

Clinical Science Advisory Commission Interview with Michael Fehlings and Philip Louie

Clinical Science supports innovation translation at the AO with clinical evidence grounded in sound scientific methodology. In close collaboration with other AO ITC business units, Clinical Science is part of an efficient pathway to transform ideas into published clinical evidence. In June this year, Michael Fehlings, MD, chaired the first meeting of the AO ITC Clinical Science Advisory Commission (CSAC) and we are pleased to update you about the work of the group, its members, and their future visions for clinical research via an interview with Fehlings and the group's spine representative, Philip Louie, MD.

Interviewer: Thank you for scheduling this time to talk about your involvement with the newly formed Clinical Science Advisory Commission.

As Chairperson of the commission, Dr Fehlings, could you tell us the purpose of the group and your role and responsibility as Chair.

Dr Fehlings: The CSAC is a critical part of the AO Innovation Translation Center and is predated by an advisory committee that was formed to offer guidance to AO CID—one of the original critical pillars of the AO Foundation. I was the Chairperson of that advisory group for CID and some of my responsibilities subsequently overlap in my new role with the CSAC. Not only do we offer study feedback to Clinical Science and Clinical Operations we are also intrinsically involved with the AO Technical Commission (formerly known as the AOTK) and provide strategic advice around clinical science related to the work of the AO Innovation Translation Center and the whole concept of the recently formed AO Global Network.

Interviewer: What are the criteria to be elected to the CSAC?

Dr Fehlings: The membership on the commission includes representation from all clinical divisions. We are looking for people who have a strong engagement and are motivated by the opportunities around innovation and translation. We require practical people who think 'outside the box.' We aim to embrace the concept of globalization, equity, diversity, and inclusion, bringing on younger faculty to prepare for the future.

Interviewer: Turning now to the group's spine representative, Dr Philip Louie, what are your first impressions of AO ITC Clinical Evidence and specifically the recently formed CSAC?

Dr Louie: Despite being an AO Fellow, this is early exposure for me as Faculty to the AO Foundation and the workings of this new group. I was very impressed by the first CSAC meeting and by the goals of the AO ITC in general. I am delighted to collaborate with individuals from around the globe, and passionate about being involved with innovation. I am interested to see how ideas are translated into practical solutions and how such solutions can be integrated into a clinical workflow.

Interviewer: How do you plan to contribute to the CSAC during your 3-year term, and can you share some thoughts about future opportunities in spine research?

Dr Louie: I have a strong passion for the academic side of spine and for innovation and the translation of ideas. I appreciate

that I am younger than other group members but hopeful that my recent training from various parts of the world will bring a valued new perspective. I am keen to get involved in brainstorming sessions and evidence-based activities to truly understand the nuts and bolts of a clinical study. In terms of future opportunities, we are certainly moving into an age of Big Data, and I am enthusiastic about contributing to a global database with the initiation of global partnerships. We should be asking each other about clinical problems that we all face on a global scale and approach them together. Through the increased application of Artificial Intelligence and Machine Learning we really can begin to personalize the care of our patients. I am fascinated by the potential for an integrated platform to assist with patient care across the entire continuum. We are all aware of the intraoperative technologies that currently exist, but the future relies on an amalgamation of new developing technologies such as navigation, robotics, Augmented Reality across all phases of the patient journey. When we have the capacity to integrate such technologies from preoperative planning to postoperative data collation, we really will be in the position of having a centralized comprehensive treatment outcome database.

Interviewer: You are both familiar with the AO Foundation's Mission: 'Promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.' How does the clinical research at the AO help to support and sustain that mission?

Dr Fehlings: The fundamental aspect of the AO relates to Knowledge Creation and Knowledge Translation. The AO was originally created to solve problems related to orthopedic fracture care, which was largely nonoperative before novel implants and technologies were developed. The AO has evolved significantly which is why we see the evolution of departments like CID, the AO TC (formerly AOTK) and Education. The AO Clinical Investigation Department, now the business units AO ITC Clinical Operations and Clinical Science form the Clinical Evidence competence area within AO ITC, became a required pillar of the AO tasked with studying and documenting patient treatment outcomes. The AOTK or AO TC (AO Technical Commission) as it is now known was developed as a collaborative function designed to work with industry engineers toward the development of implants, and the AO Education Institute was a natural follow on to ensure that procedure and product-based teaching could be performed consistently. This is a perfect example of knowledge translation and represents how the core functions of the AO work effectively together. When innovation occurs through surgeon collaboration, the clinical research infrastructure of the AO via the work of AO ITC Clinical Evidence and CSAC, ensures that studies performed by ARI (assessing basic and fundamental science) and the AO TC (performing device-oriented research) adopt the correct approach and interpret outcomes accurately. The CSAC is an objective committee created to assess all elements of a study and work in partnership across the AO ITC to drive innovation and translation. CSAC is intrinsically involved in knowledge creation, which is critical to the mission of the AO.

Interviewer: What was the goal of the CSAC kick-off meeting in June?

Dr Fehlings: The meeting was very successful and accomplished critical objectives. The CSAC was again defined as a group created to provide strategic advice related to clinical science and clinical studies affiliated with the AO ITC mission. During the meeting, we were able to effectively position ourselves within the broader AO ITC and confirm our understanding of the global network approach being adopted by the AO Foundation.

Dr Louie: My goal for the meeting was to work out where the CSAC sits in the big picture; understand the group's value and where it sits in the AO ITC. The CSAC is not alone on its mission to improve patient outcomes and it was good to see how we will be collaborating with many others across the AO Foundation in pursuit of this goal.

Dr Fehlings: I think we have a great opportunity within the CSAC and the wider AO Foundation to recognize areas that will impact how we treat patients going forward. The world is changing at a rapid rate, and we really need to embrace what is happening. The pandemic has shown us the capability and value inherent in virtual technologies; there is no doubt that this will influence the way we work, from participating in Zoom meetings with colleagues to clinically assisting communities that can't receive basic care. Virtual technologies enable the ability to network in many ways and this won't change. With the increased use of virtual technologies over the previous 18 months, it is also now possible to conceive how studies could be performed electronically without compromising safety or quality.

As clinicians operating in a world of complex disease, we need to define how we use technologies like Artificial

Intelligence and Machine Learning to obtain Big Data. The collation of real time data as a means of looking at outcomes is the future of clinical research. I also believe that precision-based medicine (robotics, image guidance solutions) is gaining importance in the complex procedures that we perform. Regenerative medicine is another big growth area and represents an opportunity for more collaboration with the AO Research Institute Davos. We have become masters of fracture fixation, but we need to learn more about replacing tissue defects across the entire anatomy. I am thrilled about the many research opportunities that await all current members in the Clinical Science Advisory Commission over the next 3 years.

Dr Michael Fehlings is a neurosurgeon at the Toronto Western Hospital and Vice Chair of Research for the Department of Surgery at the University of Toronto. Dr Fehlings combines an active clinical practice in complex spinal surgery with a translationally oriented research program and has been a long-time member of AO Spine.

Dr Philip Louie graduated from the University of Washington School of Medicine in 2014 and works as a spine surgeon in the Department of Neurosurgery at Virginia Mason Franciscan Health in Seattle. Dr Louie is the recipient of multiple academic awards including the Orthopaedic Innovator Award from the American Academy of Orthopaedic Surgeons (AAOS).

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