

INTRODUCTORY NOTES

The following is a transcript of an article that was published in the 'Gift of Blood' (No.111, April-June 2013), the official publication of the Association of Voluntary Blood Donors, West Bengal (AVBDWB). As identified in the article, I was asked to provide figures for the amount of blood used in England during World War 2 and to comment on the belief in India that blood donors received a certificate signed by the King [to my knowledge, they did not].

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BLOOD TRANSFUSION DURING THE WORLD WAR A History of Victory

The modern blood banking or blood transfusion may be called a gift of Second World War. During the First World War there were no blood banks. The donors were on the hoof. True, transfusion has become an 'indirect' procedure. Blood no longer had to flow from donor to recipient; it could be collected in a flask with sodium citrate, kept for a very short time and slowly infuse blood into the patient. The doctors viewed citrate as a short term anticoagulant to keep blood liquid long enough to complete the transfusion. Dr. Geoffrey Keynes, brother of the economist John Maynard Keynes, became proponents of citrated blood transfusion during World War 1, having learned the techniques from American Doctors stationed in Europe, though their work was extremely limited.

On December 10, 1936 at Madrid during the Spanish Civil War, the Canadian Doctor Norman Bethune established the first ever Blood Bank of the world in the real sense of the term. Immediately thereafter another blood bank was established at Barcelona by Dr. Federico Duran Jorda by storing only 'O' group blood on the line of 'Universal Donor Concept'.

Russians started work with cadaver blood and switched over to work with donors and developed blood banking service during the Second World War. More than two thousand donors queued up in Moscow each day to donate blood. All donors were women; most men had been called to the front. The use of woman's name on the bottle sometimes led to correspondence and friendship between the donor and the recipient, an occurrence that increased enthusiasm among neighbouring donors.

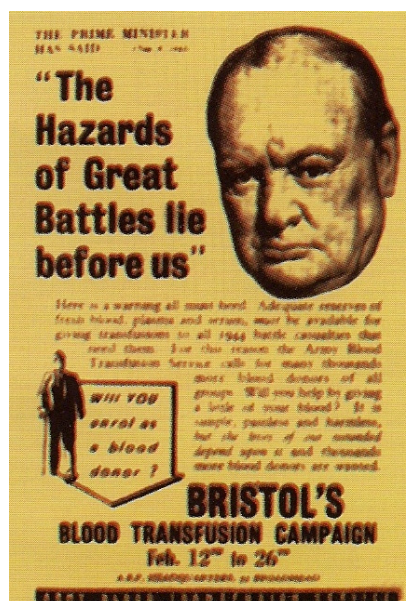
Great Britain was dependent on "Donor in hoof" till 1937 when they started building up blood banks led by Dr. Janet Vaughan with whom Dr. Jorda joined after the Spanish Civil War. Britain went to war with only 50 bottles of blood and developed the massive blood transfusion service with huge number of donors. In British India, blood transfusion started way back in 1925 without storing the blood, i.e. without blood bank. To meet the war needs, the first Blood Bank was established in Calcutta on March 6, 1942. Between March 1942 and May 1943, 39050 units blood were collected (only 5458 units in blood bank and rest in outdoor camps) proving the maxim that if you want to get voluntary blood donors take the donor's bed as close to the donor as possible on their convenient date and time. The donors were from the British, the British managed industrial and commercial houses, government employees and the Anglo-Indian community.

There was a curiosity how Britain could build up such a huge donor base during the war. There is hearsay in Calcutta among the veterans of transfusion service that

during the war blood donors were presented with a certificate signed by the King George VI. AVBDWB research team wanted to corroborate the hearsay from their friends of the British Blood Transfusion Service. Mr. Robin Knight who referred the matter to the Honorary Historian of the British Blood Transfusion Society, Mr. Phil Learoyd, who provided the following material which might be of interest to the readers.

BRITISH BLOOD DONORS IN WORLD WAR II

As far as the Red Cross was concerned, donors were mobilized in the same way during the war as before it, i.e. by means of having them on file and contacting them "as required" / "if available". This was apparently previously done either by telephone (which would have restricted contacting most people out of working hours as so few people actually had a phone then), but also according to some of the material published by Dame Janet Vaughan, the Red Cross also used drivers who went to the donor's address and presumably knocked on their door. I do know that they transported donors to hospital sites so that they could donate. During the war, recruitment was very much as it is today, using advertisement and 'celebrities'; there is a famous blood donor poster with Winston Churchill on it though there was very much more made of 'on street recruitment' as some of the wonderful photos from the time suggest.



There was of course initially no national centre compiling donor figures, other than the Red Cross and they were 'London biased' (as would be expected). As far as I am aware there were no 'National' figures compiled even though I am aware that other areas of the country had followed Percy Oliver's lead and set up local blood supplies, but I have no figures for these areas. The London Red Cross figures are not accurate either, especially for 1939, because the recording of donors stopped in September 1939 when war was declared; so the final annual figure for that year is an estimate. The following are figures published by the Greater London Red Cross Blood Transfusion Service, but Percy Lane's Red Cross service was never really properly operational during the war as this was taken over by the Army Blood Transfusion Service. Red Cross figures published by the Greater London Red Cross Blood Transfusion Service are as follows: 1939 - 5,645 donations; 1940 - 1,395

donations; 1941 - 662 donations; 1942 - 1,011 donations; 1943 - 1,042 donations; 1944 - 1,308 donations; 1945 - 1,304 donations.

Published figures identify that in 1938, the last complete year prior to World War II, the Greater London Red Cross donor panel arranged for 5,638 donations, whereas in 1940, the first complete year of the war, the Army Blood Transfusion Service (ABTS) collected 33,856 units of blood! I am afraid that I do not have any other ABTS donation numbers for the other years of World War II.

The English system during the war was to equip Army Blood Supply Depots which acted as central blood collecting depots initially in the South West of England, which was believed to be far enough away from enemy aircraft. The initial expectancy was I believe to collect 100 units of blood per day, but I do know that by the end of the war this had increased to about 1,300 units per day! The donor panel of about 5,000 in 1939/1940 increased to over 230,000 by the end of 1942 and was over 500,000 by the end of the war. Harold Gunson published that just over 765,000 donors were bled during World War II.

There is a general assumption that plasma from the US was used extensively during the whole of the war. This was not the case. Initially US plasma was unfiltered and unfrozen! Even when filtered, much of the plasma sent from the US (i.e. at the end of 1940 early 1941) was infected by the time it reached the UK (presumably shipped un-refrigerated). This resulted in the MRC unit at Cambridge extending their work into freeze-dried plasma; the US of course did the same.

During 1942-43, 1,000 litres of serum and 2,500 litres of plasma were processed by the MRC unit. In fact, due to there being no air-raids during the first part of the war, it was not until May-June 1940 with the Dunkirk evacuation that transfusion was used in any sort of quantity in the UK. It was obviously during this same period that changes were being made to anticoagulants/storage solutions to refine what became known as Acid Citrate Dextrose (ACD). John Hess and Mike Thomas' paper in 2003 identify that the US initially wanted to use plasma substitutes but changed their minds when they actually treated casualties with whole blood!



Whole blood movement from the US to Europe increased towards the end of the war. During the last year of the war, 500,000 units of blood were sent in a 13 month period i.e. 2,000 units per day! Obviously the development of freeze dried small pooled plasma increased, but the US blood programme mainly produced whole blood both for transfusion and plasma production. I am afraid that I do not have any figures as to the amount of plasma (liquid/dried) sent from the US to Europe during the war, but the timing of the development of freeze dried plasma methodology would suggest to me that it was more used towards the end of the war. I do know that during the

course of the war, the Army Blood Supply Depot issued 116,804 bottles of liquid plasma (for 'temperate climates') and 325,576 bottles of dried plasma (for 'the tropics'). As far as I am aware, blood donors during World War II apparently received a 'donor certificate' from the Army Blood Supply Depot which contained Shakespeare's Henry V quote, 'For he today who sheds his blood with me shall be my brother'. I certainly do not know of any 'Certificate of Honour' signed by the King, an urban myth I think, (but I would be very interested if anyone came across such a document!).