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Haematology International Journal
ISSN: 2578-501X

Where do we Position Transfusion Medicine in the Family of Sciences?

Smit Sibinga CT*

International Development of Transfusion Medicine, University of Groningen, Netherlands

***Corresponding author**: Cees Smit Sibinga, University of Groningen, International Development of Transfusion Medicine, Netherlands, Email: c.sibinga@planet.nl

Editorial

Volume 3 Issue 1

Received Date: March 15, 2019

Published Date: March 26, 2019

DOI: 10.23880/hij-16000137

Keywords: Hemovigilance; Pharmaco-Economics; Immunohematology; Microbiology; Soft Sciences; Transmissible Diseases

Abbreviations: WHO: world Health Organisation; UHC: Universal Health Coverage; QALY: Quality Adjusted Life Years; EML: Essential Medicines List.

Editorial

Transfusion Medicine has come a long way and has for long been regarded a Cinderella in medicine and medical science. Since the discovery around 1900 by Karl Landsteiner [1] of the ABO blood groups as principle elements for compatibility, the science has been dominated by the laboratory research for immunohematology, microbiology and virology, focused on the test tube and not so much the patient. Over the 20st century several development eras are to be recognized that contributed to the maturation of transfusion medicine as a bridging science. Twenty Nobel laureates contributed to this development.

The eras recognized are -blood group serology and immunohematology; preservation of blood and blood products; separation of blood components; transmissible diseases; community, donors and 'soft sciences'; quality management and blood safety; organization, governance and leadership. During each of these eras transfusion medicine bridged with a variety of exact, gamma and ´soft´ sciences.

Today Transfusion Medicine is maturing into a unique multidisciplinary and bridging field in the health sciences. The outbreak of the HIV/AIDS epidemic forced the development of quality awareness and culture, and centred the scientific attention back to the patient expressed by hemovigilance and patient blood management. However, so far in the international world of peer reviewed scientific journals there is only one journal that focuses exclusively on clinical transfusion practice - the International Journal of Clinical Transfusion Medicine [2], bringing blood transfusion back to where it belongs: the bedside in the hospital with the prime and leading Hippocratic adage - 'primum est non nocere'.

The discipline stems from the mother clinical specialty Internal Medicine with a close relation to Hematology, Immunology, Transplantation Immunology and Genetics. The 20 Nobel laureates, who contributed over the second half of the 19th and the 20th century to its scientific and operational development and maturation, received their price between 1908 (Ilya Ilyich Mechnikov and Paul Ehrlich) and 2011 (Ralph Steinman) [3]. They clearly illustrate the bridging of disciplines in science with Transfusion Medicine, which would not have developed and matured to its current extend without the research, publication and communication of the scientific work done; and that will certainly not be the end. The evidence is documented, but unfortunately not that easily accessible to many of the scientists in the developing part of the world. However, WHO Headquarters [4] as well as the Offices of the WHO Eastern Mediterranean Region [5], South-East Asia Region [6] and Western Pacific Region [7] took the initiative to institute a scientific library with an advanced Index Medicus with abstracts of peer reviewed publications that can be consulted on request.

Since the launch in 2000 of the UN Millennium Development Goals [8] and the continuation of this global initiative in 2016 under the title Sustainable Development Goals [9], more attention has been created for the basic governance and leadership development as well as the key foundation of an adequate legal framework to position Transfusion Medicine as an integral part of the health care and sciences. All UN Member States have agreed to work towards achieving Universal Health Coverage (UHC) by 2030. This includes financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all. This WHO initiative to introduce the Universal Health Coverage principle has awakened an interest in a scientific approach on how to integrate Transfusion Medicine in public health and the overall health care system [10]. With that the need for research on how to structure the essential steering and supportive processes has also started to become visible. A recent survey among the 22 Member States of the WHO Eastern Mediterranean Region on existence and quality of blood safety legislation unveiled an extreme paucity.

Only 9 countries responded having some legislation in place, but none of these laws and regulations comply with the WHO advocated principles and leave wide gaps in the mases of the legislative net [11]. As a consequence mal- and uncontrolled practices continue to flourish opposing and obstructing the efforts to create and achieve nationwide evidence-based safety and availability of blood and blood products within the scope of universal health coverage. Here a bridge to the science of Law should be developed to create a growing evidence for the need of fundamental protection of communities from poor and maleficent transfusion practices. Another scarcely explored field is in pharmaco-economics to be used to calculate the justification of introducing fashion-tinted interventions and methodologies that do not essentially contribute to an improvement of safety, efficacy and lengthening of quality adjusted life years (QALY) in Transfusion Medicine. Researchers such as Brian Custer [12,13], Maarten Postma [14] and René van Hulst [14,15] can be marked as pioneers in this still largely unexplored field. WHO included blood and blood products in their growing list of Essential Medicines (EML) [16]. Despite the guidance developed by WHO to adequately manage blood and blood products as essential medicines, a scientific response of observable size has not yet been developed. Similarly, Management Science needs exploration to streamline the development of well-organized and governed blood establishments with sufficient economy of scale, away from the fragmented small blood shops on the corners of the health care streets, and operating under the umbrella of a competent and adequate legal framework with a meaningful and protective licensing structure.

For long the field has been dominated by laboratory sciences and practice with a prime interest in the test tube and not so much the patient. Although the early work was triggered by clinical observations that showed at numerous occasions the power of failure, it deviated into a laboratory defined science, where the connection with the clinical practice was regarded as a 'milk man's shop' business, rather than a truly supportive facilitator of clinical transfusion medicine. Transfusion Medicine has indeed come a long way, largely in the shadow of other fields of science and medical practice. Its comprehensiveness provides a unique scenery and environment to bridge with the many supportive scientific disciplines [17]. Most of these are beta or exact sciences, but over the past decades increasingly 'soft sciences' and the group of applied exact sciences (gamma sciences) have been discovered and bridged.

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