



CREATIVE PROFESSIONAL ACTIVITY

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Creative Professional Activity (CPA) Dossier

1. Development and Clinical Application of Arthroscopic Procedures

1. *Knee arthroscopy...procedural development and outcomes.*

I developed specialized techniques for knee arthroscopy with novel applications. Synovectomy was previously performed by open surgical techniques with significant morbidity. Our research demonstrated safe portals with cadaveric experiments. Then this was applied to humans. So, for example, the work on the prognosis and results for Pigmented Villonodular Synovitis is still standard today. The information was propagated by peer reviewed publications, meetings, workshops and video presentations. The 6 portal arthroscopic synovectomy is the current standard.

Our team at UHN has started on a major research project on Stem Cells for Osteoarthritis of the knee. My role was to develop the ideas, bring together a multidisciplinary team including basic scientists and clinicians, and also be the major clinical participant. At the same time I thought it was very important to mentor younger members of the group and give them meaningful responsibility. It is funded for \$550,000 for 2 years.

I have also used large population studies from Administrative databanks to assess the long term outcome of these procedures and recommend clinical care. More recently qualitative analysis techniques have been used to define specific themes that affect patients such as reasons to return to sports (or not).

2. *Ankle arthroscopy...techniques and results.*

I was a pioneer in the development and use of arthroscopic procedures in the ankle. This included anatomical descriptions, and outcome measures. The techniques for arthroscopic ankle arthrodesis were published along with long term outcomes showing superiority to open techniques. Classifications for pathology were published. The latter had to be developed as none existed previously. Papers were published on the subject and presented at national and international meetings. I also ran courses along with the Arthroscopy Association of America on ankle arthroscopy. Gradually this has become a standard procedure in orthopedic surgery.

3. *Shoulder and elbow arthroscopy...development on new approaches.*

I was one of the first to publish large series of techniques and outcome measures for shoulder and elbow arthroscopy. Most important were the studies comparing the new procedures to conventional treatment (for example arthroscopic acromioplasty and rotator cuff repair). Also explored were alternative methodologies to find the best approach, as in subacromial decompression. The first research on frozen shoulder release including the special problem of diabetics was addressed and published in a prospective series. The information was disseminated in peer reviewed papers, book chapters, presentations and workshops.

A. Basis of Contribution

i) Creative Excellence and Professional Innovation

The techniques were in their infancy. I have been able to develop new techniques that are now widely practiced...

For example

Arthroscopic Synovectomy for various knee diseases

Arthroscopy of the Ankle including outcome scales (Ogilvie-Harris score) and classification of disease

Arthroscopic techniques in the shoulder and elbow such as capsular release and portal placement

Initiating the UHN stem cell study for osteoarthritis of the knee.

Using population studies and qualitative assessments to define outcomes

ii) Exemplary Professional Practice

Based on the research above, my results were propagated by peer reviewed publications, meetings, workshops and video presentations.

Clinical fellows.

I have taught and mentored clinical fellows for 30 years. They have been selected both nationally and internationally. The teaching and research experience has enabled these procedures to be widely disseminated. An arthroscopy program has been set up at the University on West Indies in Jamaica by one of my fellows with my help and support.

Visiting professorships.

Over the years I have been visiting professor across many continents. My knowledge and expertise is specifically sports medicine and arthroscopy. This has helped spread interest and development in the local Universities.

University of the West Indies.

I have had a close association with the University of the West Indies. I have been external examiner in Orthopedics for the Board of Examiners for 6 years. In this role, I helped set the teaching program for sports and arthroscopy...including training staff in Toronto, and teaching on site. The program was changed to use OSCE assessments, and a mutual trial was conducted to assess UWI residents comparing them to Toronto trainees. The result has been a major improvement in knowledge, skill set and assessment. As part of the duties of an External Examiner I met with the Dean of the Faculty of Medicine each year, and provided oral and written recommendations for change and improvement.

Fundraising.

Initially I raised funds for the "Smith and Nephew" professorship of Orthopedic Research. Subsequently by further funding, this is now a full chair.

I was instrumental as part of a team at UHN in raising \$35 million for research in Osteoarthritis. My role was developing strategy for research, directly promoting the cause to patients, and organising and participating in fund raising events. This was a team effort for the whole division and the foundation.

B. Comment

As a result of this work, the knowledge base for arthroscopic procedures on an international basis was significantly advanced. I was able to show the wide application of these techniques to joints other than the knee. The early publications are still widely cited as they lay the groundwork for subsequent advances. Subsequent work has further defined risks and benefits of these procedures, specifically the population studies and qualitative assessments.

C. Documentation of Contributions

I developed specialized techniques for knee arthroscopy with novel applications. Synovectomy was previously performed by open surgical techniques with significant morbidity. In our paper “*Posterior portals for arthroscopic surgery of the knee. Arthroscopy. 1994: 10(6): pp 608-613; Ogilvie-Harris DJ, Biggs D, Weisleder L, McKay M*”, we demonstrated safe portals with cadaveric experiments. Then this was applied to humans with excellent results “*Ogilvie-Harris DJ, Biggs D, Weisleder L, McKay M. Posterior portals for arthroscopic surgery of the knee. Arthroscopy. 1994: 10(6): pp 608-613*”.

Studies on the ankle defined the biomechanics of the syndesmosis as well as the arthroscopic treatment and outcome “*Disruption of the ankle syndesmosis: diagnosis and treatment by arthroscopic surgery. Arthroscopy. 1994: 10(5): Ogilvie-Harris DJ, Reed S. pp 561-568*” and “*Disruption of the ankle syndesmosis: biomechanical study of the ligamentous restraints. Arthroscopy. 1994: 10(5): pp 558-560 Ogilvie-Harris DJ, Reed S, Hedman T*”.

A classification system was developed for the evaluation of results of ankle arthroscopy “*Chronic ankle pain following sprains: Results of arthroscopic treatment. Arthroscopy. 1997: 13: pp 564-74 Ogilvie-Harris DJ, Gilbert M, Chorney K*”. This is now used as the “Ogilvie-Harris score” for assessment of the results in the ankle “*The Ogilvie-Harris scoring system, a visual analogue scale of patient satisfaction, the time to return to full activities and the ability to return to sports determined the clinical outcome*”quote from “*Open treatment of anterior impingement of the ankle by R. Coull, T. Raffiq, L. E. James, M. M. Stephens from J Bone Joint Surg [Br] 2003;85-B:550-3*”.

In the upper extremity we showed the superiority of arthroscopic techniques to conventional treatment “*The resistant frozen shoulder: Manipulation versus arthroscopic release. Clinical Orthopaedics and Related Research. 1995: 319: pp 238-248; Ogilvie-Harris DJ, Fitsialos D, Biggs D, MacKay M.*” We were also able to address the specific problems of the diabetic frozen shoulder which is resistant to conventional treatment “*The Diabetic Frozen Shoulder. Arthroscopy. 1997: 13: Pp 1-8; Ogilvie-Harris,D. J. Myerthall,S.*”

Work on population groups, specifically Ontarians, has led to interesting and useful observation for long term outcomes. These studies are of international significance due to the large numbers and rigorous approach. This led to specific recommendations, such as avoiding the high risk of re-injury in the first 2 years after ACL repair (over 90% of all re-injuries). “Wasserstein D. Khoshbin A. Dwyer T. Chahal J. Gandhi R. Mahomed N. Ogilvie-Harris D. Risk factors for recurrent anterior cruciate ligament reconstruction: a population study in Ontario, Canada, with 5-year follow-up. *American Journal of Sports Medicine*. 2013 Sep;41(9):2099-107”

The qualitative studies point to a variety of reasons as to why perfect clinical results do not necessarily correlate with functional results, in this case return to sports. It points to such outcome measures as being an unreliable end point of assessment. “VK Tjong, MD, ML Murnaghan, MD, SM Buret, J Nyhof-Young, PhD, DJ Ogilvie-Harris MD. A qualitative investigation of the decision to return to sport after anterior cruciate ligament reconstruction: to play or not to play. *American Journal Sports medicine*. 2014 Feb 18;42(2):336-42”

The stem cell activity is a continuation of assessment of new technologies and their application. “Wolfstadt JI, Cole BJ, Ogilvie-Harris DJ, Viswanathan S, Chahal J. Current concepts: the role of mesenchymal stem cells in the management of knee osteoarthritis. *Sports Health*. 2015 Jan;7(1):38-44”

2. University of Toronto Orthopaedic Sports Medicine Program (UTOSM)...innovation in education and research.

A. Basis of Contribution

i) Creative Excellence and Professional Innovation

I was appointed as Interim Program Director in 2010. A Sports program did not exist in Orthopaedics, and this was recognised as a major weakness. My mandate to develop a University program. A recent 5 year external review recognised the tremendous advances and the development of on an internationally competitive program based on

- a. Presentations at national and international meetings
- b. Prizes won by staff, residents and fellows at national and international meetings (8)
- c. Peer reviewed publications by the group (2010 – 6: 2011 – 22: 2012 – 42: 2013 – 52: 2014 – 44)
- d. Research funding (2011 to 2014 – over \$1 million)
- e. Recruitment of 6 new staff in 5 years.
- f. Fellowship training program...from none to 8 per year
- g. Establish a research program in competency assessment, and establish a leadership role in this area, including knowledge, decision making and technical skills.
- h. Develop, validate and apply “non-scholar” CanMeds evaluations...e.g. communicator, professional.

ii) Exemplary Professional Practice and iii) Contributions to the development of professional practices

To build the program I had to implement the following steps:

- a. **Develop a strategy.** Getting together the existing staff across the University Hospitals and preparing a group plan in which all benefitted...consisted of meetings, retreats, and visioning.
- b. **Develop an identity.** The program is called University of Toronto Orthopedic Sports Medicine. (UTOSM). I have developed a logo and a strategic plan. I have set up a website that includes sections of educational material for both for health professionals and patients. The website also has the links for fellowship and resident teaching, and hosts our archive of sports rounds.
- c. **Implement the strategy.** The plan based at Women's College Hospital required that I negotiate clinical resources for the new program, operating time and equipment, research space and a bioskills laboratory.
- d. **A curriculum for residency teaching.** I had to design a comprehensive teaching program including knowledge and bioskills training in sports. This was a Competency Based Program. I developed the testing and competency standards including validated OSCEs. I developed a research program in competency assessment including setting standards and validating the evaluations.
- e. **Bioskills and simulation.** I set up the Simulation Laboratory at W.C.H. It is largely industry funded. The residency and fellowship curriculum consists of weekly training sessions. Every 3 months validated procedural testing is carried out, with minimum standards set for competency. I have been instrumental in the research and publications that set these standards. In addition I developed a cadaveric based teaching curriculum that include assessment of competence at Mt. Sinai.
- f. **Research and application of evaluation methodology.** The results of this comprehensive evaluation methodology has been published and has been adopted widely. It is a key part of the larger Competency Based Curriculum (CBC) of the Division of Orthopedics at U of T. I was an early adopter and leader in setting up excellent modules that were emulated by other programs. In particular, this program was able to incorporate existing and CBC training, and training across all teaching hospitals concurrently.
- g. **Administrative support.** I was able to raise funding support for the program and appoint a research coordinator. This allows efficient organization in education and research.

- h. **Research.** My leadership in coordinated research projects have led to more than 50 papers a year in peer review journals by the group (from 1 or 2 before the program). Innovation combining the individual talents has led to integrated projects not possible before...for example joint assessment both qualitative and with bio monitoring in ACL rehabilitation.
Two highly significant articles are on qualitative research in the “return to play” decision for sports after knee and shoulder repairs. We were able to show that the actual metrics of excellent repair was not the major factor in returning to sport. This has had the effect of changing the end point of the assessment of the effectiveness of the surgery. Such qualitative research will one priority.
- i. **Fellowship.** Develop a city wide Fellowship program, where none existed before. This consisted of drawing up a curriculum for fellows, arranging rotating fellowships across all University hospitals, centralised bioskills training, and research mentorship. This included professor rounds, research operations and funding. I have instituted testing and standard setting for fellows. This year we have 6 Canadian fellows and 2 non Canadians. We have roughly 80 to 90 applicants for the posts, and have been able to attract highly qualified and productive individuals. We are now assessing competency of the fellows and setting appropriate standards.
- j. **Cross City Rounds.** I organised and moderated these rounds established in 2011. They are web based, with two thirds of the attendees being remote. The rounds are evidence based in Sports Medicine and alternate between Primary Care and UTOSM. This has built interdisciplinary coordination, and attendees include surgeons, primary care physicians, physiotherapists, chiropractors and trainees amongst others.
- k. **Recruitment.** I have been able to recruit 6 new staff surgeons across the University hospitals as part of UTOSM. My role consisted of identifying the individuals, assessing and developing the fit, being part of the search committee. Most important has been career development and mentoring for the new appointees. A key determinant of the appointments was the viability and inclusion in UTOSM as a unifying academic unit. Without UTOSM, none of the Hospitals were interested in a sports program. The impact on a global scale is important, as this (UTOSM) is now one of the biggest academic programs.
- l. **Feedback and response.** I felt that a key part of UTOSM strategy was feedback and constant re-assessment and evolution. Initially I set up a web based feedback instrument for sports alone. This provided the information and statistics for change both from staff and trainees. The method was then adopted for the whole Division. The assessments allow monitoring of attendance, feedback of training sessions, and are incorporated into the requirements for promotion through residency years.

B. Comment

Within UTOSM I have established a model for training residents which is generally applicable. This is especially as part on the Competency Based Curriculum. It is also applicable both to Sports training elsewhere and for other orthopedic modules such as arthroplasty. It provides a new paradigm for training and assessment, validated assessment procedures...and the mechanism for setting up such a program. That is, it is probably the techniques and procedures that are as important as the content.

The University wide group can work effectively outside of a hospital clinical structure. It applies to staff surgeons, trainees and patient care. This brings with a great increase in research and clinical cooperation. Using current internet technology, UTOSM has effectively overcome geographical issues with minimal costs...e.g. skype, webcasts, website, twitter. This is not only effective locally, but also establishes a model which others are emulating. Recently Duke University have requested help to set up a similar program.

A major part of the program has been use of this model to develop, test, validate and publish tools for assessment of competency in surgery. This included developing the curriculum (Delphi methodology), validated OSCEs, validated assessments of technical skills in both the laboratory, cadaveric specimens and real life operating rooms, as well as non-scholar CanMeds skills.

C. Documentation of Contributions

REPORT / EXTERNAL REVIEW ON THE UNIVERSITY OF TORONTO SPORTS MEDICINE PROGRAM (UTOSM) A. Amendola MD University of Iowa January 28, 2015

“The Division of Orthopaedic Surgery at the University of Toronto has an extraordinary history of contribution to patient care, education, and research and is a leader among the elite academic orthopaedic programs in North America. As part of the Division, the Sports medicine program (UTOSM) has made significant strides in the last 5 years despite significant obstacles, to become a University based program with all affiliated hospitals. This has occurred because of the infusion of a large group of well-trained, enthusiastic and collaborative faculty.”

“Five years ago Dr. Ben Alman (chair of orthopedics at the time) selected Dr. Ogilvie Harris as the director of the sports medicine program. Everyone interviewed in this review felt that Dr. Ogilvie-Harris has performed very well in this position. It was felt that he has recruited and supported the new faculty, dedicated significant time to the program, very collaborative and supportive of all members of the program in particular the young faculty. Overall the program has been reinvigorated with the infusion of young faculty”

UTOSM Vision 2105:

The advancement and application of surgical science in soft tissue trauma and sports injuries for the benefit of all society

Goals:

- Provide expert evidence based care for soft tissue trauma and sports injuries, including specialised care for complex problems
- To advance science in soft tissue and sports trauma by design, implementation and participation in quality clinical trials
- To measure health services outcomes and assess population health through value and access to care
- To develop and establish novel methods of assessing competence in postgraduate medical education, with a focus on surgical simulation
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Strategy – Diversity, Focus, Expertise:

A diversified approach that involves expertise across focused endeavors in clinical care, research, and education in the field of musculoskeletal soft tissue trauma and sports injury.

The collaborative nature of the UTOSM research is exemplified by our paper “Dwyer T, Whelan DB, Khoshbin A, Wasserstein D, Dold A, Chahal J, Nauth A, Murnaghan ML, Ogilvie-Harris DJ, Theodoropoulos JS. The sizing of hamstring grafts for anterior cruciate reconstruction: intra- and inter-observer reliability. *Knee Surg Sports Traumatol Arthrosc.* 2015 Apr 23;23(4):1197-200”. This includes authors from all the teaching hospitals in the U of T group including the Hospital for Sick Children. It represents a significant change in the scope of research activity by crossing individual hospital barriers. Other articles of significance are inclusive of group members across the board, emphasizing the importance of our cooperative efforts under my guidance. “Timothy Leroux; Darrell Ogilvie-Harris; Christian Veillette ; Jaskarndip Chahal ; Tim Dwyer ; Amir Khoshbin; Patrick Henry ; Nizar Mahomed ; David Wasserstein. *The Epidemiology of Primary Anterior Shoulder Dislocation in Patients Aged 10-16 Years. Am J Sports Med.* 2015 Aug”

The work on validation of residency training especially focusses on competency assessment “Dwyer T. Theodoropoulos JS. Herold J. Henry P. Wasserstein D. Murnaghan ML. Wade V. Hodges B. Semple J. Ogilvie-Harris D. *Assessing competence of orthopaedic residents: the reliability and validity of an objective structured clinical examination after a sports medicine rotation. Journal of Bone & Joint Surgery - American Volume.* 95(22):e177, 2013 Nov 20. 2013 Nov 20;95(22):177” It was important to discover that even with the Competency Based Curriculum there were differences in the learning rates between junior and senior residents which required attention within the system. “T.Dwyer, D.J.Ogilvie-Harris et al. *Competency-Based Medical Education: Can Both Junior and Senior Residents Achieve Competence After a Module? Journal of Bone and Joint Surgery.* 2015 Aug”

Surgical skills assessment has also been subject to rigorous evaluation and we have also been able to demonstrate cost effectiveness and efficiency. “Tim Dwyer MBBS, Veronica Wade MD, MEd, Douglas Archibald PhD, William Kraemer MD, John Townley MD, Darrell Ogilvie-Harris MD, MSc, Massimo Petrera MD, Peter Ferguson MD, MSc, Markku Nousiainen MD, MEd. *Entrustable Professional Activities in Orthopaedics: Simulation-based Assessment of Competency. clinical orthop and related res.* 2015 Aug.”

The ability to reliably assess non scholar CanMeds competencies was a novel application of the OSCE format. We used simulated participants which included simulated health care professionals and relatives for the evaluation of interpersonal interactions. “Dwyer T, Glover Takahashi S, Kennedy Hynes M, Herold J, Wasserstein D, Nousiainen M, Ferguson P, Wade V, Murnaghan ML, Leroux T, Semple J, Hodges B, Ogilvie-Harris D. *How to assess communication, professionalism, collaboration and the other intrinsic CanMEDS roles in orthopedic residents: use of an objective structured clinical examination (OSCE). Can J Surg.* 2014 Aug;57(4):230-6”