

An Australasian Perspective in Supporting Researchers in Anesthesia and Intensive Care

IN Japan, Australia, and New Zealand there is thriving research in anesthesia, pain medicine, and intensive care. The success of the researchers often has been attributable to organizations similar to the Foundation for Anesthesia Education and Research (FAER). Countries differ in the ways research is supported, both at a government level and at the society level. In Australia, New Zealand, and Japan, the anesthesia and intensive care societies and colleges have tailored research support to meet specific needs and to make the most of the particular opportunities for research in their countries.

The Australian and New Zealand Experience

In Australia and New Zealand, the greatest source of funding for major projects in anesthesia, intensive care, and pain medicine research has come through government agencies such as the Australian National Health and Medical Research Council and the Health Research Council of New Zealand. However, obtaining such funding is highly competitive, especially for novice researchers. The Australian and New Zealand College of Anesthetists (ANZCA), the Australian Society of Anesthetists, the New Zealand Society of Anesthetists, and the Australian and New Zealand Intensive Care Society (ANZICS) have all recognized the importance of supporting research and have become vital sources of funding for research. These organizations support researchers in several ways. They provide funding to complete small to moderate projects, they support researchers with scholarships, and they provide seed funding to prove feasibility and collect preliminary data to provide leverage to secure the larger Australian National Health and Medical Research Council and Health Research Council of New Zealand grants.

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Since 1991, ANZCA has provided more than \$7.5 million Australian for project grants, \$650,000 for scholarships and professorships, and more than \$400,000 for academic enhancement grants. Some of the grants are now specifically reserved for novice researchers. ANZCA funding (along with subsequent National Health and Medical Research Council funding) has enabled the completion of several landmark studies, such as the Multicentre Australian Study of Epidural Anaesthesia and Analgesia in Major Surgery (MASTER trial) examining the role of epidural analgesia and outcome after major surgery; the B-Aware trial comparing awareness between Bispectral Index-guided anesthesia and routine care in high-risk patients; the ENIGMA studies (Evaluation of Nitrous oxide In the Gas Mixture for Anaesthesia), which examined outcomes with the use of nitrous oxide; and the prehospital HyperTonic Saline (HTS) study examining the role of hypertonic saline in head injury. More recently, ANZCA grants have supported major projects examining the neurotoxicity of anesthesia in infants, outcomes in the elderly after surgery, cognitive decline after surgery, and the complications of peripheral nerve blockade. In addition to major projects, ANZCA, the Australian Society of Anesthetists, and the New Zealand Society of Anesthetists have funded many smaller projects. These smaller projects have helped maintain the highly academic anesthesia environment in Australian and New Zealand hospitals and have been crucial in launching the careers of highly successful anesthesia researchers.

To further expand the financial support for research, ANZCA recently established the Anaesthesia and Pain Medicine Foundation. The Foundation has three goals: “to increase the safety and comfort of patients undergoing anesthesia and sedation, to improve the outcomes for critically ill patients following surgery or trauma, and to improve the treatment of acute pain, cancer pain and persistent non cancer pain.” The Foundation is supported by philanthropic donations and by 10% of the annual subscriptions of Fellows of the College.

The Australian and New Zealand Intensive Care Society also has recognized the importance of supporting research in intensive care in Australia and New Zealand. In 1990,

ANZICS established the Intensive Care Foundation, which is “dedicated to improving the care of critically ill patients by raising funds for clinical research projects as well as the education of health professionals responsible for intensive care.” The Foundation has an annual funding round, and thus far has awarded more than \$2 million.

Both ANZICS and ANZCA have greatly increased clinical research capacity with the creation of clinical trials groups (CTGs). The ANZICS CTG was established in 1994. Central infrastructure support is funded through subscriptions from intensive care units. It has been highly successful in bringing intensive care physicians together to plan and seek funding for and coordinate large investigator-driven clinical trials. To date, the ANZICS CTG has received more than \$45 million in competitive grants and published more than 70 papers, including 7 in *The New England Journal of Medicine*. One of the earliest studies was the SAFE (Saline versus Albumin Fluid Evaluation) study examining the role of albumin, and one of the most recently published was the DECRA (does DEcompressive CRAniectomy improve outcomes in patients with diffuse traumatic brain injury) study on the role of decompressive craniectomy after neurotrauma. The ANZICS CTG makes a specific effort to engage emerging researchers. The CTG runs a mentor program for new researchers, and a research development day is held every year when emerging researchers are encouraged to share and develop ideas. All new projects must have at least one novice researcher on the trial management team. After the success of the ANZICS CTG, in 2005 ANZCA established a CTG to support large multicenter trials in anesthesia. This CTG is also proving to be highly successful in attracting funding and coordinating large trials. Importantly, both CTGs now reach well beyond Australia and New Zealand.

In conclusion, in Australia and New Zealand research support is embedded in the local societies and college. The research support has supported not only many small studies but also has enabled anesthesia, pain medicine, and intensive care researchers to obtain large amounts of government funding for pivotal studies addressing important clinical questions. The greatest success has come through the establishment of the CTGs. The societies, colleges, and CTGs are addressing the next challenge: to ensure the next generation of researchers is nurtured and able to carry forward the tradition of successful and collaborative research in an academic anesthesia and intensive care environment.

The Japanese Perspective: Wishes for Our Future

In Japan, we now provide exceedingly better anesthesia service to patients than that of 25 yr ago, a time when I did believe that I did “the best” as an anesthesia resident. The criteria for “the best” significantly depend on the time and individual’s abilities in addition to drugs and techniques available at that moment. In this context, education and support for research within the anesthesia community are of

great importance for improving our “best” clinical practice. This is in alignment with the mission of FAER.

At the annual meeting of the Japanese Society of Anesthesiologists (JSA) this year, we had more than 100 educational lectures over 3 days, and most of the sessions were full of young anesthesiologists who wish to improve their individual knowledge and skills for providing “the best” anesthesia to their patients. I believe JSA is successful in educating young anesthesiologists.

How about support for the research activity by young anesthesiologists? Similar to the National Institutes of Health grant system in the United States, the regular governmental grants in Japan are highly competitive and difficult to obtain for emerging anesthesia researchers, despite such researchers being full of new ideas and possibilities. Although part of the regular grants received by the established researchers has been used to assist emerging researchers, this is unstable and often not enough for them to fulfill all their ambitions.

The Japanese government set up the program Grant-in-Aid for Young Scientists in 2006, and this is the major financial source for young Japanese anesthesiologists conducting their own independent research. In fact, the total amount of the support is not insignificant and is equivalent to that of FAER considering the difference in the total number of anesthesiologists between the Australian Society of Anesthetists and JSA. However, in 2010, only one young anesthesia researcher received substantial financial support equivalent to that provided by FAER, and the remaining funding was divided into smaller amounts among more than 40 recipients. There are many cost-effective studies testing predictable outcomes, and the current governmental supports will be helpful for this research, which is indeed necessary and valuable. However, the big steps for anesthesia practice often occur unpredictably, mostly from young inexhaustible researchers, as evidenced by the novel prize winners. A big clinical question to be tested by a large randomized clinical trial will be costly. A big tree does not always result from a big seed, but our anesthesia society may be responsible for establishing a system supporting the big dreams proposed by our young anesthesiologists, a system similar to that FAER established 25 yr ago and that the Australian and New Zealand societies have since emulated.

Many young Japanese anesthesiologists decide to study in active and leading research laboratories outside Japan to fulfill their research ambitions. This is partly from a lack of a system cultivating the big seed in Japan. In this context, the Australian Society of Anesthetists and the US National Institutes of Health have been supporting them to become current leading researchers in JSA. The maintenance and increase of JSA scientific activities have been relying greatly on societies outside Japan. Maybe it’s time for JSA to take responsibility for both education and research in our own society.

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