce the number of leukocytes from red blood cells to be a Blood Facility;

'Blood Product' a drug manufactured or obtained from pooled plasma or blood by fractionation, drawn from donors;

'Donor' a person who voluntarily donates blood after he has been declared fit after a medical examination, for donating blood, on fulfilling the criteria given hereinafter, without accepting in return any consideration in cash or kind from any source, but does not include a professional or a paid donor;

'Hospital Blood Bank' a hospital unit which stores and distributes and may perform compatibility tests on blood and blood components exclusively for use within hospital facilities, including hospital based transfusion activities;

'Leucapheresis' the process of removing whole blood from a donor, separating the blood to into its components, keeping the white cells, and then returning the remaining blood components to the donor.

'Plasmapheresis' the process of removing whole blood from the donor , separating the blood into its components ,keeping the plasma, and then returning the remaining blood components to the donor.

'Plateletpheresis' the process of removing whole blood from the donor, separating the blood into its components,keeping the plasma, and then returning the remaining blood components to the donor.

'Commercial Donor' a person who donates blood for a valuable consideration, in cash or kind, from any source, on behalf of the recipient – patient and includes a paid donor or a commercial donor;

'Family/Aquaintant Donor' a donor who is a family friend or a relative of the patient –recipient.

2.0 REQUIREMENTS FOR LICENSING BLOOD FACILITIES AND BLOOD PRODUCT LISTING

2.1 Blood Facility

2.1.1 General considerations

- **Location and Surroundings**: The blood facility shall be located at a place which shall be away from open sewage, drain, public lavatory or similar unhygienic surroundings.

- **Building facility**: The building(s), used for the operation of a blood facility and/or preparation of blood components shall be constructed in such a manner so as to permit the operation of the blood bank and preparation of blood components under hygienic conditions and shall avoid the entry of insects, rodents and flies.
  The facility shall be well lighted, ventilated and screened (mesh), wherever necessary. The walls and floors of the rooms, where collection of blood or preparation of blood components or blood products is carried out shall be smooth, washable and capable of being kept clean. Drains shall be of adequate size and where connected directly to a sewer, shall be equipped with traps to prevent back siphonage.

- **General health and sanitation, and protective clothing**: The employees shall be free from contagious or infectious diseases. They shall be provided with clean overalls, head-gears, foot-wears and gloves, wherever required. There shall be adequate, clean and convenient hand washing and toilet facilities.

2.1.2 Premises for a Blood Facility

A blood facility shall have an area of reasonable size for its operations and for preparation of blood components. It shall be consisting of a room each for:

- Registration and medical examination. Area shall have adequate furniture and facilities for registration and selection of donors
- blood collection (air-conditioned)
- blood component preparation (The area shall be air-conditioned to maintain temperature between 20 degree Celsius to 25 degree Celsius)
- laboratory for blood group serology (air-conditioned)
- laboratory for transfusion transmissible diseases testing, i.e. Hepatitis B surface antigen, Hepatitis C, Syphilis, HIV I &II (air-conditioned)
- sterilization and washing
- donor refreshment and rest room (air-conditioned)
- stores and records room.

NOTE:

I. After phlebotomy, refreshments shall be served to the donor while he/she is kept under observation in the blood facility for a reasonable period of time according to applicable SOP.

2.1.3 Staff/Personnel

All blood facilities shall have the following permanent and competent technical staff with the appropriate qualification that meets National Blood Service job specifications:

a) A medical Officer, with the requisite qualifications
b) Blood Facility technician(s). The technician shall possess:-
    i. Degree in Medical Laboratory Technology (M.L.T), or its equivalent, with six months' experience in the testing of blood and/or its components; or
    ii. Diploma in Medical Laboratory Technology (MLT), or its equivalent, with one year's experience in the testing of blood and/or its components, the degree or diploma being from a University/Institution accredited to award the certificate.
c) Registered nurse or its equivalent.
d) Technical Supervisor (where blood components are manufactured). The supervisor shall possess:-
    i. Degree in Medical Laboratory Technology (M.L.T.), or its equivalent, with six months' experience in the preparation of blood components; or
    ii. Diploma in Medical Laboratory Technology (M.L.T), or its equivalent, with one year's experience in the preparation of blood components, the degree or diploma being appropriately accredited.

e) Technical assistant (laboratory), technical assistant (donor care)

NOTE

(1) The number of competent technical personnel employed by the Blood Facility shall be adequate and in accordance with the requirements laid down in the manual of the Ministry of Health/ Ghana Health Service.

(2) It shall be the responsibility of the licensee to ensure through maintenance of records and blood banking systems and that adequately trained personnel manage all blood banking activities, including collection, processing, storage, testing release. The personnel should be made aware of the principles of current Good Manufacturing Practices (cGMP) and trained to adhere to relevant Standard Operating Procedures (SOP). Personnel should be given initial (when employed) and continuing training relevant to their needs.

2.1.4 Maintenance

The premises shall be well-maintained with adherence to housekeeping protocols. The facilities shall provide for the following:

1. Privacy during thorough examination of individuals to determine their suitability as donors
2. Rooms for blood collection with minimal risk of contamination or exposure to activities and equipment unrelated to blood collection.
3. Storage area for blood or blood components pending completion of tests.
4. Provide for quarantine area for blood and blood components, pending repetition of tests that require further investigation.
5. Provide for dedicated areas for quarantined materials, storage, handling and disposal of products and reagents not suitable for use.
6. Storage for finished products prior to release and distribution.
7. Areas for collection, processing, compatibility testing, storage and distribution of blood and blood components to prevent contamination.
8. Adequate space and logistics for procedures related to plasmapheresis, plateletpheresis and leucapheresis.
9. Space for proper packaging and labeling as well as for other finishing operations.
10. Provide for a safe and sanitary disposal of the following;
    a. Blood, Blood component, Blood products not suitable for use, distribution or sale
    b. Reagents, medical devices, including *in vitro* diagnostic kits as well as items/articles used during the collection, processing, testing for serological markers and compatibility testing of blood and blood components.

2.1.5 Equipment

Equipment used in the collection, processing, testing, storage, release and distribution of blood, blood components and blood products shall be maintained, located and operated in accordance to the manufacturers' instructions. The equipment shall be observed, standardized and calibrated on a regular schedule in accordance with an approved SOP manual and shall operate in the manner for which it was designed. Equipment shall be calibrated relatively frequently in order to establish reproducibility, i.e. their metrological stability or the change in their measuring ability between calibrations. Equipment shall be observed, standardized and calibrated with at least the following frequencies:-

No.	Equipment	Performance	Frequency	Frequency of calibration
1	Temperature recorder	Compare against thermometer	daily	Regularly, in accordance with SOP
2	Refrigerated centrifuge	Speed and temperature	daily	Regularly, in accordance

		observation		with SOP
3	Hematocrit centrifuge	Speed and time	daily	Standardize prior to initial use, after repair or adjustment annually
4	General Lab Centrifuge	Observe speed	daily	Tachometer, every six (6) months
5	Automated blood typing	Observe controls for correct results	daily	-------
6	Haemoglobinometer	Standardize against a cyanamethemoglobulin standard	daily	-------
7	Refractiometer or Urinometer	Standardize against distilled water	daily	--------
8	Blood container weighing device	Standardize against container of known weight	daily	Regularly, in accordance with SOP
9	Water bath	Observe temperature	daily	Regularly, in accordance with SOP
10	Rh view box	Observe operation	daily	Regularly, in accordance with SOP
11	Autoclave	Observe temperature and pressure	during use	Regularly, in accordance with SOP
12	Serologic rotators	Observe controls for correct results	each day of use	Regularly, in accordance with SOP
13	Laboratory thermometer	Observe controls for correct results	each day of use	Before initial use
14	Electronic thermometer	Observe controls for correct results	monthly	Before initial use
15	Blood agitator	Observe weight of the first container of blood filled for correct results	each day of use	Standardize with container of known mass or volume before initial use, and after repairs or adjustment

2.1.6 Supplies and reagents

All supplies and reagents used in the collection, processing, compatibility, testing, storage and distribution of blood and blood components shall be stored at an appropriate temperature in a safe and hygienic place, in a proper manner. The following shall be implemented:-

a) all supplies coming in contact with blood, blood components and blood products intended for transfusion shall be sterile, pyrogen-free, and shall not interact with the product in such a manner as to have an adverse effect on the safety, purity, potency or effectiveness of the product.
b) supplies and reagents that do not bear an expiry date shall be stored and issued for use in a manner that allows the use of the oldest supplies first.
c) supplies and reagents shall be used in accordance with the instructions captured on the label provided by the manufacturer.
d) all final containers and closures for blood and blood components not intended for transfusion shall be clean and free of surface solids and other contaminants.
e) Each blood pack (single or multiple), shall be examined visually for damage or evidence of contamination prior to its use and immediately after filling. Such examination shall include inspection for breakage of seals, when indicated, and abnormal discoloration. Where any defect is observed, the container shall not be used or, if detected after filling, shall be properly discarded.
f) representative samples of each lot of the following reagents and/or solution shall be tested regularly on a scheduled basis by methods described in the Standard Operating Procedures manual to determine their capacity to perform as required:

No.	Supplies and Reagents	Frequency of testing along with controls
1	Anti-human serum	Each day of use
2	Blood grouping serum	Each day of use
3	Lectin	Each day of use
4	Antibody screening and reverse grouping cells	Each day of use
5	Hepatitis test reagent	Each run
6	Syphilis serology reagents	Each run
7	Enzymes	Each day of use
8	HIV I and II reagents	Each run
9	Normal saline (LISS and PBS)	Each day of use
10	Bovine albumin	Each day of use

2.1.7 Good Manufacturing Practices (GMPs) / Standard Operating Procedures (SOPs)

Written Standard Operating Procedures shall be maintained and periodically updated and shall include all steps to be followed in the collection, processing,

compatibility testing, storage and sale or distribution of blood and/or preparation of blood components for homologous or allogeneic transfusion, autologous transfusion and further manufacturing purposes. Such procedures shall be available to the personnel for use in their respective areas. The Standard Operating Procedures shall inter alia include:

1.
    a. criteria used to determine donor suitability.
    b. methods of performing donor qualifying tests and measurements including minimum and maximum values for a test or procedure, when a factor in determining acceptability;
    c. solutions and methods used to prepare the site of phlebotomy so as to give maximum assurance of a sterile blood collection
    d. method of accurately relating the product(s) to the donor;
    e. blood collection procedure, including in-process precautions taken to measure accurately the quantity of blood drawn from the donor;
    f. methods of component preparation including, any time restrictions for specific steps in processing;
    g. all tests and repeat tests performed on blood and blood components during processing;
    h. pre-transfusion testing, wherever applicable, including precautions to be taken to identify accurately the recipient blood components during processing;
    i. procedures of managing adverse reactions in donor and recipient reactions
    j. storage temperatures and methods of controlling storage temperatures for blood and its components and reagents;
    k. length of expiry dates, if any, assigned for all final products;
    l. criteria for determining whether returned blood is suitable for re-issue;
    m. procedures used for relating a unit of blood or blood component from the donor to its final disposal;
    n. quality control procedures for supplies and reagents employed in blood collection, processing and re-transfusion testing;
    o. schedules and procedures for equipment maintenance and calibration;
    p. labelling procedures to safe guard its mix-ups, receipt, issue, rejected and in-hand;
    q. procedures of plasmapheresis, plateletpheresis and leucapheresis if performed, including precautions to be taken to ensure re-infusion of donor's own cells.
    r. procedures for preparing recovered (salvaged) plasma if performed, including details of separation, pooling, labeling, storage and distribution.
    s. all records pertinent to the lot or unit maintained pursuant to these regulations shall be reviewed before the release or distribution of a lot or unit of final product. The review or portions of the review may be performed at appropriate periods during or after blood collection, processing, testing and storage. A thorough investigation, including the conclusions and follow-up, of any

unexplained discrepancy or the failure of a lot or unit to meet any of its specification shall be made and recorded;

2.2 Criteria for blood donation

2.2.1 Conditions for donation of blood

1. No person shall donate blood and no Blood Facility shall draw blood from a person, more than once in fourmonths. The donor shall be in good health, mentally sound and physically fit and shall not be inmates of a jail, persons having multiple sex partners and drug-addicts. The donors shall fulfill the following requirements, namely :-

    a. within the age group of 17 to 60 years.
    b. not less than 50 kilograms;
    c. temperature and pulse of the donor shall be normal;
    d. the systolic and diastolic blood pressures are within normal limits without medication;
    e. haemoglobin shall not be less than 12.0 g/dl for female and 13.0g/dl for male;
    f. the donor shall be free from acute respiratory diseases;
    g. the donor shall be free from any skin diseases at the site of phlebotomy ;
    h. the donor shall be free from any disease transmissible by blood transfusion, insofar as can be determined by history and examination indicated above;
    i. the arms and forearms of the donor shall be free from skin punctures or scars indicative of a professional blood donor or addiction to self-injected narcotics

2. Additional qualifications of a donor. -No person shall donate blood, and no blood Facility shall draw blood from a donor, in the conditions mentioned in column (1) of the Table given below before the expiry of the period of deferral mentioned in the column (2) of the said table.

Table: Deferment of blood donations

No.	Condition (1)	Period of deferment (2)
1	Typhoid	6 months after recovery
2	History of malaria and duly treated	Acceptable after treatment and recovery
3	Immunization (Cholera, Typhoid, Diphtheria, Tetanus, Plague, Gamma globulin)	15 days
4	Tattoo	6 months
5	Breast feeding	12 months after delivery
6	Surgery	12 months (major surgery), 3 months (minor

		surgery)
7	History of blood transfusion	1 year
8	Abortions	6 months
9	Rabies vaccination	12 months after vaccination
10	History of Hepatitis in family or close contact	12 months
11	Immunoglobulin	12 months
12	Tooth Extraction, Root filling and similar treatment by dentist or dental hygienist	1 week

3. No person shall donate blood and no blood facility shall draw blood from a person, suffering from any of the diseases mentioned below:
    a. Cancer
    b. Heart disease
    c. Abnormal bleeding tendencies
    d. Unexplained weight loss
    e. Diabetes-controlled with Insulin
    f. Hepatitis infection
    g. Chronic nephritis
    h. Signs and symptoms, suggestive of AIDS
    i. Liver disease
    j. Tuberculosis
    k. Polycythemia Vera
    l. Asthma
    m. Epilepsy
    n. Leprosy
    o. Schizophrenia
    p. Endocrine disorders

2.2.2 General equipment and instruments

1. For blood collection area :
    1. Donor beds, chairs and tables: These shall be suitably and comfortably cushioned and shall be of appropriate size.
    2. Bedside table.
    3. Sphygmomanometer and Stethoscope.
    4. Recovery beds for donors.
    5. Refrigerators for storing donated bloodmaintaining temperature between 2 to 6 degree Celsius with digital dial thermometer, recording thermograph and alarm device, with provision for continuous power supply.
    6. Weighing devices for donor and blood packs.

2. For haemoglobin determination:
    i. Copper sulphate solution (specific gravity 1.054 for male and 1.052 for female)
    ii. Sterile lancet and impregnated alcohol swabs.
    iii. Capillary tube (1.3x1.4x96 mm or pasteur pipettes)
    iv. haemoglobinometer.

3. For temperature and pulse determination:
    i. Clinical thermometers.
    ii. Watch (fitted with a seconds-hand) and a stop-watch.
4. For blood containers:
    i. Only disposable PVC blood bags shall be used (closed system) as per the specifications of IP/USP/BP.
    ii. Anti-coagulants: The anti-coagulant solution shall be sterile, pyrogen-free and of the following composition that will ensure satisfactory safety and efficacy of the whole blood and/or for all the separated blood components.
        a) Citrate Phosphate Dextrose Adenine solution (CPDA) or Citrate Phosphate or Dextrose Adenine- 1 (CPDA-1) ---- 63 ml Solution shall be required for 450 ml +/- 50ml.

NOTE 1

i. In case of single/double/triple/quadruple blood collection bags used for blood component preparations, CPDA blood collection bags may be used.
ii. Acid Citrate Dextrose solution (A.C.D with Formula-A). I.P. –63ml 15ml. Solution shall be required for 450ml +/- 50ml.
iii. Additive solutions such as SAGM, ADSOL, NUTRICEL may be used for storing, and retaining Red Blood cells upto 42 days.

NOTE 2

The licensee shall ensure that the anti-coagulant solutions are registered with the FDA and are procured from licensed manufacturer and the Blood bags in which the said solutions are contained have a Certificate of Analysis (CoA) of the said manufacturer and also registered with the FDA.

5. Emergency equipment/items
    1. Oxygen cylinder with mask, gauge and pressure regulator.
    2. 5 percent Glucose or Normal Saline.
    3. Disposable sterile syringes and needles of various sizes.
    4. Disposable sterile I.V. infusion sets.
    5. Ampoules of Adrenaline, Noradrenaline, Mephentin, Betamethasone or Dexamethasone, Metoclorpropamide injections
    6. Aspirin

(*Note: All medicinal items shall be regulated, approved for their indications and shall be registered with the FDA*)

6. Accessories:
    i. Such as blankets, emesis basins, haemostats, set clamps, sponge forceps, gauze, dressing jars, solution jars, waste cans.
    ii. Medium cotton balls, 1.25 cm. adhesive tapes.
    iii. Denatured spirit, Tincture Iodine, green soap or liquid soap.
    iv. Paper napkins or towels.
    v. Autoclave with temperature and pressure indicator.
    vi. Incinerator.
    vii. Stand-by generator.

7. Laboratory equipment:
    1. Refrigerators, for storing diagnostic kits and reagents, maintaining a temperature between 4 to 6 degree Celsius (plus/minus 2 degrees Celsius) with digital dial thermometer having provision for continuous power supply.
    2. Compound Microscope with low and high power objectives.
    3. Centrifuge Table Model
    4. Water bath: having range between 37 degree Celsius to 56 degree Celsius
    5. Rh viewing box in case of slide technique.
    6. Incubator with thermostatic control.
    7. Mechanical shakers for serological tests for Syphilis.
    8. Hand-lens for observing tests conducted in tubes.
    9. Serological graduated pipettes of various sizes
    10. Pipettes (Pasteur)
    11. Glass slides
    12. Test tubes of various sizes/micrometer plates (U or V type)
    13. Precipitating tubes 6mmx50mm of different sizes and glass beakers of different size
    14. Test tube racks of different specifications.
    15. Interval timer electric or spring wound.
    16. Equipment and materials for cleaning glass wares adequately.
    17. Insulated containers for transporting blood, between 2 degree Celsius to 10 degree Celsius temperatures, to wards and hospitals.
    18. Wash bottles
    19. Filter papers
    20. Dielectric tube sealer.
    21. Plain and EDTA vials
    22. Chemical balance (wherever necessary)
    23. ELISA reader with printer, washer and micropipettes.
8. Blood Storage area
    1. Refrigerator maintaining a temperature between 2-8 ^{0} C
        a. digital dial thermometer with recording thermograph and alarm device continuous power supply;
    2. Platelet agitator with incubator maintaining a temperature between20-25^{0} C(wherever necessary) continuous agitation;
        a. digital dial thermometer with recording thermograph and alarm device continuous power supply
    3. Deep freezers maintaining a temperature between -20 to -40 ^{0} C or lower temperature
        a. digital dial thermometer with recording thermograph and alarm device continuous power supply
    4. Insulated blood bag transport containers at appropriate temperature for transport purposes

2.2.3 Special reagents

1. Standard blood grouping sera Anti-A, Anti-B and Anti-AB and Anti D with known controls. Rh typing sera shall be in duplicate quantities and each of different brands or if from the same, supplier each supply shall be of different lot numbers.
2. Reagents for serological tests for syphilis and positive sera for controls.
3. Anti-Human Globulin Serum (Coomb's serum)
4. Bovine Albumin 22 percent Enzyme reagents for incomplete antibodies.
5. ELISA test kits for Hepatitis B and C and HIV I and II.
6. Detergent and other agents for cleaning laboratory glasswares.

2.2.4 Testing of whole blood

1. It shall be the responsibility of the licensee to ensure that the whole blood collected, tested, processed, stored, and released for distribution conforms to the standards contained in this document.
2. Each blood unit shall also be tested for HIV I and II Ag/Ab, Hepatitis B surface antigen, and Hepatitis C Virus antibody, Syphilis antibodies.
3. All donated blood for use must be labeled with the screening results of the agents. Only blood negative for HIV I and II, Hepatitis B and C and Syphilis must be issued for transfusion.

NOTE

a) Blood samples of donors in pilot tubes shall be preserved for5 years at -50 to -80 degrees Celsius.
b) Blood samples of recipients in pilot tubes shall be preserved for 7 days at 2 to 8 degrees Celsius.
c) The blood intended for transfusion shall not be frozen at any stage.
d) Blood packs/bags shall not come directly in contact with ice at any stage.

2.2.5 Records

The records which the licensee is required to maintain shall include but not limited to the following:

1. **Blood donor record**: It shall indicate donation number, date of collection, name, address and signature of donor with other particulars of age, weight, hemoglobin, blood grouping, blood pressure, medical examination and patient's detail for whom donated in case of replacement donation, category of donation (voluntary/replacement) and deferral records and signature of Officer In-charge.
2. **Master records for blood and its components**: It shall indicate donation number, date of collection, date of expiry, quantity in milliliter (mL). ABO/Rh Group, results for testing of HIV I and HIV II antibodies and antigen, Syphilis, Hepatitis B surface antigen and Hepatitis C virus antibody and irregular antibodies (if any), name and address of

the donor with particulars, components prepared or discarded and signature of the Officer In-charge.

3. **Issue register**: It shall indicate donation number, date and time of issue, ABO/Rh Group, volume in ml, name and address of the recipient, group of recipient, unit/institution, details of cross-matching report, and indication for transfusion.
4. **Records of components supplied**: quantity supplied; compatibility report, details of recipient and signature of issuing person.
5. Records of A.C.D./C.P.D/CPD-A/SAGM bags giving details of manufacturer, batch number, date of supply, and results of testing.
6. Register for diagnostic kits and reagents used: name of the kits/reagents, details of batch number, date of expiry and date of use.
7. Blood bank must issue the cross matching report of the blood to the patient together with the blood unit.
8. Transfusion adverse reaction records.
9. Records of purchase, use and stock in hand of disposable needles, syringes, blood bags, shall be maintained.

NOTE

The above listed records shall be kept by the licensee for a period of five years.

2.2.6 Labels

The labels on every bag containing blood and/or component shall contain the following particulars, namely:

1. Component type or name.
2. License number
3. Donation number The date on which the blood is drawn and the date of expiry
4. A colored blood group label shall be put on every bag containing blood. The following color scheme for the said labels shall be used for different groups of blood:

BLOOD GROUP	COLOUR OF THE LABEL
O	Blue
A	Yellow
B	Pink
AB	White

5. The results of the tests for Hepatitis B surface antigen, and Hepatitis C virus antibody, syphilis, freedom from HIV I and HIV II antibodies.
6. The ABO/Rh group.
7. Total volume of blood and blood component.
8. Temperature must be kept between 2 degree and 6 degree Celsius for whole blood, and Concentrated Red Cells, at 22 to 25 degrees Celsius for platelets
9. Appropriate compatible cross matched blood without a typical antibody in recipient shall be used.

10. The contents of the bag shall not be used if there is any visible evidence of deterioration 1ike haemolysis, clotting or discoloration.

NOTES

a) ln the case of blood components, particulars of the blood from which such components have been prepared shall be appropriately documented.
b) The blood and/or its components shall be distributed on the prescription of a Registered Medical Practitioner.

2.3 Blood donation session

A blood donation sessionmay be organized by a licensed blood facility managed by registered voluntary or charitable organizations recognized by Ministry of Health, National Blood Service Ghana and the FDA.

NOTE

a) Designated regional blood transfusion centers shall be approved by NBSG to collect,test, process, store and distribute blood and its components to satisfy the blood needs of the region. The center should have been licensed and approved by the Food and Drugs Authority for that purpose.
b) The FDA shall be updated with detailed information about the exercise, including venue, the number of donors involved, the volumes of blood extracted and the technical teams involved.

The requirements for organizing a blood donation drive are captured below; the following requirements shall be fulfilled/complied with before a blood donation drive shall be activated:

2.3.1 Premises and personnel

- Premises for the blood donation drive shall be spacious, hygienic and appropriately located to enable sufficient operation, maintenance and cleaning
- Information about the personnel and operational equipment dedicated to each drive shall be well documented and made available for audit, if required, while ensuring
    i. continuous and uninterrupted electricity supply for equipment used;
    ii. adequate lighting;
    iii. wash room equipped with a hand-washing basin for staff and donors;
    iv. a reliable communication system;
    v. sufficient furniture and equipment arranged within the available place;
    vi. refreshment facilities for donors and staff;
    vii. facilities for medical examination of the donor

viii. Proper disposal of waste.

2.3.2 Personnel for out-door blood donation camp

In order to collect blood from 50 to 70 donors in about 3 hours or from 100 to 120 donors in about 5 hours, the following requirements shall be fulfilled/complied with:

- Two nurses
- Three Phlebotomists/ technical staff for managing 6 - 8 donor tables;
- two attendants;
- One blood donor recruitervehicle having a capacity to seat 8-10 persons, with provision for carriage of donation goods, including logistics to conduct a blood donation drive
- One Medical Officer supervising the team

2.3.3 Equipment

- Blood Pressure apparatus.
- Stethoscope.
- Blood bags (single, double, triple, quadruple)
- Donor questionnaire.
- Weighing device for donors.
- Weighing device for blood bags,
- Artery forceps, scissors.
- Stripper for blood tubing.
- Bed sheets, blankets/mattress.
- Lancets, swab stick/tooth picks.
- Glass slides.
- Portable Hb meter/copper sulphate.
- Test tube (big) and 12x100 mm (small)
- Test tube stand.
- Test tube sealer film.
- Medicated adhesive tape.
- Plastic waste basket
- Donor cards and refreshment for donors.
- Emergency medical kit
- Insulated blood bag containers with provisions for storing between 2
  Degree Celsius to 8 degree Celsius.
- Dielectric sealer or portable sealer
- Needle destroyer (wherever necessary)

2.4 Processing blood components from whole blood

2.4.1 By a Blood Facility

The Blood components shall be processed from whole blood by a blood facility as part of its services. The conditions for granting licensure or renewal of license to prepare blood components shall be as follows: -

2.4.1.1 Accommodation

i. Rooms with adequate working space and the appropriate layout for preparing blood components depending on quantum of work load
ii. Preparation of Blood components shall be carried out only under a closed system using single, double, triple or quadruple plastic bags except for preparation of Red Blood Cells Concentrates, where single bags may be used with transfer bags. An open system may be approved provided strict GMP and house-keeping SOPs are prepared and operational.

2.4.1.2 Equipment

iii. Air conditioner;
iv. Laminar air flow bench;
v. Suitable refrigerated centrifuge
vi. Plasma expresser;
vii. Clipper and clips and or dielectric sealer;
viii. Weighing device;
ix. Dry rubber balancing material;
x. Artery forceps, scissors;
xi. Refrigerator maintaining a temperature between 2 degree Celsiusto 6 degree Celsius, a digital dial thermometer with recording thermograph and alarm device, with provision for continuous power supply;
xii. Platelet agitator with incubator (wherever necessary)
xiii. Freezers maintaining a temperature between minus 30 degree Celsius to minus 40 degree Celsius and minus 75 degree Celsiusto minus 80 degree Celsius;
xiv. Plasma thawers / insulated water bath;
xv. Insulated blood bag containers with provisions for storing at appropriate temperature for transport purposes:

2.4.1.3 Personnel

The team shall include competent technical staff dedicated to the processing of Blood Components.

2.4.1.4 Testing facilities

General: Facilities for A, B, AB and O groups and Rh grouping. Hepatitis B Surface antigen and Hepatitis C virus antibody, syphilis, HIV I and HIV II antigen and antibodies shall be mandatory for every donated blood unit before it is used for the preparation of blood components. The results of such testing shall be indicated on the label.

2.5 Categories of blood components

2.5.1 Concentrated Red Blood Cells

The product shall be known as "Packed Red Blood Cells" that is Packed Red Blood Cells remaining after separating plasma from human whole blood.

2.5.1.1 General Requirements

a) *Storage*: Immediately after processing, the packed RBC shall be kept at a temperature between 2 degree Celsius to 6 degree Celsius
b) *Inspection*: The component shall be visually inspected post-separation, during storage and at the time of issuance. The product shall not be issued if there is an abnormality in colour or physical appearance or any indication of microbial contamination.
c) *Suitability of Donor*: The source blood for the packed RBC shall be obtained from a donor who meets the criteria for blood donation as specified in SOP and questionnaire.
d) *Testing of whole blood*: Blood from which packed RBC are prepared shall be tested as specified.
e) *Pilot samples*: Pilot samples collected in integral tubing or in separate pilot tubes shall meet the following specifications:
    i. At least one pilot sample of the original blood collected at the time of donation shall be preserved for each donation.
    ii. Before they are filled, all pilot sample tubes shall be marked or identified so as to relate them to the donor of that unit.Before the final container is filled or at the time the final product is prepared, the pilot sample tubes accompanying a unit, shall be attached in a tamper-proof manner.All pilot sample tubes, accompanying a unit of whole blood, shall be filled immediately after the blood is collected, by the person who performs the collection.

2.5.1.2 Processing

xvi. *Separation*: Packed RBCs shall be separated from the whole blood-
    1) if the whole blood is stored in Anticoagulant Citrate Dextrose solution (ACD) solution within 21 days, and
    2) if the whole blood is stored in an anticoagulant Citrate Phosphate Dextrose-Adenine 1 (CPDA-1) solution, within 35 days, from the date of collection. Packed RBCs may be prepared either by centrifugation done in a manner that shall not tend to increase the temperature of the blood or by normal undisturbed sedimentation method. A portion of the plasma, sufficient to ensure optimal cell preservation, shall be left with the packed RBCs.

xvii. *Packed RBCs frozen*: Cryophylactic substance may be added to the packed RBCs for extended manufacturer's storage not warmer than minus 65 degree Celsius provided the manufacturer submits data to the satisfaction of the Food and Drugs Authority, as adequately demonstrating through *in-vivo* cells survival and other appropriate tests that the addition of the substance, the material used and the processing methods results in a final product that meets the required standards of quality, safety, and potency for packed RBCs, and that the

frozen product shall maintain those properties for the specified expiry period.

xviii. Testing: Packed Red Blood Cells shall conform to relevant Pharmacopeia standard.

xix. Platelet concentrate: The product shall be known as "Platelets Concentrates" that is platelets collected from one unit of blood and re-suspended in an appropriate volume of original plasma.

2.5.2.1 General Requirements

The source material for platelets shall be platelet-rich plasma or buffy coat which may be obtained from the whole blood or by plateletpheresis.

2.5.2.2 Processing

i. Separation of buffy-coat or platelet-rich plasma and platelets and re-suspension of the platelets shall be in a closed system by-centrifugal method with appropriate speed, force and time.

ii. Immediately after collection, the whole blood or plasma shall be held in storage between 20 degree Celsius to 24 degree Celsius. During transit, that is, from the venue of blood collection to the processing laboratory, the transit procedure shall ensure that the whole blood is kept at or very close to the temperature range between 20 degree Celsius to 24 degree Celsius. The platelet concentrates shall be separated within 6 hours after the time of collection of the unit of whole blood or plasma.

iii. The time and speed of centrifugation shall be demonstrated to produce an unclamped product, without visible haemolysis, that yields a count of not less than $3.5x10^{10}$ (3.5x10 raised to the power of 10) and $4.5x10^{10}$(4.5x10 raised to the power 10) that is platelets per unit from a unit of 350 ml and 450 ml blood respectively. One percent of total platelets prepared shall be tested of which 75 percent of the units shall conform to the above said platelet count.

iv. The volume of original plasma used for re-suspension of the platelets shall be determined by the maintenance of the pH of not less than 6 during the storage period. The pH shall be measured on a sample of platelets which has been stored for the permissible maximum expiry period at 20 degree Celsius to 24 degree Celsius.

v. Final containers used for platelets shall be colourless and transparent to permit visual inspection of the contents. The caps selected shall maintain a hermetic seal to prevent contamination of the contents. The container material shall not interact with the contents, under the normal conditions of the storage and use, in such a manner as to have an adverse effect upon the safety, purity, potency, or efficacy of the product. At the time of filling, the final container shall be marked or identified by number so as to relate it to the donor.

2.5.2.3 Storage

vi. Immediately after re-suspension, platelets shall be placed in storage not exceeding a period of 5 days, at a temperature range of 20 degree Celsius to 24 degree Celsius, with continuous agitation (gentle) of the platelet concentrates throughout the storage period.

2.5.2.4 Testing

The units prepared from different donors shall be tested at the end of the storage period for:-

i. Platelet count;
ii. pH of not less than 6 measured at the storage temperature of the unit;
iii. measurement of actual plasma volume;
iv. one percent of the total platelets prepared shall be tested for sterility;
v. the tests for functional viability of the platelets shall be done by swirling movement before issue;
vi. if the results of the testing indicate that the product does not meet the specified requirements, immediate corrective action shall be taken and records maintained.

Compatibility Test:
Compatible transfusion for the purpose of variable number of RBCs, A, B, AB and O grouping shall be done if the platelets concentrate is contaminated with red blood cells.

2.5.3 Granulocyte concentrates

i. *Storage*: The product shall be kept between 20 degree Celsius to 24 degree Celsius for a maximum period of 24 hours.
ii. Unit of granulocytes shall not be less than 1 $x10^{10}$ (that is, 1x10 raised to the power of 10) when prepared on cell separator.
iii. Group specific tests/HLA test wherever required shall be carried out.

2.5.4 Fresh frozen plasma

Plasma frozen within 6 hours after blood collection and stored at a temperature not warmer than minus 30 degree Celsius shall be preserved for a period of not more than one year.

2.5.5 Cryoprecipitate

Concentrate of anti-hemophiliac factor shall be prepared by thawing of the fresh plasma frozen stored at minus 30 degree Celsius.

i. Storage: Cryoprecipitate shall be preserved at a temperature not higher than minus 30 degree Celsius and may be preserved for a period of not more than one year from the date of collection.

ii. Activity: Anti-hemophiliac factor activity in the final product shall be not less than 80 units per bag. One percent of the total cryoprecipitate prepared shall be tested of which seventy five percent of the unit shall conform to the said specification.

2.5.6 Plasmapheresis, plateletpheresis, leucapheresis using a cell separator

An area of 10 square meters shall be provided for apheresis in the blood Bank. The blood banks specifically permitted to undertake the said apheresis on the donor shall observe the criteria as specified in Section 2.2 relating to Criteria for blood donation. The written consent of the donor shall be taken and the donor must be explained, the hazards of apheresis. The Medical Officer shall certify that donor is fit for apheresis and it shall be carried out by a trained person under supervision of the Medical Officer.

The donors subjected to plasmapheresis, plateletpheresis and leucopheresis shall, in addition to the criteria specified in Section 2.2 relating to the Criteria for blood donation being observed, be also subjected to protein estimation on post-pheresis/ first sitting whose results shall be taken as a reference for subsequent pheresis/sitting. It shall also be necessary that the total plasma obtained from such donor and periodicity of Plasmapheresis shall be according to the standards described under validated Standard Operating Procedures.

NOTE:

a) At least 48 hours must elapse between successive apheresis and not more than twice in a week.
b) Extracoporeal blood volume shall not exceed 15% of donor's estimated blood Volume.
c) Platelet pheresis shall not be carried out on donors who have taken medication containing Aspirin within 3 days prior to donation.
d) If during plateletpheresis or leucapheresis, RBCs cannot be re-transfused then at least 12 weeks shall elapse before a second cytapheresis procedure is conducted.

2.5.6.1 Monitoring for apheresis

Before starting apheresis procedure, hemoglobin or haematocrit shall be done. Platelet count, WBC counts; differential count may be carried out. In repeated plasmapheresis, the serum protein shall be 6 gm /100 ml.

2.5.7 Collection of Plasma

The quantity of plasma separated from the blood of a donor shall not exceed 500 ml per sitting and once in a fortnight or shall not exceed 1000 ml per month.

3.0 SPECIFIC REQUIREMENTS FOR MANUFACTURE OF BLOOD PRODUCTS

3.1 Blood products

The blood products shall be manufactured in a facility appropriate for the purpose. The facility shall not be used for the purpose of blood banking. The essential requirement needed for licensure or license renewal to manufacture blood products such as albumin, plasma protein fraction, immunoglobins and coagulation factor concentrates, shall be as follows:-

3.1.1 General Requirements

1. Location and surroundings, buildings and water supply:
   The requirements as regards location and surrounding, buildings and water supply as contained in section 2.1.1 shall apply mutatis mutandis to the manufacture of blood products.
2. Disposal of waste and infectious materials:
   a. The requirement as regards disposal of waste and infectious materials is contained in this document.
   b. Proper facility shall also be provided for potentially infectious materials, particularly HIV I &II, Hepatitis B (surface antigen and Hepatitis C virus antibody) through autoclaving, incineration or any other suitable validated methods.
3. Health, clothing and sanitation of personnel:
   a. The requirement as contained in this document shall be complied with.
   b. The personnel working in the manufacturing areas shall be vaccinated against Hepatitis B virus and other infectious transmitting diseases.
4. Requirements for manufacturing area for Blood Products:
   a. For the manufacture of blood products, separate enclosed areas specifically designed for the purpose shall be provided. These areas be provided with air locks for entry and shall be essentially dust free and ventilated with an air supply. Air supply for manufacturing area shall be filtered through bacteria retaining filters (HEPA Filters) and shall be at a pressure higher than in the adjacent areas.
      The filters shall be checked for performance on installation and periodically thereafter, and records thereof shall be maintained.
   b. Interior surfaces (walls, floors and ceilings) shall be smooth and free from cracks, they shall not shed matter and shall permit easy cleaning and disinfection. Drains shall be excluded from aseptic areas.
      Routine microbial counts of the manufacturing area shall be carried out during manufacturing operations. The results of such counts shall be checked against well documented in-house standards and records maintained.
      Access to the manufacturing areas shall be restricted to a minimum number of authorised personnel. Special procedures for

entering and leaving of the manufacturing areas shall be prominently displayed.

c. Sinks shall be excluded from aseptic areas. Any sink installed in other clean areas shall be of suitable material such as stainless steel, without an overflow, and be supplied with water of potable quality. Adequate precautions shall be taken to avoid contamination of the drainage system with dangerous effluents and airborne dissemination of pathogenic micro-organisms.
d. Lighting, air-conditioning, ventilation shall be designed to maintain a satisfactory temperature and relative humidity to minimize contamination and to take account of the comfort of personnel's working with protective clothing.
e. Premises used for the manufacture of blood products shall be suitably designed and constructed to facilitate good sanitation.
f. Premises shall be carefully maintained and it shall be ensured that repair and maintenance operations do not present any hazard to the quality of products. Premises shall be cleaned and, where applicable, disinfected according to detailed written validated procedures.
g. Adequate facilities and equipment shall be used for the manufacture of blood products derived from blood plasma.
h. All containers of blood products, regardless of the stage of manufacture, shall be identified by securely attached labels. Cross contamination shall be prevented by the adoption of the following measures:-

    i. processing and filling shall be in segregated L areas ;
    ii. manufacture of different products at the same time shall be avoided;
    iii. simultaneous filling of the different products shall be avoided;
    iv. ensure transfer, containers/materials by means of airlocks, air extraction, clothing change and careful washing and decontamination of equipment;
    v. protecting containers/materials against the risk of contamination caused by re-circulation of untreated air or by accidental re-entry of extracted air;
    vi. using containers that are sterilized or are of documented low "bioburden".

i. Positive pressure area shall be dedicated to the processing area concerned;
j. Air-handling units shall be dedicated to the processing area concerned;
k. Pipe work, valves and vent filters shall be properly designed to facilitate cleaning and sterilization. Valves on fractionation / reacting vessels shall be completely steam-sterilisable. Air vent filters shall be hydrophobic and shall be validated for their designated use;

5. Ancillary Areas:

a. Rest and refreshment rooms shall be separated from other areas.
b. Facilities for changing and storing clothes and for washing and toilet purposes shall be easily accessible and appropriate for the number of users. Toilets shall not be connected directly with production or storage areas.
c. Maintenance workshops shall be separated from production areas. Wherever parts and tools are stored in the production area, they shall be kept in rooms or lockers reserved for that use.
d. Animal houses shall be well isolated from other areas, with separate entrance.

3.2 Collection and storage of plasma for fractionation

3.2.1Collection

a. Plasma shall be collected from the licensed Blood Banks through a cold chain process and stored in frozen condition not warmer than minus twenty degree Celsius;
b. Individual plasma shall remain in quarantine till it is tested for Hepatitis B surface antigen and Hepatitis C virus antibody HIV I and HIV II.
c. A sample from pooled -lot plasma of about 10-12 units of different donors shall be tested for Hepatitis B surface antigen and Hepatitis C virus antibody, HIV I and HIV II and if the sample found negative, only then it shall be taken up for fractionation.

3.2.2 Storage Area

d. Storage areas shall be of sufficient space and capacity to allow orderly storage of the various categories of materials, intermediates, bulk and finished products, products in quarantine, released, rejected, returned, or recalled products.
e. Storage areas shall be designed or adopted to ensure good storage conditions. In particular, they shall be clean, dry and maintained within temperature required for such storage and where special storage conditions are required (e.g. temperature, humidity), these shall be provided, checked and monitored.
f. Receiving and dispatch bays shall protect materials and products from the weather and shall be designed and equipped to allow containers of incoming materials to be cleaned, if necessary, before storage.
g. Where quarantine status is ensured by storage in separate areas, these areas shall be clearly marked and their access restricted only to authorised personnel.
h. There shall be separate sampling area for raw materials. If sampling is performed in the storage area, it shall be conducted in such a way so as to prevent contamination or cross-contamination.
i. Segregation shall be provided for the storage of rejected, recalled, or returned materials or products.

j. Adequate facility shall be provided for supply of ancillary material, such as ethanol, water, salts and polyethylene glycol. Separate facilities shall be provided for the recovery of organic solvents used in fractionation.

3.2.3 Manufacture

The manufacture of blood products shall be conducted under the active direction and personal supervision of competent technical staff, consisting of at least one person who shall be a permanent employee, with one year practical experience in the manufacture of blood products / plasma fractionation and possesses: -

a. Post-graduate degree in Biomedical science or Medical Science OR
b. Post-graduate degree in Haematology or Microbiology or Biochemistry; OR
c. Post-graduate degree in Physical or Biological science or Pharmacy or Pharmaceutical science or Laboratory technology/science OR
d. Post-graduate degree in Life science or Allied science

3.2.3.1 Testing

The head of the testing unit shall be independent of the manufacturing unit and testing shall be conducted under the active direction and personal supervision of competent technical staff consisting at least one person who shall be a whole time employee. The Head of the, testing unit shall have eighteen months practical experience in the testing of drugs, especially the blood products and possesses –

a. Post-graduate degree in Biomedical or Allied Science or Biochemistry OR
b. Post-graduate degree in Physical or Biological science or laboratory technology/science
c. Post-graduate degree in Medical science.

3.2.3.2 Production control

1. The production area and the viral inactivation room shall be centrally air-conditioned and fitted with HEPA Filters having Grade C (Class 10,000) environment as given in the Table below.
2. The filling and sealing shall be carried out under aseptic conditions in centrally air-conditioned areas fitted with HEPA Filters having Grade A or, as the case may be, grade B (Class 100) environment given in the said Table

Air classification system for manufacture of sterile products

Maximum number of particles permitted per m^3

Grade	Maximum number of particles permitted per m^3		Maximum number of viable microorganism permitted per m^3
	0.5 – 5 micron	< 5 micron	
A (class 100) laminar –airflow workstation	3500	None	< 1
B (Class 100)	3500	None	<5
C (Class 10000)	3,50,000	2000	< 100

3. The physical and chemical operations used for the manufacture of plasma fractionation shall maintain high yield of safe and effective protein.
4. The fractionation procedure used shall give a good yield of products meeting the in-house quality requirements as approved by the Food and Drugs Authority reducing the risk of microbiological contamination and protein denaturation to the minimum.
5. The procedure adopted shall not affect the antibody activity and biological half-life or biological characteristics of the products.

3.2.3.3 Viral inactivation process

The procedure used by the licensee to inactivate the pathogenic organisms such as enveloped and non-enveloped virus, especially infectivity from HIV I, HIV II, [(Hepatitis B surface antigens and Hepatitis C virus antibody)], shall be well documented and current. The viral inactivation and validation methods adopted by the licensee shall be submitted to the Food and Drugs Authority for approval.

NOTES:

a) No preservative (except stabilizer to prevent – protein denaturation such as glycine, sodium chloride or sodium caprylate) shall be added to albumin, plasma protein fraction, intravenous immunoglobulins or coagulation factor concentrates without the prior approval of Food and Drugs Authority.
b) The licensee shall ensure that the said stabilisers do not have deleterious effect on the final product in the quantity present so as not to cause any untoward or adverse reaction in human beings.

3.2.3.4 Quality control

Separate facilities shall be provided for Quality Control such as hematological, bio-chemical, physicochemical, microbiological, pyrogens, instrumental and safety testing. The Quality Control Department shall have inter alia the following principal duties, namely.-

1. To prepare detailed instructions, in writing for carrying out test and analysis.
2. To approve or reject raw material, components, containers, closures, in-process materials, packaging material, labeling and finished products.
3. To release or reject batch of finished products which are ready for distribution.
4. To evaluate the adequacy of the conditions under which raw materials, semi-finished products and finished products are stored.
5. To evaluate the quality and stability of finished products and when necessary of raw materials and semi-finished products.
6. To review production records to ensure that no errors have occurred or if errors have occurred that they have been fully investigated.
7. To approve or reject all procedures or specifications impacting on the identity, strength, quality and purity of the product.
8. To establish shelf-life and storage requirements on the basis of stability tests related to storage conditions.
9. To establish and when necessary revise, control procedures and specifications.
10. To review complaints, recalls, returned or salvaged products and investigations conducted thereunder for each product.
11. To review Master Formula Records/Cards periodically.

3.2.3.5 Testing of blood products

The products manufactured shall conform to the standards specified in recognized Pharmacopoeia and where standard of any product is not specified in the Pharmacopoeia, the final products shall be tested for freedom from HIV I and HIV II antigens/antibodies, Hepatitis B surface antigen and Hepatitis C antibodies.

3.2.3.6 Storage of finished product

1. The final products shall be stored at temperatures between the ranges of 2 degree Celsius to 8 degree Celsius; unless otherwise specified by the Food and Drugs Authority
2. The shelf-life assigned to the products by the licensee shall be submitted to the Food and Drugs Authority for approval.

3.2.3.7 Labeling

The products manufactured shall be labeled as specified in recognized Pharmacopoeia, which shall be in addition to any other requirement stated in the application form. The labels shall indicate the results of tests for Hepatitis B surface antigen and Hepatitis C Virus antibody, freedom from HIV I and HIV II antibodies, freedom from Malaria parasites.

3.2.3.8 Records

The licensee shall maintain records as per this guidelines and also comply with Batch manufacturing records as specified in this document and any other requirement as may be directed by Food and Drugs Authority.

3.2.3.8.1 Master formula records

The licensee shall maintain Master Formula Records relating to all manufacturing and quality control procedures for each product, which shall be prepared and endorsed by the competent Technical Staff, i.e., Head of the manufacturing unit. The Master Formula Records shall contain –

1. the patent or proprietary name of the product along with the generic name, if any, strength and the dosage form;
2. a description or identification of the final containers, packaging materials, labels and closures to be used;
3. The identity, quantity and quality of each raw material to be used irrespective of whether or not it appears in the finished product. The permissible overage that may be included in a formulated batch shall be indicated;
4. a description of all vessels and equipment and the sizes used in the process;
5. Manufacturing and control instructions along with parameters for critical steps such as mixing, drying, blending, sieving and sterilizing the product;
6. the theoretical yield to be expected from the formulation at different stages of manufacture and permissible yield limits;
7. detailed instructions on precautions to be taken in the manufacture and storage of drugs and of semi-finished products; and
8. The requirements in-process quality control tests and analysis to be carried out during each stage of manufacture including the designation of persons or departments responsible for the execution of such tests and analysis.

4.0 SPECIFIC REQUIREMENTS FOR MANUFACTURERS OF BLOOD PRODUCTS FROM BULK FINISHED PRODUCTS

Where the blood products, such as albumin, plasma protein fraction, immunoglobulins and coagulation factor concentrates are developed in accordance with SOPs for the varied manufacturing activities of filling and sealing the finished manufactured blood products from either the bulk powder or solution or both, the requirement as they apply to the manufacture of blood products from the whole blood shall apply mutatis mutandis to such manufacture of blood products, unless other requirements have been approved by the FDA.

4.1 FreshApplication

- An application for licensure of a bloodfacility involved in one or more of the under-listed activities shall be made in writing:
  - Donor screening
  - Collection
  - Testing
  - Processing
  - Labelling
  - Storage
  - Release
  - Distribution

- Application forms for licensing the Blood Facilities and Listing Blood products with the FDA shall be completed, signed and stamped in accordance with the accompanied guidance document.

- Applications shall be accompanied by:
  - A duly signed covering letter
  - One(1) hard copy and one (1) soft copy of completed application forms
  - All supporting documents as specified on the application form
  - Non-refundable administrative fee as specified in the FDA fee schedule

- All documentation submitted shall be in English, and must be legibly printed and not hand written. These guidelines should be read in conjunction with other guidelines on the FDA's website www.fdaghana.gov.gh.

4.2 Prior to any GMP/GSP/GDP-audit Inspection

- The facility to be inspected shall provide:
  - Site-Master-File for Blood Facility (refer to Appendix I)
  - Important changes in facilities, equipment, processes/procedures and personnel since the last inspection shall be communicated to the FDA for approval before the change is implemented

5.0 OUTLINE OF THE EVALUATION OF APPLICATION

5.1The FDA in considering an application;

- Shall satisfy itself that the Blood Facility is fit for the purpose it is seeking a license to conduct; donor screening, collection, testing, processing, labelling, storage, release and distribution.
- May consult with other agencies and experts with knowledge of transfusion medicine and blood product.
- Reserves the right to conduct a GMP/GSP/GDP audit inspection on the Blood Facility

5.2. An appeal for the review of an application may be made in writing to the Authority within60 (Sixty) days of receipt of the rejection notice.

5.3. Where the FDA is satisfied that there is the need to license the Blood Facility and List Blood products, and all requirements for its licensure have been satisfied, it shall do so and issue to the applicant, a Certificate of Licensure, allocate a Site Number to the Blood Facility and subsequently, list all Blood products produced by the Blood Facility.

5.4. The licensure of a Blood Facility and listing of products under these regulation, unless otherwise revoked, shall be valid for a period of 3 (three) years and may be renewed.

5.5. The FDA shall from time to time, publish a notice in the Gazette notifying the licensing of Blood Facilities under these regulations.

5.6. No information given in this application shall be disclosed by the FDA to a third party, except;

- With the written consent of the licence holder
- In accordance with the directive of the Board of Directors of the FDA
- For the purpose of a legal process under the Public Health Act, 2012 (Act 851)

6.0. SANCTIONS AND PENALTIES

6.1 The Authority shall cancel, suspend or withdraw the licensure of a facility and listing of a product if:

- The information on which the approval was given is later found to be false
- The circumstances under which the approval was given no longer exist
- Any of the provisions under which the approval was given has been contravened
- The standard of quality and safety as prescribed in the documentation for approval is not being complied with
- The facility contravenes cGMP/GSP/GDP

6.2 Where the licensure of the Blood Facility and / or product listing is suspended, withdrawn or cancelled, the FDA shall cause the withdrawal from circulation of that product and shall accordingly cause the suspension, cancellation or withdrawal to be published in the Gazette.

APPENDIX I: RELEVANT INFORMATION TO BE INCLUDED IN DOSSIER

In addition to the licensure of blood facility and product listing requirements contained in the application forms (SITE MASTER FILE, APPENDIX II) and this guidance document, please ensure that the information below is included in the dossier submitted for the licensure of the facility.

- Evidence of payment for evaluation and licensure (a copy of payment receipt)
- Duly signed Covering letter (Applicant)
- Table of Contents
- Application forms (Dated, stamped and signed)
- Signed Declaration
- Contract Agreement Documents
- Complete Site Master File (SMF) containing general information on the Blood Facility, Quality Management System implemented within the Blood Facility, Personnel, Premises, Equipment, Documentation, Production, Quality Control, Distribution, Complaints, Product defects and Recalls and Self-inspection (*SEE APPENDIX II*).

APPENDIX II: SITE MASTER FILE FOR BLOOD FACILITY
(To be submitted in duplicate, one comb-bound hard copy and one electronic copy)

Cover letter addressed to:

THE CHIEF EXECUTIVE
FOOD AND DRUGS AUTHORITY
P. O. BOX CT 2783
CANTONMENTS-ACCRA
GHANA.

All information sought in this form shall be provided to enable the FDA process the application

SUBMISSION SHOULD ALWAYS BE DONE BY A COMPETENT TECHNICAL OFFICER

A. GENERAL INFORMATION		
Name of Blood Facility:		
Postal address		
Street address		
Telephone number		
Email address		
Telephone number		
Activity summary		
Please tick the relevant or indicate the activities carried out on site		
Activity	**Blood and Cells**	**Processes**
Collection ☐	Whole blood ☐	Whole blood ☐
Testing ☐	Erythrocytes ☐	Apheresis ☐
Processing ☐	Thrombocytes ☐	Washing ☐
Storage ☐	Fresh Frozen Plasma ☐	Splitting ☐
Distribution ☐	Plasma for fractionation ☐	Cryo preservation ☐
Importation ☐	CryoprecipitatesCell selection ☐	☐
Exportation ☐	Granulocytes ☐	Leukocyte depletion ☐
	Others (please specify) ☐	Freezing ☐
	Irradiation	☐

Others ☐ (please specify)

B. ACTIVITY –DETAILS
Does the facility conduct donor testing? . Yes ..☐……..No ☐ (If no, indicate which organization conducts the testing)
Types of blood related item collected at the facility: (e.g., whole blood, autologous or allogeneic, blood components, received by apheresis, etc.)
Types of blood components processed by the Blood Facility: a. b. c. d.
State blood processing methods: (please add here the room numbers)
State the number of donors in the previous year and the volume of blood collected: • Number of donors: • Volume of whole blood/blood components collected:
State quality control testing methods in place at the Blood Faciliy a. b. c. d. e. f. g.
C. PERSONNEL
Name of the Responsible person as defined in Directive:
Name of Blood Facility Director:
Name of Medical Director:
Name of the head of Quality Control:
Name of the Quality Manager:
Name(s) of other relevant key personnel: a. b. c.

d.
Total number of the staff:
Section C- This should include the following: • Qualification, experience and responsibilities of key personnel • Outline of arrangements for basic and in-service training and how records are maintained • Personnel hygiene requirements, including clothing • Functional organization chat which identifies roles and reporting relationships • Organization chart indicating how many people are working in collection, processing, storage, distribution/dispatch, transport, quality control, quality assurance and administration
D. FACILITIES
Short description of the facility (size, location and adjacent environment):
Number of outside collection sites, number of mobile sites:
Description of the processing and storage facilities indicating the number of rooms, their collection, production and laboratory areas:
Description of preventive maintenance programs and recording system:

E. EQUIPMENT
Brief description of major production and control laboratory equipment:
Qualification and calibration including recording system:
Arrangements for computerized system:
F. DOCUMENTATION
Arrangements for the preparation, revision and distribution of necessary documentation for collection of blood and manufacture of blood components and products:
Standard operation procedures (SOP):
Donor questionnaire:
Manufacturing records:
Analytical methods:
Product specifications:
Release procedures including the release for sale of finished products:
G. CONTRACTS / AGREEMENTS WITH OTHER ORGANIZATIONS
Are there any activities carried out by a third party (e.g. testing, cleaning, storage, transport)? Yes☐ No ☐ If yes, indicate which steps and name the organization that acts as the third party. Add a copy of the contract, if available
H. HAEMOVIGILANCE SYSTEM
SAE / SAR investigation and reporting system and management of look-back procedures:
I. COMPLAINTS AND PRODUCT RECALL
Describe the arrangements for the handling of complaints and product recalls:
J. RISK MANAGEMENT SYSTEMQUALITY SYSTEM

Give a short description of the quality system applied at the blood facility including the self-inspection program
Has the Blood Facility been certified by any external body e.g. ISO? Yes ☐ No ☐ If yes, add the certification number and institution
K. SIGNATURE AND DATE
Date (DD/MM/YYYY):
Signature of the Responsible Person:
L. INSTRUCTIONS FOR THE SUBMISSION OF FORM
The form should be submitted as an initial application for licensure / listing by the Blood Facility. It should be re-submitted prior to any following re-inspection or whenever significant changes in activity, staffing or processes applied have taken place.
M. OTHER RELEVANT INFORMATION (SELF INSPECTION, DATE OF INSPECTION/PERSONNEL INVOLVED IN INSPECTION/QUALIFICATIONS OF INSPECTORS, ETC..)
N. OFFICE USE ONLY (FDA TO INSERT OTHER RELEVANT INFORMATION)