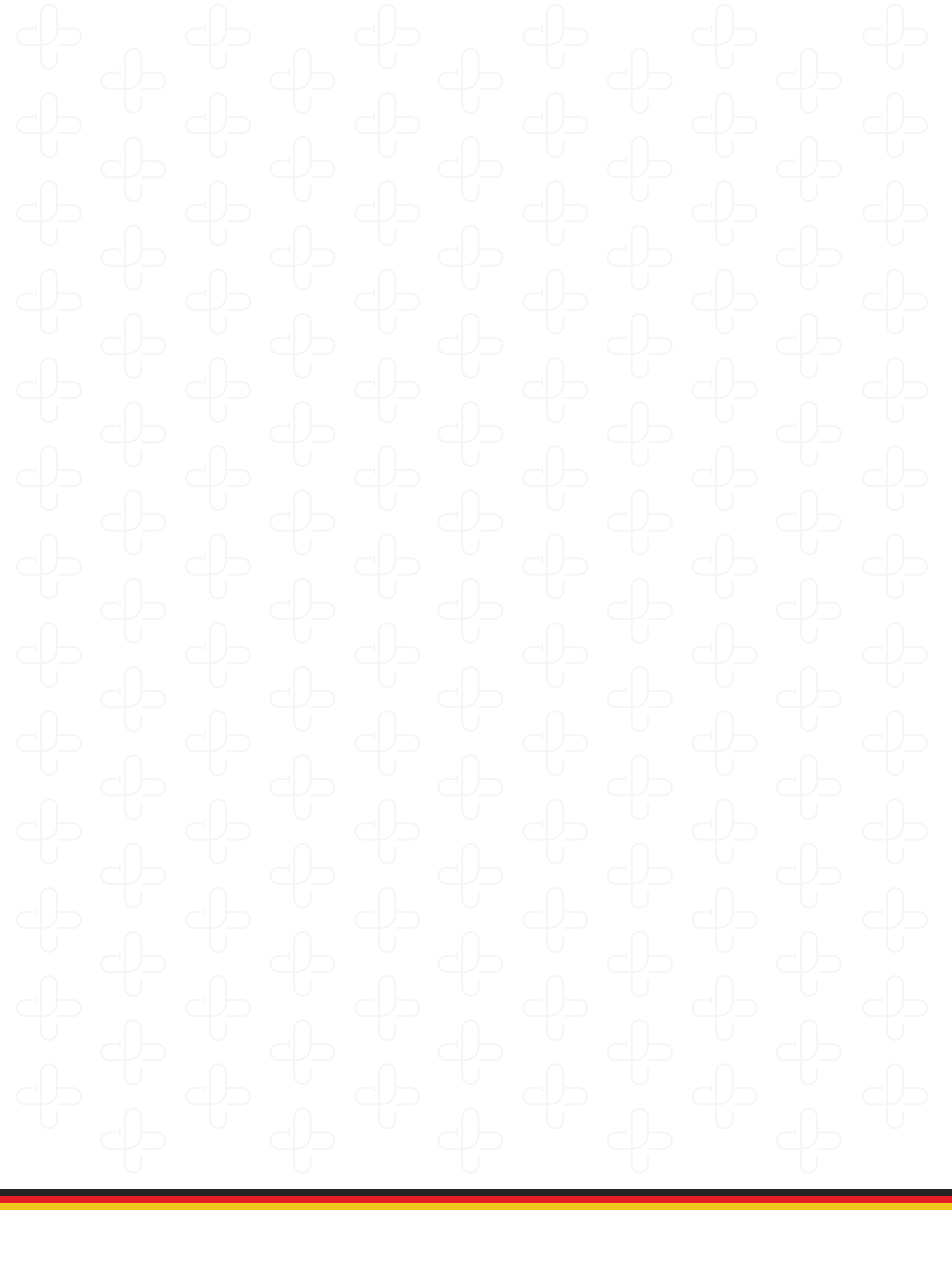
TUTORIALS



DAD Consulting Berlin

Who we are:

DAD Consulting Berlin is a partnership of anaesthetic, intensive care, acute medicine, pain management and palliative care consultants from nine European countries. We advise and support hospitals in their endeavour to optimise performance in theatre and on the intensive care unit. With our support, hospitals can optimise both productivity and quality of services within their current financial framework. *DAD Consulting Berlin* is defined by continuous interdisciplinary cooperation and outstanding competence in both patient management and consulting qualification. Beyond their extensive clinical experience, our consultants' profound academic, scientific and teaching backgrounds benefit our clients.

DAD Consulting Berlin offers systemic solutions to facilitate all processes in theatre and on the ICU. You can take advantage of our extensive European expertise in respect to patient care and its structural organisation. Our experience is rooted in decades of work in different hospitals, different health care systems and different medical specialties.

Our detailed know-how allows us to optimise working processes, reduce costs and resource consumption, and increase patient safety. You get advice, support and implementation from one source, *DAD Consulting Berlin*. You receive it with a maximum of reliability and transparency.

More often than in any other area of the hospital, medical professionals from different specialties find themselves under time pressure but are nevertheless obliged to cooperate in accordance with agreed evidence-based clinical guidelines. Deficits in both individual competence and structural organisation of workstreams tend to be especially problematic in such a high-pressure environment.

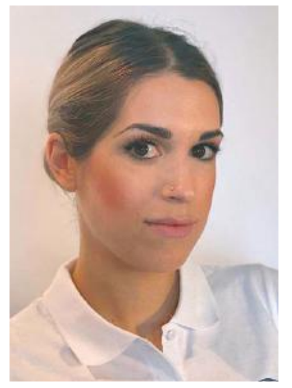
We implement standards to deliver world-class hospital service by ensuring adherence with the auditable quality criteria expected from a modern anaesthetic department by all other subspecialties. All team members and stakeholders benefit from our leadership! Teamwork in theatre and on the intensive care unit becomes efficient, organised and calm. The most important precondition for our success is well-structured project management as this facilitates change and promotes clarity, transparency and the unequivocal definition of the agreed goals.

We support your obligation to ensure first-class patient care and help promote quality improvement in perioperative medicine.

Ths School of Athen, Raphael

DIRECTORATE

Michał Marcin Poprawski M. A. Clinical Lead Anaesthetics. Chief Executive.



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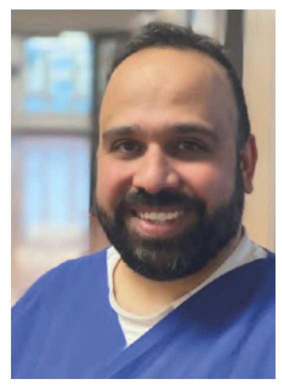


Ali Ghazi Director of Sales Professional Development.

Dr David Swiatlowski Program Director Professional Development.

Hospital Consulting - DAD Berlin

Principles of our method – Professional Development *DAD Consulting Berlin*

DAD tutorials support the implementation of change and provide new stimuli for quality management in theatre and on the ICU. Quality management is the basis for both improved patient care and increased transparency in your hospital.

The structure of our program is multidisciplinary and supports the professional autonomy of all participants. The content of our tutorials is tailored to your individual needs. We present complex medical and organisational issues in a "real life" context suited to all participants. In all our tutorials, we always emphasis cooperation, teamwork, joint learning and mutual respect.

Paramount for the success of our tutorials is our ongoing assessment of the participants' learning progress. Scheduled break-away sessions serve to assess the team's expectations, interests and learning progress. At the end of the tutorial, participants from all professional groups discuss and assess the progress made.

You will benefit from both our intimate knowledge of proven quality improvement strategies from different European countries, as well as our experience with very unique and individual quality improvement programs. With our support, start a re-think of those facts and realities existing in your hospital. We would be pleased to support you in embracing innovative and evidence-based techniques that provide real benefit for patient care.

We are available to organise lectures or workshops for groups or individuals. Discreetly and professionally, we can adjust these offerings to your very individual requirements.

Our unique competencies have emerged from our national and international experience with different diagnostic and therapeutic concepts in different hospitals providing different levels of care. These competences include: an analytic, strategic and multidisciplinary approach, an appreciation of health and hospital economy, outstanding communication and leadership skills and our ability and willingness to share both theoretical knowledge, as well as practical abilities and techniques with our medical and non-medical colleagues on the intensive care unit.

We provide you with the opportunity to reposition your hospital within an ever-shifting health economy and we support and advise you on any required restructuring process in your hospital. As an independent and experienced team, we are quick to integrate into your existing network and discuss and evaluate development goals in accordance with your hospital's local operational environment.

INTRODUCTORY COURSE: INTENSIVE CARE MEDICINE FOR BEGINNERS

Intensive care is complex and often bewildering for the novice. Stress and insecurity take over when knowledge and experience run out. Compounded by insufficient induction and supervision, any initial enthusiasm can quickly turn into frustration and anxiety. Our course is for colleagues about to rotate onto the intensive care unit. Its pragmatic modular structure provides ICU novices with the necessary theoretical knowledge and practical abilities required to function safely and proficiently on the ICU. They will be sooner able to manage patients professionally and more independently. Our course is also suitable for colleagues with more experience who want to consolidate and update their ICU competences.

While there are plenty of websites, review articles and some textbooks on intensive care medicine, we emphasise a practical approach to the common day-to-day problems on the ICU. We provide interactive presentation and acquisition of crucial knowledge. We value a direct, open, supportive, non-critical and non-judgemental interaction between course participants and our trainers. All our trainers have not only extensive practical experience as senior ICU Consultants (Chefarzt / Oberarzt in the German health care system) but have also helped countless junior doctors to find their way into intensive care medicine. Rather than overloading juniors with theory, we strive to guide them to be able to manage critically ill patients safely, reliably, competently and evidence-based. Our aim is to spark enthusiasm for intensive care medicine in our course participants.

We know from experience that regular mortality, morbidity and clinical governance meetings do not take place on all intensive care units. We also know that often a forum to discuss a wider and holistic view on ICU patients is lacking. More often than not, this is due to a lack of resources and trained personnel. We believe that ”soft skills” and ethical considerations are essential in modern intensive care medicine. We therefore give our course participants the opportunity to discuss memorable and/or controversial patients with each other and with our senior Consultants leading the course. We provide training and strategies to help prepare the participants for difficult conversations with patients, relatives and colleagues from other specialties By the end of our course, all participants should be able to reliably recognise the ”critically ill patient” and to instigate the necessary and appropriate diagnostic and therapeutic interventions.

COURSE DETAILS:

1. General workflow on the ICU:

- Daily "problems and plans" / documentation
- Daily assessment of ICU patients
- Ward rounds
- Indications of HDU/ICU admission
- Scoring systems on the ICU
- Patient discharge from the ICU/HDU
- Certification of death

2. Basic practical skills on the ICU:

- Infection control
- Monitoring
- Vascular access techniques
  - Central venous access techniques
  - Arterial access
  - Access for haemofiltration / haemodialysis
- Intubation
- Invasive and non-invasive ventilation
- Bronchoscopy
- Tracheostomy
- Sedation and analgesia
- Ultrasound on the ICU
  - Lung ultrasound
  - Bedside echocardiography
  - US guided access to
    - a) central and peripheral veins
    - b) arteries
    - c) chest/abdomen
    - (US guides peripheral and regional blocks on the ICU)

3. ICU diagnostics

- Biochemistry
- Haematology and transfusion medicine
- Microbiology

4. Soft skills

- Breaking bad news
- The "complex patient / family"
- Ethics and law on the ICU
- Burnout prophylaxis

5. Common problems on the ICU: Recognition and management

- Shock
  - Septic
  - Cardiogenic
  - Hypovolemic
  - Complex
- Sepsis
- Hypoxia
- Cardiac emergencies
  - Myocardial infarction and acute coronary syndrome
  - Cardiac resuscitation and post-resuscitation management
    - a) ALS (Acute Life Support guidelines)
  - Arrhythmias
  - Acute cardiac failure
- Renal failure / Oliguria
  - Haemofiltration / Haemodialysis
- Liver failure
- Neurological emergencies and neurological deterioration
  - Management on increased ICP
  - Delirium on the ICU
  - Seizures and Status Epilepticus
- DKA and other endocrine emergencies
- Major haemorrhage and DIC
  - Polytrauma
    - a) ATLS (Acute Trauma Life Support approach)
  - Peripartum haemorrhage
- The pregnant patient on the ICU
- The burns patient

6. Workshops

- CPR (Cardiopulmonary resuscitation)
  - Acute cardiopulmonary resuscitation
  - Post resuscitation management
  - Indications and contraindications for cardiopulmonary resuscitation
- Ultrasound on the ICU
  - Arterial and venous access
  - Lung ultrasound
  - Bedside echocardiography
- Airway management and ventilation
  - Invasive ventilation
  - Non-invasive ventilation
  - High flow oxygen
- Communication on the ICU
  - Breaking bad news
  - The "difficult patient / relative"

INTENSIVE CARE MEDICINE COURSE FOR INTERMEDIATE AND ADVANCED PRACTITIONERS: CURRENT STANDARDS OF CARE FROM THE GERMAN CLINICAL SOCIETIES

HOW DO WE REALLY DO IT? THE *DAD* COURSE FOR ADVANCED PRACTITIONERS

Main topics:

- Analgesia / sedation and management of delirium on the ICU
    - S3 Guidelines of the German Society for Anaesthetics and ICU *(DSGAI)*
- Management of increased intracranial pressure
    - S1 Guidelines of the German Society for Neurology *(DGN)*
- Management of cerebral trauma
    - S2e Guidelines of the German Society for Neurosurgery *(DGNC)*
- Antibiotic stewardship
    - Infection control on the ICU
    - Antibiotic selection
    - Infection prophylaxis and surveillance
- Invasive and non-invasive ventilation
    - "the difficult airway"!
    - Patient controlled ventilation
    - Weaning strategies
    - Pneumonia prophylaxis
- Rehabilitation and homeostasis
    - Physiotherapy and early mobilisation
        - a) Chest physiotherapy
        - b) Musculoskeletal physiotherapy
        - c) Cardiovascular physiotherapy
    - Management/prophylaxis of ICU polyneuropathy/myopathy
    - Nutrition on the ICU
        - a) Early enteral nutrition
        - b) Indications for parenteral nutrition
        - c) Speech and language therapy on the ICU
        - d) Swallow assessment
        - e) Speech and language diagnostic/rehabilitation

INVASIVE AND NON-INVASIVE VENTILATION. WEANING ON THE ICU.

Invasive ventilation is a central part of organ support on the ICU. Technical and scientific advances as well as different providers of hardware have produced a sometimes confusing plethora of jargon and detail. This makes the application of evidence-based ventilation strategies at the bedside more difficult. We provide course participants with a clear, practical and structured approach to lung protective ventilation, choice of appropriate mode of ventilation and a rational approach to the patient-specific setting of inspiratory and expiratory pressures and inspiration and expiration times. We also discuss special interventions such as recruitment manoeuvres and less common modes of ventilation e.g. Airway Pressure Release Ventilation (APRV)

We present invasive ventilation in four modules:

1. Basics of invasive ventilation

- Monitoring of ventilation
    - Pressure/volume curves
    - Capnography
    - Blood gas analysis

2. Therapeutic approach to acute and acute on chronic respiratory failure

- Non-invasive ventilation
    - High flow nasal oxygen (Optiflow)
    - CPAP (Continuous Positive Airway Pressure)
    - NIPPV (Non-Invasive Positive Airway Ventilation
        - a) Indications
        - b) Limitations
        - c) Contraindications
- Invasive Ventilation
    - PS/CPAP (Pressure Support/Continuous Positive Airway Pressure)
        - a) Indications/limitations
    - BiPAP (Bilevel Positive Airway Pressure)
        - a) Patient specific modulation of ventilation profiles
    - APRV (Airway Pressure Release Ventilation)
        - a) Indications/contraindications
    - Lung protective ventilation
        - a) PEEP (Positive End-Expiratory Pressure) setting
        - b) Minimal driving pressures
        - c) Recruitment manoeuvres
        - d) Oesophageal pressure monitoring

3. Weaning, analgosedation and management of delirium

- Tracheotomy
    - Surgical tracheotomy
        - a) Evidence/indications/timing
    - Percutaneous tracheotomy
        - b) Evidence/timing
- Weaning from mechanical ventilation
    - Problems and strategies
    - Standardised vs individualised weaning strategies
    - Sedation and management of delirium during weaning
- Airway management during weaning

MANAGEMENT OF COVID-19 PATIENTS

The COVID-19 pandemic has posed significant challenges for intensive care doctors and nurses. The specific management of COVID-19 pneumonia and pneumonitis has been of particular importance for intensive care units worldwide. The extensive experience of our Intensive Care Consultants has enabled us to support and train intensive care colleagues in the treatment of COVID-19 patients. All our decisions regarding the management of individual patients are made in line with the most recent guidelines of the Robert Koch Institute and those of the German and international intensive care societies

- Indications for hospital admission of COVID-19 patients
- Incremental oxygen therapy in COVID-19 patients
    - Optiflow
        a) Proning of awake patients
    - NIV
    - Mechanical ventilation
        a) Criteria for escalating from NIV to IPPV
        b) Proning of ventilated patients
    - ECMO
        a) Indication for ECMO according to ASLO criteria
            - Failure of mechanical ventilation
                > Persistent hypoxia
                > Persistent hypercarbia/acidosis
            - Cardiac failure
            - Broncho-pleural fistula
            - Reversible cardiogenic shock
    - Drug therapy in COVID-19 patients

INVASIVE CIRCULATORY ORGAN SUPPORT ON THE ICU

Invasive organ support has become one of the most important aspects of intensive care medicine. Especially different forms of extracorporeal respiratory and cardiac support techniques have been developed. These can be confusing even for experienced ICU practitioners.

We provide a pragmatic and comprehensive overview across the different available techniques:

- Vv ECMO
- Va ECMO
- Vav ECMO
- ILA (Interventional Lung Assist)
- ECCO2R (Extracorporeal CO_2 elimination)
- IMPELLA/IABP (Intraaortic balloon pump)

ADVANCED MEDICAL TECHNOLOGY AND PROGRESS IN YOUR HOSPITAL

More than ever, we depend on the application of mechanical and electronic devices without which our ability to provide modern organ support on the intensive care unit would cease to exist.

Over recent years, devices to provide extracorporeal oxygenation have developed to a degree that the scope for their application has become less limited.

Many of our patients suffering from cardiorespiratory failure secondary to COVID-19 or other causes benefit from the wider availability of ECMO techniques. These techniques are becoming a common part of the techniques of organ support provided on intensive care units in many modern and expanding hospitals.

We help you set up a modern ECMO service. We also provide support, guidance and personnel training in implementing and maintaining it. Part of our support is our offer of a 24-hour online telemedicine service and a 24-hour hotline to discuss clinical and technical challenges in real time.

ULTRASOUND ON THE ICU

While some decades ago in the Lung section of "Harrisons Textbook of Internal Medicine" the statement "the lung is not accessible to ultrasound" could be found, the works of Daniel Lichtenstein have radically altered reality.

Together with bedside echocardiography, his work has become a standard technique for real time monitoring of ICU patients' cardiorespiratory function. Lung US has bypassed the chest x-ray by a wide margin in the diagnosis of pneumothoraxes and allows reliable bedside diagnosis of acute pneumothorax within seconds. Ultrasound-guided access to arteries and central veins has made insertion of central venous and arterial catheters more reliable and is now recommended by all major intensive care societies. Ultrasound-guided nerve and nerve plexus blocks can be safely and efficiently utilised on the ICU to reduce systemic analgesia requirements and significantly improve patients' comfort.

In our course we provide, revisit and expand the participants' ability to use ultrasound efficiently and routinely in their day-to-day ICU practice.

- Ultrasound-guided access to veins and arteries
  - In-plane and out-of-plane approach
    - a) Internal jugular/femoral/peripheral vein/subclavian vein
    - b) Radial and femoral artery

- Lung ultrasound
  - A-line and B-line pattern/confluent B-lines
    - a) Real time response monitoring to therapeutic intervention
  - Lung sliding and pneumothorax
    - a) "Sea/shore pattern"
    - b) Pitfalls in the ultrasound diagnosis of pneumothorax
  - Pleural effusions and chest drain placement

- Bedside echocardiography
  - Left ventricular function
    - a) Global dysfunction
      - > Systolic vs diastolic failure
    - b) Regional wall motion abnormalities
  - Acute right ventricular strain pattern
  - Pericardial effusions
  - Significant acute heart valve pathology

PATIENT AND FAMILY COMMUNICATION ON THE ICU - GENERAL ETHICAL CONSIDERATIONS. GERMAN AND UK LAW PERSPECTIVE.

Every patient on the ICU is critically ill and has a significant risk of dying. While many patients benefit from the ICU, many others will come to a point when active organ support is no longer in their best interest, and adjustment of the therapy goal to palliative care rather than cure becomes necessary. These decisions have to be appropriately discussed with the patient whenever possible, more often with the patient's family and always with the rest of the ICU team.

Poor, unclear, delayed or evasive communication causes distress and is largely responsible for complaints from relatives.

Communicating "bad news" is another area in which many ICU doctors feel uncomfortable.

In our course, we give space for participants to discuss their experiences, provide training and tips how to communicate better with patients and families and how to avoid common mistakes in those conversations.

While it is not the main focus of the course, we also clarify some common misconceptions about the legal framework in which intensive care medicine is practiced in Germany, the UK and the rest of Europe

THEATRE MANAGEMENT AND HUMAN RESOURCES

Hospitals and hospital departments find themselves exposed to increasing pressure to reduce costs and improve quality. Therefore, critical analysis of management and clinical processes is required, especially in cost and labour intensive hospital departments like theatres.

Operating theatres are especially important in terms of cost and quality because any reduction of efficiency or safety in theatres have a detrimental knock-on effect on all other services involved. In many German hospitals, the surgical department can account for up to 50% of the institution's running costs and investment requirements. This is why the optimisation of safety, quality and efficiency in theatres is one of our core competencies. Professional and efficient theatre management is key to our strategy to improve overall theatre performance.

Whereas experience is valuable, unreflected continuation and adherence to “time honoured ways of doing things“ is detrimental to patient safety, economic performance and staff morale. We can analyse the work streams in your central operating unit and identify weaknesses, redundancies, inefficiencies and unrealised strengths and opportunities. Clearly defined areas of responsibility and clear lines of communication support everybody in the department in performing to the best of their abilities. We can thereby improve resource utilisation, patient flow, patient safety and employee satisfaction.

Where do we start?

- Transparency and clearly defined and structured processes of change allow and demand the full participation and support of all theatre staff involved.
- Detailed analysis of current working practices and clear definition of what goals are to be achieved.
- Clearly and comprehensively structured daily routines in the theatre department.
- Improving teamwork between different professional groups in the theatre department.
- Team building.
- Improvement of the interplay between elective and emergency surgery.

We help convince all team members of the benefit of teamwork.

We support the development of active, critical and engaged participation in the running of the surgical department among all theatre professionals.

Thereby, we support the development of ”corporate identity” and a culture of mutual support and respect. This helps improve cooperation with all other teams in the hospital.

REGIONAL ANAESTHESIA

Quality in medicine means providing the appropriate care at the appropriate time for the appropriate patient every time.
In the anaesthetic department, demographic changes over recent decades are reflected in an increasing number of elderly patients with significant premorbidity requiring surgical intervention. Moreover, the demands for medical services in this demographic group have increased, while limitations of the physiological reserve of these patients often demand a very individually tailored anaesthetic and surgical approach.

An individualised choice of the most appropriate anaesthetic technique is a crucial precondition for good perioperative patient outcomes. Especially surgical interventions involving the extremities or the carotid artery can be done safely and routinely under regional anaesthesia as a reliable alternative to a general anaesthetic.

Regional anaesthesia is an advanced commonly practiced mode of anaesthesia with high efficacy and safety. It can be applied to anaesthetize a part of the body, in awake or sedated patients to avoid the complications of general anaesthesia such as cardiovascular effects (as severe hypotension), pulmonary, central and gastrointestinal effects and also to benefit from good analgesia during surgery or perioperatively, and also postoperatively.

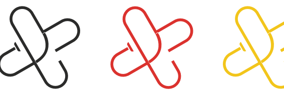
Central regional techniques as well as abdominal and thoracic field blocks, Transverse Abdominal (TAP) or Erector Spinae Plane (ESP) blocks for instance, can reliably reduce postoperative opioid requirements and accelerate post-operative recovery, mobilisation and discharge. They can provide this after common minor abdominal procedures such as laparoscopic cholecystectomies or hernia repairs, as well as after major abdominal and thoracic procedures.

Why Ultrasound-Guided Regional Anaesthesia specifically?

Ultrasound-Guided Regional Anaesthesia (UGRA) has become an area of growing clinical and academic interest. US guided regional anaesthetic techniques are now commonly applied in brachial, interscalene, supraclavicular, infraclavicular and axillary regions. Ultrasound guidance for sciatic and psoas compartment is crucial to perform a safe and successful procedure, and ultrasound visualization of the epidural space can facilitate neuraxial blockade especially in children.

The surface anatomy-based techniques previously used, such as nerve stimulation, palpation of landmarks, fascial "clicks", paresthesias, and transarterial approaches, do not allow monitoring of the disposition of the local anaesthetic injectate.

But ultrasound allows visualization of the anatomy of the region of interest and consequently reducing the likelihood of inadvertent needle trauma to unintended structures.



In addition, ultrasound offers the following significant advantages:

- Reduces the number of needle attempts for nerve localization which may reduce the risk of nerve injury.
- Reveals exactly the nerve location and the surrounding vascular, muscular, bony, and visceral structures.
- Ensures high nerve block success and improved patient safety, particularly with regard to local anaesthetic systemic toxicity (LAST).
- Improves the quality of sensory block, the onset time, and the success rate compared to nerve stimulator techniques (as shown in some clinical studies).
- Differentiates extravascular injection from unintentional intravascular injection.
- Differentiates extraneural injection from unintentional intraneural injection

The use of regional anaesthesia is the new gold standard for the performance of anaesthesia nowadays. Together with you, we audit the use of multi-modal analgesia and especially the utilisation of regional techniques in your department. Based on these results, we provide you with options for introducing new anaesthetic techniques specifically tailored to the needs of your department, your surgeons and your patients. We analyse how the introduction of regional anaesthetic techniques will improve the quality of perioperative care in your hospital and how they improve patient flow through theatres.

We then support you with the implementation of those standardised procedures you have chosen to introduce. We demonstrate how new techniques can be safely implemented within a structured plan involving all stakeholders, surgeons, anaesthetists, operating department practitioners and nurses.

Offer your patients optimal pain management by educating your staff to provide various regional anaesthetic techniques:

- Epidural and intrathecal techniques as median and paramedian approach
- In-plane and out-of-plane ultrasound-guided single shot or catheter techniques for nerve blocks, plexus blocks and plane blocks
- Procedure specific pain management plans for thoracic, abdominal and orthopaedic surgery
- Chronic pain management

We ensure your success through impeccable and adequate technique, innovative technology and optimal titration of effect.

ACUTE PAIN MANAGEMENT

Over recent years, pain management has become an important quality marker of patient care delivered in German hospitals.

However, only 10% of German hospitals currently have written standardised and evidence-based standard operating procedures for their pain management services.

In our experience, organisation and delivery of acute pain services differ immensely between hospitals. While this might partly be due to different levels of staffing and organisation in the respective hospitals, we firmly believe that in most hospitals there is plenty of room for quality improvement in pain services within the existing monetary and staffing constraints.

In many hospitals, patient safety and patient satisfaction can be increased significantly by the provision of optimal pain management. The key to such provision of optimal pain management is an appropriate and efficient combination of classical oral analgesics, intravenous patient-controlled analgesia and epidural techniques and peripheral fixed-rate or patient-controlled nerve blocks.

Our "Acute Pain Management" program is designed to provide medical and nursing staff with the skills, knowledge and competences required to provide modern pain management. We demonstrate how to introduce a pragmatic and effective pain management standard that will allow your team to work together efficiently. We tailor our teaching program exactly to the specific needs of your team.

We combine new techniques and drugs in pain management with time honoured techniques.

"Acute Pain Management" is a structured and adaptive education program that can be fine-tuned to the needs of individual adult learners, with different levels of experience, knowledge and learning needs. Effective pain management, however, rests crucially on the competence and involvement of the all staff involved.

Would you be worried to have your unit audited against international quality standards?

We present you with different models of how acute pain services can be established in different hospitals. While we endeavour to implement new work streams and techniques, we are of course always mindful of those successful and well-developed strengths that exists in most units. Combining new and traditional models improves your patients' experience as well as the quality of your services without putting undue strain on your budget.

LAST BUT NOT LEAST

We give new stimuli to your team. We demonstrate how the most current guidelines can be smoothly integrated into daily clinical routines. We advise, teach and develop staff enthusiastically and interactively and thereby increase their joy and motivation in learning and participating.

Our combined skills and competences in ICU practice, perioperative medicine, accident and emergency, prehospital medicine and acute admission units in both university and district hospitals are your opportunity to benefit from modern dual learning embedded into daily hospital routines.

From external problem analysis through teaching, tutoring and mentoring, to the development of economic and sustainable patient management on the ICU and in theatre, we are your strong and reliable partner.

- **Do you need a professional partner for staff training?**
- **Do you want to establish new diagnostic or therapeutic interventions and techniques?**
- **Do you want to extend the range of your perioperative and intensive care services?**
- **Do you want to restructure old fashioned work streams?**
- **Do you want to extend your intensive care unit?**
- **Do you need a discreet and competent partner to improve the economic performance of your ICU?**

We provide future-proof solutions.
To facilitate your day-to-day delivery of ICU services or operating theatre is our job.

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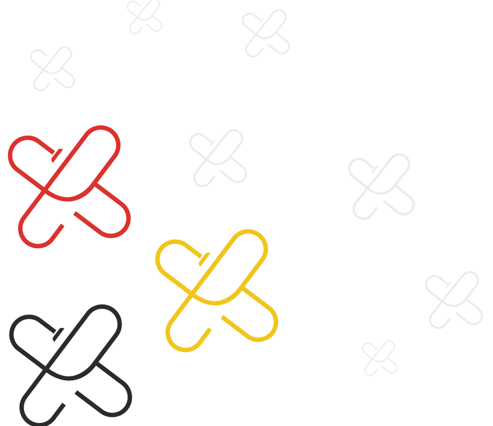

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