THE PINNACLE OF NIGERIAN EXCELLENCE!

Notwithstanding the dynamics of the threatening rate of moral decline and stagnating socio-economic environment of the country, Nigerians have continued to be their best in terms of intellectual creativity, industriousness and resilient tenacity. In 2022, Nigeria ranked 17th in African countries Global Innovation Index, and 114th in the world (Galal, 2022), which showed an increased improvement compared to previous years. Globally, Nigerians have successfully carved niches and questioned the modus operandi in various fields of but are not limited to technology, sports, literature, agriculture, medicine and entertainment. Ngozi Okonjo-Iweala; the first ever African and woman to become the director of World Trade Organisation is from Nigeria, Olufunmilayo Falusi Olopade from the Yoruba ethnic group is globally acknowledged for her ground-breaking efforts in cancer genetics and researches in breast cancer tailored to women of African descent, Philip Emeagwali who left a mark in the domain of oil exploration and supercomputing through his nature-inspired formula, is from South-Eastern Nigeria.

From being bright geniuses, prideworthy role models, to remarkable life-changing innovators, Nigerians are illimitable. One of the most widely acknowledged inventions with genuine and positive impact was spearheaded by a Nigerian veteran military doctor; Felix Otuanovwe Oviemo. He invented the emergency auto-transfusion system (EAT-SET) in the year 1989 (WIPO, 2010) which adopts a simple but efficient approach to blood auto-transfusion.

Blood transfusion is a pivotal, life-saving medical procedure effectuated to restore blood lost due to haemorrhage from surgery, injury or medical complications. The blood is obtained from blood banks, transferred to the patient after series of clinical examinations to ensure blood match and limit the risks associated with blood transfusion. However, a more sophisticated system known as autotransfusion has become common, in which the blood is gotten from the exact patient, as opposed to blood banks from donors, through the employment of different

techniques. It is often considered low-risk and offers more compatibility over traditional blood transfusion.

Haemonetic Cell Saver, American Cobe-Brat are some of the automated blood transfusion technology already in use in industralised countries before the EAT-SET was invented. However, they are expensive and require highly skilled expertise which many developing countries are not capacitated with, especially in sub-Sahara Africa. Otuanovwe's insight to how inadequate blood resources put lives at risk in Nigerian hospitals, especially pregnant women with internal bleeding within the peritoneal cavity, spurred him to develop the EAT-SET. He started the first few trials at the military hospital in Ikoyi, Lagos, with the research facilities provided by the Nigerian government. Furthermore, to shape the device into global standards, he was awarded grants and received support from several international organisations due to it's ingenuity and life-saving potential.

The EAT-SET operates manually; it consists of a re-usable collection device, holding a disposal filter connected to suction and re-transfusion tubes. Through a manual vacuum pump which applies the principle of low pressure, blood is suctioned from the patient's bleeding internal organs into the collection device (Jewe, 2018). The collected blood is filtered under a period of 24 hours to remove impurities and re-infused into the patient by gravity.

In many countries, blood donation schemes are not adequately supported by the government, which consequently cause shortfalls in blood supply, as opposed to the blood collection infrastructure and schemes that the highly developed nations are equipped with (Barro et al, 2018). In some sub-Sahara African countries, majority of the blood resources are still obtained from family replacements and paid donors. Just 5% is sourced from voluntary donors,

due to the inadequacy of the centralised blood banking system. Through manual autologous blood transfusion, the EAT-SET provides a low-cost alternative, which is sustainable in poor-resource environments like ours. It does not require electricity, which increases it's flexibility, considering the problem of erratic power supply in many African nations, Nigeria inclusive. The device promises improvement in medical prospects, through blood accessibility.

In addition to, the EAT-SET provides access to safe blood based on scientifically proven clinical practice. Before being approved for medical laboratory use, it underwent series of Alpha trials without testing with animals or human beings. The World Health Organisation sent delegates from Geneva to witness the first use of the device in Lagos University Teaching Hospital (LUTH) before it was endorsed. The EAT-SET is well-fitted to the vacuum pump which provides a low infection risk and credible means of auto-transfusion. Since it is the patient's blood that is re-infused as compared to a volunteer donor, it ensures compatibility and there are low chances of allergic reactions. It eliminates the fears of patients on unsafe blood from blood donated by volunteers or paid for.

The lightweight and hence portable features of the EAT-SET enhance it's flexibility of being transported to remote areas, especially battlegrounds where soldiers easily get injured. This promotes aids' supply and general medical outreach.

Through the adoption of a simple approach, the EAT-SET has proved to be an efficient improvised form of automated blood transfusion technology which have helped to save lives that might have been lost to complications and inadequacy of resources in many developing countries. Furthermore, through continuous research and investment, the augmentation of the EAT-SET device with blood banking schemes in developing countries promises advancements in medicine and general quality of life, in the near future. It has been patented in 9 African

countries, and is increasingly receiving attention from all over the world. Due to his invention, Otuanovwe was jointly declared best scientist in Africa by the African Union; the World Intellectual Property Organisation (WIPO) also awarded him a gold medal. Likewise, he received the Promex Silver Medal award, World Bank Institute award, and numerous ones.

Conclusively, the inventor established the EAT-SET industries in 2001 for further research dedicated to providing alternatives to healthcare technology which is limited in developing countries, and are sustainable. Although he has retired from the Nigerian army, he has continued to collaborate in medical researches over the world. Otuanovwe is an example of Nigerian excellence who proved the significance of indigenous knowledge in bringing about positive change globally, when integrated with scientific techniques and adequately supported.

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