AO Trauma Masters Course—
Current Concepts—
Tips from the Masters
Difficult Cases through the Eyes of Master Surgeons

December 1—6, 2019
Davos, Switzerland

Lecture room:
Sanada 1
The AO’s flagship educational event, the AO Davos Courses offer surgeons at all stages of their career outstanding educational and networking opportunities. Experience this pioneering spirit of peer-to-peer collaboration and learn skills that will help advance your career.

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Mission
The AO’s mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

Purpose statement
AO Trauma is committed to improve patient care outcomes through the highest quality education. We strive to combine the right knowledge and surgical skills that empower the orthopedic and trauma surgeons to put theory into practice and to improve fracture management for the benefit of the patient.

The AO principles of fracture management

1. Fracture reduction and fixation to restore anatomical relationships.
2. Fracture fixation providing absolute or relative stability, as required by the “personality” of the fracture, the patient, and the injury.
3. Preservation of the blood supply to soft-tissues and bone by gentle reduction techniques and careful handling.
4. Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.
Welcome
Dear AO Trauma course participant,

Welcome to AO Trauma’s first-class schedule of activities at the AO Davos Courses 2019. We provide a wide range of relevant courses designed to meet your specific professional needs—and we are confident that you will find your course and the networking experiences professionally rewarding.

With a global reputation for innovation, leadership, and excellence in continuing medical education (CME), AO Trauma and the AO Education Institute are transforming education by expanding the educational activities available to you. CME is not just about face-to-face courses. Our educational opportunities address the specific clinical problems that you encounter daily. Visit our website (www.aotrauma.org) to discover the latest educational activities.

At the AO Davos Courses 2019, AO Trauma offers you a chance to actively engage in your course as well as opportunities to:
• Interact with over 300 international faculty
• Expand your professional network by establishing contacts and new relationships with colleagues, including faculty and participants from over 80 countries
• Meet with staff and surgeons from the AO’s clinical divisions, institutes, and initiatives.
• Visit the AO experience or take a tour of our headquarters, the AO center, to gain insight into the AO’s ongoing activities and resources available to support you in your clinical work
• Experience the AO spirit of collegiality and camaraderie that is felt by participants and faculty alike

Your current level of knowledge, attitudes, and skills will be challenged throughout the week. At the same time, our best-in-class curriculum and faculty will provide you with a memorable learning experience that will remain with you for a lifetime.

Your experiences with us over the next few days will result in the realization of new and meaningful knowledge, skills, and understanding that we hope will translate into improved patient care.

If you enjoy your experience this week and want to stay in touch, we invite you to become a member of AO Trauma. Doctors of medicine and osteopathy who have completed AO Trauma basic principles course are eligible for membership; contact us to learn more.

Yours sincerely,

Wa’el Taha
Chairperson AO Trauma Education Commission

Kodi Kojima
Chairperson AO Trauma International Board
Course description
This course is delivered as three case-based modules per day, thereby covering nine difficult trauma fractures and injuries in depth over 3 days. Each module is delivered by one very experienced AO Trauma faculty member who will present a challenging trauma scenario that requires in-depth investigation, planning, operative intervention, and rehabilitation. Participants work through every step of the case along with the faculty member, and the faculty member then presents their plan, outcomes, best available evidence, and their philosophy on the management of the problem. During each module, participants will form small groups to make a preoperative plan—one or more groups will be invited to present their plan and there will be awards for the best plans throughout the course. Best evidence is presented through practical exercises, and simulations are integrated where appropriate.

Course structure
This five-day, Masters-level course comprises three one-day modules. Participants also select two from a wide choice of one-day self-directed learning modules.

Goal of the course
The course will demonstrate how senior AO surgeons collect data, organize and use evidence-based medicine to plan, and operationalize a very tough clinical trauma case. This will be shown in multiple ways in different anatomical scenarios so participants can learn how to plan and organize their next difficult trauma case.

Target participants
Surgeons who are experienced in the care of the trauma patient, but who wish to have an in-depth look at many very difficult clinical problems. Participants will want to "look over the shoulder" of the senior AO surgeon as they solve the toughest trauma cases.

Learning objectives
Upon completion of this course, participants will be able to:
- Apply evidence-based medicine to decision making in difficult and complex trauma cases
- Apply biomechanical principles to decision making in difficult and complex trauma cases
- Develop and implement a preoperative plan for all stages of difficult trauma cases
- Implement operative treatment decisions with planned clinical outcomes
- Recognize and manage unusual and rare clinical problems
- Identify performance gaps in practice and implement strategies to fill these gaps
Overall chairperson
Friedrich Baumgaertel
Private Practice, Vallendar, Germany

Chairperson
Christoph Sommer
Kantonsspital Graubünden, Chur, Switzerland

Co-chairperson
Rodrigo Pesantez-Hoyos
Fundacion Santa Fe de Bogota, Bogota, Colombia

International faculty
Richard Buckley
University of Calgary, Calgary, Canada

Jesse Jupiter
Massachusetts General Hospital, Boston, USA

Kodi Kojima
University of Sao Paulo, Sao Paulo, Brazil

Cong Feng Luo
Shanghai Sixth People's Hospital, Shanghai, China

Muhammad Wajid
Shalamar Medical & Dental College, Lahore, Pakistan

Regional faculty
Iain McFadyen
University Hospital of North Midlands, Stoke-on-Trent, United Kingdom

Nation faculty
Marius Keel
Clinic Hirslanden, Zurich, Switzerland
Self-directed learning module
External fixation

Learning objectives

Tuesday, December 3, 2019

External fixation for acute trauma and nonunion
Upon completion of this module, participants will be able to:
• Describe the principles of external fixation and correct techniques for wire and pin insertions
• Describe the principles of distraction osteogenesis
• Recognize the external fixation methods for acute trauma, nonunion and bone transportation
• Describe the methods and indications for unilateral external fixation and circular external fixation
• Apply the principles to manage acute trauma and nonunion with external fixation
• Apply the proper techniques in basic circular frame construction
• Recognize safe techniques, implementation of post-op care program, and manage complications

Thursday, December 5, 2019

External fixation for bone defects and deformity correction
Upon completion of this module, participants will be able to:
• Describe the principles of external fixation, distraction osteogenesis, and long bone deformity
• Analyze clinical, radiographic findings and the center of rotation of angulation (CORA)
• Describe the techniques using conventional circular frame and 6-axis hexapod systems to correct bone defects and deformity
• Apply the principles of management of bone defects and deformity correction with external fixation
• Perform long bone deformity correction using circular external fixation with hinges, the 6-axis hexapod system, and its software application
• Recognize safe techniques, implementation of post-op care program, and manage complications

Chair-person
Vajara Phiphobmongkol
Bangkok Hospital, Bangkok, Thailand

Co-chair-person
Andrey Volna
Ilyinsky Hospital, Ilyinskoe, Russia

International faculty

Sergio Iriarte Vincenti
Clinica del Sur | La Paz | Bolivia

Mahmoud Mahran
Medical School-Ain Shams University | Cairo | Egypt

Stephen Quinnan
University of Miami | Miami | USA

Spence Reid
Pennsylvania State University College of Medicine, Milton S. Hershey Medical Center | Hershey | USA

Regional faculty

Dankward Höntzsch
Private Practice | Tübingen | Germany

Leonid Solomin
Vreden Russian Research Institute of Traumatology | St.Petersburg | Russia

National faculty

Theddy Slongo
Inselspital | Bern | Switzerland
Self-directed learning module
Intramedullary nailing

Learning objectives

Tuesday, December 3, 2019

Nailing of complex fractures—special situations
Upon completion of this module, participants will be able to:
• Perform correct decision making and preoperative planning for nailing procedures for complex diaphyseal and metaphyseal fractures
• Perform correct decision making and preoperative planning for nailing procedures for special situations (osteoporotic bone, atypical fractures, polytrauma, and soft-tissue injury)
• Explain the indications and limitations of nailing for fractures involving articular segments
• Describe options for obtaining and keeping good reduction while nailing more proximal and distal diaphyseal fractures
• Explain how to minimize the likelihood of complications, and how to recognize and manage complications when they occur

Thursday, December 5, 2019

Complications related to nailing
Upon completion of this module, participants will be able to:
• Define and recognize delayed union, nonunion, malunion, and infection and carry out an appropriate diagnostic work-up
• Develop a treatment plan based on the cause
• Explain the treatment options and indications for delayed union and nonunion
• Explain the treatment options and indications for nailing in malunion
• Explain the treatment options and indications for infection and broken nails

Chair-person

Ernest Kwek
Tan Tock Seng Hospital, Singapore, Singapore

Co-chair-person

Christopher Finkemeier
Orthopedic Trauma Surgeons of North California, Carmichael, USA

International faculty

Hayder Abdul Hadi
Rashid Hospital | Dubai | UAE
Paulo Barbosa
Hospital Quinta D’Or | Rio de Janeiro | Brazil
Mark Lee
University of California, Davis | Sacramento | USA
Jong-Keon Oh
Korea University Guro Hospital | Seoul | South Korea
Chang-Wug Oh
Kyungpook National University Hospital | Daegu | South Korea

Regional faculty

Martin Hessmann
Academic Teaching Hospital Fulda | Fulda | Germany
Christian Kammerlander
Ludwig Maximilian University Munich | Munich | Germany
Self-directed learning module
Pediatric fractures

Learning objectives

Tuesday, December 3, 2019

Pediatric fractures of the upper extremity
Upon completion of this module, participants will be able to:
• Recognize how bone characteristics and fracture classification are different in children and adolescents compared to adults, and describe how this affects bone healing and fracture management
• Evaluate a range of nonsurgical and surgical options for the treatment of common pediatric fractures of the upper extremity
• Manage pediatric upper limb fractures according to biological and mechanical principles and apply appropriate techniques and technologies
• Apply treatment strategies for pediatric fractures of the upper limb based on available evidence and discuss areas of controversy
• Provide strategies for the prevention and management of complications associated with pediatric fractures
• Demonstrate the ability to perform proper fixation of common upper limb fractures in children and using the Elastic Stable Intramedullary Nailing (ESIN) in forearm fractures

Thursday, December 5, 2019

Pediatric fractures of the lower extremity
Upon completion of this module, participants will be able to:
• Recognize how bone characteristics and fracture classification are different in children and adolescents compared to adults, and describe how this affects bone healing and fracture management
• Evaluate a range of nonsurgical and surgical options for the treatment of common pediatric fractures of the lower extremity
• Manage pediatric lower limb fractures according to biological and mechanical principles and apply appropriate techniques and technologies
• Apply treatment strategies for pediatric fractures of the lower extremity based on available evidence and discuss areas of controversy
• Provide strategies for the prevention and management of complications associated with pediatric fractures
• Demonstrate the ability to perform proper fixation of common lower limb fractures in children and using the Elastic Stable Intramedullary Nailing (ESIN) in femoral fractures

Chair-person
Mamoun Kremli
Dallah Hospital, Riyadh, Saudi Arabia

Co-chair-person
Matej Kastelec
University Medical Centre Ljubljana, Ljubljana, Slovenia

International faculty

Daniel Green
Hospital for Special Surgery | New York | USA

James Hui
National University Hospital Singapore | Singapore | Singapore

Talal Ibrahim
Sidra Medical and Research Center | Doha | Qatar

Unni Narayanan
The Hospital for Sick Children | Toronto | Canada

Jamil Soni
Pontifical Catholic University Paraná | Curitiba | Brazil

Regional faculty

Arnold Besselaar
Maxima Medical Centre | Veldhoven | The Netherlands

Fergal Monsell
Bristol Childrens Hospital | Bristol | United Kingdom
Self-directed learning module
Polytrauma and soft tissue

Learning objectives

Tuesday, December 3, 2019

**Polytrauma**
Upon completion of this module, participants will be able to:
• Define and recognize a polytrauma patient from the clinical presentation and lab work
• Identify key clinical parameters that will direct surgical management and timing of care for polytrauma patients
• Use up-to-date principles to surgically manage a polytrauma patient based upon their clinical reaction to resuscitation
• Recognize that polytrauma is a disease that will affect a patient and their family for a lifetime

Thursday, December 5, 2019

**Soft tissue**
Upon completion of this module, participants will be able to:
• Demonstrate strategies for assessing and treating open fractures and mangled limbs
• Use soft-tissue techniques to create local and rotational flaps to deal with soft-tissue defects
• Understand surgical techniques and rehabilitation to ensure amputations are successful

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**Chair-person**
Richard Buckley
University of Calgary, Calgary, Canada

**Co-chair-person**
Waleed Abdulwahid
Alsaadan
Medical City Teaching Complex, Baghdad, Iraq

**International faculty**

Khalid Alawadi
Rashid Hospital | Dubai | UAE

Jay Bridgeman
Missouri Orthopedic Institute | Columbia | USA

Tito Rocha
Instituto Nacional de Ortopedia e Traumatologia | Rio de Janeiro | Brazil

**Regional faculty**

Jasmin Gaab
Bundeswehr Krankenhaus Berlin | Berlin | Germany

John McMaster
John Radcliffe Hospital | Oxford | United Kingdom

Inger Schipper
Leiden University Medical Center | Leiden | The Netherlands

Christian Willy
Bundeswehr Krankenhaus Berlin | Berlin | Germany
Sunday
December 1, 2019

15:00  Opening of the congress center
15:00–17:00  Registration of participants
17:00–19:00  Opening Ceremony and Founders’ Reception

Monday
December 2, 2019

Location: Sanada 1 (lectures) Sanada 2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 08:00–08:05 | Introduction to the course:  
- Goals  
- Objectives  
- Faculty  
- Plan for the course  
- Evaluation |
| 08:05–08:15 | What is the case?  
What do we know about this clinical problem? |
| 08:15–08:25 | Preoperative findings (eg. initial x-rays, videos) |
| 08:25–10:10 | Practical exercise  
- Develop a preoperative plan  
- Discuss the preoperative plan  
- Execute the preoperative plan |
| 10:10–10:20 | Preoperative plan of the Master |
| 10:20–10:50 | Implementation of the plan and long-term result |
| 10:50–11:10 | Coffee break |
## Module 2
**Moderator:** M Wajid  
**Proximal femur**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 11:10–11:20 | What is the case?  
What do we know about this clinical problem? |
| 11:20–11:30 | Preoperative findings (eg. initial x-rays, videos)                       |
| 11:30–11:50 | **Small groups:**  
• Develop a preoperative plan  
• One group presents their plan |
| 11:50–12:00 | Preoperative plan of the Master                                          |
| 12:00–12:30 | Implementation of the plan and long-term result                           |
| 12:30–12:50 | • Discussion, questions, and conclusions of best practice  
• Best participant group preoperative plan                                 |
| 12:50–14:00 | Lunch break                                                              |

## Module 3
**Moderator:** R Buckley  
**Calcaneus**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 14:00–14:10 | What is the case?  
What do we know about this clinical problem? |
| 14:10–14:20 | Preoperative findings (eg. initial x-rays, videos)                       |
| 14:20–16:10 | **Practical exercise**  
• Develop a preoperative plan  
• Discuss the preoperative plan  
• Execute the preoperative plan |
| 16:10–16:20 | Preoperative plan of the Master                                          |
| 16:20–16:50 | Implementation of the plan and long-term result                           |
The page contains a detailed schedule for a course on external fixation for acute trauma and nonunion, taking place on Tuesday, December 3, 2019. The schedule is divided into modules and sections, each with specific times, locations, and topics. The course is held at Schiahorn (lectures) and Strela/Rinerhorn (practicals).

### Module 1
**Moderator:** V Phiphobmongkol  
**General principles**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:10</td>
<td>Welcome and introduction to today’s module</td>
<td>V Phiphobmongkol, A Volna</td>
</tr>
<tr>
<td>08:15</td>
<td>Spectrum of external fixation in acute trauma</td>
<td>A Volna</td>
</tr>
<tr>
<td>08:30</td>
<td>Safe zones for the insertion of wires and half-pins</td>
<td>V Phiphobmongkol</td>
</tr>
<tr>
<td>08:45</td>
<td>Techniques of pin and wire insertion, to avoid complications</td>
<td>T Slongo</td>
</tr>
<tr>
<td>09:00</td>
<td>Principles of circular frame construction—equipment and terminology</td>
<td>L Solomin</td>
</tr>
<tr>
<td>09:15</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
</tbody>
</table>

### Module 2
**Moderator:** A Volna  
**Acute trauma**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:15</td>
<td>External fixation for Damage Control Orthopedics (DCO) and soft-tissue management—tips and tricks</td>
<td>D Höntzsch</td>
</tr>
<tr>
<td>09:30</td>
<td>Case-based lecture—ring fixation in definitive fracture management</td>
<td>V Phiphobmongkol</td>
</tr>
<tr>
<td>09:45</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:00</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>Discussion group 1 External fixation in acute trauma</td>
<td>All faculty</td>
</tr>
<tr>
<td>11:00</td>
<td>Location change to practical exercise room</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Practical exercise 1 Basic circular frame construction with DO system</td>
<td>All faculty V Phiphobmongkol, L Solomin</td>
</tr>
<tr>
<td>11:30</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

### Module 3
**Moderator:** L Solomin  
**Nonunion**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td>Biology of distraction osteogenesis and techniques of corticotomy</td>
<td>M Mahran</td>
</tr>
<tr>
<td>13:45</td>
<td>Nonunion and infected nonunion, diagnosis and treatment</td>
<td>S Iriarte Vincenti</td>
</tr>
<tr>
<td>14:00</td>
<td>Case-based lecture—treatment strategies for nonunion with external fixation</td>
<td>M Mahran</td>
</tr>
<tr>
<td>14:15</td>
<td>Case-based lecture—infected nonunion</td>
<td>S Reid</td>
</tr>
<tr>
<td>14:30</td>
<td>Location change to discussion groups</td>
<td>All faculty</td>
</tr>
<tr>
<td>14:45</td>
<td>Discussion group 2 External fixation in nonunion/infection treatment</td>
<td>All faculty</td>
</tr>
<tr>
<td>15:00</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>15:10</td>
<td>Practical exercise 2 Bone transportation with DO system</td>
<td>All faculty S Quinnan, A Volna</td>
</tr>
<tr>
<td>17:10</td>
<td>Location change to lecture room</td>
<td></td>
</tr>
</tbody>
</table>

### Module 4
**Moderator:** S Quinnan  
**Pin/frame management and removal**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:15</td>
<td>Management of complications in the external fixator</td>
<td>D Höntzsch</td>
</tr>
<tr>
<td>17:30</td>
<td>External frame removal and post-removal management</td>
<td>S Iriarte Vincenti</td>
</tr>
<tr>
<td>17:45</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>17:55</td>
<td>Summary, evaluation, and take-home messages</td>
<td>V Phiphobmongkol, A Volna</td>
</tr>
<tr>
<td>18:00</td>
<td>Coffee break</td>
<td></td>
</tr>
</tbody>
</table>

**Location change to lecture room**

**Practical exercise 1 Basic circular frame construction with DO system**

**Location change to lecture room**

**Practical exercise 2 Bone transportation with DO system**

**Location change to discussion groups**

**Other activities**

- **AO Davos Courses night**

This comprehensive schedule covers a range of topics from general principles to specific strategies for external fixation in acute trauma and nonunion.
## Nailing of complex fractures—special situations

**Location:** Flüela (lectures) Foyer C/Studio (practicals)

### Module 1
**Moderator:** M Hessmann
**Complex and periarticular fractures**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:10–08:25</td>
<td>Welcome and introduction to today’s module</td>
<td>E Kwek</td>
</tr>
<tr>
<td>08:25–08:40</td>
<td>Case-based lecture—proximal humeral fractures—can we nail it?</td>
<td>M Hessmann</td>
</tr>
<tr>
<td>08:40–08:55</td>
<td>Nailing of trochanteric fractures—tips to improve implant positioning and results</td>
<td>JK Oh</td>
</tr>
<tr>
<td>08:55–09:10</td>
<td>Nailing subtrochanteric fractures of the femur—tips and tricks</td>
<td>C Finkemeier</td>
</tr>
<tr>
<td>09:10–09:25</td>
<td>Nailing complex distal femoral fractures</td>
<td>M Lee</td>
</tr>
<tr>
<td>09:25–09:40</td>
<td>Segmental fractures of the femur and tibia—tips and tricks for nailing</td>
<td>E Kwek</td>
</tr>
<tr>
<td>09:40–09:50</td>
<td>Metaphyseal tibial fractures—decoration and nailing techniques</td>
<td>P Barbosa</td>
</tr>
<tr>
<td>09:50–10:15</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:15–11:25</td>
<td>Discussion group 1 Nailing of complex fractures</td>
<td>M Hessmann, E Kwek, H Abdul Hadi M Lee, P Barbosa, JK Oh C Finkemeier, CW Oh, C Kammerlander</td>
</tr>
<tr>
<td></td>
<td>Group 1 – Landwasser 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2 – Landwasser 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3 – Flüela</td>
<td></td>
</tr>
<tr>
<td>11:25–11:30</td>
<td>Location change to practical exercise room (Foyer C2)</td>
<td></td>
</tr>
<tr>
<td>11:30–13:00</td>
<td>Practical exercise 1 Proximal humeral nailing</td>
<td>All faculty M Hessmann, E Kwek</td>
</tr>
<tr>
<td>13:00–14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

### Module 2
**Moderator:** C Kammerlander

#### Nailing in controversial and atypical situations

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–14:15</td>
<td>Nailing fractures in the elderly/osteoarthetic bones</td>
<td>C Kammerlander</td>
</tr>
<tr>
<td>14:15–14:30</td>
<td>Nailing atypical fractures and fractures with abnormal anatomy—tips and tricks</td>
<td>E Kwek</td>
</tr>
<tr>
<td>14:30–14:45</td>
<td>Nailing fractures in polytrauma patients—current concepts and contemporary trends</td>
<td>H Abdul Hadi</td>
</tr>
<tr>
<td>14:45–15:00</td>
<td>Periprosthetic tibial nailing</td>
<td>M Lee</td>
</tr>
<tr>
<td>15:00–15:05</td>
<td>Location change to practical exercise room (Studio)</td>
<td>All faculty C Kammerlander, H Abdul Hadi</td>
</tr>
<tr>
<td>15:05–16:25</td>
<td>Practical exercise 2 Proximal femoral nailing with augmentation demo</td>
<td>All faculty C Kammerlander, H Abdul Hadi</td>
</tr>
<tr>
<td>16:25–16:40</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>16:40–17:40</td>
<td>Discussion group 2 Nailing in special situations</td>
<td>M Lee, CW Oh, C Kammerlander M Hessmann, H Abdul Hadi, C Finkemeier P Barbosa, JK Oh, E Kwek</td>
</tr>
<tr>
<td></td>
<td>Group 1 – Landwasser 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 2 – Landwasser 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group 3 – Flüela</td>
<td></td>
</tr>
<tr>
<td>17:40–17:45</td>
<td>Location change to lecture room</td>
<td>M Lee</td>
</tr>
<tr>
<td>17:45–18:00</td>
<td>Extreme nailing concepts</td>
<td>C Finkemeier</td>
</tr>
<tr>
<td>18:00–18:10</td>
<td>Summary, evaluation, and take-home messages</td>
<td></td>
</tr>
</tbody>
</table>

17:45–20:30 AO Davos Courses night
# Pediatric fractures of the upper extremity

**Location:** Seehorn (lectures) Sanada 2/Duncan/Altein (practicals)

### Module 1
**Moderator:** M Kremli  
**Upper limb—shoulder and humerus**

Upon completion of this module, participants will be able to:
- Recognize the range of treatment options of humeral fractures in children
- Identify indications for operative intervention in humeral fractures
- Describe assessment of injuries associated with musculoskeletal trauma around the shoulder (eg peripheral nerve injury, brachial plexus injury, vascular injury, labral tears)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-08:10</td>
<td>Welcome and introduction to today’s module</td>
<td>M Kremli, M Kastelec</td>
</tr>
<tr>
<td>08:10-08:20</td>
<td>Plenary session Evaluation of warm-up cases—common injuries around the shoulder in children</td>
<td>M Kremli</td>
</tr>
<tr>
<td>08:20-09:00</td>
<td>Round table discussion 1 Shoulder girdle and humerus Table 1-5</td>
<td>All faculty</td>
</tr>
<tr>
<td>09:00-09:10</td>
<td>Plenary session Reevaluation of warm-up cases—common injuries around the shoulder in children</td>
<td>M Kremli</td>
</tr>
</tbody>
</table>

### Module 2
**Moderator:** A Besselaar  
**Upper limb—elbow injuries and supracondylar fractures**

Upon completion of this module, participants will be able to:
- Discuss management of supracondylar humerus fractures and method of management
- Perform proper fixation of supracondylar fractures and discuss possible complications and methods to avoid them
- Describe the late complications of lateral condylar fractures (eg nonunion, malunion, tardy ulnar nerve palsy)
- Avoid missing the Monteggia lesion

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:10-09:20</td>
<td>Plenary session Evaluation of warm-up cases—important pediatric elbow injuries</td>
<td>A Besselaar</td>
</tr>
<tr>
<td>09:20-09:35</td>
<td>Supracondylar fracture</td>
<td>U Narayanan</td>
</tr>
<tr>
<td>09:35-09:55</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>09:55-10:45</td>
<td>Round table discussion 2 Pediatric elbow injuries and supracondylar fractures Table 1-5</td>
<td>All faculty</td>
</tr>
<tr>
<td>10:45-10:55</td>
<td>Plenary session Reevaluation of warm-up cases—important pediatric elbow injuries</td>
<td>A Besselaar</td>
</tr>
<tr>
<td>10:55-11:00</td>
<td>Location change to practical exercise room (Sanada 2)</td>
<td></td>
</tr>
</tbody>
</table>

### Module 3
**Moderator:** D Green  
**Upper limb—forearm and wrist fractures**

Upon completion of this module, participants will be able to:
- Explain how the forearm functions as a multi-axial joint
- Explain the methods of stabilization and fixation according to the level of fracture in the forearm and wrist
- Describe the indications for surgical treatment
- Perform ESIN techniques for forearm and radial neck fractures
- Discuss the indications for and application of other techniques

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00-12:00</td>
<td>Practical exercise 1 Supracondylar humerus fracture, lateral condyle fracture and medial epicondyle fracture</td>
<td>T Ibrahim, J Hui</td>
</tr>
<tr>
<td>12:00-13:30</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>13:30-13:45</td>
<td>Plenary session Evaluation of warm-up cases—forearm and wrist injuries</td>
<td>D Green</td>
</tr>
<tr>
<td>13:45-14:00</td>
<td>Proximal forearm injuries—radial head, Monteggia</td>
<td>J Soni</td>
</tr>
<tr>
<td>14:00-14:50</td>
<td>Round table discussion 3 Treating forearm and wrist fractures Table 1-5</td>
<td>All faculty</td>
</tr>
<tr>
<td>14:50-15:05</td>
<td>Plenary session Reevaluation of warm-up cases—forearm and wrist injuries</td>
<td>D Green</td>
</tr>
<tr>
<td>15:05-15:25</td>
<td>Coffee break and location change to practical exercise room (Duncan/Altein)</td>
<td></td>
</tr>
<tr>
<td>15:25-16:35</td>
<td>Practical exercise 2a Elastic nailing of forearm fractures</td>
<td>M Kastelec, F Monsell</td>
</tr>
<tr>
<td>16:35-17:00</td>
<td>Practical exercise 2b Elastic nailing of radial neck fracture</td>
<td>M Kastelec, F Monsell</td>
</tr>
<tr>
<td>17:00-17:05</td>
<td>Summary, evaluation, and take-home messages</td>
<td>U Narayanan</td>
</tr>
<tr>
<td>17:45-20:30</td>
<td>AO Davos Courses night</td>
<td></td>
</tr>
</tbody>
</table>
## Polytrauma

**Location:** Sanada 1 (lectures) Sanada 2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:30</td>
<td>Welcome and introduction to the course and today's module, pre-test—polytrauma factoids you must know</td>
<td>R Buckley, W Abdulwahid</td>
</tr>
<tr>
<td>08:30–08:25</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
<tr>
<td>08:35–10:10</td>
<td><strong>Discussion group 1</strong> Polytrauma Group 1 – Landwasser 12 Group 2 – Landwasser 25 Group 3 – Sanada 1</td>
<td>All faculty, K Alawadi, J Gaab, J McMaster</td>
</tr>
<tr>
<td>10:10–10:30</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>10:30–12:00</td>
<td>Plenary case discussion—cases that went badly (patient death or disability) and why? Summary of key points/questions</td>
<td>All faculty</td>
</tr>
<tr>
<td>12:00–13:30</td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>13:30–15:10</td>
<td><strong>Practical exercise 1</strong> Preoperative planning—polytrauma case—the participant, must keep the patient alive and provide the best clinical outcome</td>
<td>All faculty, R Buckley, I Schipper</td>
</tr>
<tr>
<td>15:10–15:30</td>
<td>Coffee break</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:15–17:30</td>
<td>Summary lecture 1—questions When can I safely proceed with “early total care”?—evidence-based facts</td>
<td>I Schipper</td>
</tr>
<tr>
<td>17:30–17:45</td>
<td>Summary lecture 2—questions Long-term outcome of polytrauma patients and how to do the best job with their care—evidence-based facts</td>
<td>J McMaster</td>
</tr>
<tr>
<td>17:45–17:55</td>
<td>Summary, evaluation, and take-home messages</td>
<td>R Buckley, W Abdulwahid</td>
</tr>
<tr>
<td>17:45–20:30</td>
<td><strong>AO Davos Courses night</strong></td>
<td></td>
</tr>
</tbody>
</table>

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**Tuesday December 3, 2019**
### Module 4
**Moderator: K Kojima**
**Polytrauma**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 08:00–08:10| **What is the case?**
|            | What do we know about this clinical problem?                            |
| 08:10–08:20| Preoperative findings (eg. initial x-rays, videos)                      |
| 08:20–08:40| **Small groups:**
|            | - Develop a preoperative plan                                          |
|            | - One group presents their plan                                         |
| 08:40–08:50| Preoperative plan of the Master                                         |
| 08:50–09:20| Implementation of the plan and long-term result                         |
| 09:20–09:40| - Discussion, questions, and conclusions of best practice
|            | - Best participant group preoperative plan                             |
| 09:40–10:00| Coffee break                                                           |

### Module 5
**Moderator: CF Luo**
**Tibial plateau**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 10:00–10:10| **What is the case?**
|            | What do we know about this clinical problem?                            |
| 10:10–10:20| Preoperative findings (eg. initial x-rays, videos)                      |
| 10:20–12:10| **Practical exercise**
|            | - Develop a preoperative plan                                          |
|            | - Discuss the preoperative plan                                         |
|            | - Execute the preoperative plan                                         |
| 12:10–12:20| Preoperative plan of the Master                                         |
| 12:20–12:50| Implementation of the plan and long-term result                         |
| 12:50–14:00| Lunch break                                                            |

### Module 6
**Moderator: R Pesantez-Hoyos**
**Distal femur**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
</table>
| 14:00–14:10| **What is the case?**
|            | What do we know about this clinical problem?                            |
| 14:10–14:20| Preoperative findings (eg. initial x-rays, videos)                      |
| 14:20–16:10| **Practical exercise**
|            | - Develop a preoperative plan                                          |
|            | - Discuss the preoperative plan                                         |
|            | - Execute the preoperative plan                                         |
| 16:10–16:20| Preoperative plan of the Master                                         |
| 16:20–16:50| Implementation of the plan and long-term result                         |
# External fixation for bone defects and deformity correction

**Location:** Aspen 1 (lectures) Foyer C2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:10</td>
<td>Welcome and introduction to today’s module</td>
<td>V Phiphobmongkol, A Volna</td>
</tr>
</tbody>
</table>

## Module 1
**Moderator:** M Mahrán

**General principles**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:10–08:25</td>
<td>External fixation options for bone defects and deformity</td>
<td>S Quinnan</td>
</tr>
<tr>
<td>08:25–08:40</td>
<td>Circular frame construction—equipment and terminology</td>
<td>L Solomin</td>
</tr>
</tbody>
</table>

## Module 2
**Moderator:** S Iriarte Vincenti

**Bone defects**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:40–08:55</td>
<td>Options for long-bone defects—tips and tricks for bone transport</td>
<td>S Quinnan</td>
</tr>
<tr>
<td>08:55–09:10</td>
<td>Modulation of bone transport—the problem of bad regeneration</td>
<td>A Volna</td>
</tr>
<tr>
<td>09:10–09:20</td>
<td>Case-based lecture—transport/lengthening then intramedullary nailing</td>
<td>S Reid</td>
</tr>
<tr>
<td>09:20–09:30</td>
<td>Case-based lecture—transport over intramedullary nail or along a plate</td>
<td>V Phiphobmongkol</td>
</tr>
<tr>
<td>09:30–09:35</td>
<td>Location change to discussion groups</td>
<td>All faculty</td>
</tr>
<tr>
<td>09:35–10:40</td>
<td>Discussion group 1 Long bone defect management</td>
<td>All faculty</td>
</tr>
</tbody>
</table>

**Group 1—Landwasser 12**
**Group 2—Landwasser 14**
**Group 3—Landwasser 16**
**Group 4—Landwasser 18**
**Group 5—Aspen 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:40–11:00</td>
<td>Coffee break</td>
<td></td>
</tr>
</tbody>
</table>

## Module 3
**Moderator:** S Reid

**Long bone deformity**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00–11:15</td>
<td>Radiographic analysis of deformity</td>
<td>L Solomin</td>
</tr>
<tr>
<td>11:15–11:30</td>
<td>Principles of deformity correction</td>
<td>T Slongo</td>
</tr>
<tr>
<td>11:30–11:35</td>
<td>Location change to practical exercise room</td>
<td>All faculty</td>
</tr>
<tr>
<td>11:35–13:00</td>
<td>Practical exercise 1 Circular frame construction for deformity correction</td>
<td>L Solomin, V Phiphobmongkol</td>
</tr>
<tr>
<td>13:00–14:00</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

## Module 4
**Moderator:** A Volna

**Long bone deformity**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–14:15</td>
<td>Analysis of oblique plane deformity and placement of hinges</td>
<td>S Reid</td>
</tr>
<tr>
<td>14:15–14:30</td>
<td>Principles of deformity correction using 6-axis orthopedic hexapods</td>
<td>L Solomin</td>
</tr>
<tr>
<td>14:30–14:45</td>
<td>Case-based lecture—treatment of complex long bone deformity with orthopedic hexapod—new technology</td>
<td>T Slongo</td>
</tr>
<tr>
<td>14:45–14:50</td>
<td>Location change to discussion groups</td>
<td>All faculty</td>
</tr>
<tr>
<td>14:50–15:50</td>
<td>Discussion group 2 Long bone deformity management</td>
<td>All faculty</td>
</tr>
</tbody>
</table>

**Group 1—Landwasser 12**
**Group 2—Landwasser 14**
**Group 3—Landwasser 16**
**Group 4—Landwasser 18**
**Group 5—Aspen 1**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:50–16:10</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>16:10–17:50</td>
<td>Practical exercise 2 Hexapod system for complex deformity correction</td>
<td>All faculty</td>
</tr>
<tr>
<td>17:50–17:55</td>
<td>Location change to lecture room</td>
<td>All faculty</td>
</tr>
<tr>
<td>17:55–18:00</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>18:00–18:05</td>
<td>Summary, evaluation, and take-home messages</td>
<td>V Phiphobmongkol, A Volna</td>
</tr>
</tbody>
</table>
### Complications related to nailing

<table>
<thead>
<tr>
<th>Location: Flüela (lectures) Studio (practicals)</th>
<th>08:00–08:05</th>
<th>Welcome and introduction to today's module</th>
<th>C Finkemeier</th>
</tr>
</thead>
</table>

#### Module 1

**Moderator: JK Oh**

**Complications related to nailing techniques**

<table>
<thead>
<tr>
<th>08:05–08:25</th>
<th>Case-based lecture—inadequate entry point and its consequences for the femur</th>
<th>JK Oh</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:25–08:40</td>
<td>Fractures of the femoral neck while nailing diaphyseal fractures—what now?</td>
<td>C Finkemeier</td>
</tr>
<tr>
<td>08:40–08:55</td>
<td>Implant loosening and loss of fixation in proximal femoral fractures—prevention and management strategies</td>
<td>C Kammerlander</td>
</tr>
</tbody>
</table>

#### Module 2

**Moderator: H Abdul Hadi**

**Nonunion after nailing**

<table>
<thead>
<tr>
<th>08:55–09:10</th>
<th>Disturbances of fracture union after nailing—causes and management</th>
<th>CW Oh</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:10–09:25</td>
<td>Broken nails—how to deal with them?</td>
<td>H Abdul Hadi</td>
</tr>
<tr>
<td>09:25–09:35</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>09:35–09:50</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>09:50–11:10</td>
<td><strong>Practical exercise 1</strong> Femoral reconstruction nailing (FRN)</td>
<td>All faculty</td>
</tr>
<tr>
<td>11:10–11:15</td>
<td>Location change to lecture room</td>
<td></td>
</tr>
</tbody>
</table>

### Module 3

**Moderator: CW Oh**

**Malunion after nailing**

<table>
<thead>
<tr>
<th>11:15–11:30</th>
<th>Malunions of the lower limb after nailing—diagnostic work-up and deformity analysis</th>
<th>JK Oh</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:30–11:45</td>
<td>Angular and complex malunions of the lower limb—nailing strategies and techniques</td>
<td>M Hessmann</td>
</tr>
<tr>
<td>11:45–12:00</td>
<td>Correcting length and rotational deformities with nails</td>
<td>CW Oh</td>
</tr>
<tr>
<td>12:00–12:10</td>
<td>Question and answer session</td>
<td>All faculty</td>
</tr>
<tr>
<td>12:10–13:30</td>
<td>Lunch break</td>
<td></td>
</tr>
</tbody>
</table>

### Module 4

**Moderator: P Barbosa**

**Infection after nailing**

<table>
<thead>
<tr>
<th>13:30–13:45</th>
<th>Challenges of the surgical treatment of infections after nailing</th>
<th>CW Oh</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:45–14:00</td>
<td>Extended indications and tips for reaming</td>
<td>P Barbosa</td>
</tr>
<tr>
<td>14:00–14:05</td>
<td>Location change to practical exercise room</td>
<td></td>
</tr>
<tr>
<td>14:05–15:25</td>
<td><strong>Practical exercise 2</strong> Suprapatellar tibial nailing</td>
<td>All faculty</td>
</tr>
<tr>
<td>15:25–15:40</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>15:40–17:00</td>
<td><strong>Discussion group 1</strong> Complications related to nailing</td>
<td>M Lee, H Abdul Hadi, P Barbosa, JK Oh, C Kammerlander, E Kwek, C Finkemeier, M Hessmann, CW Oh</td>
</tr>
<tr>
<td>17:00–17:05</td>
<td>Location change to lecture room</td>
<td></td>
</tr>
<tr>
<td>17:05–17:20</td>
<td>What is new about implants for infection prevention and treatment?</td>
<td>C Kammerlander</td>
</tr>
<tr>
<td>17:20–17:30</td>
<td>Summary, evaluation, and take-home messages</td>
<td>E Kwek</td>
</tr>
</tbody>
</table>

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**Thursday, December 5, 2019**
Pediatric fractures of the lower extremity

Location: Seehorn (lectures) Ducan/Altein (practicals)

Module 1
Moderator: M Kastelec
Fundamentals of managing pediatric fractures

Upon completion of this module, participants will be able to:
- Recognize the relevance of age in relation to injury pattern
- Describe the optimum treatment of pediatric fractures and how it is different from fractures in adults
- Explain the relationship of age to modeling capacity and define acceptable limits of malunion
- Describe the impact of growth disturbance in the management of pediatric fractures

Module 2
Moderator: J Hui
Lower limb—femoral fractures

Upon completion of this module, participants will be able to:
- Evaluate the range of treatment options for epiphyseal, metaphyseal and diaphyseal femoral fractures in children
- Define indications for and principles of femoral traction
- Perform the technique for elastic nailing of femoral fractures and discuss limitations
- Compare and contrast treatment options of femoral fractures in children of different ages (ie, casting, traction, plating, external fixation, and intramedullary devices)

Module 3
Moderator: J Soni
Lower limb—tibial, fibular, and ankle injuries

Upon completion of this module, participants will be able to:
- Recognize the range of treatment options of tibial diaphyseal fractures in children
- Describe the presentation of compartment syndrome
- Describe the pattern of Tillaux and triplane fractures
- Apply principles of fracture reduction and fixation that maintain the function of the physis
### Thursday
December 5, 2019

**Soft tissue**

**Location:** Sanada 1 (lectures) Sanada 2 (practicals)

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00–08:10</td>
<td>Welcome and introduction to the course and today's module</td>
<td>R Buckley, W Abdulwahid</td>
</tr>
<tr>
<td>08:10–08:15</td>
<td>Location change to discussion groups</td>
<td></td>
</tr>
</tbody>
</table>
| 08:15–10:00   | **Discussion group 1**  
**Soft tissue**  
- Group 1 – Landwasser 2  
- Group 2 – Landwasser 4  
- Group 3 – Landwasser 6  
- Group 4 – Landwasser 25  
- Group 5 – Sanada 1       | All faculty                   |
|               |                                                                          | J Gaab, J McMastor            |
|               |                                                                          | J Bridgeman, T Rocha          |
|               |                                                                          | W Abdulwahid, I Schipper      |
|               |                                                                          | K Alawadi, C Willy            |
|               |                                                                          | R Buckley                     |
| 10:00–10:20   | Coffee break                                                            |                               |
| 10:20–11:30   | Principles of soft-tissue management and stabilization of the wound  
- Reconstructive ladder—timing of definitive coverage—anatomical basis for flaps  
- Negative pressure wound therapy (NPWT)  
- Skin grafting  
- Extremity flap principles  
- Detection of infection—what tools do we have?  
- Mangled extremities and decision making | J Gaab                        |
|               |                                                                          | J Bridgeman                   |
|               |                                                                          | K Alawadi, C Willy            |
|               |                                                                          | R Buckley                     |
| 11:30–11:55   | **Interactive case-based discussion**                                    | J Bridgeman                   |
| 11:55–12:00   | Summary of key points—questions                                          | W Abdulwahid                  |
| 12:00–13:30   | Lunch break                                                             |                               |
| 13:30–15:10   | **Practical exercise 1**  
**Soft-tissue care**  
- Group 1—Anatomy—understanding the possible flaps  
- Group 2—Negative pressure wound therapy—how to do a good VAC  
- Group 3—Vascular shunts  
- Group 4—Fasciotomies  
- Group 5—Z-plasties (rotating stations 20 min each) | J Gaab                        |
|               |                                                                          | J Bridgeman, I Schipper       |
|               |                                                                          | C Willy, J McMastor           |
|               |                                                                          | R Buckley, T Rocha            |
|               |                                                                          | W Abdulwahid, K Alawadi       |
| 15:10–15:30   | Coffee break                                                            |                               |
| 15:30–16:40   | **Practical exercise 2**  
**Soft-tissue planning**  
- Irrigation and debridement  
- Timing of procedures  
- Soft-tissue preparation  
- Bone stabilization  
- Definitive soft-tissue coverage  
- Aftercare with rehabilitation of the limb | All faculty                   |
|               |                                                                          | W Abdulwahid                  |
| 16:40–17:10   | **Case discussion 2**  
**Summary cases of the day**   | R Buckley, W Abdulwahid       |
| 17:10–17:30   | **Summary, evaluation, and take-home messages**                         | R Buckley, W Abdulwahid       |
**Module 7**  
**Moderator:** M Keel  
**Pelvis**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00-08:10</td>
<td>What is the case?</td>
<td>What do we know about this clinical problem?</td>
</tr>
<tr>
<td>08:10-08:20</td>
<td>Preoperative findings (eg. initial x-rays, videos)</td>
<td></td>
</tr>
<tr>
<td>08:20-10:10</td>
<td><strong>Practical exercise</strong></td>
<td>• Develop a preoperative plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the preoperative plan</td>
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<tr>
<td></td>
<td></td>
<td>• Execute the preoperative plan</td>
</tr>
<tr>
<td>10:10-10:20</td>
<td>Preoperative plan of the Master</td>
<td></td>
</tr>
<tr>
<td>10:20-10:50</td>
<td>Implementation of the plan and long-term result</td>
<td></td>
</tr>
<tr>
<td>10:50-11:10</td>
<td>Coffee break</td>
<td></td>
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</tbody>
</table>

**Module 8**  
**Moderator:** J Jupiter  
**Malunion**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:10-11:20</td>
<td>What is the case?</td>
<td>What do we know about this clinical problem?</td>
</tr>
<tr>
<td>11:20-11:30</td>
<td>Preoperative findings (eg. initial x-rays, videos)</td>
<td></td>
</tr>
<tr>
<td>11:30-11:50</td>
<td><strong>Small groups:</strong></td>
<td>• Develop a preoperative plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• One group presents their plan</td>
</tr>
<tr>
<td>11:50-12:00</td>
<td>Preoperative plan of the Master</td>
<td></td>
</tr>
<tr>
<td>12:00-12:30</td>
<td>Implementation of the plan and long-term result</td>
<td></td>
</tr>
<tr>
<td>12:30-12:50</td>
<td>• Discussion, questions, and conclusions of best practice</td>
<td>• Best participant group preoperative plan</td>
</tr>
<tr>
<td>12:50-13:20</td>
<td>Sandwich break</td>
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</tbody>
</table>

**Module 9**  
**Moderator:** I McFadyen  
**Infection**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:20-13:30</td>
<td>What is the case?</td>
<td>What do we know about this clinical problem?</td>
</tr>
<tr>
<td>13:30-13:40</td>
<td>Preoperative findings (eg. initial x-rays, videos)</td>
<td></td>
</tr>
<tr>
<td>13:40-14:10</td>
<td><strong>Small groups:</strong></td>
<td>• Develop a preoperative plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• One group presents their plan</td>
</tr>
<tr>
<td>14:10-14:20</td>
<td>Preoperative plan of the Master</td>
<td></td>
</tr>
<tr>
<td>14:20-14:50</td>
<td>Implementation of the plan and long-term result</td>
<td></td>
</tr>
<tr>
<td>14:50-15:10</td>
<td>• Discussion, questions, and conclusions of best practice</td>
<td>• Best participant group preoperative plan</td>
</tr>
<tr>
<td>15:10-15:20</td>
<td>End of course evaluations, summary, and handouts</td>
<td>C Sommer, R Pesantez-Hoyos</td>
</tr>
</tbody>
</table>
Event organization

AO Trauma Masters Course—Current Concepts—Tips from the Masters

AO funding sources
Unrestricted educational grants from different sources are collected and pooled together centrally by the AO. All events are planned and scheduled by local and regional AO surgeon groups based on local needs assessments. We rely on industrial commercial partners for in-kind support to run simulations and/or skills training if educationally necessary.

Event venue and opening times

Congress Centre Davos
Talstrasse 49A
7270 Davos, Switzerland
Phone +41 81 414 62 00
Fax +41 81 414 62 29

General information
Sunday 12:00-19:00
Monday through Thursday 07:30-19:00
Friday 07:30-16:00

The AO experience
Sunday 14:00-17:00
Monday through Thursday 09:00-18:30 (Tuesday –20:30)
Friday 09:00-16:00

Industry exhibition
Sunday 14:00-17:00
Monday through Thursday 09:00-18:30
Friday 09:00-16:00

AO Trauma Education
Bettina Bolliger
Clavadelerstrasse 8
7270 Davos
Switzerland
Phone +41 81 414 27 22
Fax +41 81 414 22 84
E-mail bbolliger@aotrauma.org
Exhibitions

The AO experience
The AO experience offers you the chance to view the latest publications in the AO library, see what benefits you are eligible for in the community and membership area and take a selfie with your new colleagues. Explore AO teaching and learning resources and find out about our new digital gateway myAO at the digital zone’s interactive stations. Visit the innovation in research and development zone, to take part in hands on demos featuring some of our newest innovations, and join the AO Technical Commission’s popular Meet the Experts sessions. Don’t forget to purchase any mementos at our store in the main entrance. Experience the AO spirit, walk the timeline of AO history, and mingle with other participants. AO staff will be on-hand to help you get the most out of this experience.

Exhibition partners
Visit the exhibitions of our trusted partner DePuy Synthes, Siemens, and other exhibitors: SPI, Invibio, Precision OS, Synoste, Rimasys, AO Alliance.

Media exhibitors
Lehmanns Media is in the welcome area.

Sponsors

We thank our trusted partner DePuy Synthes, and Siemens, for contributing in-kind support (materials and logistics) without which this event would not be possible. A special thanks to DePuy Synthes and Siemens for providing an unrestricted educational grant for this event.

We also extend our thanks to the following co-sponsors (educational grants, in-kind support):

Credit Suisse
Synbone
Business center

The business center facilities in the Congress Centre Davos are accessible to everyone.

Services
- Internet and e-mail access
- Printer access
- www.aodavoscourses.org
  AO Davos Courses website offering course-related information

Opening hours
The business center is open 30 minutes before the first course of the day starts until 30 minutes after the end of the last course of the day.

Disclaimer
The use of your own computer in the business center network is inherently not secure. We strongly recommend that you take appropriate actions to protect your computer against unauthorized use or theft (e.g., firewall, virtual private network [VPN] connection, virus scanner). AO cannot be held responsible for any data loss or theft.

For further information or support, please contact:
Phone +41 81 414 28 70
E-mail it.helpdesk@aofoundation.org

Wireless network

How to connect to the AO wireless local area network (LAN)

1. Open the Wireless Network Connection window
2. Choose the AO Business network as shown in the image below and click on the Connect button
3. Our AO Business wireless network requires a wireless protected access (WPA) network key:
   Network key: aowireless
4. Then click on the OK button
Event information

**Event fee**
AO Trauma Masters Course—Current Concepts—Tips from the Masters: CHF 3,980
The event fee covers the conference bag, documentation, coffee breaks, lunches, participation in AO Davos Courses night, and the course certificate.

**Intellectual property**
Event materials, presentations, and case studies are the intellectual property of the event faculty. All rights are reserved. For more information, please see: www.aofoundation.org/legal.

**Recording, photographing, or copying lectures, practical exercises, case discussions, or any event materials is strictly forbidden. Participants violating intellectual property will be dismissed.**

**Swiss CME Accreditation**
For this course the UEMS-EACCME® in Brussels have granted 34 European CME credits (ECMEC).

**European CME Accreditation**
Additionally, an application has been made to the following Swiss societies:
Schweizerische Gesellschaft für Chirurgie (SGC/SSC)
Schweizerische Gesellschaft für Orthopädie und Traumatologie (SGO/SSO).

**Conflicts of Interest (COI)**
All disclosure information can be viewed at the event webpage: http://AOTRAUMA10009586.aotrauma.org

**Course certificate**
Course certificates will be available at the end of the event at the general information desk.

**Evaluation guidelines**
All AO Trauma events apply the same evaluation process, which includes pre- and post-event online evaluation and on-site written questionnaires. These evaluation tools help ensure that AO Trauma continues to meet your training needs.

**Use of mobile phones**
Use of mobile phones is not permitted in the lecture halls or in other rooms during educational activities. Please be considerate of others by turning off your mobile phone.

**Security**
Security checks will be conducted at the building entrance. Wearing a name tag is compulsory at all times in the congress center and hospital.

**Insurance**
The event organization does not take out insurance to cover any individual against accident, theft, or other risks.

**Use of social media**
During the AO Davos Courses 2019, you can post about your experience using the #AODavosCourses2019 hashtag. While we encourage you to share your AO Davos Courses 2019 experience with your online network, it is expressly forbidden to share any images or recordings from inside the course.

**Picture gallery**
Check out aodavoscourses.org for a daily selection of pictures from the AO Davos Courses 2019, the best from last year’s courses, and a selection of photographs from the first-ever AO Davos Courses.

**Dress code**
Warm clothes and suitable shoes are recommended.
Principles of AO educational events

1. Academic independence
Development of all curricula, design of scientific event programs, and selection of faculty are the sole responsibilities of volunteer AO network surgeons. All education is planned based on needs assessment data, designed and evaluated using concepts and evidence from the most current medical education research, and reflects the expertise of the AO Education Institute (www.aofoundation.org). Industry participation is not allowed during the entire curriculum development and planning process to ensure academic independence and to keep content free from bias.

2. Compliance to accreditation and industry codes
All planning, organization, and execution of educational activities follow existing codes for accreditation of high-quality education:
- Accreditation Criteria of the Accreditation Council for Continuing Medical Education, US (www.accme.org)
- ACCME Standards for Commercial Support: Standards to Ensure Independence in CME Activities (www.accme.org)
- Criteria for Accreditation of Live Educational Events of the European Accreditation Council for Continuing Medical Education (www.uems.eu)

Events that receive direct or indirect unrestricted educational grants or in-kind support from industry also follow the ethical codes of the medical industry, such as:
- Eucomed Guidelines on Interactions with Healthcare Professionals (www.medtecheurope.org)
- AdvaMed Code of Ethics on Interactions with Health Care Professionals (advamed.org)
- Mecomed Guidelines on Interactions with Healthcare Professionals (www.mecomed.org)

3. Branding and advertising
No industry logos or advertising (apart from the AO Foundation and its clinical divisions) are permitted in the area where educational activities take place.

Sponsors providing financial or in-kind support are allowed to have a promotional booth or run activities outside the educational area with approval from the event chairperson.

4. Use of technologies and products in simulations
In case simulations are chosen as an educational method to educate skills, we only use technology approved by the AO Technical Commission—a large independent group of volunteer surgeons developing and peer reviewing new technology. More information about the AO Technical Commission and its development and approval processes can be found on the AO’s website: www.aofoundation.org.

5. Personnel
Industry staff members are not permitted to interfere with the educational content or engage in educational activities during the event.
AO Research Institute Davos (ARI)

Mission
The AO mission is promoting excellence in patient care and outcomes in trauma and musculoskeletal disorders.

AO Research Institute Davos (ARI)
In its work to further the AO mission, ARI's purpose is to advance patient care through innovative orthopedic research and development.

Orthopedics concerns musculoskeletal, spine and craniomaxillofacial trauma, degenerative musculoskeletal diseases, infections, and congenital disorders.

Goals
• Contribute high-quality, applied preclinical research and development focused toward clinical applications/solutions.
• Investigate and improve the performance of surgical procedures, devices and substances.
• Foster a close relationship with the AO medical community, academic societies, and universities.
• Provide research environment/support/training for AO clinicians.

Meet with our team including our ARI Medical Research Fellows, establish contacts, freely discuss your clinical problems and ideas, and learn about the latest results from ARI.

Collaborative research programs
• Annulus fibrosus rupture
• Acute cartilage injury
• Osteochondral defect
• Imaging and planning of surgery, computer aided preoperative planning
• Medication-related osteonecrosis of the jaw
• Bone regeneration and 3D printing

Spine
• Degeneration and regeneration of the intervertebral disc
• Biomarkers and patient outcomes

Trauma
• Bone infection, including the development and testing of active anti-infective interventions
• Sensing implants for objective monitoring of fracture healing
• Development of smart surgical tools
• New implant concepts for optimized bone healing
• Prediction of subject-specific risk of proximal humeral fixation failure via computational tools
• Development of generic Asian pelvic bone model
• Patient outcomes and biomarkers

Veterinary medicine
• Improving osteosynthesis for small and large animals

Multidisciplinary
• 3R principles: refinement of preclinical studies
• Bioreactor culture systems and mechanobiology
• Development, standardization, optimization, and improvement of preclinical models and methods
• Ex vivo testing using advanced biomechanical models
• Gene transfer: non-viral and viral
• Implant design using the finite element methods
• Implant positioning assistance, C-arm guided implant placement
• In-vivo and in-vitro quantification of bone turnover and scaffold degradation
• Medical additive manufacturing and biofabrication
• Medical computed tomography (CT) image processing and analysis
• Polymers to deliver cells and biological factors, create potential space for tissue development, and guide the process of tissue regeneration
• Prototype development and production
• Stem cell therapies for the treatment of bone, intervertebral disc, and cartilage defects

For the AO Research Institute Davos Activity Report 2018 and recent publications, go to www.aofoundation.org/ari/publications.
Upcoming AO Davos Courses 2020

AO Davos Courses—November 29–December 4, 2020

- AO Trauma Course—Basic Principles of Fracture Management
- AO Trauma Course—Advanced Principles of Fracture Management
- AO Trauma Course—Advanced Principles of Fracture Management for Swiss residents
- AO Trauma Masters Course—Current Concepts
- AO Trauma Course—Pelvic and Acetabular Fracture Management
- AO Trauma Masters Kurs (German speaking)
- AO Trauma Course—Managing Pediatric Musculoskeletal Injuries
- AO Trauma and AO Recon Course—Comprehensive Periprosthetic Fracture Management of the Hip and Knee

AO Davos Courses—December 6–9, 2020

- AO Trauma Course—Basic Principles of Fracture Management for Swiss Surgeons
- AO Spine Courses
- AO CMF Courses
- AO VET Masters Course—Small Animal
- AO VET Masters Course—Large Animal
- AO Recon Course—Principles in Shoulder Arthroplasty
- AO Recon Course—Complex Total Hip and Knee Arthroplasty
- AO PEER Course—Level 1 Principles of Clinical Research
- AO PEER Course—Level 2 Grant writing
- AO PEER Course—Level 2 GCP and study management
- AO PEER Course—Level 2 Publication writing course

This course list is subject to further change.

The final list of AO Davos Courses and worldwide courses will be available on www.aotrauma.org in January 2020.
Expanding precision medicine in image-guided surgery

siemens-healthineers.com/surgery

Expanding precision medicine through a complete imaging portfolio for orthopedic trauma, spine and CMF surgery ranging from mobile C-arms and robotic angiography systems to computed tomography and magnetic resonance imaging, as well as multi-modality suites.

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To provide 3D capabilities that can be seamlessly integrated into clinical routine, we developed Cios Spin®: a mobile 2D and 3D C-arm for intraoperative quality assurance. Delivering new insights and perspectives, Cios Spin gives you more certainty in surgical routine – and full control over your procedures.

ARTIS pheno
As individual as your patients

Cios Spin
New perspectives. Full control.
AO Trauma membership
Driving excellence and empowering the next generation

Discover the advantages of joining the leading global trauma and orthopedic community, providing its members with education, research, and networking opportunities worldwide. Join us and share your passion.