

AO Education Institute

# Educational Research Output

Journal articles, presentations, posters, and publications (2011–2014)



Thanks to all authors, presenters,  
and contributors to our research

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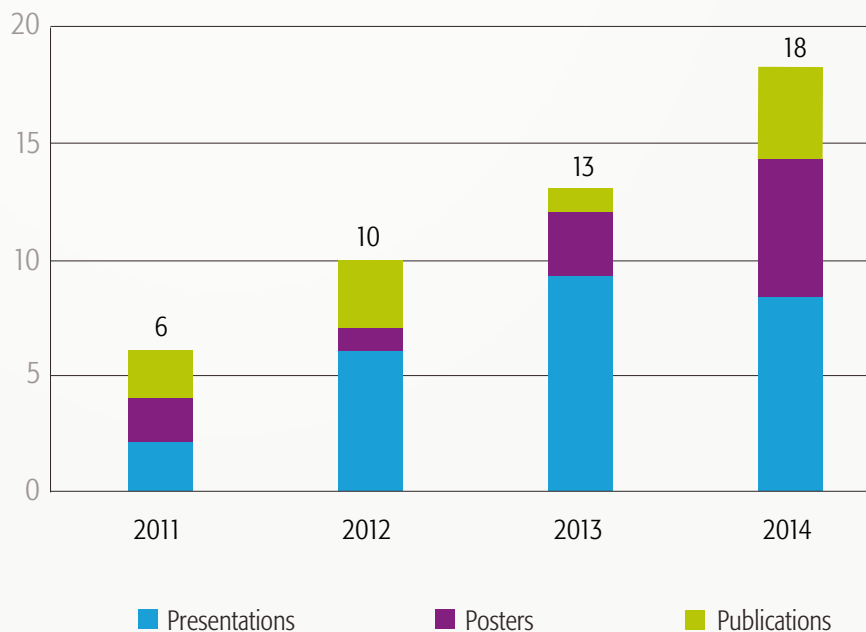
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Research Output (2011–2014)



# Foreword

Over the past few years, research at the AO Education Institute has increased dramatically. Now, we regularly have presentations and posters at the major medical educational conferences and are publishing in the leading journals in the field. These activities help to promote and differentiate our education and also show that our external peers acknowledge the high quality of our work.

Please take the time to familiarize yourself with our most recent projects. We hope you will join us on the journey to expand our research initiatives and publish further contributions in the future.



**Suthorn Bavonratavech**  
Chairperson,  
AO Education Platform  
(2013–2014)



**Norbert Haas**  
Chairperson,  
AO Education Platform  
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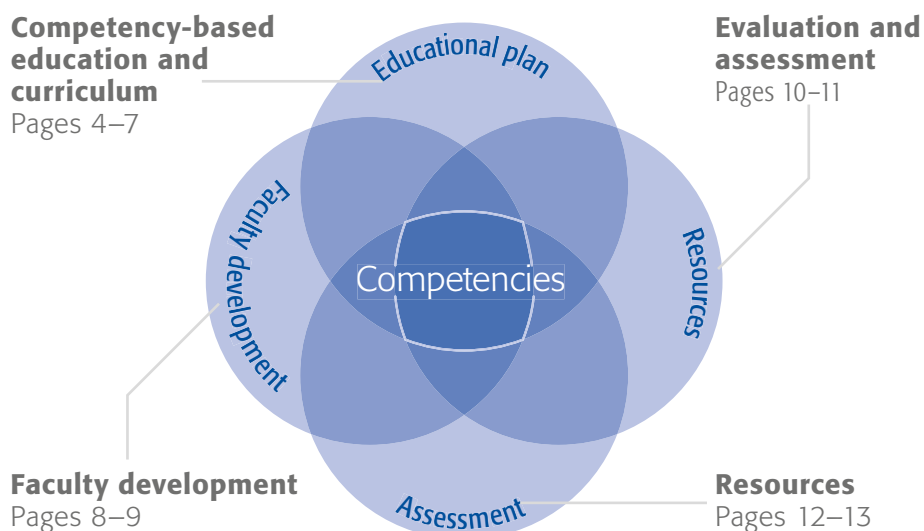


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## Global Needs Analysis in orthopedic trauma for practicing surgeons: The Asia Pacific perspective

**Lap Ki Chan**  
**Wilson Li**  
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Poster: Asia Pacific Medical Education Conference (APMEC) 2014, Singapore



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### Introduction

Needs assessment is one of the key steps in curriculum planning in medical education. To ensure best quality and effectiveness in designing and delivering educational activities, AOTrauma's Education Commission decided to conduct a Global Needs Analysis in orthopedic trauma for practicing surgeons.

### Materials and methods

During July to November 2012, an email invitation to participate in an online survey was sent to our members and community globally. Through collaboration with orthopedic and orthopedic trauma societies and associations in several countries, a large number of non-member surgeons were also invited to participate in this needs analysis.

### Results

A total of 4,316 surgeons practicing orthopedic trauma (52%), general orthopedics (16%), general trauma (16%), and specialty orthopedics (14%) participated worldwide. The survey was offered in multiple languages and 875 responses were received from Asia Pacific, including India (229), China (196), Japan (184), Thailand (33), Malaysia (30), and Australia (26). Over 70% of participants completed all 30 questions. Standard statistical methods were used to analyze the quantitative and qualitative data. An expert panel of surgeons interpreted the resulting information and decided several specific actions for delivering education within our curricula for orthopedic trauma and subspecialty areas. Ten key observations were identified globally (eg, preference for increased use of many types of educational events, particularly courses, online education, and consultation with experts, main barriers to face-to-face education are time away from practice and cost), and regional variations were detected.

### Conclusions

Our survey data confirmed that needs analysis is a valuable step in curriculum planning for surgeon education. The information and resulting actions help our organization to meet the educational needs and preferences of participants on a regional and country specific-basis, within our global framework and target audience.

Involving residents in the development of an interactive, web-based learning and self-assessment hub

**Kathrin Lüssi, Kokeb Abebe, Doris Straub Piccirillo, Kodi Kojima, Wa'el Taha**

Presentation: Association for Medical Education in Europe (AMEE) 2014, Milan



## Global Needs Analysis in orthopedic trauma for practicing surgeons: The Canadian perspective

**Richard Buckley, Mark Reilly, Claude Martin Jr**

Poster: Canadian Orthopaedic Association 2014, Montreal



## The use of MRI in orthopaedic trauma surgery (Anwendungsgebiete des MRT in der Traumatologie)

**Michael Kraus, Frieder Mauch, Bettina Ammann, Mike Cunningham, Florian Gebhard**

Article: Der Unfallchirurg (The Trauma Surgeon). 2014;117(3):190–192



## Orthopedic and Trauma Surgeons: CPD in Community Hospitals

A study of different educational needs and preferences  
**Piet de Boer**

Publication: The AO Education Institute, April 2014. 1st ed. Thieme. ISBN-13: 978-3131987914.



## Needs Analysis for a Performance Improvement Program in Intraoperative Imaging of the Proximal Femur

**Claude Martin Jr**

Masters in Medical Education Thesis, 2013. Thesis integrated in the imaging performance improvement project (Daniel Rikli et al).



## Global Needs Analysis in orthopedic trauma for practicing surgeons: The Middle East perspective

**Wa'el Taha, Koji Kojima, Mike Cunningham**

Presentation: AMEEMR 2013, Riyadh

## Global implementation of a competency-based curriculum for spine surgeons.

**Laurence Rhines**  
**Carlo Bellabarba**  
**Germán Ochoa**  
**Bryan Ashman**  
**Jane Thorley Wiedler**  
**Mike Cunningham**

Presentation: CME Congress 2012,  
Toronto



### **Synopsis**

AOSpine has implemented a competency-based curriculum based on patient care and problems in a range of spinal pathologies. This consistent global framework for optimizing the effectiveness of educational activities to fulfill the learning needs of practicing spine surgeons throughout their career has been piloted in 10 events worldwide during 2011.

### **Purpose**

To describe the development and global implementation of the competency-based AOSpine Curriculum for the continuing professional development of spine surgeons with the aim of improving patient care and outcomes.

### **Methods**

The new AOSpine Curriculum was implemented in 10 events in 9 countries during 2011, involving 350 learners and 80 faculty worldwide. The curriculum was provided as a framework for instructional design and content development and a complete module on implementation was developed and integrated into faculty training. Pre and postcourse assessment and a commitment to change were administered.

### **Results**

Data and conclusions from the 10 Curriculum pilot events will be presented, with a focus on pre and postcourse self-assessments (subjective and objective components), commitment to change, and faculty development/involvement to ensure implementation. Regional variations will be highlighted, as well as analysis of differences based on the level of experience and on the spinal pathology.

## The AOSpine Curriculum: Global framework, regional implementation

**Germán Ochoa, Bryan Ashman, Tatjana Topalovic, Mike Cunningham, Miriam Uhlmann**

## AOSpine Continuing Education Program: New approaches for medical education

**Osmar Moraes, Néstor Fiore, Luciana Garcia**

Presentations: Global Alliance for Medical Education (GAME) Online Conference, June 25, 2014.

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The Alliance for Continuing Education in the Health Professions



Effective integration of webinars in a competency-based curriculum for spine surgeons worldwide

**Kate de Boer, Tatjana Topalovic, Rudolf Elmer**

Poster: Association for Medical Education in Europe (AMEE) 2014, Milan

Global Needs Analysis in orthopedic trauma for practicing surgeons: The European perspective

**Peter Brink, Mike Cunningham**

Presentation: ECTES 2013, Lyon and GAME 2014, Barcelona

Abstract: Eur J Trauma Emerg Surg. 2013; Suppl 1:S1-S162.

Using Trigger Videos for Multi-Disciplinary Team Learning

**Stephen Kates, Jane Mihelic, Kimberly Aguilar, Mike Cunningham**

Workshop: Alliance for CEHP 2013, San Francisco

Barriers to orthopaedic practice: Why surgeons do not put into practice what they have learned in educational events

**Piet de Boer, Rick Buckley, Pascal Schmidt, Bob Fox**

Article: Injury. 2012;43(3):290-294.

Changing Patterns of Lifelong Learning

**Piet de Boer, Bob Fox**

Publication: AO Education Institute, 2012

Developing and implementing a patient-centered orthogeriatrics program for a global audience

**Stephen Kates, AOTrauma Orthogeriatrics Taskforce, Mike Cunningham, Jane Mihelic, Clint Miner, Jane Thorley Wiedler**

Poster: CME Congress 2012, Toronto

### Development, implementation, and evaluation of a competency-based global faculty education program

**Miriam Uhlmann**  
**Clint Miner**  
**Mike Baumgaertner**  
**Robert Fox**  
**Jane Thorley Wiedler**

Presentation: 2nd International Conference on Faculty Development in the Health Professions 2013, Prague

*International Conference on*  
Faculty Development in the Health Professions

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#### **Introduction**

The development of AOTrauma's 2,500 faculty members is a challenge. This global organization provides CPD to about 25,000 trauma surgeons in different parts of the world to address regional needs, cultures, and languages. The existing faculty training was reaching only a small number of faculty, its effectiveness was in doubt, and it lacked an assessment process. An innovative new global Faculty Education Program (FEP) firmly based on sound adult learning theories was initiated.

#### **Methods**

Using an adapted backward planning process (Moore et al) starting with teaching problems, we identified teaching gaps in knowledge, skills and attitudes, which were formulated as competencies. To achieve the desired outcomes, we structured the FEP curriculum around the predisposing–enabling–reinforcing instructional framework as developed by Green and Kreuter. Several studies have shown that this approach was associated with improved CPD outcomes. An evaluation/assessment process based on the four levels of outcomes of adapted from Miller was developed with the following instruments: pre- and postcourse self-assessment, formative evaluation with feedback, summative evaluation at the end of the program, commitment-to-change contract, assessment (peers, participants) on teaching performance.

#### **Results**

The program was implemented globally in 2011 and 2012—a total of 350 faculty members have since been educated. The results demonstrate that a competency-based approach is ideal for designing and implementing faculty development programs of global scope to provide standardized but adaptable curricula that can be delivered by a diverse body of faculty to meet the needs of an equally diverse body of learners.

#### **Discussion**

The FEP can be used as a model for developing faculty programs in medical education organizations confronted with increasingly complex educational methods, the implications of new technology, and a global faculty and student composition.

The importance of faculty development for the global implementation of a new competency-based curriculum targeted at orthopedic residents

**Nathalie Rutz, Miriam Uhlmann, Kathrin Lüssi**

Presentation: Association for Medical Education in Europe (AMEE) 2014, Milan



International Conference on  
Faculty Development in the Health Professions



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Continuing Education in the  
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Faculty education program: overcoming barriers to engagement in online activities

**Miriam Uhlmann, Clint Miner**

Presentation: 2nd International Conference on Faculty Development in the Health Professions. 2013, Prague

Implementation of a competency-based global faculty education program

**Lap Ki Chan, Wilson Li, Miriam Uhlmann, Bob Fox, Clint Miner, Michael Baumgaertner**

Presentation: APMEC 2013, Singapore  
Best Oral Presentation Finalist  
Abstract: Medical Education. 2013;47(s2):1-15.

Member Section Meeting—Medical Specialty Societies—Junior Faculty Member's Guide to Success

**Joseph S Green, Janice Sibley and Marcia Jackson (American College of Cardiology Foundation), Chitra Subramaniam and Katherine Grichnik (Duke Center for Educational Excellence), Miriam Uhlmann (AO Education Institute)**

Expert panel: Alliance for CEHP 2012, San Francisco

Implementation of a competency based global faculty education program

**Miriam Uhlmann, Clint Miner**

Presentation: Alliance for CEHP 2012, Orlando

Faculty Development Program for an international surgeon-driven, non-profit organization

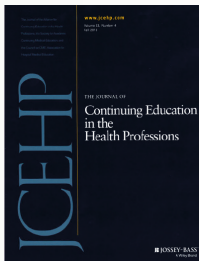
**Miriam Uhlmann, Michael Baumgaertner, Clint Miner**

Presentation: 1st International Conference on Faculty Development in the Health Professions. 2011, Toronto

### Using a commitment to change tool for evaluation and planning of a global competency-based curriculum in orthogeriatrics

**Michael Cunningham**  
**Stephen Kates**  
**Michael Blauth**

Article: *J Contin Educ Health Prof.* 2014; 34(2):129–136.



#### **Introduction**

Measuring the outcomes of educational activities at the performance level is a challenge for all medical educators. This study reports retrospective outcomes data from the administration of a commitment to change (CTC) at orthogeriatrics courses and how the findings were used for curriculum improvement.

#### **Methods**

During 2010–2012, a CTC questionnaire was administered at 8 educational courses attended by 513 orthopedic and trauma surgeons and medicine physicians in 5 countries. The CTC asked if physicians intended to change anything in their clinical practice as a result of participating and to list their specific changes. A 3-month follow-up was conducted to assess the status of intended changes and identify barriers to implementation.

#### **Results**

Two hundred seventy-six (54%) of the 513 course participants and faculty reported at least 1 intended change in their clinical practice (485 specific changes overall). The intended changes were quantified and analyzed further based on 10 competencies for orthogeriatrics. Follow-up responses were received for N = 150 (31%) of the intended changes. Of these changes, 24% were fully implemented, 51% were partially implemented, and 25% were not implemented. The main barriers to implementation were categorized as “ongoing process (needs more time)” and “requires more discussion, collaboration, or support.”

#### **Discussion**

CTC is an effective tool for self-reported measurement of outcomes of educational activities at the performance level with orthopedic surgeons and an interprofessional audience. Analysis based on a framework of competencies enables curriculum improvement by identifying content that could be adjusted and new materials to address the reported issues and barriers.

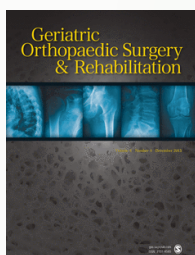
### Motivation gaps and commitment to change in residents education in orthopedic trauma

**Wa’el Taha, Pascal Schmidt, Kathrin Lüssi**

Poster: Association for Medical Education in Europe (AMEE) 2014, Milan

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J B J S The Journal of Bone & Joint Surgery

Does an online case-based experience help develop decision making skills for surgical residents?

**Kokeb Abebe, Kathrin Lüssi, Kodi Kojima, Wa'el Taha**

Poster: Association for Medical Education in Europe (AMEE) 2014, Milan

Evaluating the educational effect of a series of live pediatric trauma webinars

**Theddy Slongo, Jane Thorley Wiedler, Ruedi Elmer**

Presentation: ECTES & World Trauma Congress 2014, Frankfurt

Evaluating the educational effect of live webinars on orthogeriatrics

**Michael Blauth, Stephen Kates, Christian Kammerlander, Joseph Nicholas, Ruedi Elmer, Bettina Bolliger**

Presentation: IGFS 2013, Phoenix

Commitment to change: lessons learned in applying this tool in the education of orthopedic trauma and spine surgeons worldwide

**Mike Cunningham, Pascal Schmidt, Urs Rüetschi**

Presentation: AMEE 2012, Lyon

Early Experience in Implementation of a Learning Assessment Toolkit in the AOTrauma Geriatric Fracture Course

**Natasha O'Malley, Michael Cunningham, Frankie Leung, Michael Blauth, Stephen Kates**

Article: GOS. 2011;5-6(2):163-171.

Learning Assessment Toolkit

**Piet de Boer, Rick Buckley, Pascal Schmidt, Robert Fox, Jesse Jupiter**

Article: J Bone Joint Surg Am. 2010;92:1325-1329.

### Performance improvement program on MRI in spinal trauma

**Marguerite Müller**  
**Michael Kraus**  
**Florian Gebhard**  
**Bernd Schmitz**  
**Mike Cunningham**

Presentation: ECTES & World Trauma Congress Frankfurt, 2014  
Supported by an educational grant from Siemens.



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#### **Introduction**

Performance improvement (PI) programs have not been fully explored with surgeons who manage fractures and related musculoskeletal injuries. This educational research aimed to deliver an effective PI program to orthopedic trauma surgeons, neurosurgeons, and radiologists to improve communication and the use of MRI in spinal trauma.

#### **Material and methods**

A 3-step PI process was defined and implemented over a 6-month period in one hospital department: 1.) opportunities for improvement were identified by applying a 10-item quality checklist to 25 cases, 2.) a focused educational intervention was delivered to address identified gaps, and 3.) a set of 25 post-education cases was compared.

#### **Results**

24 cases collected prior to the educational intervention showed several areas for potential improvement. In only 4 out of 24 cases a specific trauma mechanism or a possible inflammatory or malignant illness were mentioned by the surgeon, where such information may lead to a change of MRI sequence planning. In 23 cases the radiologist did not believe that the communication led to a change of plan, although sequences other than usual were carried out. In 4 cases the radiologist did not believe that the indication was appropriate though the MRI was carried out. To improve the performance an educational intervention with surgeons and radiologists was delivered to point out the data and possible impact.

#### **Conclusion**

There are specific aspects that may be improved concerning communication between the surgeon and the radiologist. Our post-educational intervention data will demonstrate if improvements were achieved after 6 months.

### Intended use of an educational app on medical aspects of orthogeriatrics by surgeons

**Katrin Singler, Markus Gosch, Tobias Roth, Mike Cunningham**

Poster: Association for Medical Education in Europe (AMEE) 2014, Milan



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**Almanac**

## Using Trigger Videos for Multidisciplinary Team Learning

**Mike Cunningham, Jane Mihelic, Kimberly Aguilar, Stephen Kates**

Case Study from AO Foundation. Almanac. 2014;36(1):4–5.



## Are webinars an effective educational tool to improve spinal patient care?

**Kate de Boer, Ruedi Elmer, Mike Cunningham**

ePoster: AMEE 2013, Prague



## Design and implementation of performance improvement programs for orthopedic trauma surgeons

**Urs Rüetschi, Mike Cunningham, Claude Martin Jr, Florian Gebhard, Michael Kraus, Bettina Amman, Frieder Mauch, Thomas Blattert, Marguerite Müller, Bernd Schmitz, Daniel Rikli, Michael Blauth, Franz Seibert, Samir Mehta**

Poster: AMEE 2013, Prague

Supported by an educational grant from Siemens.



Global Alliance for Medical Education

## The Playground for Orthopaedics and Trauma Surgeons: A New Workshop to Teach Basic Biomechanical and Surgical Skills to Upcoming Surgeons

**Giuseppe Alajmo, Urs Schlegel, Romano Matthys, Emanuel Gautier**

Poster: GAME 2011, Munich



## A cognitive perspective on technology enhanced learning in medical training: Great opportunities, pitfalls and challenges

**I Dror, Pascal Schmidt, L O'Connor**

Article: Med Teach. 2011;33(4):291–296.

### Usability Test: AO Surgery Reference

**Tobias Hövekamp**  
**AO Surgery Reference Editors**

Internal report: AO Education  
Institute, 2011



#### **Introduction**

A usability study of AO Surgery Reference was designed based on three scenarios: Preparation for surgery, looking for a specific approach, and finding additional information.

#### **Methods**

During the Davos courses in 2011, 17 surgeons participated in individual 45-minute usability tests. Interviews were conducted after completing each task/scenario to evaluate: Did the participant use the guided path?, Did they notice the information boxes on the right margin?, Did they notice the videos and/or eLearning material?, and What did they like best/least?

#### **Results**

Participant data were grouped by surgeons who knew Surgery Reference and those who did not know it and by first time users or advanced users. The results were clustered into categories of usability problems (navigation issues, content issues, etc). Short descriptions of the observation and the users' quotes were gathered in a comprehensive usability report.

#### **Summary of key findings**

- All users liked AO Surgery Reference and it met their expectations
- Some specific problems in navigation/information architecture were identified
- Some parts of the content were not clearly "visible" or obvious to users
- Smaller issues that could contribute to a better user experience were identified

#### **Outcome**

The data and findings were used to guide improvements to the AO Surgery Reference interface and navigation.

The AO Education Institute supports the AO Foundation and its clinical divisions to further develop and to transform medical education for our communities.

**Our vision** is excellence in the education of surgeons and operating room personnel leading to improved patient outcomes in the surgical management of trauma and disorders of the musculoskeletal system.

**Our mission** is to support the AO Foundation and the AO clinical divisions in the development and innovation of high-quality educational services and products.



Visit our website for the latest information:  
<http://tinyurl.com/q3rodmp>

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