

Translational research and anesthesia

This issue of Journal of Anesthesiology and Clinical Pharmacology carries an article “Antioxidants: The new frontier for translational research in neuroanesthesiology.”^[1] This review explores the role of various anti-oxidants like vitamins, micronutrients, co-enzymes etc. in clinical conditions like cerebral hypoxia, traumatic brain injury, subarachnoid hemorrhage and other CNS patho-physiological conditions. The authors have reviewed the various pre-clinical and clinical studies and their applicability in clinical conditions. They have also emphasized the importance of interdisciplinary and translational research.

The term translational research first appeared in the literature in the 1990’s, mostly in relation to cancer research. However, historically, John Snow’s research in his home laboratory that helped him in the understanding of the mechanism of vaporization of volatile anesthetics for safe delivery of anesthesia was also an example of translational research.^[2] Various attempts have been made to define translational research. Shorten in an editorial written for Anesthesia defined it as bi-directional research where clinicians define practical questions that need to be answered and then work in collaboration with basic scientists to deliver answers that benefit the patient.^[3] Woolf in a commentary on meaning of translational research discussed two types of definition. The first refers to harnessing knowledge from basic sciences in order to produce new drugs, devices, and treatment options. The second refers to translating research into practice so that new treatments and research knowledge reaches the patient population.^[4] Rubio *et al.* have proposed a working definition where translational research fosters multidirectional integration of basic research, patient-orientated research, and population-based research with long-term aim of improving the health of public. The first stage T1 expedites movement between basic research and patient-oriented research and leads to formation of standards of care. T2 research is the movement between patient-oriented and population-based research and leads to better patient

outcomes. T3 research is interaction between lab-based research and population-based research and results in better understanding of health and disease.^[5]

Three approaches to translational research have been highlighted; the information-based approach (passage of information to clinician), the clinician-based approach (teaching evidence based practice), and the activity system-based approach (assessment and changes of system delivering care).^[6]

The scope of translational research in anesthesia is immense. There are several areas where basic research needs to be translated to clinical benefits, with neurosciences being one of them. The areas of research focus in neurosciences at present are pain and pain modulation, transition from acute to chronic pain, neurotransmission, anesthesia toxicity in developing brain, cognitive awareness, spinal cord and cerebral blood flow and neurotrauma. Outside this domain, other areas that are being explored are drug development, patient safety, simulation, aging, non-invasive monitoring, sepsis, trauma, and resuscitation.

Realizing the importance of translational research, many academic departments of anesthesia in more affluent countries have made an active effort to focus on and support translational research by highlighting it in their research objectives, offering fellowships in this area, and by offering translational research awards. The government agencies of these countries are also funding more translational research projects, and there are recommendations to have national/translational clinical trial networks.^[3]

Multidisciplinary translational research may also be the answer to “intellectual malaise” seen in anesthetic research in academic anesthesia.^[7] Academic anesthesia departments have to compete with other specialties for research funding. The position of the specialty of anesthesia is interposed between surgical and medical fields, between basic and clinical sciences and its data-rich environment, along with the expertise of anesthetist in physiology, pharmacology, patient safety, simulation and monitoring offers a unique opportunity to be part of multidisciplinary and translational research.^[8] The research of the future will involve research teams rather than individuals, and anesthesiologist must become part of this group.

In conclusion, the ultimate aim of any research is to improve patient care and safety. The opportunity to be part of translational research is currently available to our specialty, and we must make the most of it.

Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/0970-9185.129993

Fauzia Anis Khan

Department of Anesthesiology, Aga Khan University, Karachi, Pakistan

Address for correspondence: Dr. Fauzia Anis Khan,
Department of Anesthesiology, Aga Khan University,
PO Box 3500, Karachi - 74800, Pakistan.
E-mail: fauzia.khan@aku.edu

References

1. Tewari A, Mahendru V, Sinha A, Bilotta F. Antioxidants: The new frontier for translational research in Neuroanesthesiology. *J Anaesthesiol Clin Pharmacol* 2014;30:160-71.
2. Ramsey MA. John Snow, MD: Anaesthetist to the Queen of England and pioneer epidemiologist. *Proc (Bayl Univ Med Cent)* 2006;19:24-8.
3. Shorten GD. Anaesthesia, research and translation: "Send not to know for whom the bell tolls....". *Anaesthesia* 2007;62:211-3.
4. Woolf SH. The meaning of translational research and why it matters. *JAMA* 2008;299:211-3.
5. Rubio DM, Schoenbaum EE, Lee LS, Schteingart DE, Marantz PR, Anderson KE, *et al.* Defining translational research: Implications for training. *Acad Med* 2010;85:470-5.
6. Davidson A. Translational research: What does it mean? *Anesthesiology* 2011;115:909-11.
7. Evers AS, Miller RD. Can we get there if we don't know where we're going. *Anesthesiology* 2007;106:651-2.
8. Sanders RD, Maze M. Translational research: Addressing problems facing the anesthesiologist. *Anesth Analg* 2007;105:899-901.

How to cite this article: Khan FA. Translational research and anesthesia. *J Anaesthesiol Clin Pharmacol* 2014;30:151-2.

Source of Support: Nil, **Conflict of Interest:** None declared.

New features on the journal's website

Optimized content for mobile and hand-held devices

HTML pages have been optimized for mobile and other hand-held devices (such as iPad, Kindle, iPod) for faster browsing speed.

Click on **[Mobile Full text]** from Table of Contents page.

This is simple HTML version for faster download on mobiles (if viewed on desktop, it will be automatically redirected to full HTML version)

E-Pub for hand-held devices

EPUB is an open e-book standard recommended by The International Digital Publishing Forum which is designed for reflowable content i.e. the text display can be optimized for a particular display device.


Click on **[EPub]** from Table of Contents page.

There are various e-Pub readers such as for Windows: Digital Editions, OS X: Calibre/Bookworm, iPhone/iPod Touch/iPad: Stanza, and Linux: Calibre/Bookworm.

E-Book for desktop

One can also see the entire issue as printed here in a 'flip book' version on desktops.

Links are available from Current Issue as well as Archives pages.

Click on  View as eBook