SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSSUDU AGARAM VILLAGE; KUDAPAKKAM POST,PONDICHERRY - 605503

From
Dr. PAMMY SINHA
Professor and HOD
Department of Pathology
SriLakshmiNarayanaInstituteofMedicalSciences,Puducherry
Bharath Institute of Higher Education and Research.
Chennai.

Date 2.10.2017

To
The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences, Puducherry
Bharath Institute of Higher Education and Research.
Chennai.

Sub: Permission to conduct value-added course: RATIONALE USE OF BLOOD COMPONENTS

Dear Madam,

With reference to the subject mentioned above, the department proposes to conduct a value added course titled: RATIONALE USE OF BLOOD COMPONENTS on Nov2017. We solicit your kind permission for the same

Kind Regard

Dr. PAMMY SINHA

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course

The Dean: Dr G.JAYALAKSHMI

The HOD: Dr. PAMMY SINHA

The Expert: Dr. J.PRIYADHARISINI

The committee has discussed about the course and is approved.

Dean
(Sign &Seal)

Subject Expert
(Sign &Seal)

HOD
(Sign &Seal)

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSSUDU AGARAM VILLAGE, KUDAPAKKAM POST,PONDICHERRY - 605003

Circular 9-10-17

Sub: Organising Value-added Course: RATIONALE USE OF BLOOD COMPONENTS

With reference to the above mentioned subject, it is to bring to your notice that **SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES *Bharath* Institute of Higher Education and Research**, is organizing "RATIONALE USE OF BLOOD COMPONENTS" **from November2017**. The course content is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 31.10.2017. Applications received after the mentioned date shall not be entertained under any circumstances

Dean

Encl: Copy of Course content

Course Proposal

Course Title: Rationale use of blood components

Course Objective:

1. To know about the blood component separation and its clinical significance
2. Should know in detail about blood components each
3. Should be able to describe the quality control and indications of blood component transfusion

Course Outcome: Better understanding and knowledge about the rationale use of blood components

Course Audience: IInd year MBBS

Course Coordinator: Dr. J.Priyadharisini

Course Faculties with Qualification and Designation:

Dr. J.Priyadharisini, Assistant professor, Pathology
Dr. Sivaganesh @ Porko.G, Assistant professor, Pathology
Dr. A.Manoharan, Assistant professor, Pathology

Course Curriculum/Topics with schedule

SlNo	Date	Topic	Time	Faculty	Hours
1.	4.11.2017	Introduction	1.30-4 pm	Dr.J.Priyadharisini	2.5 hrs
2.	11.11.2017	Whole blood processing and storage	1.30-4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs
3.	18.11.2017	Blood component separation	1.30-4 pm	Dr. A.Manoharan	2.5 hrs
4.	25.11.2017	Blood components-Packed red cells-constituents, storage and shelf life	1.30-4 pm	Dr.J.Priyadharisini	2.5 hrs
5.	2.12.2017	Blood components-Fresh frozen plasma-constituents, storage and shelf life	1.30-4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs

6.	9.12.2017	Blood components- cryoprecipitate - constituents, storage and shelf life	1.30-4 pm	Dr. A.Manoharan	2.5 hrs
7.	16.12.2017	Blood components -platelet concentrates - constituents, storage and shelf life	1.30-4 pm	Dr.J.Priyadharisini	2.5 hrs
8.	23.12.2017	Blood products	1.30-4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs
		Practical Class			
9.	30.12.2017	Component separation 1	1.30-4 pm	Dr. A.Manoharan	2.5 hrs
10.	6.1.2018	Component separation 2	1.30-4 pm	Dr.J.Priyadharisini	2.5 hrs
11.	13.1.2018	Component separation 3	1.30-4 pm	Dr. Sivaganesh @ Porko.G	2.5 hrs
12	20.1.2018	Assessment and feedback	1.30-4 pm	Dr. A.Manoharan	2.5 hrs
		Total			30 hrs

REFERENCE BOOKS:

1. Medical laboratory technology Methods and interpretations by Ramnik Sood. Fifth edition
2. Atlas and textbook of hematology by Dr.Tejinder singh

VALUE ADDED COURSE

1. Name of the programme & Code

RATIONALE USE OF BLOOD COMPONENTS & PA06

2. Duration & Period

30 hrs , Nov 2017- Jan 2018

3. Information Brochure and Course Content of Value Added Courses

Enclosed as Annexure- I

4. List of students enrolled

Enclosed as Annexure- II

5. Assessment procedures:

Short answer questions- Enclosed as Annexure- III

6. Certificate model

Enclosed as Annexure- IV

7. No. of times offered during the same year:

1

8. Year of discontinuation: 2019

9. Summary report of each program year-wise

Value Added Course- Nov 2017- Jan 2018

Sl. No	Course Code	Course Name	Resource Persons	Target Students	Strength & Year
1	PA06	Rationale use of blood components	Dr. J.Priyadharisini	II year MBBS	Nov 2017- Jan 2018

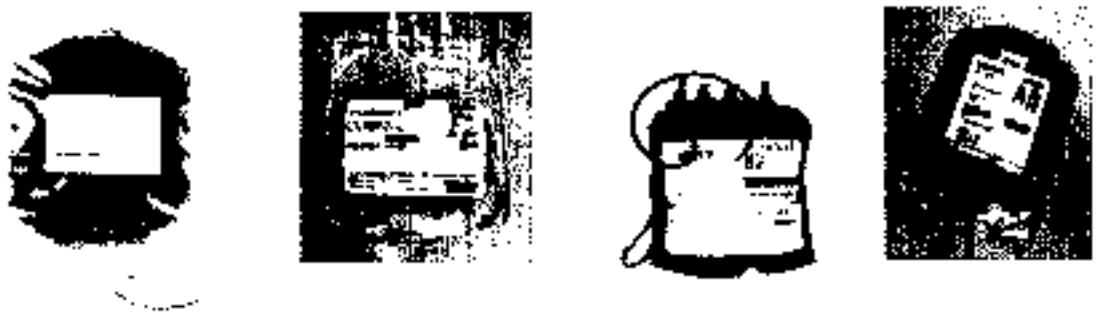
10. Course Feed Back

Enclosed as Annexure- V

RESOURCE PERSON **COORDINATOR**

RATIONALE USE OF BLOOD COMPONENTS

Blood Components



PARTICIPANT HAND BOOK

COURSE DETAILS

Particulars	Description
Course Title	Rationale use of blood components
Course Code	PA06
Objective	1. Introduction 2. whole blood 3. Component seperation 4. Blood components 5. Storage and shelf life 6. Packed red blood cells 7. Fresh frozen plasma 8. Cryoprecipitate 9. Platelet concentrates 10. Rational use
Key Competencies	On successful completion of the course the students will have knowledge regarding Rational use of blood components
Target Student	2nd MBBS Students
Duration	30hrs Nov 2017- Jan 2018
Theory Session	20hrs
Practical Session	10hrs
Assessment Procedure	Written assessment

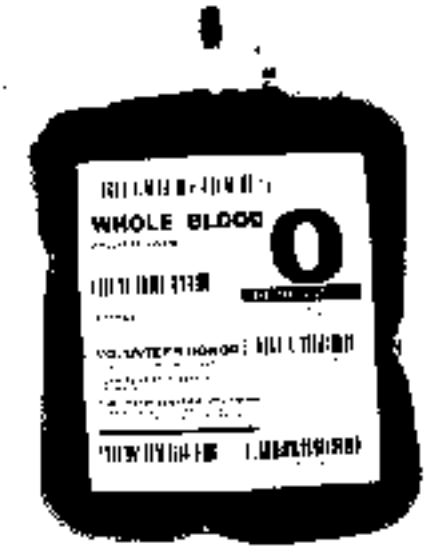
Blood transfusion (hemotherapy) is a therapeutic intervention and an important part of modern healthcare. According to the World Health Organization (WHO), transfusion is the process of transferring blood or blood products derived from a donor into the vasculature and subsequently the circulating blood of the recipient, carried out by inserting an intravenous needle or catheter in the patient and followed by administration of blood or blood products. Blood transfusion is considered to be the first successful organ transplant. Blood is a "fluid tissue" consisting of plasma and cellular components (red blood cells, white blood cells, platelets) that circulates through the vascular system throughout the body.

History

The first documented animal-to-animal (dog) blood transfusion was performed at Oxford in 1665 by Richard Lower, followed by the first animal-to-human blood transfusion in 1667 by Jean Denis. The first human-to-human blood transfusion was performed by James Blundell in 1818. In the year 1900, the ABO blood grouping system was classified by Landsteiner and, based on this, the first pretransfusion cross-match was done by Ottenberg in 1907.

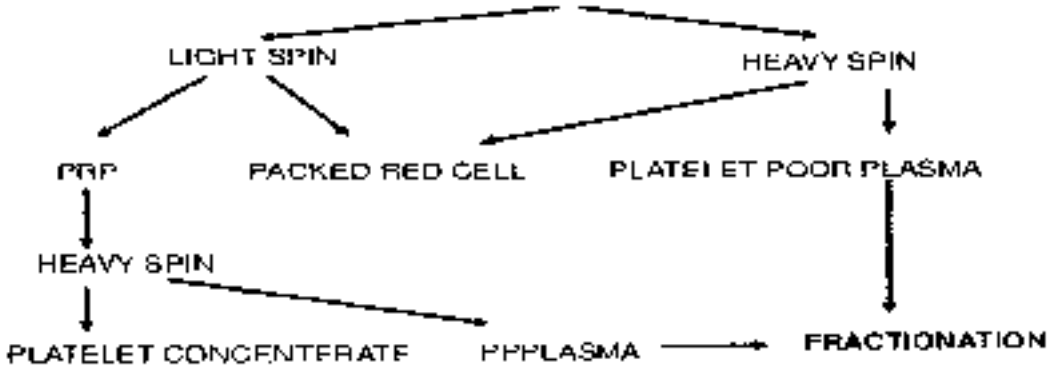
Whole blood

- Blood collected in to CPDA-1 anticoagulant containing bags
- Contains 450ml (+/-10%) of donor blood (blood cells and plasma)
- 63ml of and anticoagulant such as CPD (Citrate, Phosphate, Dextrose)
- Hct 35-45%
- Stored at 2-6 °C
- Shelf life with CPD 21 days, with CPDA-1 (Adenine) - 35days



Blood components;

Component separation done by component centrifuge



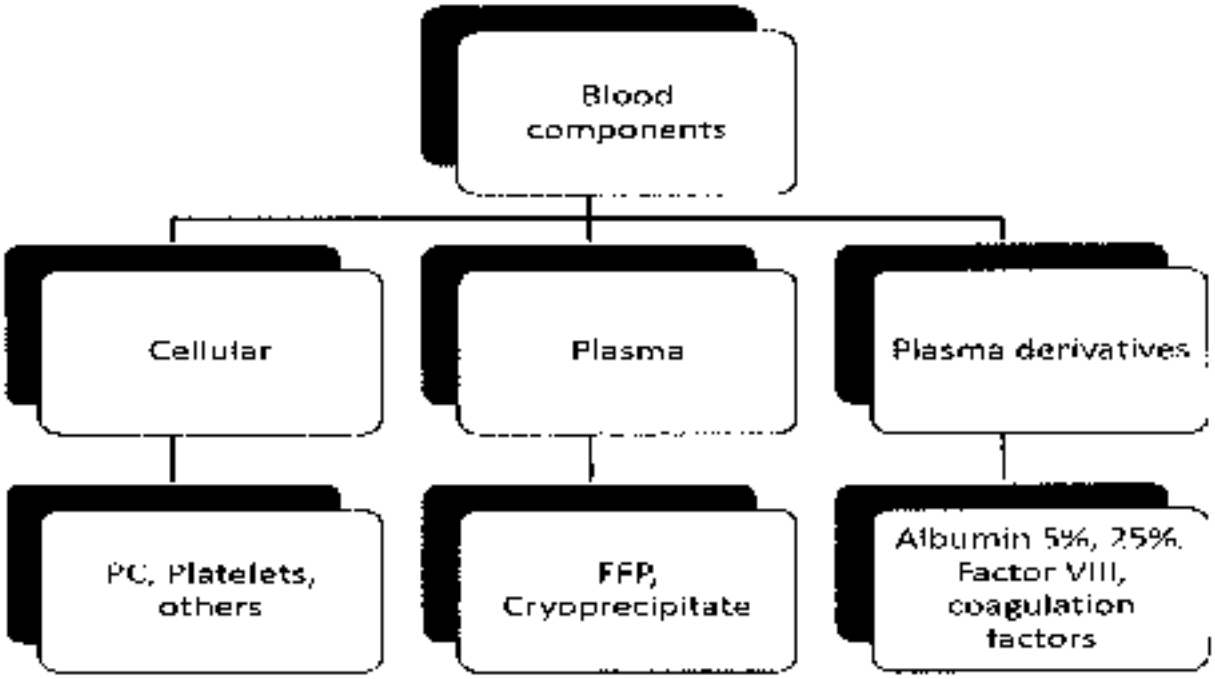
LIGHT SPIN-2000RPM FOR 3 MIN
HEAVY SPIN- 5000RPM FOR 5 MIN

Need for the separation of the components includes

One whole blood saves the life of many people

- For optimal survival of various blood components

Blood components include



The rational use of blood and its components is essential, due to the frequent undesirable reactions, to the increasing demand of blood products and the cost of the process.

Packed Red blood cell -pRBC

The objective of RBC transfusion is to improve oxygen delivery to the tissues.

Following are the red cells and their different components for transfusion:

Packed red cells

The red cells from a donor unit are concentrated to a hematocrit of about 75%, and the volume is made to 200 ml. Storing red cells (just above freezing) allows survival for 42 days but, unfortunately, decreases the 2,3-DPG and ruins the platelets and neutrophils. Giving packed red cells is the fastest way to increase the oxygen-delivering capacity of the blood. A unit of whole blood or packed red cells will raise the hematocrit by 3% and the haemoglobin by 1 gm/dl.

Dose –Assume an increment of 10g/L per unit for a 70kg adult.

INDICATIONS

• R1 Acute Bleeding Once normovolaemia achieved, frequent measurement of Hb (including by near patient testing) should be used – see suggested thresholds below.

• R2 Hb ≤70g/l. if stable acute anaemia. Use a target Hb of 70 -90g/L. Follow local protocols for post cardiac surgery, traumatic brain injury, acute cerebral ischaemia.

• R3 Hb <80g/l. if cardiovascular disease Use a target Hb of 80-100g/L.

• R4 Chronic transfusion dependent anaemia Maintain an Hb which prevents symptoms. Suggest an initial threshold of 80g/L then adjust as required. Haemoglobinopathy patients require individualised Hb thresholds.

• R5 Radiotherapy Limited data for maintaining Hb of 110g/L.

• R6 Exchange transfusion.

Fresh Frozen Plasma (FFP)

- Plasma removed from RBC within 6-8 hrs of collection is rapidly frozen to bellow -30°C temperature. Before transfusion is necessary to thaw at 37°C
- Once thawed, there is rapid deterioration of clotting factor, therefore it is very important to use the immediately after thawing
- Dose – 10-12ml by weight
  Shelf life 12 months
- Stored at < -30°C

Dose 15ml/kg body weight, often equivalent to 4 units.

INDICATIONS;

• F1 Major haemorrhage Early use in trauma – 1 unit FFP: 1 unit red cells. Other settings at least 1 unit FFP: 2 units red cells. Once bleeding controlled use thresholds below.

• F2 PT Ratio/INR >1.5 with bleeding without major haemorrhage. Keep PT/APTT ratio of <1.5.

• F3 PT Ratio/INR >1.5 and pre-procedure e.g. disseminated intravascular coagulation (DIC) with risk of significant bleeding.

• F4 Liver disease with PT Ratio/INR >2 and pre-procedure.Not usually required if no bleeding or before invasive procedure if PT ratio/INR is <2.

• F5 TTP/plasma exchange.

• F6 Replacement of single coagulation factor.

Cryoprecipitate

Dose – 2 pooled units will increase fibrinogen by approximately 1g/L.

Cryoprecipitate is usually used with FFP unless there is an isolated fibrinogen deficiency.

INDICATIONS;

C1 Clinically significant bleeding and fibrinogen<1.5g/L(2g/l. in obstetric bleeding

C2 Fibrinogen<1g/L and pre procedure

C3 Bleeding associated with thrombolytic therapy

C4 Inherited hypofibrinogenaemia, fibrinogen concentrate not available.

Platelet concentrates

Platelet concentrates (PCs) can be obtained either from whole blood or by apheresis from healthy donors. Two preparations are available. Depending on the number of platelet units used (from 4–6 donors), pooled PCs generally contain $240–360 \times 10^9$ platelets suspended in 200–350 ml plasma or a substitute plasma solution. Apheresis PCs generally contain $200–400 \times 10^9$ platelets in 200–300 ml plasma from a single donor.

Platelet Rich Plasma

- Gentle centrifugation of whole blood
- Supernatant transferred to the 2nd bag

Platelet concentrate

- Prepared from PRP by 2nd centrifugation
- Removal of all but 50ml of plasma
- Contain approximately ≥55X109platelets
- 60-80% platelets present in whole blood unit
- Volume - 300ml
- Stored at 20-240C
- Shelf life - 5 days

Dose – for prophylaxis, 1 adult therapeutic dose. Prior to invasive procedure/to treat bleeding, consider patient size, previous increments and target count.
Prophylactic platelet transfusion

Prophylactic transfusion Indications	**Platelet count (× 10^3 per µL)**
Major surgery or invasive procedure, no active **bleeding**	≤ 50
Ocular surgery or neurosurgery, no active **bleeding**	≤ 100
Surgery with active **bleeding**	< 50 (usually)
	> 100 (rarely)

WHO recommends for the safe and rational use of blood to reduce unnecessary and unsafe transfusions and to improve patient outcomes and safety, thus minimizing the risk of adverse events including errors, transfusion reactions and transmission of infections.

These strategies should include:

- Prevention, early diagnosis and effective treatment of conditions that could result in the need for transfusion (through health promotion, disease control and screening for early detection);
- Optimal patient management and rational use of blood products (evidence-based use of transfusion for the treatment of conditions that could not be managed by alternative treatment modalities to blood transfusion including the use of pharmaceuticals, medical devices, good surgical and anaesthetic techniques);
- Safe clinical transfusion processes for ensuring patient safety.

WHO has produced a series of recommendations, guidance documents and learning materials and conducted several global, regional and national meetings and skill building workshops to support countries in the development of systems for safe and appropriate use of blood.

Assessment Procedure Written assessment

VALUE ADDED COURSE

Rationale use of blood components and PA06

List of Students Enrolled Nov 2017- Jan 2018

2ND Year MBBS Student

Sl. No	Registration Number	NAME OF THE STUDENT	Signature
1	U16MB291	GOKUL SRIRAM D	
2	U16MB292	GOLLA SRUTHI	
3	U16MB293	GOMATHI L M	
4	U16MB294	GRACELIN RIMI J	
5	U16MB295	GUNASUNDARI M	
6	U16MB296	GUNTI YAGNA NARAYAN	
7	U16MB297	HANEESHA PALETI	
8	U16MB298	HARIHARAN J K	
9	U16MB299	HARIPRIYA T	
10	U16MB300	HARISHKA S	
11	U16MB301	HARITHA SHREE K	
12	U16MB302	HARSHITHA CHOWDARY P	
13	U16MB303	HEMAPRIYA G	
14	U16MB304	JADHAV MAHESH MOHANRAO	
15	U16MB305	JAGAIPRIYA M	
16	U16MB306	JAYASRI J	
17	U16MB307	JESTIN K J	
18	U16MB308	JEYACHANDRAN S	
19	U16MB309	JINCY J MANU	
20	U16MB310	KARTHIK K	

RESOURCE PERSON

COORDINATOR

SRI LAKSHMI NARAYANA INSTITUE OF HIGHER EDUCATON AND RESEARCH

RATIONALE USE OF BLOOD COMPONENTS

Course Code: PA06

4x5=20

I. ANSWER ALL THE QUESTIONS

1. Define Blood components

2. Discuss mechanism of component seperation

3. Storage of various blood components

4. Indications of FFP(Fresh frozen plasma)

3. Storage of Blood Components :

Red cells :- temperature :- 2 - 6°C
Shelf life :- 35 days

Fresh Frozen Plasma :- temperature -30°C
thawed [illegible] before storage (30 minutes)
infused within [illegible] loss of [illegible]

Cryoprecipitate
[illegible] at less than [illegible]
thawed before use [illegible]

Platelets :-
shelf life only 5 days.

Human Albumin Solution
available as 4.5% (5ml/dl) or 20% (20g/100ml)
Stored at room temperature [illegible] in dark
[illegible] transfusion [illegible] to [illegible] within 3 hours

4. FFP contains normal levels of stable clotting factors, albumin and immunoglobulins. [illegible] coagulation factors [illegible]

[illegible] bleeding in patients with liver disease

prevention of bleeding in case of surgery or invasive procedure in patients liver disease.

Patients with DIC and active bleeding

Gomathi M Blood Pouch components
Validation of ...

Define Blood Components.

Blood is a specialized ...

Functions of blood

(i) Transports oxygen and nutrients to the cells, organs and tissue

(ii) carrying cells and antibody that fight infection.

(iii) Bringing waste products to kidney, liver, which filter & clean the blood.

(iv) Forming blood clots that prevent excess blood loss

(v) Regulate body temperature

In total body weight blood is about 7 to 8 percent of ...

Sri Lakshmi Narayana Institute of Medical Sciences

CERTIFICATE OF MERIT

This is to certify that _____ has actively participated in the Value Added Course on *Rationale use of blood components* held during Nov 2017- Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences. Pondicherry- 605 502. India.

Dr. J.Priyadharisini
RESOURCE PERSON

Dr. Pammy Sinha
COORDINATOR

Sri Lakshmi Narayana Institute of Medical Sciences

CERTIFICATE OF MERIT

This is to certify that _____ has actively participated in the Value Added Course on *Rationale use of blood components* held during Nov 2017- Jan 2018 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. J.Priyadharisini
RESOURCE PERSON

Dr. Pammy Sinha
COORDINATOR

Student Feedback Form

Course Name: **RATIONALE USE OF BLOOD COMPONENTS**

Subject Code: **PA06**

Name of Student: _____ Roll No.: _____

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear					
2	Course contents met with your expectations					
3	Lecturer sequence was well planned					
4	Lectures were clear and easy to understand					
5	Teaching aids were effective					
6	Instructors encourage interaction and were helpful					
7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory, 1 Not-Satisfactory*

Suggestions if any:

Signature

Date:

Student Feedback Form

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Subject Code: PA06

Name of Student: _____ Roll No: _____

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7	The level of the course					
8	Overall rating of the course	1	2	3	4	5

** Rating: 5 – Outstanding; 4 – Excellent; 3 – Good, 2– Satisfactory; 1 Not-Satisfactory*

Suggestions if any:

Signature

Date:

Date: 20.1.2018

From

Dr.J.Priyadharisini
Assistant Professor
Department of pathology
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper Channel

To

The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: Rationale Use of blood components

Dear Madam,

With reference to the subject mentioned above, the department has conducted the value-added course titled: Rationale Use of blood components for IInd MBBS during 2017 Nov Jan 2018 for 20 students. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards.

Dr. J Priyadharisini

Encl: Certificates

Photographs