

4TH ANATOLIAN BLOOD DAYS

11-13 December 2015 Maritim Pine Beach Resort Hotel, Belek - Antalya, TURKEY



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Dear Colleagues,

Turkish Blood Foundation (TBF) initiated annual trans-national workshops since 2012 under the name of “Anatolian Blood Days” (ABD). Sharing the experience and finding solution alternatives are the main goals of this initiative. This workshop also aims to touch the untouched or less discussed topics of Blood Banking & Transfusion Medicine.

Economical and financial aspects are essential to establish and run safe and effective blood supply system which is usually a non-profit service globally. Cost of blood supply system has been increasing since decades depending on technical, administrative and legal aspects. Actually new consumables, medical technologies, equipment, regulations, etc. make blood supply system more expensive. It is an essential tool to make effective cost calculation for supplying blood components. There are different payment systems at different countries which have various problems on financing blood supply system.

This year, Turkish Blood Foundation invited economically developed countries and also limited economical source countries to discuss Cost Calculation of Blood Components & Payment Systems and compare the other medical disciplines in different countries.

Turkish Blood Foundation believes that this interactive trans-national workshop will have an important out comes on actual success of Blood Banking activities depending on economical aspect of blood supply by clear scientific evidence. This may also have a positive impact while preparing the cost of blood components at different countries.

Sincerely yours;

Prof. Mahmut Bayık

President

4th Anatolian Blood Days Committee

Scientific Chairs

Prof. Mahmut Bayık, Turkey
Prof. José Manuel Cardenas, Spain
Dr. Gamal Gabra, UK
Prof. Brian McClelland, UK
Dr. Faten Moftah, Egypt
Dr. N. Nuri Solaz, Turkey

General Secretary

Dr. Ramazan Uluhan, Turkey

Venue

Maritim Pine Beach Resort Hotel and Convention Center,
Belek, Antalya- Türkiye

Date

11 December – 13 December 2015

4th Anatolian Blood Days Program

11 December 2015

- 09:00 – 10:00 **Opening**
- 10:00 – 10:30 Country presentations – 1
Albania
Azerbaijan
Bosnia & Herzegovina
- 10:30 – 11:00 **Coffee break**
- 11:00 – 12:30 Country presentations – 2
Egypt
Estonia
Germany
India
Iran
Japan
Kazakhstan
- 12:30 – 14:00 **Lunch break**
- 14:00 – 15:30 Country presentations – 3
Kosovo
Kyrgyzstan
Lithuania
Macedonia
Oman
Pakistan
Palestine
- 15:30 – 16:00 **Coffee break**

- 16:00 – 17:30 Country presentations – 4
Portugal
Qatar
Romania
Slovenia
Spain
Sri Lanka
Tajikistan
- 17:30 – 18:00 **Coffee break**
- 18:00 – 19:00 Country presentations – 5
Turkey
Uganda
United Kingdom
Uzbekistan

12 December 2015

- 08.00 – 13:00 Sight Seeing
- 13:00 – 14:00 **Lunch break**
- 14:00 – 15:30 General Discussion – 1
- 15:30 – 16:00 **Coffee break**
- 16:00 – 17:30 General Discussion – 2
- 20:30 **President Dinner**

13 December 2015

- 09:00 – 10:45 Discussion on declaration
- 10:45 – 11:15 **Coffee break**
- 11:15 – 12:30 Discussion on declaration
- 12:30 – 14:00 **Lunch break**

Language: English

COST CALCULATION OF BLOOD COMPONENTS IN ALBANIA

Irena Seferi , Albania

National Blood Transfusion Centre of Tirana is the provider of blood components in Albania. This Institution formulates policies of blood safety and is responsible for the implementation. NBTC Tirana performs its activity based on the Law 9739 date 21.05.2007 ***“For the organization of transfusion service in the Republic of Albania”***. This Law recognizes Red Cross and other donor organizations as partners in the promotion of voluntary non-remunerated blood donations.

The cooperation of NBTC with Red Cross in the promotion of blood donation has been successful in our country and thanks to this cooperation we have had a significant increase in overall number of donations and in the quality of blood donors.

Based on the above mentioned Law, NBTC is the official body that calculates the costs of the services and products followed by further approval of the Ministry of Health.

The cost of products has been calculated based on three big groups of expenditures:

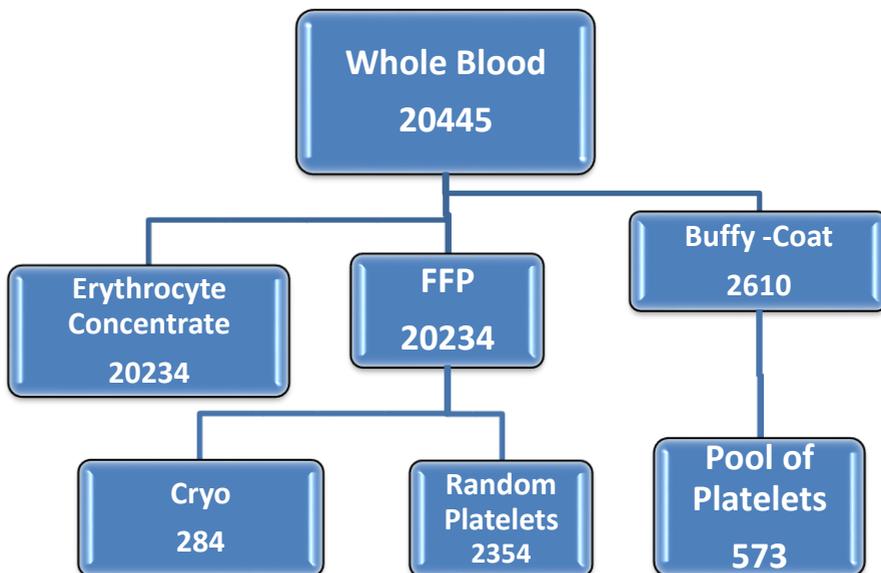
1. Staff salaries and wages
2. Operational expenditures
 - a. Expenditures for recruitment
 - b. Expenditures for reagents, consumables and equipment (if any new purchased)
 - c. General expenditures (infrastructure + logistic)
3. Amortization index of equipments and building

Distribution of costs (in %) in the unit cost



The prices of blood components are defined in our country by distributing equally the main cost on the prices of red cells and fresh frozen plasma. Calculation methodology has been the distribution of whole costs in red blood cells and fresh frozen plasma, because most of our whole blood units are separated in red cells and fresh frozen plasma. For calculating the cost of platelets produced from buffy coat the cost of the whole blood unit has been divided in three parts (red cells, FFP and buffy-coat) and then to the cost of the buffy coat has been added the cost of the pool sets and staff work needed for producing platelets from pooled buffy coats. Random platelets are produced from platelet rich plasma and in this case for calculating the random platelet cost we have divided the cost of plasma in the cost of cryo and platelets.

The following flowchart demonstrates the separation of whole blood in components and their quantities in Tirana for 2014. Based on this flowchart and the respective quantities we have calculated the unit costs.



The costs of our components calculated by using this methodology are as following:

- Erythrocyte concentrate 35 Euro/unit
- Fresh frozen plasma 35 Euro/unit
- Random platelets 17 Euro/unit

The Law establishes the obligation for private hospitals to pay for all units of blood components that they use, except for units used for chronic anemia patients, and in the same time the Law defines that these costs in no case should be directly charged to the patients. Despite this, the costs of blood components are charged from the private hospitals directly to the patients. This Law has been approved in 2007. Since its approval private hospitals have vigorously opposed it and have not applied it. After many efforts and with the firm support of the Ministry of Health we managed to begin with the regular application of the Law in January 2015. The patients of private hospitals pay fees for all services that they

receive and paying also all costs of blood raises significantly the cost of their treatment. We have proposed to private hospitals to calculate blood and components as general costs of the hospitals and charge them not only to the recipients but to all inpatients. This mechanism of charging blood will encourage also the rational use of blood except for ensuring the cost-recovery for BTS with a positive impact in blood safety.

Conclusion: The correct application of our Law 9739 date 21.05.2007 “On organization of transfusion service in the Republic of Albania” will of course create a mechanism of cost recovery and will positively affect blood safety by giving possibility to BTS to increase the quality of collection, testing, processing and distribution of blood and components and in the same time will stimulate the rational use of blood.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS

Parvana Hacıyeva

Central Blood Bank, Baku, Azerbaijan

In recent years, Health Care Systems of Eastern European countries, including Azerbaijan, have faced disruption, as a result of the political and social upheavals since 1989. This process was in no ways curbed even after Azerbaijan gained its independence.

To improve the level of blood service in 2005, the Law of the Republic of Azerbaijan was adopted "On the donation of blood, its components and blood service," with the approval by the President of the Republic of Azerbaijan on 3 May 2005.

In 2006 the State Program "On the development of the donation of blood, its components and blood service," was approved by the Cabinet of Ministers of the Republic of Azerbaijan the sole purposes of which were:

- Development of the donorship and blood donation services in the Republic of Azerbaijan and the reorganization of the Blood service process;
- Improving the safety quality of blood components for patients;
- Reorganization and optimization of the existing structure of the Republic Blood service in accordance with modern requirements;
- Strengthening the material-technical base of the Blood Bank;
- Expanding outreach country, engaging citizens to donate blood or blood components.

The state program targets solving of the existing problems to ensure that the state institutions of the Blood services are furnished with the necessary equipment, blood bags, testing reagents etc. It

envisages of acquiring sufficient number of refrigerated centrifuges, refrigerators, freezers, automatic separators for blood components, automated donor weights, containers for the transportation of blood and blood components, etc.

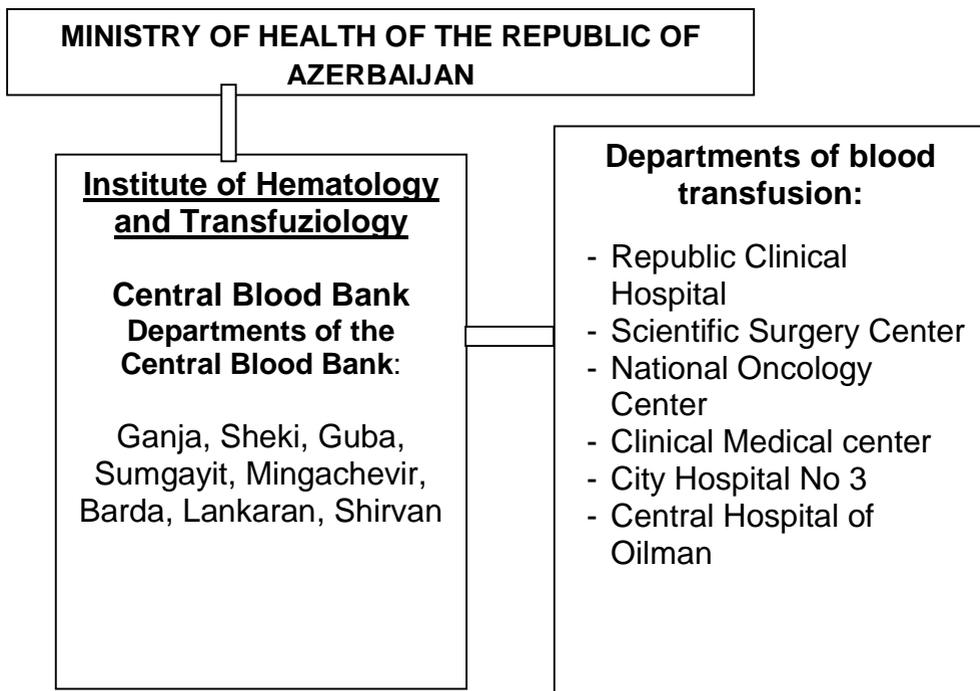
In accordance with the state program for reorganization the structure of the Blood Service, as well as stemming from the appropriate Order of the Ministry of Health issued in 2008, the reduction in the number of hospital blood banks (HBB) was carried out at the expense of inefficient and low-power (of 6 HBB was eliminated in Baku). As a result of this restructuring, amounts of blood collection is not diminished, but rather increased significantly.

In 2010 the Ministry of Health issued a decree "On the optimization of the network of BS institutions and improvement of their operations"

Currently, blood service in Azerbaijan consists of a Central Blood Bank at the Institute of Hematology and Transfuziology, which has 8 Branches in the regions and also in the city of Baku on the basis of large hospitals with 6 blood transfusion Departments. The whole territory of Azerbaijan is divided into 9 areas that serving by the Central Blood Bank and its 8 regional offices. Moreover, the formation of service zones aims that the blood could be delivered at any facility, part of the zone to a maximum of 1.5 hours.

The given below is the structure of the blood service in Azerbaijan:

The structure of the blood service in Azerbaijan



The results of the realization of the state program are reflected in the table below:

Dynamics of blood service development in Azerbaijan for 9 years (2005-2014)

Years	2005	2014	The growth in 9 years (times)
Blood donations	22862	72697	3.2
Blood (L)	9691	36193	3.7
Red blood cells (L)	1838	21259	11.6
Fresh frozen plasma (L)	1252	14424	11.5
Platelets (dose)	738	1801	2.4
The average amount of blood per employee (L)			
The amount of blood donors per 1000 population	24	123	5.1
	2.7	8.0	3.0

As it follows from the table, for more over the past 9 years there has been a twofold increase in the number of donors, the twelve-fold increase in red blood cells and fresh frozen plasma, twofold increase platelets, and threefold increase in the number of blood donors per 1,000 population.

It should be particularly noted a fivefold increase in the amount of collected blood, which indicates an improvement in work productivity in the BS.

The BS in Azerbaijan is fully funded by the state and the blood products provided to hospitals and transfused patients are free of charge. Salary of employees of the BS is fixed and does not depend on work productivity. In 2011, the President of the Republic of Azerbaijan had increased salary of BS employees in two times.

Order of the President of the Republic of Azerbaijan

Order of the President of the Republic of Azerbaijan on salary of personnel of enterprises engaged in the supply and treatment of the blood and its components as well as bone marrow and their

storage at the frozen state, that are subjected to the Ministry of Health of the Republic of Azerbaijan.

Guided by item 32, article 109 of the Constitution of the Republic Azerbaijan, I hereby decide:

1. Double rise in coefficient of the rate (post) salaries determined according to the Unique Rate Schedule of the personnel of the enterprises (departments and sections) engaged in the supply and treatment of the blood and its components as well as bone marrow and their storage at the frozen state, that are subjected to the Ministry of Health of the Republic of Azerbaijan.

2. To authorize the Cabinet of Ministries of the Republic of Azerbaijan in the settlement of all other problems arisen due to this Order.

3. This Order is valid as of January 1, 2012.

Ilham Aliyev, President of the Republic of Azerbaijan, Baku, November 10, 2011

In this way:

- Ministry of Health / National Blood Service and Hospital Blood Banks are the providers of blood components in our country.
- Blood components are released to hospitals for free of charge. Generally, all prices for goods and services are determined by the Tariff Council of the Republic of Azerbaijan.
- There is no need to define the prices for the components of blood, as blood components are released to hospitals for free.
- The actual costs in Euro of listed below blood components in the country:

- a) 1 unit of red blood cell concentrate – 40 Euro
- b) 1 unit of random platelet concentrate – 100 Euro
- c) 1 unit of fresh frozen plasma – 30 Euro
- d) 1 unit of apheresis red blood cell concentrate – not manufactured
- e) 1 unit of apheresis platelet concentrate – 250 Euro

➤ The official body paying for the price of blood components in the country is Ministry of Finance

➤ The list of the topics are in order according to their importance at the final cost of the blood components in the country:

- a) Cost of consumables such as blood bags, test kits, etc.
- b) Staff salaries and other social expenses such as pensioner, etc.is
- c) Cost of equipment
- d) Cost of infrastructure maintenance such as; building, electricity, water, waste, etc.
- e) Cost of logistics such as storage and distribution, etc.
- f) Costs for recruitment of donors

➤ ELISA microbiologic tests are performed to each unit of blood before issuing by components in the country.

➤ No pathogen inactivation routine is applied to blood components in the country.

➤ There is no indication over the irradiation of blood components in the country.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS BOSNIA & HERZEGOVINA

Dr. Aida Djozo, Bosnia & Herzegovina

Bosnia and Herzegovina is a very complex and complicated country, so is its health system. Being a part of the Bosnian health system, transfusion medicine and its services are not an exception. [Show slide and state centers]. The administration is overwhelming and heavily decentralized.

This complexity is evident from the existence of 13 Ministers of Health and also 13 health insurance funds.

It is divided into two entities and one district. Entity of the Federation is divided into 10 cantons. The border between cantons almost functions as a state border. Health professionals in this environment do not have enough space for action. There is no National Policy for transfusion, which is something that we advocated for.

ZTM (Institute for blood transfusion of Federation B&H) is the only Institute in FBiH. In the RS (Republik Srpska) there is the Transfusion Institute of RS . There are 3 centers and 12 hospital blood banks. IZTM collected 16 410 units in 2014. In the 2014. ZTM issued .cca 16 300 blood units: 12 111 FFP; 7422 platelets; 828 apheresis platelets; The customers are hospital centers in Sarajevo , Gorazde, as well as some private institutions; The sum of collected units in FBiH in 2014. was 56 808 units.

Hospital transfusion department are dependent on the hospital budget and the cost of transfusion is calculated as a part of hospital days.

1..There is no a national blood service As the entities and the cantons act like states, there are sharp limits in the blood supply-

there is no "flow" of blood products between cantons and entities. ZTM --- hospital transfusion and cantonal centers Red cross participates in organizing blood drive in minimal percentage.

What is the official body that defines and sanctions the price?

It should be the Minister of Health in consultation with the Health Insurance Institute of FBiH; However, we have a similar situation with services for example: genotyping RhD – The Ministry has approved the method and sanctioned the price, but the Health Insurance does not cover the cost. It works on the way the Institute spends its own budget. Here we have overlapping responsibilities between ZZOKS and ZZOR Federation.

The price for blood components has not been defined. Before dissociation when BH was an integral federal unit within the EX YU, there was a price so that the Institute was very solvent. Today, in the 20th year of transition, we do not have defined price of blood components. The Institute works in a way that Cantonal health insurance fund covers the cost of blood bags, serological tests and kits for apheresis. There is a contract with the largest user UKCS to charge a fee per component at a symbolic price. Little bit more realistic is the cost for components for TX programme. But again there is delay.

The Price of blood components is not defined - only the prices of some services (imunohaematology testing), For Ks there is no charge for service, although we do not get the money for Imunohaematology testing.

It is not a payment of blood components, rather refund for raw materials. EPA HP, ZZORF, FBiH Ministry f. even though the Founders, they do not perform their obligations towards the Institute in an accepted manner.

Of course, there is a gap, even the last 2 years, the reduction of funding by 50%, although the prices of raw materials rose. By the way, salaries have not risen since 2008, although the cost of living tripled. The average salary in the FBiH is 400 E.

Normal functioning was enabled thanks to the existence of the accumulated funds of the Institute.

The most costly element of blood component is raw materials. We know that the transfusion Medicine is an expensive part of medicine. Standards and guidelines are more demanding. We know that quality costs. Automation is an imperative, but its establishment costs. For example, molecular testing is an imperative for the EU membership, but our budget does not allow for it. Unfortunately, the least investment is made in the corpus of voluntary blood donors who are the purpose and the end of the whole operation. The Institute receives only one euro per one donor.

9. In the ranking of most expensive, the raw materials is on the first place, according to growing demands on platelets and leukodepletion of components;

2. Equipment - purchase and maintenance;

3. Salaries of staff (average salary doctor's is 850 E. ; technician's is 500E;)

4. Logistic infrastructure ;

5. Conservation and surveillance of components;

6. Unfortunately, the least "expensive" blood donors although the most

10. We are implementing laws and standards in the field of pretransfusion testing (4 obligated tests), Confirmatory testing; and molecular-mini pool testing; (Unfortunately , the Institute is only well equipped Institution in BS in BiH able to perform molekular serological testing, but the budget is insufficient; there is no point of testing some of all seronegative donors.;

12. There was a pilot project through the UNDP Programme "Safe blood". ("Intercept" -FFP). However, it was not sustainable because of high costs, and we did not have the requirements of our customers.

13. Irradiation of blood products is available at Hospital center Sarajevo.. There is an increasing demands on irradiated platelets and ER. This products have no a higher "price", except that requires extra work of staff involved in management of irradiated components.

15. On the first place is Minister of health, who is responsible for establishment of National blood transfusion policy; The Law was passed, but implementacion stagnates. There is obviously no real willingness for making progress and conection to European integrations.

It seems that even among professionals there is no consensus - the trend of decentralization instead of centralization, and unification that makes us closer to establish unique price for BC.

On the one hand the requirements for transfusion are growing, consequently costs in BS are growing. On the other hand, polytransfusions multiplate aloimmun isation and consequently rises the costs in BS. But, there is no understanding by authorities.

In short: The algorithms are challenging ,but our finances do not following them (or us).

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS EGYPT

Faten Mofteh, Egypt

Introduction

Every patient in every health institute has the right to be transfused with any blood component irrespective of the cost or affordability of paying for the treatment. Blood components cost a considerable budget to be collected, processed, tested, and made available to patients. Governments must ensure descent budget for costing blood supply.

Subject

In Egypt, several stakeholders provide health care namely; Ministry of Health public hospitals, Ministry of higher Education University hospitals, Private Sector hospitals, Ministry of Defense Military hospitals, NGOs hospitals, different syndicates hospitals, etc. Subsequently, the same stakeholders provide blood supply. MOH provides 60 to 70 % of the blood supply at a subsidized cost. University hospitals provide blood supply free of charge, and private hospitals charge for a fee including profit margin.

The national insurance organization finances the blood requirements for school students, chronic diseases like hepatic & renal failure, and oncology patients. Some major NGOs mobilize financial donations to support blood needs for special patients groups like, hemophilia, thalassemia, and primary immune deficiency.

The major part of the blood cost is consumables and reagents, salaries next to them, and finally storage equipment and electricity power. Screening tests done on blood supply includes; HIV ½ antibodies, HCV antibodies, HBsAg, Syphilis antibodies, and NAT for

HIV/HBV/HCV. Irradiation, leukoreduction, extended phenotyping, and antibody identification are made available as well.

Recommendations

It is highly recommended that the official MOH regulator standardize the fees for blood supply. It is hoped that with the future health insurance project, blood components needs to all patients groups are financed by the basic insurance plan.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS IN ESTONIA

Riin Kullaste, Estonia

Estonia has mandated universal healthcare insurance provided by Health Insurance Fund.

Insurance is funded largely through payroll taxes as a percentage of income of working people.

The Fund also covers disability due to illness. The children's, the retired people and the poor are covered by the same Fund for free.

The Estonian Ministry of Social Affairs oversees the insurance and payment systems, as well as the quality and safety of the care provided.

Income of the hospitals is based on medical services provided to the patients. In case of blood centers this means blood components supplied to the hospitals and transfused to the patients.

Blood products are provided by 4 blood collection and processing facilities belonging to the bigger hospitals in four directions – north, south, west and east of Estonia. Those blood centers are independent from each other, but working under the umbrella of the common legislation, which regulates collection, testing, processing and quality issues.

The official body to define and declare price of blood components is National Health Insurance Fund. Every blood product has its own price calculated by activity based costing method, calculation is done in cooperation of all four blood centers and Health Insurance Fund.

The price includes materials, devices, reagents, rooms, human resources etc used in activities to achieve the final product.

For example:

Activities needed for producing red cells -

- Medical examination
- Blood collection
- Testing – viruses, microbiology, blood groups
- Quality control
- Storage and distribution

People are involved almost in all activities. The amount of minutes or hours used in activities

to get this product is measured and determined.

The price for an hour of work of doctors, nurses and lab technicians is agreed at the state

level in cooperation with Unions, Ministry and Health Insurance Fund.

Topics in order according to their importance at the final cost of the blood components:

1. Cost of consumables such as blood bags, test kits, etc.
2. Cost of equipment.
3. Staff salaries and payroll taxes.
4. Cost of infrastructure maintenance such as; building, electricity, water, waste, etc.
5. Cost of logistics such as storage and distribution, etc.
6. Donor recruitment.

Donor blood testing is done by ELISA method and PCR in minipools of 6. Pathogen inactivation is not in use, irradiation can be done to the red cells and platelet concentrates.

Cost of the main products:

- a) 1 unit of red blood cell concentrate – 57,54 €
- b) 1 unit of random platelet concentrate (4BC) – 120,13 €
- c) 1 unit of fresh frozen plasma – 35,23 €
- d) 1 unit of apheresis red blood cell concentrate – 85,34 €
- e) 1 unit of apheresis platelet concentrate – 229,58 €
- f) 1 irradiation procedure - 17,05 €

Hospitals pay for the blood products to the blood centers and get reimbursed by Health Insurance Fund per patient.

Every hospital has annual contract with Health Insurance Fund - how many medical services can be provided. What exceeds the limit is not reimbursed. It means very careful planning of treatment and no unnecessary transfusions.

BLOOD PRODUCTS IN GERMANY: COST CALCULATION & PAYMENT SYSTEMS

Gert A. Matthes, Germany

The lecture about blood products in Germany is divided into four sections: transfusion system, blood supply, cost analysis for blood products, payment of blood products.

In the German Transfusion Service, three / four different blood establishments reflect: a) German Red Cross Blood Transfusion Services (36 blood establishments, share of about 72%); b) State-run, municipal or university blood establishments (76, 20%); c) private blood centres (22, 8%), as well some commercial plasma centres (16). Shown are main figures of transfusion service for manufacturing of blood components in Germany 2014 (4.43 Mio. whole blood donations, 4.305.105 units red cell concentrate (RCC), 582.687 units platelet concentrates (PC), 925.844 units fresh frozen plasma (FFP), 3.208.167 L of fractionation plasma).

Almost 4.170.523 of the produced RCC are sold (97%), further 3.973.806 of the sold RCC transfused (95%); 528.226 of the produced PC are sold (91%), further 495.866 of the sold PC transfused (94%); 919.147 of the produced FFP are sold (91%), further 830.801 of the sold FFP transfused (90%). Altogether 105 blood component manufacturer distribute blood products in Germany. They must have a manufacturing license, and a wholesale license for blood products by the Local Health Authority, and an approval for these blood products by the Federal Health Authority (Paul-Ehrlich-Institute, PEI).

In Germany, blood products are subject to price competition among blood products supplier. The actual cost for blood components (per unit) are for RCC 95 € (85-112), random platelet concentrate 320 € (220-360), FFP 35 € (30-70), apheresis RCC 100 € (90-112), apheresis PC 600 € (350-680). The price between different

providers and users can vary widely due to the competition. Presented are cost calculations for the manufacture of different blood products (RCC, PC, FFP by conventional and apheresis procedures) using the example of the university blood bank Leipzig. Manufacturing costs are for the RCC about 120 €, for a PC € 450. The total costs are composed of 33% costs of staff salaries, 32% for consumables, 21% for donor recruitment, 7% for equipment, 4% for logistics, and 3% for infrastructure maintenance.

In Germany, the blood supply is mainly provided on a regional basis. Blood establishments supply 1.412 hospitals with blood components by charging product prices according to specifications (price list, DKG-NT). With that, blood centres receive their income from the sales of blood products and services, and from selling plasma to fractionation. The hospitals pay the delivered units direct to the blood manufacturer. In hospitals, the total cost of a blood transfusion is higher than the procurement costs. In addition to the procurement costs are caused by blood grouping, antibody screening, cross matching, blood test and application, additional personnel and material costs. On that basis the total cost of a transfusion can be calculated for a red cell concentrate with 196 € (procurement costs make up only 49% of the total cost). The reimbursement of the blood product prices to hospitals will be made by the statutory and private Health Insurances. The Statutory Health Insurance Association and the Association of Private Health funds the ongoing operating costs of the hospitals within the prescribed hospital remuneration (Hospital Remuneration Act (KHEntgG): each hospital is negotiating principle annually with health insurance an annual budget for the remuneration of full inpatient and hospital services).

Corresponding address:

Prof. Dr. med. Gert A. Matthes, Voßstrasse 9, 10117 Berlin, Germany

Email: gert.matthes@yahoo.de

COSTING OF BLOOD AND COMPONENTS IN INDIAN BTS

Nabajyoti Choudhury , India

Introduction

The question of appropriate price tag for a unit of blood has been a subject of controversy since a long time. People in general are of the opinion that there cannot be any price for a free gift donated by a blood donor. They are absolutely right and there should not be any price for blood and components. But why do blood units are being charged? This is not the price for blood but it is the charge for processing blood units after collection. It includes collection cost like blood donor motivation, donor selection, cost of bag, donor refreshment; mandatory tests to be performed, component preparation cost; preservation cost, infrastructure cost like maintenance of equipment/ gadgets, electricity, salary of employees, other consumables and office expenses.

This is not as simple as it sounds. The blood banking community has often been tarnished (?) by the words like 'profit', 'commercial' and 'sale' etc. These are supposed to be 'dirty' words in blood banking. Blood banks have often been looked upon as charitable institutes or moneymaking institutes. In India, only during the last twenty years, blood-banking services (BTS) have succeeded in attaining respect with special thanks to the emergence of AIDS epidemic. Whenever the government sector fails to perform, private sector takes over. Many of the private sectors blood banks came out with philanthropic attitude, which tried to give blood to people against little or no money. They did not realize that blood is considered as medicine, which needed quality and it actually did cost money. On the other hand, some corporate blood banks took the advantage of simple market economy of 'demand and supply'. These activities made general public averse against pricing on blood units. 'Service charge or processing charge' is often interpreted as

'selling price' with 'profitable' motive. *However, nobody should engage in 'trading' of liquid human tissue i.e. blood.*

Costing in Indian BTS

National Blood Transfusion Council (NBTC) in India is the policy making body under the Federal Ministry of Health. There were two previous notifications about processing changes of blood and components in India. However in February 2014, NBTC issued a structured notification keeping in view of various types of blood and components available for transfusions. There is a differential pricing on the basis of additional test performed and also for public sector and non-public sector blood banks. For example, if red blood cells (RBC) units are leukoreduced by filtration or NAT tested, the processing charges may go higher. There is a differential pricing for public sector blood banks and also in other blood banks. The pricing of blood and components recommended by NBTC is given below:

Components	Public sector (INR/ Euro)	Private sector (INR/ Euro)
Red cells	1050/ 15	1450/ 20
FFP	300/ 4	400/ 5
RDP	300/ 4	400/ 5
Cryoppt.	200/ 2	250/ 3
SDP	12000/ 171	12000/ 171

Payment system in healthcare industry:

In Indian healthcare system, cost of treatment is either taken care of by the government (in public sector hospitals) or by the insurance company or by the employer or by the patient him/herself. There are four types of blood banks under different

administrative heads in India. They are either in Public sector (administrative control under provincial or federal government) or under Red Cross or under non-profit organizations (approved by government bodies) or under corporate hospitals. Paid and professional blood donation is banned since 1996. There is about 10 million blood collection in India and 75% are from voluntary donors and 25% are collected from family replacement donors.

Calculation of processing charges

It was a recommendation of National Blood Policy in India for cost recovery and self sustainance of Indian BTS. Keeping this important dictum in mind, the NBTC formed an expert committee for deciding processing charges of blood and components. The committee has taken multiple factors into consideration while deciding processing charges of various blood and components. They have done separate cost calculation for public sector and non-public sector blood banks. They have taken many factors into consideration including consumables (blood bags, reagents, stationaries, chemicals), test processes (TTI, cross-matching, haemoglobin test etc), logistics and infrastructure (electricity, equipment maintenance and depreciation, biomedical waste, donor refreshments, blood wastage etc). The main reason for separate cost calculation for public and non-public sector blood banks is because in public sector, the government takes care of many cost elements including salary, electricity, consumables, reagents etc. Whereas in non-public sector blood center has to take care of all cost factors on the basis of processing charges recovered from distribution of blood and components only.

Conclusions:

Indian BTS is centrally coordinated by the Federal Ministry of Health but it is highly fragmented. All blood banks are licensed under the Indian Drugs and Cosmetics Acts and regulatory department issues license for five years with a provision of annual and random audit to blood banks. National AIDS Control Organization is looking after technical and quality part of blood bank and facilitate with equipment, reagents and training for specified number of blood banks. In India, all collected units are tested for transmissible diseases. About 90% units are tested by ELISA or chemilucense technique and rest 10% is tested by rapid tests in small blood banks. Out of total collection, 10% units are tested by NAT, especially in corporate hospitals. Pathogen inactivation process is not licensed in India till now.

Dr. Nabajyoti Choudhury,

Secretary General, AATM

Additional Director & Head,

Department of Transfusion Medicine,

Fortis Memorial Research Institute,

Sector: 44, Gurgaon-122002 (National Capital region-DELHI)

INDIA.

Mobile : +91-8587099908

E-mail : nabajyoti_2000@yahoo.com;

Web site: www.aatmweb.org

COST CALCULATION OF BLOOD COMPONENT

Leila Kasraian

Blood Transfusion Research Center, Higher Institute for Research and Education in Transfusion Medicine, Shiraz, IRAN

The question of appropriate price tag for a unit of blood has been a subject of controversy over a long time.

People in general are of the opinion that there cannot be any price for a free gift donated by a blood donor.

Blood units are donated voluntarily. You do not need to pay for the blood you receive during a transfusion.

Blood is never sold. This is because blood donations are voluntary and donors do not receive any form of payment.

As a patient, you will only need to pay for a blood-processing fee. This is to recover costs for collecting, processing, testing each unit of blood to ensure it is safe for transfusion.

Actually, this is not the price for blood but service charges for processing blood units after collection.

This is not as simple as it sounds. The blood banking community has often been tarnished by words like 'profit', 'commercial' and 'sale' etc. These are supposed to be 'dirty' words in blood banking.

These activities have made general public averse to pricing on blood units. 'Service charge' is often interpreted as 'selling price' with 'profitable' motive.

Blood transfusion costs have increased dramatically over the past two decades. Blood banks and collection centers are also feeling the pinch.

Increasing blood transfusion cost depends on

Increased demand

Increased utilization

Risk-reduction methods

Donor recruitment programs

Development and implementation of new technologies for donation and transfusion.

Nucleic Acid Amplification (NAT) testing

Irradiation

Other tests and treatments to make the available blood supply safer

Blood unit costs includes

Collection cost like blood donor motivation

Donor selection

Cost of bag

Donor refreshment

Testing cost like confirmation of ABO/Rh

Mandatory transfusion associated infection tests

Component preparation cost

Preservation cost like maintaining refrigerators, deep freezers, platelet shakers/ incubators;

Infrastructure cost like maintenance of equipment's/ gadgets, electricity

Salary of employees

Electricity

Other consumables

Office expenses

Costs can be much higher if the transfusion causes an infection or serious problem happens

Iran Blood Transfusion Organization (IBTO) was established in 1974.

Iran has 100% non-remunerated voluntary blood donation. Iran has 27 donations per 1000 population.

Contribution of female donors in blood donation is less than 6%.
IBTO screen all donated blood for important transfusion transmissible infections such as HBV, HIV, HCV and syphilis.

Iran patients receive transfusions of 2.1 million blood products (red blood cells, fresh-frozen plasma, and platelets) each year.

Which approximately one seventh (300 000) unit used for thalassemia patients.

Till now all blood transfusion fee was supplied by Iran ministry of health and no money was paid by patients and hospitals.

The price of preparation one unit of pack cell was estimated about 42 dollar for P-RBC, 9 US Dollars for FFP9, 5 US Dollar for platelet .

It suppose from now some expenses will paid by medical insurance.

Hospitals must report the exact amount of blood and blood products usage.

Then, medical insurance will pay one-fifth of this about 20% to IBTO.

What we must do for lowering the use of blood product?

The benefits of blood transfusion are being challenged by the findings which show that restrictive transfusion practices are equivalent or better than liberal practices, even for patients with heart disease and the elderly

Preventive strategies are emphasized to identify, assess, and manage anaemia in medical and surgical patients, including use of pharmacological interventions and the avoidance of unnecessary diagnostic testing to minimize iatrogenic blood loss; to optimize homoeostasis and use of point-of-care testing; and to establish clinical practice guidelines for blood transfusions

Strategy as simple as the detection and treatment of anemia before surgery may help reduce the use of blood products and the concomitant risk. "Quality indicators measuring patient outcomes (ie, hospital stay, postoperative complications, mortality, and costs) need to be used so that the alternatives to blood transfusion can be more effectively assessed and incorporated into clinical practice.

The importance of blood management: "Patient blood management encompasses an evidence-based medical and surgical approach that is multidisciplinary (ie, including transfusion medicine specialists, surgeons, anaesthesiologists, and critical care specialists) and multiprofessional (ie, including physicians, nurses, pump technologists, and pharmacists).

With recent development of quality–performance indicators for patient blood management by health-care institutions and accreditation organizations at "total annual blood costs are largely driven by transfusion rate," which includes factors such as the proportion of surgical patients transfused and the number of RBC units per patient transfused, and provide a unique understanding of both cost drivers and the opportunities for cost containment.

According to researchers, "reducing either or both factors has the potential to reduce costs dramatically."

The portion of total hospital costs attributable to blood transfusion varies by disease and procedure, with transfusion representing 1% or less of total costs for most conditions.

Transfusion plays a more substantial financial role (5%-9% of total hospital costs) for other medical treatments, however, including liver and bone marrow transplantation.

The total cost of blood transfusion for these treatments can easily exceed \$3800.

In the field of transfusion medicine, economic evaluation help clinicians and policymakers maximize efficiency patient benefit while minimizing cost.

A transfusion can be understood as a sequence of three stages: “pretransfusion” “transfusion,” and “post-transfusion,” with each of these stages consisting of several distinct processes, all associated with costs.

The actual cost of blood is substantially higher than previously estimated.

There is still wide variation in the use of transfusions and frequent use of transfused blood in patients who don’t need it.

Blood transfusion carries significant risk that may outweigh its benefits in some settings,” and stated that misuse adds unnecessary costs.

Blood transfusion, which introduces a foreign substance “transplant” into the body, initiates a series of complex immune reactions.

Patients often develop antibodies to transfused red blood cells making it more difficult to find a match if future transfusions are needed.

Transfused blood also has a suppressive effect on the immune system, which increases the risk of infections, including pneumonia and sepsis.

42 percent increased risk of cancer recurrence in patients having cancer surgery who received transfusions. The surgeon and the anesthesiologist may have different opinions about when a transfusion is necessary. Discussions about transfusion trigger points would ideally be made before surgery, since it is too late to be making decisions when the surgery is under way.

Produced a list of blood use and trigger points for each individual surgeon and anesthesiologist.

Designing guidelines for ordering blood puts patients at risk all over the country. Coming up with an exact algorithm for the timing of blood transfusion is impossible, as each situation and each individual surgery is different. The safest blood transfusion, 'is the one not given.

In addition, hospital staff will make careful identification checks before a transfusion to ensure that you receive the right blood. You will also be regularly monitored during your transfusion to make sure you are well.

Blood transfusions cause "tens of thousands" of non-infectious adverse reactions in hospitalized patients annually and many of them are quite serious resulting in longer, more costly care.

But until now, there hasn't been an organized effort to define them, count them, and find better ways to prevent them.

Many of them are preventable "But we won't really know until we start tracking them."

The hospitals follow protocol that includes a set of definitions that spell out specifically what constitutes each of 10 categories of transfusion reactions in their patients, and report them to the

hemovigilance system. They can monitor their own statistics, but not those from other participating hospitals.

Some adverse reactions may be relatively minor, such as a rash, hives, flushing, edema or itching lasting hours or a few days. But reactions can be much more severe, including hypotension, fevers, bronchospasms, anaphylactic shock, renal failure, pain at the IV site, and abrupt onset Transfusion Related Acute Lung Injury, or TRALI.

There's also Acute Hemolytic Transfusion Reaction or AHTR, in which the body's antibodies cause a reaction that results in rapid destruction of red blood cells immediately after or within 24 hours of a transfusion or a delayed reaction, called DHTR, 24 hours to 28 days after the blood is given. Febrile Non-Hemolytic Transfusion Reaction, or FNHTR, Post Transfusion Purpura, or PTP, and Hypotensive Transfusion Reaction are also defined.

All of these can result in longer hospital stays, slower recoveries, and in a few very rare cases, death—reactions that some hospital officials may attribute not to the blood transfusion, but to the illness that caused the patient to be admitted in the first place. "We think that there's a lot of things that go wrong in blood transfusions that get misattributed."

The effort also is trying to get hospital officials to keep track of human errors in the handling or labeling of blood that result in unintended consequences.

"These may be considered near misses, in that they could have resulted in an adverse reaction if the circumstances had been different.

Applicable to various hospital practices, the ABC model confirms that blood costs have been underestimated and that they are geographically variable and identifies opportunities for cost containment.

Studies to determine whether more stringent control of blood utilization improves health care utilization and quality, and further reduces costs, are warranted.

This adverse transfusion reaction includes:

Short, intermediate long term outcomes

Increased infection rates

Prolonged ventilator times

Disease transmission

Allergic reactions

Cross match errors

Lung injury

Increased mortality

Increased risk for infection

Kidney failure

Lung dysfunction,

And many other health complications.

Associate Professor, Blood Transfusion Research Center, Higher Institute for Research and Education in Transfusion Medicine, Shiraz, Iran.

Community Medicine Specialist, Manager of Research Department of Blood Transfusion Center, Shiraz, Iran.

Address: No. 164, lane 37, Besat Boulevard, 7174715357, Shiraz, Iran.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS IN JAPAN

Shigeru Takamoto, MD, PhD

Director General, Japanese Red Cross, Hokkaido Block Blood Center

The medical insurance system in Japan works as follows: as an adult citizen, everybody has to belong to a pension plan which includes health insurance. Employees pay the premium to the company, whereas owners of personal businesses and the unemployed pay the government directly, according to income. Anyone who gets ill goes to either the family doctor or hospital, receives medical care, and in return has to pay 30% of medical expenses to the medical side. The medical side then demands the remaining 70% of expenses from the organization, which evaluates the medical care. If the care is deemed appropriate, the organization demands the same 70% from health insurance, which pays this amount to the medical side, via the organization. Naturally, the cost of blood products included in the medical expenses.

The blood programme in Japan is regulated by the ministry of health, labour and welfare (MHLW) and practically managed by the Japanese Red Cross (JRC). Blood donation is 100% voluntary and non-remunerated. In regarding to the blood products 1 unit of component stands for the one derived from 200 ml of whole blood donation. The donated blood is tested and processed at the Block Blood Centers (Seven centers over Japan) and distributed to medical institutions at standard prices set by the national government. As described above, expenses of blood products are covered by the national health insurance system. Prices of blood are calculated by the national government, based on the expenses involved in the process, from blood collection to distribution, and are officially posted. Prices of 1 unit of blood components are as follows: RBC: 61.3, FFP: 65.4 Euros, while 5 units of apheresis derived platelets cost 289.5 Euros. (10, 15 and 20 units are

available, but no whole blood derived platelets are available). On the other hand, the plasma products are either produced & sold in Japan or imported from foreign countries.

The final cost of blood components is composed of three major factors evenly such as personnel expenses, cost of materials and other costs such as infrastructure maintenance, equipment and logistics. For safety management, individual NAT for HCV, HBV and HIV, 6 months quarantine for FFP, universal leukoreduction, initial blood flow diversion and X-ray irradiation are already introduced. However, neither pathogen inactivation nor bacterial culture system have not been implemented yet.

Annual blood donors are 5 million, and from these 18 million units of blood components are produced and supplied to 13,000 hospitals and clinics and roughly 1.2 million patients are estimated to receive blood products.

BLOOD SERVICES OF THE REPUBLIC OF KAZAKHSTAN

Dr. Zhandos Kinysovich Burkitbaev, Kazakhstan

Blood services of Kazakhstan are comprised of 18 blood centers: 16 blood centers at oblast and city level, the Republican Blood Center in Almaty, and the Scientific Production Center for Transfusiology (SPCT) in Astana. Over the last decade, the blood services have undergone through some significant organizational changes, and donor blood collection has been stopped at more than 200 low-capacity blood centers and hospital transfusiology departments (the population of Kazakhstan is approximately 17 mln people).

The leading organization in this area that determines development strategy, issues normative regulations and activity standards concerning blood services, and performs educational functions and scientific research is the SPCT.

Blood centers are financed by the government, with regional blood centers funded directly from local budgets, and the SPCT and the Republican Blood Center funded from the republican budget.

In 2008-2012, 16 new standard blood centers have been built in ten regions of the country, and the rest of them have been additionally equipped and their specialists had an opportunity to be trained to learn about the best practices used abroad.

Every year, about 300,000 donations are done, and 250,000 doses of whole blood, 36,000 doses of apheresis plasma, 34,000 therapeutic doses of platelets, including 18,000 doses of apheresis platelets, are collected.

The methods of providing more infectious and immunological safety of blood components, such as leukoreduction, viral inactivation, and quarantine, are widely used.

Screening for the presence of markers of transfusion-transmissible infections (HIV-1.2, hepatitis B and C, syphilis) is conducted using fully automated systems in two stages: immunoassay at the first stage and the NAT testing of the donor blood samples that were negative at the first stage.

NAT testing of donor blood has been a mandatory screening standard since 2013.

At the SPCT, there is a reference laboratory, and one of its main goals is to create an external quality assessment system of laboratory testing at the blood services of the Republic. As a part of the process of implementing external quality assessment, the reference laboratory uses two types of qualification assurance programs: parallel testing and sample selection testing (or inter-laboratory comparison). Blood centers and medical organizations participate in the program.

In medication organizations (hospitals), transfusiology departments are established as a structural unit of hospitals. They receive and keep blood components, conduct a number of pre-transfusion immunohematology tests, and audit clinical justification for transfusions. Every year, approximately 330,000 transfusions of blood components are conducted in Kazakhstan.

Transfusiologist is included in the official nomenclature of medical specializations.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS

B. Zhubi, H. Sadriu, National Blood Transfusion Center of Kosovo

Background

Kosovo Blood Transfusion Service was established 63 years ago (1952) as an entity of Prishtina General Hospital. The development of transfusion services extended through years and finally after many efforts in 2003 it was upgraded to National Blood Transfusion Centre of Kosovo (NBTCK) with its seven Regional Blood Transfusion Centres, located in the Regional Hospitals of Kosovo. There was a functional vertical connection between NBTCK and Regional Centres. As of January 1, 2015, NBTCK is reorganized, whereas Regional Transfusion Centres are under full responsibility of NBTCK.

NBTCK is linked directly to the Ministry of Health and also all Regional Blood Centers now are linked directly to NBTCK in an effort to unify the quality of work between the Regions and NBTCK.

Kosovo has 1.74 million inhabitants with more than 25000 blood donations per year. 40% of blood donors are multiple (repeated) blood donors and 60% of them first time donors. 20% of blood donors are females and 80% are males. In 2014, the ratio between voluntary and family donors was up to 75% in favor of voluntary donors. For 1000 inhabitants there are 15 blood donations.

Kosovo blood transfusion service is able to provide self adequacy of safe blood and blood components in a timely manner. We have implemented software/computerised system to manage the entire process from collection to release of blood components. Documents of blood donors are in both forms: electronic and in hard copy.

ELISA test, as a standard method is in use for TTI screening for blood donors. NAT testing is performed only for TTI positive results

in National Institute for Public Health (NIPH), from 2010. Confirmatory tests for positive results of the TTI are performed in NIPH. We don't use pathogen inactivation system and irradiation.

Every unit of blood and blood components is registered in a database and has alphanumeric barcode. Due the fact that clinics do not use computerised system, we do not have the possibility of tracking the transfusion of blood products after they are released from our premisses. However, hard copy system provides a mean for blood tracking. There is no official request of QMS running in Kosovo about Blood Banking and Transfusion Medicine. There is no national system for complaints and/or component recalls and there is no national system for confirmatory reports, adverse events and reactions.

Transfusion treatment is performed at the public and private hospitals (18 clinics of Clinical University Centre of Kosovo CUCK, 7 regional hospitals, and in 7 out of 25 licensed private hospitals). However, NBTCK supplies with blood and blood products both public and private health domains. The blood product use is increasing by years especially for platelets.

Payment Systems and Cost Calculation of Blood Components have been present in blood services in Kosovo many years ago. There is a lists of cost calculation of blood components and payment which were proposed by NBTCK and accepted by Ministry of Health (January, 1, 2004). The list contains real prices and the price of participation for blood products and for other health services in transfusion medicine. However, the payment system is still not functional, as well as health insurance. Reimbursement of services for blood products by NBTCK are not executed by public hospitals, except for private hospitals where reimbursements is done by patients or by private insurance companies. From the total of 10 blood products, whole blood and concentrated erythrocytes are reimbursed only in private sector.

The provider of blood components in our country is the Ministry of Health and NBTCK. The official body to define and declare the prices of blood components at our country is the Ministry of Health and National Blood Service. In our country the prices of blood components at current are defined only for red blood cells and the whole cost is charged completely by price of red blood cell. Meanwhile the rest of blood components are supplied free of charge.

The actual costs of blood products in our country are listed below:

- a) 1 unit of red blood cell concentrate = real price 226 euro, actually 100 euro
- b) 1 unit of random platelet concentrate = real price 20 euro, actually free of charge
- c) 1 unit of fresh frozen plasma = real price 50 euro, actually free of charge
- d) 1 unit of aphaeresis red blood cell concentrate = actually free of charge
- e) 1 unit of aphaeresis platelet concentrate = actually free of charge

The official body that will pay for the price of blood components in our country for private hospitals are the private health insurance companies or by the patients themselves. In public hospitals all blood products are free of charge, and the state health insurance has not yet been functionalized. There is a gap between the actual price and the legal reimbursement amount of blood components at our country, and the differences will pay the patient himself or herself, or private insurance company.

The major components comprising the final cost of blood components in our country are: Cost of consumables such as blood bags, test kits, cost of equipment. But, also the new safety technology has an impact on the final cost of blood products.

Finally, all necessary procedures from selection of the donors to the delivery of the blood component transfusion will be included in the final cost of the blood products. The Elisa tests are the microbiologic tests for HIV, HBsAg, HCV and Syphilis which are performed for each unit of blood before releasing the components. Pathogen inactivation is not applied to blood components in our country. Irradiation of blood components is also not available.

Conclusion

In Kosovo the blood product use is increasing by years according to safety of blood products. However, the cost of blood and blood products could be increased due to compliance with the new safety technologies (screening tests of blood donors, NAT testing, aphaeresis, leukoreduction, pathogen inactivation, donor deferrals, etc). Many of these new safety measures are costly and those are indicated in the final cost and payment system.

COST CALCULATION OF BLOOD COMPONENTS AND PAYMENT SYSTEM IN KYRGYZ REPUBLIC

Bakyt Karabaev, MD, Director, Republican Blood Centre, Bishkek, Kyrgyzstan

National Blood Service in Kyrgyzstan consisted of 5 blood centers (1 Republican Blood Center (RBC) and 4 oblast level blood centers), 1 branch of RBC in Batken Oblast and 39 transfusion departments (hospital based blood collection sites) and 17 blood banks. The centralization reform is launched within the project of German KfW Bank, in 2011-2015. Within this project is planned to have 7 blood centers: in Bishkek (RBC) and in each oblast, excepting Chu oblast. Transfusion Department in Issyk-Kul oblast transformed into blood center and branch in Batken oblast also reformed into oblast level blood center. Renovation of buildings, supply with the same equipment into each center, which complies with minimum requirements to the quality standards, and disposables and test kits; 7 mobiles for distribution of blood components within oblasts; and trainings for blood service staff were done by the project.

National Blood Service is under the Ministry of Health regulation, which defines operational policy. Financing from the government covers 60% of actual needs; and the other 40% comes from commercial services performed by RBC.

Since 2010 RBC worked closely with CDC through a Cooperative Agreement under the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). The main achievement in this project is pilot of Club-25 – development of Voluntary Non-Remunerated Blood Donorship among youth, which was started in 2012; and Turkish model of same initiative Hedef-25 was adopted. Study tour to Ankara Turkish Red Crescent was supported; Monitoring and Evaluation of indicators of blood service performance was implemented; and establishment of the Computer Information Management System (CIMS) within the entire blood service. The

aims of a CIMS in a Blood Transfusion Service is to support activities in ensuring the safety of donors, the quality of blood components and the safety of patients on the information level. The information from CIMS is used to collect data on blood service performance; and of course, should be related to cost calculation and should be included into cost calculation.

The Antimonopoly Committee under the Ministry of Economics and the ministry of Health define price and cost of blood and blood components in the country.

The price of blood components in Kyrgyzstan is calculated based on the cost of 1 liter of whole blood collected; and then cost is distributed for red cells, platelets and plasma due to quantity of supplies and medications spent to separation of components. Below, we provide cost of each component for one unit of product: red cells concentrate – 13 Euro; random platelet concentrate – 17 Euro; fresh frozen plasma – 20 Euro. Blood Service in Kyrgyzstan doesn't produce apheresis red cell concentrate and apheresis platelet concentrate. The final cost of blood components is calculated from numerous factors listed according to their relative contribution to cost: cost of equipment, cost of supplies; staff salaries, donor recruitment, cost of infrastructure maintenance, and lastly storage and distribution.

Donors' blood is tested by ELISA technology on open automated analyzer for HBsAg, anti-HCV, anti-HIV-1/2, anti- syphilis screening. HIV reactive samples are sent to Republican AIDS center for confirmatory test, HBV and HCV reactive samples are sent to Sanitary-Epidemiologic Station for confirmation, and samples which have antibodies to Syphilis are sent to dermatology-venerological center for confirmation. All TTI reactive units of blood are discarded. Approximately 12% of blood products are discarded due to TTI's; 9.9% of red cells due to expiration date.

The costs of salaries, test kits and other disposable supplies, e.g. blood bags, gloves, gowns as well as physical facilities are all necessary costs that must be paid for regardless of the funding methodology. It should be emphasized, however, that simply funding these well-established ongoing costs does not guarantee continued advancement of the quality of the national blood supply. The total cost of safe blood should also include ongoing maintenance and repairs of equipment, quality oversight, investment into CIMS, and the important function of identifying and destroying those blood products that are unsafe and unsuitable for transfusion. These costs incurred to collect; test and store blood components as well as the amount spent to remove and dispose these units are legitimate costs to ensure that patients only receive the safest blood products and must be funded as any other element of cost such as salaries and supplies.

WHO IS THE PROVIDER OF BLOOD COMPONENTS AT YOUR COUNTRY?

Miglė Vantens, National Blood Center of Lithuania

Public organization National Blood Center was established in 2003 through the merger of public organizations Vilnius Blood Center and Klaipėda Blood Center. In pursuance of the order of the Minister of Health of the Republic of Lithuania, in 2006 the National Blood Center commenced activities in Panevėžys. It is the biggest blood donation organization in our country.

The aim of activities of the National Blood Center is to improve health and to reduce the morbidity and mortality rates of the residents of Lithuania, to supply personal health care institutions with blood, blood components and products, to implement quality, safety, and efficiency requirements of the European Union, and to promote voluntary non-remunerated blood donation.

Vision – to become a blood center, which meets the European Union requirements for blood centers and their activities in respect of the preparation of safe blood, blood components and products from voluntary non-remunerated donors' blood and conformity to the European Union quality standards.

Mission – to continually and timely supply the patients of personal health care institutions in Lithuania with safe high quality blood, blood components and products.

In 2009 public organization National Blood Center became the first blood donation organization to be assessed in accordance with the requirements of ISO 9001 standard. ISO 9001 are quality management system standards of the International Organization for Standardization, which enable taking over the best management experience proved to be in practice in the world.

Public organization National Blood Center has been granted a Certificate of Good Manufacturing Practices (GMP) and a license for the production of medicinal products. No other blood donation organization in Lithuania has been granted such license. Activities, equipment, and qualification of personnel of public organization National Blood Center meet the requirements of Good Manufacturing Practices (GMP) and the European Union quality standards.

The specialists at the National Blood Center take donors' blood, produce blood components, and supply them to personal health care institutions as well as their patients. The Center compiles and analyzes data on blood donors, recipients, as well as blood components and products.

Who is the official body to define and declare price of blood components at your country?

Maximum allowed prices are stated in the Order of the Minister of Health of Lithuania, issued on 2009 of December, 2009 (from 1 st of January of 2015 new edition).

This Order sets the nomenclature of blood components and the maximum allowed prices.

How the prices of blood components are defined at your country?

The detailed analysis of price formation is undisclosed. The analysis of the price is based on the actual expenditure results of blood donation organization. The actual expenditures of national Blood Center of Lithuania consist of :

Direct costs

- a) medical appliances, medicine, lab materials,
- b) direct labour costs,
- c) expenses of quality assurance of blood components and products

Indirect costs

- a) production overhead costs;
- b) losses due to write-off products;
- c) depreciation/amortization of the equipment

Please write the actual costs in Euro at your country of below listed blood components;

According the Order of the Minister, mentioned above, maximum prices (in Euro) of the blood components are :

- a) 1 unit of red blood cell concentrate -**84,38**
- b) 1 unit of random platelet concentrate- not produced
- c) 1 unit of fresh frozen plasma -**8,52**
- d) 1 unit of apheresis red blood cell concentrate-the price is not stated in the Order of the Minister
- e) 1 unit of apheresis platelet concentrate – **150,61**

Who is the official body to pay for the price of blood components at your country?

According the agreements who are concluded by Nacional Blood Center of Lithuania and the hospitals following a public procurement procedures, hospitals are paying the price of the blood component, set out in the contract price (not exceeding the price, set out in the above mentioned Order of the Minister) to the National Blood Center. These health care institutions who have no

agreements with National Blood Center can buy the blood components by the prices stated in the Order of Director of National Blood Center, which also are not exceeding the prices stated by the Minister of Health. The hospitals must sign contracts with Territorial Patient funds for the reimbursement of the in-patient services provided, including the transfusion of blood components.

There is no gap between the actual price and the legal reimbursement amount of blood components. The hospitals are reimbursed full price stated in the agreements and paid by the hospitals to the national Blood Center.

Please indicate the microbiologic tests performed to each unit of blood before issuing by components at your country?

PCR mini pool tests are performed to each unit of blood. Pathogen inactivation routine is not applied to blood components.

In 2005 the National Blood Center started testing blood of all donors at the laboratory of molecular biology NAT. Nucleic acid amplification test (NAAT) is the most innovative donors' blood test in the world. It is the first blood centers' laboratory of such type in Lithuania. Laboratory tests HIV1 RNA/ HBV DNA/ HCV RNA (to identify DNA (deoxyribonucleic acids) and RNA (ribonucleic acids) of HIV1, hepatitis B, hepatitis C viruses).

Is irradiation of blood components in your country available?

Irradiation process of red blood cells and platelets is available. National Blood Center has agreements (after public procurement procedure (public tender) with accredited laboratory for irradiation of blood components. The price of the irradiation procedure is a subject of the agreement. Irradiation of blood components (red blood cells and platelets) is 7,53 Euro per unit.

COST CALCULATION OF BLOOD COMPONENTS AND PAYMENT SYSTEM IN R. MACEDONIA

Emilija Velkova, Lolita Mitevaska, Macedonia

National Institute of Transfusion Medicine-Skopje, R. Macedonia

Introduction: The National Institute for Transfusion Medicine (NITM) is the major institution in R. Macedonia responsible for transfusion services and comprises of 3 regional Centers (RBTS) and 18 hospital units called Blood Transfusion Services (BTSs). The reorganization of the blood transfusion system in the year 2011 was performed to enable implementation of the EU standards and norms of quality and safety, during the process of collection, testing, processing, storage, and distribution into daily practice. Even though those processes demand cost recalculation due to increased costs of production safe blood components, this is very difficult and long lasting process.

Aim: To analyze the existing system of cost calculation for blood components in R. Macedonia.

Material and method: Retrospective study and calculations performed by expert team from NITM were used to explain how was gained the cost of blood components.

Results: NITM is an exclusive provider of blood and blood components at national level for all public or private hospitals, according to the Law for blood safety (Gazette 110/07). The Red Cross has responsibility in the organization of blood collection, according to the national plan for blood collection. The Ministry of Health (MOH) is responsible to define and declare price for blood/components. The prices of blood components are estimated by negotiation between the MOH and NITM, but the Ministry made the final decision. Now, half of the cost is charged by price of red blood cell other half is charged equally by prices of platelet and

plasma. The actual cost in Euro for 1 unit of red blood cell concentrate is 20 Eu. The official body that pays the price of blood components in R. Macedonia is State owned Health Insurance Fund (HIF). There is a gap between the actual price and the legal reimbursement amount of blood components that is paid by the NITM, which produce financial misbalance in the budget of NITM. The major component comprising the final cost of blood components are cost of consumables such are: blood bags, test kits, logistics such as storage and distribution, donor recruitment etc. The microbiologic tests that are performed to each unit of blood before issuing are ELISA tests. Pathogen inactivation is not a routine method applied to blood components and the irradiation of blood components is still not available in R. Macedonia.

Conclusions: The cost of blood and blood components doesn't follow the real cost of the whole process from blood donor recruitment, until the finalization of product and issuing to specific patient. Never the less, the competent authorities does not recognize the cost of blood components as a real and important issue that have to be solved. It is necessary to work more on different negotiation strategies in order to provoke further interests in recalculation and better payment for the services provided by NITM.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS

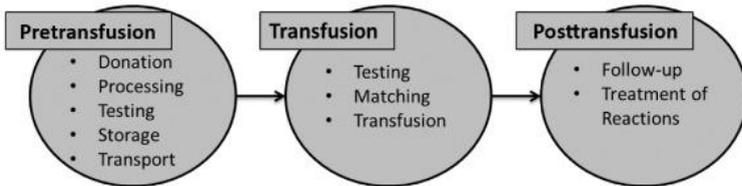
**Dr. Thamina Muhammad Ashraf, Dept of Blood Bank Services
Ministry of Health, Sultanate of Oman**

It's not surprising that the health care costs are increasingly overwhelming individuals, communities and governments. The field of blood banking and transfusion medicine has not been isolated from these changes. Blood transfusion costs have increased dramatically over the past two decades, due in part to increased demand, increased utilization of risk-reduction methods, and the development and implementation of new technologies for donation and transfusion.

However, in Oman, healthcare delivery costs are centralized for the entire country. As per the policy of Ministry Of Health, no costs are incurred on blood components. The blood components are issued free of cost to all hospitals, both government and private. The costs associated with blood banking and transfusion processes and procedures are covered by MOH centrally. The healthcare services are free for Omani nationals if treated in MOH hospitals. But if they seek treatment in private health establishments, they are required to pay for the treatment.

However, in private health establishments, there is practice of charging the patients for blood transfusion, as service charge, but that does not include the costs for blood components (these blood components are issued free of cost to all private health establishments from the MOH blood banks).

Currently, a study is undertaken at the department to estimate the total MOH and societal cost of blood transfusions in Oman and to determine the average cost of blood transfusions and units of blood for adults and children, and also to determine increase in cost due to introduction of newer services such as leucodepletion, Nucleic acid testing and advancement in the National serology laboratory. Costs can be drawn from a variety of sources, including published literature and re-imburement, price or charge data. Figure below is taken from article by Kacker et al. Transfusion 2013; 53:1383-1385, representing costs associated with transfusion. Costs associated with transfusion can be perceived as falling into one of three sequential categories: pre-transfusion, transfusion and post-transfusion. Within each of these categories, direct medical, direct non-medical, and intangible or productivity-related costs are borne by donors (D), blood supplier(S), hospitals (H), and patients (P). For hospitals that both collect and transfuse blood products, both the supplier and hospital costs need to be incorporated.



	Pretransfusion	Transfusion	Posttransfusion
Direct Medical	<ul style="list-style-type: none"> • Donor Screening (S) • Donation Supplies (S) • Labor: Nurses, Physicians, Technicians (S, H) • Blood Processing (S, H) • Blood Testing (S, H) 	<ul style="list-style-type: none"> • Patient Testing (H, P) • Transfusion Supplies (H, P) • Labor: Nurses, Physicians, Technicians (H, P) 	<ul style="list-style-type: none"> • Patient Testing (H, P) • Posttransfusion Supplies (H, P) • Labor: Nurses, Physicians, Technicians (H, P)
Direct Non-Medical	<ul style="list-style-type: none"> • Donor Recruitment (S) • Donor Time (D) • Travel (S, D, H) • Storage/Inventory Management (S, H) • Facilities, Equipment (S, H) 	<ul style="list-style-type: none"> • Patient, Caregiver Time (P) • Facilities, Equipment (H, P) • Travel (P) 	<ul style="list-style-type: none"> • Patient, Caregiver Time (P) • Facilities, Equipment (H, P) • Travel (P)
Intangible or Productivity-Related	<ul style="list-style-type: none"> • Incapacity for work (D) • Pain/Suffering (D) 	<ul style="list-style-type: none"> • Incapacity for work (P) • Pain/Suffering (P) 	<ul style="list-style-type: none"> • Incapacity for work (P) • Pain/Suffering (P)

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COST CALCULATION OF BLOOD COMPONENTS AND PAYMENT SYSTEMS

Prof. Hasan Abbas Zaheer

**National Coordinator, Safe Blood Transfusion Programme,
Ministry of National Health Services, Government of Pakistan**

Blood products contribute significantly to the costs of a healthcare centre. Globally the healthcare systems are putting emphasis on understanding the costs associated with blood products which requires availability of basic data about the transfusion services. To deliver quality blood services at a reduced cost is recognized as a huge challenge all over the world. Blood is not a resource to be taken for granted or wasted. In order to increase the output, the blood should be rationally used and the expenses controlled so that the scarce resources may be channeled toward other therapeutic and technological initiatives. Assessing blood costs, however, is a complex task, surpassing simple supply versus demand economics.

The donated blood entails extensive processing and testing before being transfused. A unit of blood is therefore both expensive and a limited resource. There are two models of transfusion services, centralized and hospital based. Apparently, the centralized BTS seems to be expensive while the hospital based blood banking system is relatively cost effective due to reliance on family donors, although it is considered un-safe comparatively. The difference in the costing is attributed to the cost involved in quality management, donor management and hidden costs. Currently some costs are not included in BTS budget of hospital based system, e.g. blood bank operating inside a hospital gets a large number of resources free of charge from the hospital, such as building space, administrative support staff, electricity, etc.

Blood costs largely rely on the number of activities performed to deliver the final product. There are two types of costs involved;

- i. Direct costs (that could be allocated directly to the activities of production and sales), purchasing of raw materials (directly allocable too); and
- ii. Indirect costs, which will have to be dispatched between auxiliary centres (human resources, support departments) and main centres (purchase centre, production centre, administration and finance, sales department for instance), to finally be allocated to the costs of stocks of raw materials, production, stocks of finished products and final selling costs.

To calculate the cost, the items of expenditure must be detailed, which means that the Administration and Finance has to organize its data collection in order to have a clear cascade of documents, e.g. an order form, receipt form for reception of the order, invoice and receipt for the payment; establishment of a ledger where all the operations will be entered and referenced for expenditure and also for income; the type of expenditure according to the nature, fixed costs (salaries and attached costs, capital cost amortization, other costs like security costs), variable costs (consumable and reagents) and non-technical costs (water, power, telephone, vehicles functioning).

That organization of the accounts may lead to the calculation of a rate of Variable Cost Margin (VCM) according to the direct costing approach, and to the calculation of the dead point of the blood centre. Indeed, in a classical firm, we have to consider the income (turnover or T) generated by the activity, and that income must be superior to the total of the charges in the enterprise wants to be sustainable. It is therefore possible to calculate a Margin on variable costs, according to the classical formula:

- If x is the turnover and a the variable unit cost, the VCM will be $x-ax$ or $x(1-a)$

- The rate of VCM will be the coefficient (1-a)
- It will be equal to $(1-a) = \frac{x-ax}{x} = \frac{VCM}{T}$
- Another approach is to calculate a result count which could allow directly to know the status of the rentability of the enterprise:

$$T(\text{urnover}) - V(\text{ariable}) C(\text{osts}) = \text{VCM}$$

$$\text{VCM} - F(\text{ixed}) C(\text{osts}) = \text{Result}$$

- Finally, the calculation of the break-even point is important in prospective studies, principally regarding a starting blood centre.
- This point is the point where the enterprise (or the blood centre) will have neither benefit nor loss, in other terms it is the point where the fixed costs are equal to the VCM.

There is another important budget preparation called Cash Flow Accountancy. This kind of budget is designed to forecast the regular charges the blood centre will have to face in order to have money enough in its Bank Account (Public Treasury or Private Bank) to cope with them and not to have any problems like overdrafts or requests for special authorization. It is necessary that blood centre manager should perform an analytical accountancy to know his costs and at least to better negotiate with documented evidence with the Provincial Authorities on the reimbursement of the unit cost of blood products. This accountancy is regarding periods that are necessarily shorter than the ordinary Budget cycle, especially in private enterprises, which need immediate reactions of adaptation to the market.

The direct costing method tries to eliminate the role of fixed costs to address directly the margin on variable costs, which is covering the fixed costs. In the case of the blood centre, whose costs are supposed to be “reimbursed” within the framework of a non-profit system, this approach seems quite contradictory, and more adapted to Private hospitals.

The rational imputation of fixed costs tries to make the cost of working units independent from the level of activity. It needs to define a “normal level of activity” and to take into account the fraction of the fixed costs which is representative of the difference in the level of activity. The non-taken part of the fixed costs will serve to balance the result. The main problem is the definition of a “normal level of activity” in an blood centre which is starting its activity.

The ABC (Activity based costing) has an objective different from the other ones, which are forced for accountability reasons to incorporate the stocks into the costing study. A blood centre has no real significant stock of intermediate materials (the blood bags supply must be distributed all along the year to avoid cash problems) and the stock of blood products is a short term stock.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEM IN PALESTINE

**Khalid Younis, Assist. Professor of Clin. Hamatology
Al-Quds University, Palestine**

Palestine is one of the Mediterranean countries and part of the Middle East. Historic Palestine has an area of 28,000 km². At present it is composed of the West Bank (pop. 2.7 mill. and area 5655 km²) and Gaza Strip (pop. 1.8 mill and area 365 km²). Both wings are under Israeli occupation and connection between them is very limited.

Most of the blood banks are hospital-based and still parts of the clinical labs but there is one small central BB in Ramallah. Private blood banking system in the West Bank is present in two large private hospitals; one in Jerusalem and the other in Nablus. In Gaza Strip, Red Crescent Society is responsible for blood transfusion services.

All those working in the BBs are Medical technologists holding BSc degree in Med. Technology but none is a blood bank specialists.

Every city in the West Bank has a Government Hospital with a hospital-based blood bank. Patients in these hospitals do not pay for the blood components.

Two private hospitals in the West Bank have their own blood banks; one in Jerusalem (Makassed Hospital) and the other in Nablus (An-Najah University Hospital). . All other private hospitals in general take and buy the blood component from the government blood banks (GBB) but unfortunately they charge the patient a price higher than that paid for it.

GBB sell the blood components for 23 Euro for each unit of RCC, FFP, Cryo, and Plat. concentrate. Makassed hospital BB in Jerusalem

sells the components as follows: 57 Euro for RCC, 23 for FFP, Cryo, Plat concentrate, and 1590 Euro for therapeutic plasma pheresis.

An-Najah University hospital BB sells the components as follows: 34 Euros for RCC, FFP, Cryo, Plat concentrate, 1023 Euro for plasma pheresis and 682 for single donor plat concentrate/pheresis.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS IN PORTUGAL

Mario Muon, Portugal

The Blood Transfusion System in Portugal is based on a mixed system where the major provider of blood components is the National Blood Service – Instituto Portugues do Sangue e da Transplantação with its three collecting centres. There are also 32 Hospital Blood Banks that are collecting as well in our country.

The Ministry of Health approves the official price of blood components upon National Blood Service and Hospitals Blood Services advice.

At the present, half of the cost is charged by the price of red blood cells and other half is charged equally by prices of platelets and plasma.

The cost of an unit of red blood cell concentrate (leucoreduced) is 104.20€, an unit of a Pool of platelet concentrate (leucoreduced) is 193.70€, an unit of fresh frozen plasma (quarantined) is 28.50€ and an unit of Apheresis platelet concentrate (leucoreduced) is 374.20€.

The payment of the blood components is based on a legal price defined by decree for public and private sectors. The reimbursement amount of blood components is the actual legal price.

The major component comprising the final cost of blood components is the Cost of consumables, mainly blood bags and test kits, followed by the Staff salaries, Donor recruitment, logistics of storage and distribution, equipment and finally by the infrastructure maintenance.

The safety of the microbiologic tests performed to each unit of blood is ELISA and individual PCR.

Pathogen inactivation routine applied to blood components costs are as follow: Pool of Platelets with pathogenic inactivation 467.90€, Fresh Frozen Plasma with pathogenic inactivation (on demand) is 61.60€. Blood components irradiation per session is 23.50€

The net cost and payment in a country is difficult to compare to another country. Benchmarking of Blood establishments is needed and Cost of Blood Components should also be referred to the country average wages and Purchasing power parity. Like the Big Mac Index or the iPad Index (Turkey \$656.96, Portugal \$688.49) would give a clearer picture.

COST CALCULATION OF BLOOD COMPONENTS IN QATAR

Dr. Aysha Almalki , Qatar

The collection, testing, processing and issuing of blood and blood components is undertaken by one Blood Donor Center (BDC) in Qatar. BDC is functioning under the authority of Hamad Medical Corporation (HMC) which is the main health care provider in the country. HMC is a nonprofit corporation funded by the Government.

Thus, all costs of blood and blood products are provided to all patients free of charge. There is no evidence based accurate estimation for the cost of blood transfusion in Qatar. A recent review to estimate the cost of a unit of blood performed, found that the price of blood and blood products is similar to the international charges. However, an additional cost may be added due to the fact that blood processing is conducted using automatic system and all fresh frozen plasma (FFP) and platelets bags are pathogen reduced. The review showed that the primary component comprising the final cost of blood is the staff salaries, while the consumables such as blood bags, pathogen reduction, test kits, etc. are secondary.

Currently, the BDC provides the blood and blood products to 8 governmental hospitals and 3 private hospitals free of charge; therefore, a paying system does not exist.

BLOOD BANK PLOIESTI

Dr. Georgeta Hanganu, Romania

Motto: *“When it comes to money, everybody is of the same religion.”(Voltaire)*

In Romania the price of blood products of national nomenclature is fixed by order of the Ministry, last price updated having been set by the order of the Health Minister, on the 12.12.2014. Blood products are administered both in state hospitals and private hospitals.

In order to determine the cost of blood products, all expenses incurred for blood collection, processing, testing, and storage of blood products are taken into consideration.

Largest part of the costs for calculating the price of blood products derives from the price of consumables, blood bags or bags apheresis, kits of reagents required for testing, equipment, equipment maintenance, maintenance system, and the cost of utilities: electricity, heat, water, garbage waste, biological waste.

The costs of promoting blood harvesting and organizing campaigns are not considered because they are very small and promotion actions are by law free through the media, and most campaigns are funded from sponsorships.

The costs of employee wages goes into the price, but are very low, due to fewer employees and lower wages given to employees of the centers.

Prices:

1 unit of red blood cell concentrates = € 47

1 unit of random platelet concentrates = 42 €

Fresh frozen plasma of 1 unit = 50 €

1 unit of red blood cell apheresis concentrates = € 419

Apheresis platelet concentrates of 1 unit = € 624

Fresh frozen plasma of 1 unit of apheresis = 180 €

The price of blood, which is set by the Minister of Health, is big enough in Romania comparative, with income levels, but rather faithfully reflects expenses incurred for obtaining blood products. The payment of blood is different, depending on the status of the medical unit, depending on whether the hospital is part of the public health system or privately owned.

Payment of blood products by hospitals was first introduced in 2002.

Transfusion centers had written out invoices from August until October. Later on, it became obvious that public hospitals were unable to pay invoices, and therefore through decision of the Minister of Health issuing invoices from transfusion centers to public hospitals stopped.

Public health units currently do not pay blood products, because public hospitals have very large expenses and subdivisions and many are not able to support these costs.

Only private hospitals pay for blood products used, as these costs are met by the patient. The cost of blood products can be found in the final bill that the patient gets from the hospital. The money obtained from selling products to private hospitals by blood transfusion centers do not go directly to the transfusion centers, but to the state budget, which in term finances the Transfusion Centers.

The fact that public hospitals do not pay blood products drives an exaggerated demand and excessive use of blood products. Blood

products suffer an understatement, as any product that is offered for free and that is not appreciated at their true value.

Because in public hospitals, blood products are not paid, many physicians do not know that they have a price, do not know that these products have a real cost which is quite high, and in order to get them transfusion centers have to endeavor sustained efforts, and that these are expensive therapeutic products, they are very valuable. This is why doctors in public hospitals use these products excessively without thinking if the patients really need blood products.

Sometimes, ignoring the price and especially biological risk, are receiving blood products that are free just in order to refill a medication ends up costing a lot of money.

Since the issue of an order on haemovigilance, and authorities began applying the principles of haemovigilance, this practice is becoming rarer.

COST CALCULATION OF BLOOD COMPONENTS AND PAYMENT SYSTEMS IN SLOVENIA

Slavica Stanisic, MD, transf. med. spec. , Slovenia

There is general opinion in population that if blood is collected from unpaid blood donors on voluntary basis, there cannot be any price. And that is true. Blood has no price- it is priceless.

Nevertheless, there are lot of different costs in the process of collection, processing, testing, storage and distribution which have influence on the final cost of blood components. In the last half-century quality and safety of blood components have been greatly improved and are still improving. Higher the quality and safety of blood, higher the final price.

Slovenian Blood Transfusion service was established in 1945 as a blood transfusion unit within the Central Military Hospital in Ljubljana. Since then it has been developed and reorganized to the current form. Blood transfusion service is public non-profit service and is the only supplier of blood components in Slovenia.

According to the Blood Supply Act, prices of blood components are determined on annual basis until the 31 March of the current year. Blood Transfusion Centre of Slovenia is in charge of preparing the price list by the methodology determined by the Regulation.

The price of each type of blood component is determined as per unit of that component, while price for plasma intended for further processing is per millilitre. The units of RBC and FFP are prepared out of one unit of whole blood (450 ml) or collected by apheresis procedure. The unit of platelets (therapeutic dose) is prepared out of 4-6 units of whole blood (450 ml) or collected by apheresis procedure.

Every type of blood component has its basic price. If some additional processing or testing steps were performed on it, additional cost is added. Blood component basic price includes blood collection, laboratory testing, processing of whole blood and preparing of blood components, storage, issuing and distribution of blood components. Each unit of whole blood is tested for HIV, HBV, HCV and syphilis with serological tests- Elisa (anti-HIV1/2/0+ p24, HBsAg, anti-HCV and anti-TP) and NAT is also performed (individual donation HIV, HBV and HCV). Antigens of blood group AB0, RhD and other antigens of Rh (C,c,E,e) and K systems are determined for each collected blood unit as well as the screening test for irregular antibodies. All of our blood components are 100 % leucodepleted.

Additional cost of blood components depends on used materials, technology, number of staff included in process and their education rank. For the patients in need, we provide washed, tested for CMV red blood cells, and irradiated blood components. Almost all of platelets provided by Blood Transfusion Centre of Slovenia are pathogen inactivated.

Hemovigilance system requires traceability of every blood component unit from donor to patient and as such allows also transparent system of payment.

In Slovenia is ensured that all needs for blood and blood components are covered from our own resources, so we are self-sufficient. Import and export of blood and blood components may only be performed in specific cases, as defined by the Blood Supply Act.

All issued blood components have the same price, no matter whether they are issued to the public or private hospitals. Price of blood components is included in a "hospital-day-price", no matter how many units were issued for specific patient. It is generally calculated price of being in hospital for diagnostic and/or

therapeutic purpose. With the health care legislation in 1992 Slovenia introduced a system of health insurance, compulsory for all the citizens of the Republic of Slovenia so all hospital expenses for insured Slovenian citizens are covered by the Health Insurance Institute of Slovenia. If patients are not insured they pay for themselves - for Slovenian citizens price of blood components is included in a "hospital day". Non-citizens pay for each issued blood component.

Payment system in our country is indirect. Price of transfused blood components (included in "hospital-day price") is reimbursed by the National health insurance to hospitals which further make a payment to transfusion organizations that provide blood components.

Prices of blood components have stayed at the same level since 1 April 2013. In the meantime, at the Blood Transfusion Centre of Slovenia the costs were recalculated two times and proposals of new price lists were sent to the Ministry of Health. The last proposal includes a request for an 18% price increase, but the proposal hasn't been discussed so far.

The Blood Transfusion Centre of Slovenia is currently facing three main problems:

1. High costs of blood bags, reagents and other materials because of high purchase price on tenders (required quantities are too small)
2. Inadequate prices of blood components
3. Irregular payment by hospitals

To conclude, when budget is limited and unreliable it is very difficult to make any step forward in improving quality and safety of blood components. For example, in our neighbouring countries there are some regions already dealing with WNV and HEV. It is only question of time when we will have to face the same or some completely different challenge.

If sources are limited, performing of any additional safety actions becomes questionable.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS IN SPAIN

Jose Manuel Cardenas, Spain

1) Who is the provider of blood components at your country? You may choose more than one.

a) Ministry of Health / National Blood Service - National (regional) Health Service

- b) Red Cross / Red Crescent
- c) Private Blood Banks
- d) Hospital Blood Banks
- e) Other (Please define it)

In Spain the Health Authority and the Public Health Service are managed by regional authority; the Central Government has no managerial functions, only coordination and common legislation. In order to clarify and simplify, when the answer is “Ministry of Health”, it means “Ministry of Health the autonomous regional government”)

2) Who is the official body to define and declare price of blood components at your country?
You may choose more than one.

a) Ministry of Health / National Blood Service - National (regional) Health Service

- b) Red Cross / Red Crescent
- c) Private Blood Banks
- d) Hospital Blood Banks
- e) Ministry of Finance
- f) National Health Insurance Agency
- g) Other (Please define it)

- 3) How the prices of blood components are defined at your country?
- Whole cost is charged completely by price of red blood cell
 - Half of the cost is charged by price of red blood cell other half is charged equally by prices of platelet and plasma**
 - Main cost is distributed equally on prices of red blood cell, platelet and plasma
 - Other (Please define it)
- 4) Please write the actual costs in Euro at your country of below listed blood components;
All the blood components are leucocyte-reduced
- 1 unit of red blood cell concentrate / **€125,00**
 - 1 unit of random platelet concentrate / **single random platelet concentrates are not available**
 - 1 unit of fresh frozen plasma / **€50,00**
 - 1 unit of apheresis red blood cell concentrate / **€125,00**
 - 1 unit of apheresis platelet concentrate / **€450,00**
 - 1 pool of five whole-blood derived platelets / **€250,00**
- 5) Who is the official body to pay for the price of blood components at your country?
You may choose more than one.
- State owned health insurance**
 - Private health insurance
 - State agencies such as police, military, etc. for their members and their relatives
 - Patient himself / herself
 - Ministry of Finance

- a) Staff salaries and other social expenses such as pensioner, etc.
- b) Cost of consumables such as blood bags, test kits, etc.
- c) Cost of equipment
- d) Cost of infrastructure maintenance such as; building, electricity, water, waste, etc.
- e) Cost of logistics such as storage and distribution, etc
- f) Donor recruitment

The list is Ok as it is

10) Please indicate the microbiologic tests performed to each unit of blood before issuing by components at your country? (More than 1 topic can be answered)

- a) **ELISA, etc**
- b) **PCR mini pool**
- c) PCR individual

11) Is pathogen inactivation routine applied to blood components in your country?

- a) Yes
- b) No
 - **Almost half of regional blood centres carry out pathogen inactivation of plasma; the other half follow a quarantine process for plasma securization**
 - **Four (out of 23) carry out pathogen inactivation for platelet units (either pooled or apheresis)**

12) If the answer of Question 11 is “Yes”; specify the component types and costs of inactivation for each application?

- **I am not able to answer to this question**

13) Is irradiation of blood components in your country available?

a) Yes

b) No

14) If the answer of Question 13 is “Yes”; specify the component types and costs of irradiation for each application?

5% of Red cells and almost 100% platelets are irradiated (25Gy/unit)

A charge of 10% is charged in the case of irradiated red cells

15) Please write down about any subjects related with “Cost Calculation of Blood Components & Payment Systems” which you would like to emphasize besides above requested information?

The above answers relate to prices more than to “costs”. For example the cost for producing plasma is much lower than the price because plasma is easy to draw from whole blood and it lasts longer. We have a price of 50 euro per unit but the calculated cost is 15,80 euro. However a high price for plasma helps to reduce its consumption when used instead of albumin concentrate which is more expensive. In Spain the proportion of plasma / red cells is 1/10 but years ago used to be much higher, and prices were used as a tool to reduce the use of clinical plasma

METHODS TO ADOPT COST ACCOUNTING IN SRI LANKAN BLOOD TRANSFUSION SYSTEM

Dr. Ananda Gunasekera, Sri Lanka

Sri Lanka is an island of about 62,000 square KM, located at the southern tip of India in the Indian Ocean. It is a Democratic Socialist Republic with an executive president as the head of the nation. The population is 21 million with a Population density of 319/sqKm. Sri Lanka has a Multi ethnic and Multi religious population and blessed with a tropical climate, beautiful beaches, native rain forests and an extraordinary wild life. It is culturally a rich country with a written History of Over 2500yrs.

The health system of Sri Lanka is totally free for the patients at the delivery point and administered by the Ministry of Health (MOH). The secretary to the MOH is the chief executive officer. Head of the health department is Director General of Health.

Following are the major Health Indicators of Sri Lanka;

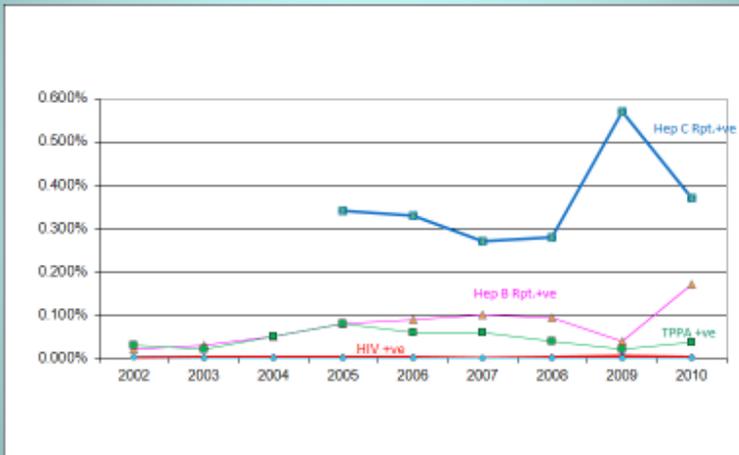
- 1 .GNI - US\$ 1,990 @
- 2 .Population Growth Rate - 0.47%
3. Infant Mortality Rate (per 1000 live births)
4. Maternal Mortality Rate (per 100,000 live births) – 58
5. Life expectancy at birth - 72.4 years (overall)
6. Literacy rate - 90.8%
7. Total Health Expenditure 3.2% of GDP
8. As at December 2014 there were: 1042 Government Hospitals, 13,720 Medical Officers ,Total bed strength is 69,501 There were 115 private sector hospitals, No. of Persons Per Medical Officer – 2500

The National Blood Transfusion Service (NBTS) is directly under the MOH and Headed by a Director as the head of the organization. It has its headquarters in Colombo with 94 island wide hospital blood

banks managed under 16 Regional Cluster Centers headed by Transfusion Medicine Specialists. The main supplier of the blood and blood products to the country's need is N BTS with a very small fraction of supply from few hospital based blood banks in the private sector.

The total blood collection is around 400,000 units per year with 100% voluntary donations from the year 2014. Majority of this (90%) is collected in mobile camps organized by the voluntary donor organizations. The main component of the donors are males (86%) and 68% are repeat donors. The entire collection of blood is separated for components and 100% are tested for HIV, HB, HC and Malaria. Blood Irradiation is used limitedly for last few years, while technologies like, NAT testing, Cord Blood banking, frozen red cells and pathogen Inactivation were just introduced to the system.

Prevalence of TTI among units collected (2002 – 2010)



A cost accounting procedure is not yet used in the NBTS. However just a rough cost for consumables used for the components preparation are recovered from the private patients.

The MOH started cost accounting procedure as a pilot project in the government Hospitals from 2012. The Method used was the **STEP DOWN COST ACCOUNTING PROCEDURE** to determine the “**Unit cost**” and “**Per Patient Per Day Cost**” in the hospitals. In this system the hospital based blood banks were considered as the **INTERMEDIATE COST CENTERS**. This method is done mainly for the cost comparison for management purposes, not for billing purposes.

The same **Step Down Procedure** can be adopted for the NBTS when taken as a separate entity. The administration cost will be taken as the **OVER HEAD COST CENTER** and the each sections will be taken as the **INTERMEDIATE COST CENTERS**. The **FINAL COST CENTER** would be the Storage Section to determine the unit cost of the blood products.

This needs further discussions before finalizing a precise methodology for costing in a given Blood Transfusion System.

COST CALCULATION OF BLOOD COMPONENTS AND PAYMENT SYSTEM IN TAJIKISTAN

Aziz Odinaev, MD, PhD, Director, Republican Scientific Blood Centre, Dushanbe, Tajikistan

In 2013, blood services in Tajikistan were centralized. All 79 hospital based blood collection and processing sites were closed and transformed into blood banks. Now blood service is performed only by blood centers: one republican level blood center in Dushanbe and 3 oblast level blood centers, located in each oblast center. Oblast level blood centers got status of the branch of the Republican Scientific Blood Center (RSBC). These four blood centers form National Blood Service and are under the Ministry of Health regulation, which defines operational policy. Financing from the government covers 50% of actual needs; and the other 50% comes from commercial services performed by RSBC. Commercial services include diagnostic testing for TTI of general population for payment, sale of blood components, and trainings for physicians and nurses. The RBC has a training department, which is licensed by the Ministry of Health and the Ministry of Education.

Since 2010 RSBC worked closely with CDC through a Cooperative Agreement under the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). The main achievement in this project is establishment of the Computer Information Management System (CIMS) within the entire blood service. The aims of a CIMS in a Blood Transfusion Service is to support activities in ensuring the safety of donors, the quality of blood components and the safety of patients on the information level. The information from CIMS is used to collect data on blood service performance; and of course, should be related to cost calculation and should be included into cost calculation.

The Agency of Antimonopoly Service under the Government of Tajikistan determines price and cost of blood and blood components in the country.

The price of blood components in Tajikistan is calculated based on the cost of 1 liter of whole blood collected; and then cost is distributed for red cells, platelets and plasma due to quantity of supplies and medications spent to separation of components. Below, we provide cost of each component for 100 gram of product: red cells concentrate – 12 Euro; random platelet concentrate – 20 Euro; fresh frozen plasma – 13 Euro; apheresis red cell concentrate – 14 Euro; and apheresis platelet concentrate – 20 Euro. The final cost of blood components is calculated from numerous factors listed according to their relative contribution to cost: cost of equipment, cost of supplies; staff salaries, donor recruitment, cost of infrastructure maintenance, and lastly storage and distribution.

Donors' blood is tested by ELISA technology on open automated analyzer for HBsAg, anti-HCV, anti-HIV-1/2, anti- syphilis screening. PCR is performed only in the RSBC on individual samples for HBV, HCV and HIV on samples from voluntary, first time donors. HIV reactive samples are sent to Republican AIDS center for confirmatory test, HBV and HCV reactive samples are sent to Sanitary-Epidemiologic Station for confirmation, and samples which have antibodies to Syphilis are sent to dermatology-venerological center for confirmation. All TTI reactive units of blood are discarded. Approximately 5% of blood products are discarded due to TTI's, expiration, and other reasons.

The costs of salaries, test kits and other disposable supplies, e.g. blood bags, gloves, gowns as well as physical facilities are all necessary costs that must be paid for regardless of the funding methodology. It should be emphasized, however, that simply funding these well-established ongoing costs does not guarantee

continued advancement of the quality of the national blood supply. The total cost of safe blood should also include ongoing maintenance and repairs of equipment, quality oversight, investment into CIMS, and the important function of identifying and destroying those blood products that are unsafe and unsuitable for transfusion. These costs incurred to collect; test and store blood components as well as the amount spent to remove and dispose these units are legitimate costs to ensure that patients only receive the safest blood products and must be funded as any other element of cost such as salaries and supplies.

COST CALCULATION OF BLOOD COMPONENTS & PAYMENT SYSTEMS IN TURKEY

Dr. N. Nuri Solaz; Turkish Blood Foundation

Based on 2015 statistics Turkey has 77 695 904 populations. Annual population increase is 1.04 %, 70.% of the population lives in cities. Almost half of the population is younger than 28.3 years. 66.5 % of the population is between 15 - 64 years old. Depending on 2013 statistics average life expectancy is 73,7 years for men and 79.4 years for women. More than 90% of the population is under the coverage of Social Security Agency (SSA) which is a governmental organisation for pensioner and health insurance.

Ministry of Health (MoH) is the “national authority” on Blood Banking & Transfusion Medicine (BB&TM) likewise other medical aspects in Turkey.

Turkey had mixed Blood Banking since 2003 when MoH has announced new “National Blood Policy” as “regionalisation”. Although MoH appointed Turkish Red Crescent (TRC) as a main national blood supplier still there are “temporary blood banks” run by university hospitals and MoH training hospitals. TRC collects almost 80% of national blood donation annually. Each year around 2 500 000 units of blood are collected nationwide.

There are 368 blood facilities in Turkey (regional blood centers, blood donation centers and transfusion centers) which collect blood. There are more than 1 500 institutions where blood transfusion is performed legally (hospitals, special medical centers, etc.).

Cost of blood products are annually defined by a commission which is consisted of the members from Ministry of Health, Turkish Red Crescent, Ministry of Finance, Under secretariat of Treasury and

Foreign Trade, Social Security Agency. Final prices are issued by Ministry of Finance.

Blood transfusion costs are completely reimbursed by state owned SSA unless the patient has governmental health insurance. Those should cover their health expenses by themselves either by private health insurance or else.

Each unit of donated blood should get below listed tests;

b) VDRL since 1950 ies

c) HBsAg since 1973

d) Anti-HIV ½ since 1983

e) Anti – HCV since 1996

f) TRC has started to screen each donated blood by NAT for HBV, HBC and HIV since 2014

While pathogen inactivation is not a routine application to blood components in Turkey; irradiation of cellular blood components is available at most of the major cities and university hospitals in case of indication.

Whole cost of a bag of donated blood for transfusion is charged completely by price of red blood cell. Prices of main blood components are listed at below table in Euro;

Blood Component Type	Price in €
Red blood cell concentrate	31 € / 46 €*
Random platelet concentrate	14 € 44
Fresh frozen plasma	14 € 44
Apheresis platelet concentrate	28,70 + disposable (87) = 116 €
Apheresis red blood cell concentrate	28,70 + disposable (87) = 116 €
Irradiation of single cellular component	3,5 € / per unit

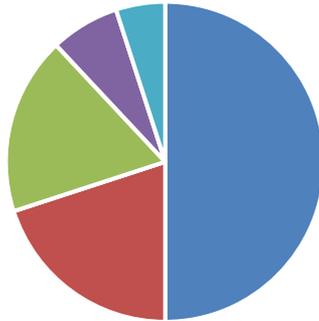
*TRC blood products are prepared from in-line leucofiltered bags and has mini-pool NAT testing that TRC is allowed to charge RBC 50% more than RBC prepared from other blood service facilities.

Legally; institutions cannot charge extra fee from the patient for blood components.

Below topics are listed in order according to their importance at the final cost of the blood components at Turkey.

- 1) Staff salaries and other social expenses such as pensioner,etc. 50 %
- 2) Cost of consumables such as blood bags, test kits, etc. 20 %
- 3) Cost of infrastructure maintenance such as; building, electricity, water, waste, etc. 18 %
- 4) Cost of equipment 7 %
- 5) Donor recruitment 5 %

Cost Distribution



- Staff 50%
- Disposables 20%
- Logistics & Infrastructure 18%
- Equipment 7%
- Catering 4%

COST CALCULATION ON BLOOD COMPONENTS AND PAYMENT SYSTEM IN UZBEKISTAN

Mayya R. Makhmudova, MD, PhD, Republican Blood Centre, Tashkent, Uzbekistan

Uzbekistan is the most populated country in Central Asia (30,5 million, 447,400 km²). In 2006, the Ministry of Health initiated a reform on centralization and restructuring of the blood services, comprising 27 blood facilities and 176 hospital blood banks by consolidation into 6 regional centers for collecting, screening, processing, storage and distribution blood components to hospitals. The total number of donations in the country is approximately 137327, number of donors -127877 in 2014.

Significant initiatives were launched by the Government and the Ministry of Health to improve safety and quality of transfusion medicine in the country, however, economic and financial aspects still need to be addressed for managing an effective and self-sufficient blood supply system.

The Republican Blood Center, Oblast and City Blood centers and hospital blood banks are under government regulation. The Ministry of Health (MOH) determines operational and financial policy and defines the price of blood components and plasma products for the whole country. Although the blood system generally meets international standards, the current financing mechanism has to be matched with operational activities: especially areas such as quality assurance, procurement of new consumables, medical technologies, equipment make the current blood supply system expensive and unsustainable by the current level of prices.

The current system of blood services financing is based on the quantity of blood products processed by each facility, including hospitals and blood centres. Since there are some transfusion

facilities still in the hospital system, which act as producers and customers at the same time, there is no incentive neither to adjust the production to the actual needs nor to reduce waste. Currently, the quantity of blood actually transfused in hospitals is still calculated and measured in litres and is not precisely known by the regional blood centres.

During a transitional period, the MOH does not reimburse all costs and Blood centers have developed other sources of funding, primarily from patient families as well as seeking grants and assistance from international sources. The annual volume of blood service financed by the MOH covers only about 40-50% of real needs. Due to a lack of funding, it is very difficult to take on new initiatives, such as to implement Quality programs, upgrade computer systems, maintain facilities and equipment and procure expensive reagent and consumables.

The prices of blood components in Uzbekistan are equally calculated for red blood cell, platelet, plasma and plasma products (cryoprecipitate, albumin, immunoglobulins). The actual cost of 1 liter of red cells is 81,5 EUR, 1 unit of red blood cell concentrate is about 20,37 EUR; 1 unit of washed red cells – 48 EUR; 1 liter of plasma costs 85,5 EUR, 1 unit of fresh frozen plasma – 21,35 EUR; 1 unit of platelet concentrate is 45-50 EUR; apheresis red cells and platelets are not produced at the present time due to the lack of consumables.

The final cost of blood components in Uzbekistan depends on many factors and estimated figures show that staff salary and other social expenses comprise about 50%, consumables and test kits - 35%, infrastructure maintenance – 13% and cost of logistics such as storage and distribution about 2%. Disposable blood bags, test kits, tubes and other consumables are procured from abroad and influence on final cost of blood products.

Most donations are collected in double bags "Medibag", the majority of them are whole blood donations. The procurement of better quality bags and more complex bags for the production of cryoprecipitate, automatic plasmapheresis and platelet would expand collection cost by 2-3 times, depending on the proportion of donations collected with special purpose. Donor's blood tested by ELISA technology on open automated analyser for screening HBsAg, anti-HBc, anti-HCV, anti-HIV-1/2, syphilis. PCR technology has not been introduced in the Uzbek blood service as yet, as well as pathogen inactivation.

Reactive samples are sent to the Republican AIDS centre for confirmation test and units of blood discarded. Last year with support of TICO (Turkish International Cooperation Organization) equipment was delivered for irradiation of red cells in the Republican Blood centre.

A comprehensive survey of the real current cost of transfusion in Uzbekistan is needed and will require:

- partitioning of exceptional expenses (premises and investments) and "routine" expenses (regular maintenance);
- taking overhead cost of the hospital blood banks into account;
- partitioning of production cost (supplier side: blood donation, processing, testing, transportation) and hospital costs (patient side) of the transfusion chain;
- giving due consideration of waste within hospitals (currently estimated up to 10-20%);
- careful analysis of all cost components: expenses and income by hospitals, blood centres, blood donors and patients.

Such an analysis would necessitate time and the expertise of a health economist. The Ministry of Health planned to implement new effective cost calculation tool and financing mechanisms for blood service, and improve interaction between blood centers and hospitals.

In conclusion, cost calculation system for blood supply has to be matched to real operational activities related with implementation of quality assurance system, procurement of new consumables, medical technologies, equipment, development voluntary donor program, that will make the current blood supply system more expensive, but will meet the international standards.

1st ANATOLIAN BLOOD DAYS – FINAL REPORT

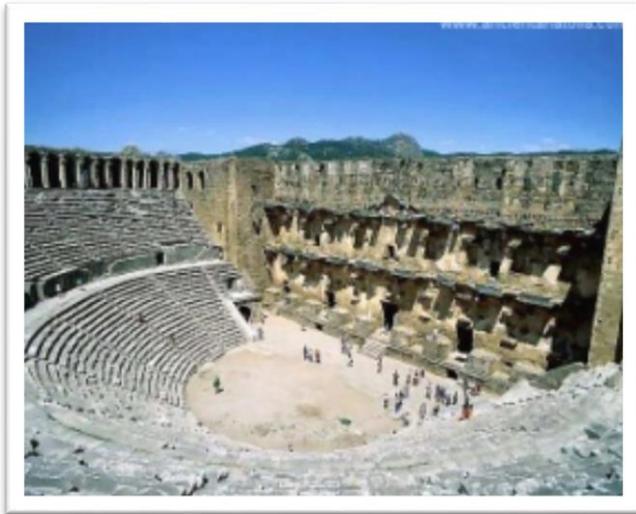
The Blood Banking and Transfusion Society of Turkey (BBTST) launched the first Anatolian Blood Days in Antalya Turkey to meet its international and regional responsibilities.

Representatives from transfusion services in the region surrounding Turkey were invited to participate in a 2-day meeting to explore the various approaches to establish the national policy and regulatory framework in their respective countries.

The meeting was convened in the historic Mediterranean sea resort of Antalya, not very far from ancient port of "Side" with its magnificent remains of the temple of Apollo, and the famous city of "Aspendos"



with its superb roman amphitheater and arena built by the Greek architect Zenon in 155 BC.



Participants from 9 services accepted the invitation to meet with experts from the Blood Banks and Transfusion Society of Turkey (BBTST). The group struggled over the 2 "Anatolian Blood days"; 17-18 November 2012, to share and exchange experience about the challenges each country faced during setting up of the appropriate national regulatory frameworks and the practical measures to establish safe, reliable and sustainable services.

The discussions revealed that the recommendations promoted internationally were not always "fit for purpose" in dealing with the wide range of challenges met in most of the countries participating in this gathering. Some had already achieved a good deal of progress on the road to developing an acceptable structure for their services.

A number were wondering whether they were on the right track and few were almost defeated by the magnitude of their problems and were not sure where to start. They were looking for an

opportunity, and this forum was ideal to allow them to share their troubles with their colleagues in pursuit of the ideal generic "blue print" approach for defining a policy and guidelines that would be suitable to overcome their problems within an appropriate regulatory framework.

The country presentations revealed individual case studies with widely variable needs, challenges and in some services, what can easily be considered insoluble obstacles as in the case of Palestine. The inhuman fragmentation of services dictated by political, societal and geographical conditions resulting in particular difficulties that required special solutions to discover where to start on the road to development.

The representatives of Bosnia Herzegovina described difficulties of a different kind of fragmentation, this unusual form of state found itself emerging in the epicenter of the Balkan conflict with inherent internal malformations leading to its isolation. Trying, with great difficulty, in the midst of intense surrounding pressures, to establish viable services with normal acceptable criteria of quality, safety and reliability proved to be a daunting task.

The uphill struggle experienced by Albania, Egypt, Iran and Turkey, who were on the road to progress. Building the regulatory framework in these countries has taken time, effort and resources. The example of these four countries provided hope to participants from Afghanistan and Tajikistan where services were challenged by very limited infrastructure and lack of human and financial resources. It was clear that when local characteristics are taken in consideration, specific solutions would be discovered, and the appropriate system will eventually start to take shape.

The group realized from the deliberations that the variation in challenges and problems necessitated to formulate tailor-made

solutions and that the off- the-shelf recommendations would be unsuitable and very difficult to implement. In fact they agreed that blind application of inappropriate measures might lead to problems and even disasters.

A consensus, summarized below in the form of a statement, was arrived at after 2 days of agonizing discussions. This declaration would serve as guidance for those services and health authorities trying to establish safe and reliable transfusion systems for their respective communities.

This initiative led and supported by the BBTST provided the suitable forum to formulate a suitable generic "Blue Print". It is hoped that it will prove useful to assist services in trouble and facilitate the efforts of others looking for ways to resolve the problems on the road to progress in order to achieve sustainability and good quality transfusion practice.

The guest participants were later invited to attend the proceedings of the 5th annual national conference of the society. They found themselves sharing with their Turkish colleagues a comprehensive scientific program with state of the art lectures.

BBTST was established in 1996. It has currently over 500 members with an attendance of over 800 participants in the annual national conferences.

The social program was also rich and varied enough to suit all age groups and tastes. One evening was dedicated for the young, enjoying the standing and "hand-waving" concert atmosphere led by a Turkish well known popular "Diva". The star of the second day was the Symphony Orchestra of Antalya with its impressive well-established conductor Emin Guven Yaslicam and Antalya Philharmonic Orchestra. The hall was packed with seated senior

members as well as young professionals that would not release the orchestra before two encores!

It has been a revealing experience to share with the Turkish society their 5th Annual Congress as well as the launch of their neighboring international initiative to help services in need and prepare the generic blue print for services and guidance for fellow professionals, to take them out of their isolation and share experience without intimidation of high tech, high power meetings, in order to find the way for development, progress and sustainability.

It was a non-threatening friendly forum where professionals from the "G 12" services could share their experiences without reservation or embarrassment and reveal their aches and pains, stumbling blocks, serious worries and concerns on the hope to find assistance from the experience of fellow colleagues who were there and just made it.

Consensus declaration of principles

1. A national blood policy should identify at a high level the direction and strategies to provide a safe and adequate blood supply to meet the needs of the population. The intentions of the policy should be expressed in legislation, supported where necessary by regulations and guidelines. The legislative framework reflects the agreed national policy and identifies clearly the issues that need to be protected and regulated through the legal system.
2. Health Authorities must endorse National laws, regulations and guidelines on blood banking and transfusion medicine and require that relevant institutions and personnel should comply with them
3. Professional bodies and experts in transfusion medicine should be proactive in initiating and supporting the

- formulation of the national policy and guidelines.
4. The whole process of transfusion from the donor to the patient - should be supported by national laws, regulations and guidelines
 5. The application of National laws, regulations and guidelines on blood banking and transfusion medicine must be supported by an effective quality system and an effective regulatory framework
 6. Every country must prepare its own national laws, regulations and guidelines on blood banking and transfusion medicine according to its own situation with regard to its own economic, socio-cultural and health situation. A country in the process of the formulation of national laws and guidelines should examine existing international and national laws and guidelines and may decide to adopt those elements that are considered to be appropriate for that country
 7. Development of guidelines on blood banking and transfusion must be the responsibility of those with the relevant professional knowledge and expertise and should be based on the best available scientific and medical knowledge but must also be adapted to each country's health needs and resources
 8. The regulatory framework may be published as a single document or as a series of individual documents covering specific topics or meeting the needs of specific user groups. Whatever format is used the documentation must provide all the detailed information required
 9. During development of a guideline, it must be made available to relevant personnel for review and their comments must be taken into account in preparing the final document.
 10. The completed guideline must be introduced to all relevant personnel by means such symposia, seminars and training

courses. It should be widely distributed by appropriate means including making it readily accessible via the Internet.

11. As an essential part of risk reduction, compliance with the guideline should be rigorously monitored by periodic internal and external audit, with prompt feedback of findings to the audited institution and personnel.
12. The impact of the guideline should be evaluated periodically. Guidelines should be subject to a periodic review and should be updated according to the findings of audit and evaluation and new medical or scientific evidence. The review and updating process should enable relevant personnel to contribute their experience. A new edition or revision of a guideline should be effectively communicated to all relevant personnel.

2nd ANATOLIAN BLOOD DAYS – FINAL REPORT

Second Anatolian Blood Days

Antalya, Turkey. November 25th – 27th, 2013

Sponsored by the Turkish Blood Foundation

This was a follow up of the initiative launched in 2012 by the Turkish foundation (TBF). The proceedings of that first meeting of this initiative were subsequently reported in Transfusion Today No 94 in March 2013.

The Turkish Blood Foundation continued to take seriously its partnership with neighbouring regional transfusion services to share experience. The Foundation believes that these interactive gatherings will provide fairly quick, practical and easily available approaches to enhance and develop the appropriate solutions required for resolving local problems and improving the quality and safety of transfusion practice in their respective services.

The theme chosen this year for ABD-II was “Bedside Transfusion Safety and Training of the Clinical Nurse”. It was intended to assist participating services to develop the quality of basic and specialised nurse training to improve the nursing skills and input in transfusion practice.

The Turkish Blood Foundation has been engaged since 2008 in evaluating, developing and establishing curricula and training courses for undergraduate and postgraduate training for nurses at a national level, as well as planning guidance and recommendations for in-service training.

International and European efforts to harmonise the general education and training of nurses can be traced back to 1967 in a publication entitled "The European agreement on the instruction and education of nurses". It was published under the Council of

Europe Treaty Series. It was detailed in 10 articles and two comprehensive annexes. Unfortunately transfusion-nursing activities were not included because the transfusion workforce was not regularly exposed to clinical blood transfusion practice and thus not familiar with bedside transfusion protocols.

In 2002 the council of Europe Committee of Ministers recommended that particular attention should be focused on the regular training and assessment of competency of nursing and junior medical staff who are more directly involved in bedside transfusion practice, as part of the hospital's and clinician's role in the optimal use of blood and blood products. This was followed by Recommendation (2004) 18 for the training and education of nurses in transfusion medicine that was adopted by the Committee of Ministers to member states on 15 December 2004

In spite of all these European initiatives training and education of nurses remained neglected with little national harmonisation of courses and national curricula. The training and educational needs remain not keeping pace with the developing patterns and increased participation of nurses in transfusion and their contribution and key position in particular to safety of clinical transfusion. The purpose of the meeting was to develop a consensus on the training of nurses in clinical transfusion.

Services from 17 countries accepted the invitation and completed a questionnaire to survey local approach to education, training and role of nurses in transfusion practice with special emphasis on bedside transfusion safety. This year participation included 8 participants from Asia, 6 from Eastern Europe, 2 from Europe and even 1 participant from Africa; Ghana. The participants presented detailed reports based on the questionnaire (can be supplied on request).

During the meeting 30 transfusion professionals representing; Albania, Belarus, Czech Republic, Ghana, India, Iran, Jordan, Kosovo, Palestine, Pakistan, Oman, Qatar, Romania, Spain, Tajikistan, Turkey and UK, had the opportunity to share their knowledge and experience in the field and to report on the situation of nurses related to clinical transfusion in their countries.

The country presentations revealed many problems and fully endorsed the purpose of the meeting. The analysis of the data presented reflected the wide variation in standards, quality and approaches to nurse training as well as the wide difference in activities and input of nurses in transfusion practice. Participants agreed generally that a policy for clinical transfusion medicine should be developed at the national level.

They also agreed that comprehensive training for nurses in clinical transfusion should be included in schools of nursing and also at hospital levels. Discussion supported the importance of In-service training and on the job education courses in specific areas such as hospital and bedside transfusion, haemovigilance, stem cell collection, therapeutic exchange and other clinically related areas of clinical transfusion practice. The country representatives fully endorsed the purpose of the meeting as expressed in the following final declaration and consensus statement.

Anatolian Blood Days Workshop-II

Final Declaration and consensus statement

Purpose and Activities of the Meeting

The purpose of the meeting was to develop a consensus on the training of nurses in clinical transfusion. Nurses have a key position in ensuring the safety of blood transfusion in the hospital setting.

To discuss this important subject, the Turkish Blood Foundation

convened an international meeting as the subject of the Second Anatolian Blood Days, November 25 -27 2013.

The participants in the meeting took into consideration the official Recommendation ((2004) 18 of the Council of Europe on teaching transfusion medicine to nurses, which includes the following statements.

Recent reports on risk assessment in blood transfusion demonstrate that more than 30% of serious adverse reactions and untoward events associated with blood transfusion are due to human errors and system errors in the blood transfusion chain (vein-to-vein). These can be fatal or cause major or minor morbidity to the transfused patient

Explanatory Memorandum Item 2

Most errors occur in blood sampling from the patient, in prescriptions of blood components, in the laboratory of the blood establishment or blood services, during collection of donor blood and in the ward where blood components are administered

Explanatory Memorandum Item 3

Haemovigilance systems stress that complications of blood transfusion can be avoided or reduced by the application of safety measures before, during, and after transfusion

Explanatory Memorandum Item 4

Blood transfusion safety depends largely on the nursing staff (while doctors are responsible for prescribing) involved in the transfusion of patients in hospitals or at home.

Explanatory Memorandum Item 5

Reports from Europe, the USA and elsewhere on evidence-based practice in the field of blood transfusion, stress that inadequate

training of nurses is a key determinant of poor transfusion-related knowledge and practice of transfusion safety measures

Explanatory Memorandum Item 6

Therefore there is a need to determine common basic principles for pre and post-graduate education of nurses in the clinical setting, and to define a common basis for good transfusion practice

Explanatory Memorandum Item 9

During the meeting 30 transfusion professionals representing 17 countries gave presentations on their own services. They presented evidence of inadequate training of nursing personnel in clinical transfusion that confirmed the need for work on this subject.

After a plenary discussion the participants formed three working groups dealing with

- 1) The core training common to all of nurses during their initial education (pre-graduate training),
- 2) The training required for all in-service nurses who have any responsibility in the clinical transfusion process, and
- 3) The characteristics and role of the nurse dedicated to or specialized in clinical transfusion.

Based on the reports presented by each working group a draft consensus statement was prepared and discussed. The final statement agreed by the participants is shown below.

Consensus Statement

1. The curriculum for education and training of nurses in the topic of clinical transfusion

- Should be clearly defined and the method of delivery should be practically achievable.

- The latter requirement is especially important for in-service training
 - The core curriculum for nurses in training and for in-service nurses should be similar
 - In-service training should give special emphasis to practical procedures that affect patient safety.
 - The pre-graduate core curriculum should preferably be covered as a single block rather than distributed among different parts of the course.
2. The core curriculum should cover the following topics

- Responsibilities of the nurse in clinical transfusion.
- Knowledge of regulations and guidelines on blood transfusion
- Compatibility of the blood component with the patient: ABO types, hemolytic transfusion reactions and prevention. Prevention of Rh immunization
- Description of the main blood components, main indications, storage handling and administration
- Complications of blood transfusion
- Description of the clinical transfusion process
 - Informed consent
 - Request form, sampling and patient identification
 - Receipt and visual inspection of the component unit
 - Pre-transfusion identity checks to ensure that the blood component is the one intended for the patient
 - Baseline observation of vital signs
 - Administration of the blood component
 - Monitoring vital signs
 - Recognition of signs of acute transfusion reactions and initial management
 - Finalization of transfusion (completion of transfusion record, discard of blood pack and giving set).
 - Ensuring traceability of each unit transfused by completing the required documentation

3. With respect to the dedicated nurses in clinical transfusion, it was agreed that role requires a person with good clinical experience and skills, preferably including experience in a clinical specialty in which transfusion is used.

The role involves coordination, communication and the promotion of change and quality improvement, so a successful appointee will have a good aptitude for management. Specific tasks of the dedicated nurse would include

- Leading the implementation of training in clinical transfusion
- Co coordinating Haemovigilance reporting
- Promoting best clinical transfusion practice
- Co coordinating a program of transfusion audits
- Providing progress reports to the Hospital Transfusion Committee (HTC)
- Participating as a full member of the HTC

Readers are invited to send comments, on the consensus statement and final declaration given below, or share their experience with the Transfusion Society of Turkey by writing directly to:

3rd ANATOLIAN BLOOD DAYS – FINAL REPORT

Third Anatolian Blood Days

Antalya, Turkey. November 30th – December 2nd 2014

Sponsored by the Turkish Blood Foundation

Anatolian Blood Days; an international workshop by Turkish Blood Foundation

The Turkish Blood Foundation initiated annual international workshops in 2012 under the name of Anatolian Blood Days. The aim is to share experience of problems and challenges that are common to many Transfusion organisations but are rarely discussed at national or international conferences. Anatolian Blood Days aims to identify and discuss the “untouchable” topics and help to identify ways forward.

The third workshop in November 30th – December 2nd 2014

addressed the socioeconomic conditions of blood transfusion staff compared with those of other medical disciplines, and the influence of these employment conditions on the morale and job satisfaction of staff and on the effectiveness and efficiency of the transfusion service. A central theme was the inconsistency that exists within hospitals, regions and countries in the pay and conditions of each category of staff, when transfusion service staffs are compared within other specialties departments, or organisations and the adverse effect that this can have on staff morale and performance.

In advance of the meeting the organisers had carried out a survey among the invited participants to obtain information about employment conditions and staff morale in transfusion services in their countries.

Twenty three countries were represented by 51 participants. Each country gave a short presentation on their situation with regard to

the current situation of staff and identifying particular difficulties or challenges for their service. At the end of the first day a summary was prepared of the main themes emerging in the discussions.

These were formed into topics and tasks for each of three working groups. Each group was asked to concentrate on an aspect of actions that might be taken to improve pay and employment conditions of staff.

Despite the 3 different remits, the conclusions of the three working groups were quite convergent. The consensus statement that follows is based on these discussions and reports.

The consensus statement;

- 1) Transfusion is a critical element in the working of any health service
- 2) The resources allocated to transfusion should be sufficient to ensure that it will sustainably meet the requirements
- 3) An effective transfusion service depends on the quality and morale of its staff
- 4) The morale and performance of staff is influenced by the quality of their working environment, quality of management, perception of the value of their work
- 5) The external or public and community image of the service is exceedingly important.
- 6) It comprises also adequate financial rewards, and conditions such as, job security, prospects for further training and promotion, pensions, and paid vacation allowance.
- 7) Good management and leadership is a critical factor and generally requires an individual with a good knowledge and understanding of the work of a transfusion service
- 8) The manager must have the ability to set clear objectives and ensure that both good and inadequate staff performance is recognised and deal with effectively.

- 9) Managers should have the right and duty to select staff for their own departments it must be recognised that transfusion is acknowledged to be a specialised entity per se
- 10) Blood transfusion must learn to be business like. Services must take steps to obtain and use the essential data required to manage effectively and to argue effectively for the resources required.
- 11) Transfusion services should not be profit driven, since the “raw material” is human blood given by people who generally do not wish it to be used for the profit of others

Anatolian Blood Days will be organized with the topic of “cost calculation of blood components and reimbursement systems” at December 13-15; 2015 at Antalya /Turkey.



**Turkish
Blood Foundation**



**Blood Banks and
Transfusion Society of Turkey**

**Bağdat Caddesi Kumbaracılar Çıkması
Birlik Apt. B Blok, No.16 D.24 34724
Feneryolu - Kadıköy - İstanbul
Tel: +90 216 414 4417 (pbx)
Fax: +90 216 414 4419
E-Mail: kmttd@kmttd.org.tr**