

# The Storage Sciences, Blood Transfusion and Expected Disorders Revisited

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## Commentary

Blood transfusion is final mean to save life of patients with bleeding disorders. To date, blood transfusion and disorders (BTDS) govern and dominate health system in the clinical applications. Although the aim is to bridge the basic science to the clinic, there is still little known about standard blood transfusion and related disorders. In 21st century still too many causes of side effects (SEs) remained to be elucidated, [1,2] and it is not acceptable, If Science listen to the patients.

In the last decades, basic and clinical researchers engineered and developed so many sophisticated tools to follow every step of blood transfusion that One might expect there is no room for mistakes anymore. Following recent international meetings' news and people who win different prestigious prizes gives hope for future patients to be treated without any extra disorders and SEs. In my view, perfect treatment helps patients to cure and does not cause any permanent side effects. Furthermore, treated patient supposed to be cured immediately. Hence, why? and how is it possible that still so much patients exposed to different SEs world widely, which somehow patients remain with such SEs in their whole life, ever after. Now a day, it is a logic one assumes that potential future patients expect a reliable standard blood transfusion without any SEs.

To highlight more about the ABC of the known side effects we need to know more about 'how?' and "why" such SEs could be triggered? Different publications from 100 years ago have shown that higher mortality and morbidity caused by such SEs after blood transfusion i.e. chilling, infections, inflammations, and even death [1-4]. In theory, there are more than 11 causes that could make SEs happen, during blood transfusion procedures.

1. Isolation procedure
2. Processing procedure
3. Storage processes
4. Logistics conditions
5. Transfusion procedures
6. Patients defenselessness

7. Donor blood quality and quantity
8. Available unknown microorganisms
9. Blood group matching
10. Different non-biological antigens and at last but not least
11. Unknown factors

There are so many scientific basic and clinical publication about the current isolation and storage activities from 107 years ago up to now [1-5]. Moreover they became a mouthful Sciences and Science groups, which each research group distinct themselves from another, world widely. In my view one needs have right to demand more standard and optimized treatments without SEs than merely agreed prearranged ones, eventually. Why patients still do not get standard perfect treatment, without side effects? It is possible to divide the situation into three categories, which can refer to the aim of this paper as well namely A) the available side effects (effects B) the blood transfusions (cause and C) effects of the blood transfusions on the side effects (SEs). To explore more in details about the SEs, we could divide whole isolation and storage procedures in three aspects I. Donated whole blood cells quality and quantity II. Isolation and storage materials and methods and III. Donors and patients' blood cells/proteins matching technologies. About donated whole blood and donors' blood cells and proteins-quality/quantity, which are genetically affected and so much biological variability exist there are no doubt. Cross matching technologies are very young and still have own difficulties. Although recent research and developments caused assessments of new regulations, which after following these regulations the SEs decreased to 1:300, however. On the other hand target SEs occurrence should be put somewhere high reaching 1:1000000 and lower.

There are two major methods to isolate and store donated whole blood cells 1) using storage medium with some additives- i.e. plasma in combination with specific buffers, sugars, DMSO, or alternatively 2) using storage medium without extra additives i.e. Combination of starvation and cold storage model systems [5]. Furthermore, if one look for details in the literature, there are more than 20 different additives that affects certain blood cells quality,

quantity and viability (QQV) during isolation, prolonged storage, transport, and transfusion, which in each steps the environmental conditions appeared to be involved in increase of harmful factors that immediately increase the risk of mortality and morbidity rate post transfusions. Although some research group denied these side effects, however [1,2].

It is noteworthy that the isolation and processing of blood products should not affect any blood products' QQV of pre-transfusion. Based on literature studies, it became obvious that some specific studies appeared to be funded and awarded for decades with respect to preserve QQVs but still after a decades still patients suffer from the SEs post transfusions. It is not acceptable anymore. Obviously, other interests play pivotal role in the BTDs rather than patients' safety and treatments. Patients and donors matching is another aspect, which play also pivotal role to cause various SEs and disorders. Scientists still do not know and/or are not completely agreed with each other yet about how they can cross-match patients and donors in a standard manner that no SEs occur, post transfusions. When clinician needs whole blood and/or derivatives produced by the blood isolation and banking centers, they order their estimated blood products based on real time calamity of certain patient and not on the standardized procedures (!). Some un-published studies indicate that the guidelines of specific blood products order predestined for general patient in the ICUs. Although in-between due to any SEs; by the Surgeon and/or the responsible qualified Physicians the agreed planned of blood transfusion might be changed, and it was not carrying out according to the standard protocols, however. Besides, sometimes orders took place via ICU-Technicians, experienced Nurses, and even in some cases by the family of patients due to excessive side

effects, costs, and emergency calls. In some countries, the relatives and family of patients compulsory arrange own blood products at own costs and risks, from the raised 'jungle of the Blood banking and isolation centers'. Might for 'One' the aforementioned problems still are not enough motives to wake up authorities significantly but for general Scientists should be enough reason to go back to the sketch. Taken together, after a Century Research and Development with appropriate plans, it can be assumed that we can solve the BTDs problems if we focus on real blood transfusion side effects and offer ultimate solutions, after all. All inspectors, Reviewers and Editorial boards also being warned by this final call. Do not waste yours and Patients' time to give opportunities to the Scientists who playing with projects and after say '15 years' still searching for missing links. Set out limits and demands from each Basic and/or Clinical Scientists. Don't accept agreements and promises after death row of projects, anymore.

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