2021

Lung Ultrasound online conference

Abstract Book

12 JUNE 2021

For the second time, we are pleased to invite you to the scientifically didactic **on-line conference "Lung ultrasonography"** organized by the Lus.expert portal. The event will take place on **June 12, 2021**

Due to the growing interest in lung ultrasound and very positive opinions from the previous edition, this time we have a wide lecture panel to offer.
We offer 5 rooms in which, throughout the day, sessions will be conducted simultaneously, differentiating according to specialization. The issues and topics discussed during the conference were grouped into sessions on lung ultrasound in: internal diseases, cardiology, pulmonology, anaesthesiology and intensive care, emergency medicine, family medicine, pediatrics, neonatology. A separate session will be devoted to education in the field of lung ultrasound. This session is of exceptional importance due to the issues discussed and the participation of specialists from around the world. In addition, a separate full-day program has been developed for student sessions that will be educational in nature. The student learning room is called "Students teach Students". Here, you will learn or remind the basics of lung ultrasound, cardiac and vascular ultrasound, as well as POCUS.

Natalia Buda
Organizer of the Lung Ultrasound Conference

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Lung Ultrasound

Online conference

Conference Programme

12 June 2021

Main Organizer: PhD Natalia Buda as a Lus.expert

Organizing committee

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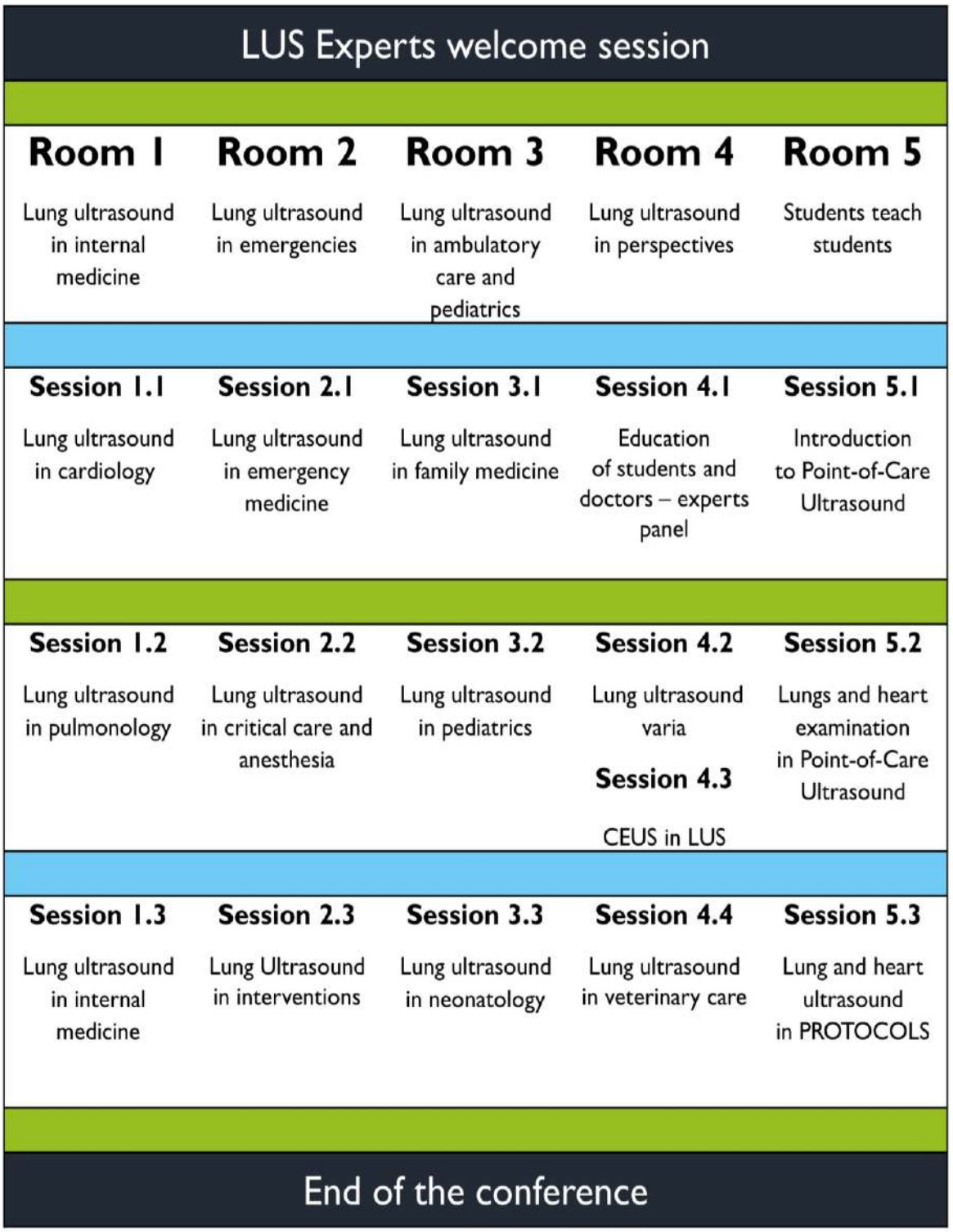
General plan

- 5 simultaneously running themed rooms
- Lectures in both Polish and English, with translation
- All lectures available until 30 July 2021, in a form of a recorded video on Lus.expert website
- Accreditation of Polish Ultrasound Society and 26 education points

Accreditation of EFSUMB

GENERAL PLAN



LUS Experts welcome session

Time	Lecturer	Lecture
9:00 – 9:20	Wojciech Kosiak & Natalia Buda	Lung ultrasound history in Poland
9:20 – 9:40	Gebhard Mathis	Lung ultrasound history worldwide
9:40 – 10:00	Jan Tuma	Africa and ultrasonography
10:00 – 10:20	Christoph F. Dietrich	How do I see the future of ultrasonography
10:20 – 10:30	Overview of virtual exhibitors	

Room 1

Lung ultrasound in internal medicine

Lung ultrasound in cardiology		
10:30 – 10:50	Robert Olszewski	Lung ultrasound guidelines in cardiology (Polish)
10:50 – 11:10	Luna Gargani	Lung ultrasound in cardiology settings, acute and/or chronic
11:10 – 11:30	Radosław Nowak	Usefulness of lung ultrasound during cardiological consultations
11:30 – 11:50	Mateusz Zawadka	Ultrasound of the lung and heart in ICU
11:50 – 12:10	Helmut Prosch	Lung ultrasound vs. Chest x-ray vs. Computed Tomography
12:10 – 12:30	Gebhard Mathis	Triple-organ-ultrasound in thromboembolism
12:30 – 12:50		Q&A Panel
12:50 – 13:00		Advertising panel of virtual exhibitors 1.1
Lung ultrasound in pulmonology		
13:00 – 13:20	Tudor Toma	Lung ultrasound in pulmonology – experiences from Great Britain and Romania
13:20 – 13:40	Agnieszka Skoczylas	Lung ultrasound in geriatric clinic
13:40 – 14:00	Magda Grabczak	Lung ultrasound in pulmonary practice
14:00 – 14:20	Szymon Skoczyński	Lung ultrasound during COVID-19 pandemic
14:20 – 14:40	Krystian Sporysz	Pleural diseases
14:40 – 15:00		Q&A Panel
15:00 – 15:10		Advertising panel of virtual exhibitors 1.2
Lung ultrasound in internal medicine		
15:10 – 15:30	Natalia Buda	Why lung ultrasound is for internal medicine specialists
15:30 – 15:50	Jakub Piotrkowski	Lung ultrasound on internal medicine ward – my experiences
15:50 – 16:10	Marcin Wełnicki	Lung ultrasound in pulmonary embolism
16:10 – 16:30	Jakub Wiśniewski	Lung ultrasound in palliative care
16:30 – 17:10	Natalia Buda Jolanta Cylwik Tomasz Górecki	Perspective of emergency specialist, internist and anesthesiologist
17:10 – 17:30		Q&A Panel

Room 2
Lung ultrasound in emergencies

Lung ultrasound in emergency medicine		
10:30 – 10:50	Giovanni Volpicelli	COVID in Emergency room
10:50 – 11:10	Narciso Barbancho	Lung ultrasound in triage
11:10 – 11:30	Tomasz Górecki	Lung ultrasound in high-altitude medicine
11:30 – 11:50	Tomasz Darocha	Ultrasound in air ambulance service
11:50 – 12:10	Andrew W Kirkpatrick	The History and evolution of the eFAST protocol in Point-of-Care trauma care
12:10 – 12:30	Tomas Villen	Protocols in acute respiratory failure
12:30 – 12:50	Federico Stefanini	Acute respiratory failure with „normal" lung image – what then?
12:50 – 13:10		Q&A Panel
13:10 – 13:20		Advertising panel of virtual exhibitors 2.1
Lung Ultrasound in critical care and anesthesia		
13:20 – 13:40	Daniel Lichtenstein	Lung ultrasound?
13:40 – 14:00	Jolanta Cylwik	Lung ultrasound in recruitment maneuvers
14:00 – 14:20	Paweł Andruszkiewicz	Ultrasonography in assessment of mechanical ventilation weaning probability
14:20 – 14:40	Wojciech Wierzejski	Lung ultrasound during consultation outside the ICU
14:40 – 15:00	Mateusz Zawadka	Lung and heart – complementary assessment of patient in ICU
15:00 – 15:20	Marek Wiśniewski	Lung ultrasound in clinical toxicology
15:20 – 15:40	Elena Segura	Lung ultrasound in unexpected respiratory failure during general anesthesia
15:40 – 16:00		Q&A Panel
16:00 – 16:10		Advertising panel of virtual exhibitors 2.2
Lung Ultrasound in interventions		
16:10 – 16:30	Wolfgang Blank	Lung ultrasound and interventions in pleural cavity
16:30 – 16:50	Krystian Sporysz	Lung ultrasound and interventions on ICU
16:50 – 17:10	Zeno Sparchez	Lung ultrasound and interventional diagnosis of lung lesions
17:10 – 17:30		Q&A Panel

Room 3

Lung ultrasound in ambulatory care and pediatrics

Lung ultrasound in family medicine		
10:30 – 10:50	Mateusz Kosiak	Point-of-Care Ultrasound in family doctor's office
10:50 – 11:10	Sławek Białek	Why should my GP perform lung ultrasound examination?
11:10 – 11:30	Piotr Bartela	Lung ultrasound usefulness in acute lung diseases
11:30 – 11:50		Q&A Panel
11:50 – 12:00		Advertising panel of virtual exhibitors 3.1
Lung ultrasound in pediatrics		
12:00 – 12:20	Andrzej Pomiećko	Lung ultrasound guidelines in pediatrics
12:20 – 12:40	Mariusz Woźniak	Lung ultrasound in diagnostics of tuberculosis
12:40 – 13:00	Wojciech Kosiak	Lung ultrasound in infections in hematooncologic patients
13:00 – 13:20	Joanna Jaworska	Lung ultrasound in cystic fibrosis
13:20 – 13:40	Tomasz Batko	Diaphragm ultrasound
13:40 – 14:00	Konrad Paczkowski	Lung ultrasound in children cardiac surgery
14:00 – 14:20	Błażej Littwin	Lung ultrasound in pediatric ward
14:20 – 14:40		Q&A Panel
14:40 – 14:50		Advertising panel of virtual exhibitors 3.2
Lung ultrasound in neonatology		
14:50 – 15:10	Jovan Lovrenski	Respiratory distress syndrome in neonatology
15:10 – 15:30	Sławomir Jaszczołt	Lung ultrasound in bronchiolitis
15:30 – 15:50	Jing Liu	Lung ultrasound guidelines in neonatology
15:50 – 16:10	Magdalena Kryger	Lung ultrasound in neonates – normal image
16:10 – 16:30	Luigi Cattarossi	Can lung ultrasound guide surfactant treatment in neonates?
16:30 – 16:50	Piotr Kruczek	Lung ultrasound in neonatal intensive care unit
16:50 – 17:10	Piotr Szymański	Pulmonary haemorrhage in neonatology
17:10 – 17:30		Q&A Panel

Room 4
Lung ultrasound in perspectives

Education of students and doctors – experts panel		
10:30 – 11:50	Christoph F. Dietrich Wojciech Kosiak Gebhard Mathis Martin Altersberger	Helmut Prosch Maija Radzina Paweł Andruszkiewicz
11:50 – 12:00	Advertising panel of virtual exhibitors 4.1	
Lung ultrasound varia		
12:00 – 12:20	Gino Soldati	Clinical impact of B lines
12:20 – 12:40	Alessandro Zanforlin	B lines – to count or not to count
12:40 – 13:00	Danilo Buonsenso	Lung Ultrasound in pregnant women
13:00 – 13:20	Marcello Demi	Vertical artifacts in LUS images
13:20 – 13:40	Q&A Panel	
13:40 – 13:50	Advertising panel of virtual exhibitors 4.2	
CEUS IN LUS		
13:50 – 14:10	Maija Radzina	Lung Contrast-Enhanced Ultrasound –additional tool for radiologist
14:10 – 14:30	Wojciech Kosiak	Lung Contrast-Enhanced Ultrasound
14:30 – 14:50	Q&A Panel	
14:50 – 15:00	Advertising panel of virtual exhibitors 4.3	
Lung ultrasound in veterinary care		
15:00 – 15:20	Katarzyna Kraszewska	Chest ultrasound in exotic animals
15:20 – 15:40	Michał Gajewski	The most common pathologies in the ultrasound of the lungs of dogs and cats
15:40 – 16:00	Rafał Niziołek	Difficult and unusual diseases of cats and dogs
16:00 – 16:20	Ziemowit Kudła	Interesting cases in everyday practice
16:20 – 16:40	Q&A Panel	

Room 5
Students teach students

Introduction to Point-of-Care Ultrasound		
10:30 – 10:50	Aleksandra Ramel	Point-of-Care Ultrasound – what is it?
10:50 – 11:10	Eryk Nowiński Dorian Otłowski	Point-of-Care Ultrasound – where can I use it?
11:10 – 11:30	Bartosz Kaniowski	Point-of-Care Ultrasound – does it help?
11:30 – 11:50	Jan Ryl	Understanding ultrasonography – how does it work?
11:50 – 12:10	Urszula Szablewska	Understanding ultrasonography – what do I see?
12:10 – 12:30	Paweł Walisiewicz	Understanding ultrasonography – why does the images play tricks?
12:30 – 12:50		Q&A Panel
12:50 – 13:00		Advertising panel of virtual exhibitors 5.1
Lungs and heart examination in Point-of-Care Ultrasound		
13:00 – 13:20	Martyna Łukasiewicz	PoCUS in examination of lungs – how to do it?
13:20 – 13:40	Bartosz Gonsior	PoCUS in examination of lungs – what can I find?
13:40 – 14:00	Maciej Pokrzeptowicz	PoCUS in examination of heart – what can I see and find?
14:00 – 14:20	Łukasz Sein Anand	PoCUS in examination of heart and lungs – why is it better to combine the examinations?
14:20 – 14:40		Q&A Panel
14:40 – 14:50		Advertising panel of virtual exhibitors 5.2
Lungs and heart ultrasound in PROTOCOLS		
14:50 – 15:10	Marek Treppner	BLUE
15:10 – 15:30	Ewelina Ciak	FATE
15:30 – 15:50	Martin Altersberger	A surprise lecture
15:50 – 16:10		Q&A Panel
16:10 – 16:20		Advertising panel of virtual exhibitors 5.3
16:20 – 17:20		**Interactive ultrasonography quiz**

ABSTRACTS

ROOM 1-5 Invitation Session

Moderators: Natalia Buda & Wojciech Kosiak

1. Authors: Natalia Buda, Poland & Wojciech Kosiak, Poland

Lung ultrasound history in Poland

In the presentation, we will recall the figure of Dr. Janusz Grymiński, one of the pioneers of lung ultrasound. His innovative works from the 1970s and 1980s were absolutely innovative and paved the way for modern lung ultrasound. First steps, first training, first scientific research, first student education ...

2. Author: Gebhard Mathis, Austria

Lung ultrasound history worldwide

The expert introduces us to the highlights of ultrasound history, presenting studies that have proven the superiority of ultrasound over other imaging techniques and factors contributing to that superiority. The subject is discussed based on the differential diagnosis of various clinical findings, for instance pleural cavity effusion or interstitial abnormalities.

3. Author: Jan Tuma, Switzerland

Africa and ultrasonography

The aim of the lecture is to present the experience of Foundation for Medical Knowledge Transfer regarding the accessibility of lung ultrasound in developing countries, focusing mainly on Africa. The speaker describes his time spent in the hospitals of Tanzania, particularly the diagnostic use of ultrasound in the most common diseases in the region (TB, HIV, malaria).

4. Author: Christoph F. Dietrich, Germany

How do I see the future of ultrasonography

Increasing number of modern ultrasound techniques are coming into clinical practice, waking a huge hope for both a successful diagnostic process and treatment. Listeners are familiarised with among others elastography, artificial intelligence and 4th dimension imaging by a brief description and examples of daily use.

ROOM 1
Internal Medicine

Session 1.1 Lung Ultrasound in Cardiology
Moderators: Jakub Piotrkowski

5. Author: Robert Olszewski, Poland
Lung ultrasound guidelines in cardiology
The coronavirus pandemic has significantly contributed to the recognition of lung ultrasound's role in cardiology. The observational study has shown that lung assessment can be helpful in prediction of a severe course of COVID-infection. Subsequently increasing attention is devoted to the use of lung US in the diagnosis and monitoring of heart failure patients. The lecture focuses on the characteristic findings as well as examination techniques.

6. Author: Luna Gargani, Italy
Lung ultrasound in cardiology settings, acute and/or chronic
The purpose of the lecture is to present the diagnostic features of various cardiac pathologies in the lung ultrasound. Potential findings are exemplified in clinical cases. Moreover, the presentation proves the research based benefits occuring from the use of LUS in the diagnostic and therapeutic process.

7. Author: Radosław Nowak, Poland
Usefulness of lung ultrasound during cardiological consultations
Echocardiography has become an inherent part of cardiologic diagnostics, while an increasing role of lung ultrasonography is a relatively new phenomenon, enhanced largely by the COVID-19 pandemics. In the lecture the significance of combining the two methods is presented. The speaker focuses on the findings which can narrow-down potential diagnosis, differentiate various conditions or indicate prognosis. Practical hints are based on clinical cases encountered in the lecturer's professional practice.

8. Author: Mateusz Zawadka, Poland
Ultrasound of the lung and heart in ICU
Bedside ultrasound in the ICU allows physicians not only to deepen diagnosis in case of unstable patients, whose transportation could pose terminal risk, but also follow up the treatment of the patient and even perform some of the therapeutic procedures. Techniques of both emergency medicine and standard lung ultrasonography examinations are described as well as differential diagnosis based on the ultrasonographic picture. Moreover the awareness of multiorgan failure in the intensive care patients is raised. Participants will learn about the BLUE protocol as well as integrated algorithms for assessment of heart and lungs.

9. Author: Helmut Prosch, Austria
Lung ultrasound vs. Chest X-ray vs. Chest computed tomography
Various imaging modalities discussed from the perspective of a radiologist. At first the lecturer describes stages of imaging assessment. Secondly, factors determining choice of specific modality are mentioned in regard to each of the techniques. Ultrasound is compared with an X-ray, CT and MRI in regard to aspects such as accessibility, cost, patients' comfort and diagnostic value in a number of clinical conditions.

10. Author: Gebhard Mathis, Austria
Triple-organ-ultrasound in thromboembolism
The mortality rate in patients with pulmonary embolism remains high, making it crucial to establish a successful diagnostic tool. Nowadays angio-CT of the lungs is considered a golden standard but is it really superior to the lung ultrasound? The speaker discusses the topic from the perspective of various clinical scenarios as well as explains the three organ assessment approach.

Session 1.2 Lung Ultrasound in Pulmonology
Moderators: Jakub Piotrkowski

11. Author: Tudor Toma, United Kingdom
Lung ultrasound in pulmonology – experiences from Great Britain and Romania
Experiences from the speaker's homeland and country of his professional career. In this short presentation he mentions history of interest in chest US as a diagnostic tool, fields of its usage, teaching strategy, competencies of physicians as well as importance of interdisciplinary and international cooperation.

12. Author: Agnieszka Skoczylas, Poland
Lung ultrasound in geriatric clinic
The elderly constitute an increasing part of Polish society. Their health problems are of specific nature and require unique management. Presentation describes specificity of geriatric patients' care such as the problems of comorbidity or polypragmasia. Importance of early diagnosis, feasible owing to the widely accessible US, is presented in a series of clinical cases.

13. Author: Magda Grabczak, Poland
Lung ultrasound in pulmonary practice
Recent years have brought a rapid development in the field of ultrasound modality, including publishing of documents standardising its clinical usage. The lecture consists of two parts - the first one focuses mainly on the non-invasive diagnostics and monitoring strategies, the second one on the invasive procedures within pulmonology. The speaker presents research comparing LUS with other assessment tools such as lab tests, imaging techniques and physical examination findings in case of among others pneumonia, dyspnea, asthma and COPD exacerbation. Later invasive procedures, like lung tumor biopsy, are mentioned. Last but not least listeners get to hear a few words about endobronchial ultrasonography.

14. Author: Szymon Skoczyński, Poland
Lung ultrasound during COVID-19 pandemic
COVID-19 pandemic has changed the reality of national healthcare systems, among others increasing the importance of lung ultrasound examination. In the presentation both the technique and potential findings are described. In addition the speaker answers the question about the correlation between the US picture of the COVID affected lungs and the clinical outcome of the patient.

15. Author: Krystian Sporysz, Poland
Pleural diseases
Pleura is the plane of the lungs most accessible to the ultrasound examination. Therefore several pathologies affecting it, such as pneumothorax or pleural effusion, can be easily visualised in this widely available imaging modality. The speaker explains the characteristic findings encountered in the pleural abnormalities.

Session 1.3 Lung Ultrasound in Internal Medicine
Moderators: Natalia Buda & Jakub Piotrkowski

16. Author: Natalia Buda, Poland
Why lung ultrasound is for internal medicine specialists
The main health complaints leading to hospitalisation in the internal medicine department concern circulatory and respiratory systems. Ultrasonographic examination of the lungs allows the physician to conduct the initial assessment and on that basis plan further diagnostic and therapeutic approaches. Patients of the internal medicine departments are in the vast majority elderly people with numerous comorbidities and frailty syndrome, making point-of-care assessment invaluable. A series of images from lecturer’s clinical practice is presented, stressing the advantages arising from the usage of ultrasound modality.

17. Author: Jakub Piotrkowski, Poland
Lung ultrasound on internal medicine ward – my experiences
Even though the significance of ultrasonographic assessment has risen enormously over the past years it is still not an obligatory part of medical education programme in Poland. How can the chest US facilitate work of a young physician at the internal medicine department? The lecturer's answer to this question is based on his own clinical experience.

18. Author: Marcin Wełnicki, Poland
Lung ultrasound in pulmonary embolism
Typical signs of PE in LUS, the role of the tool in the diagnostic process and the changes in its importance due to COVID-19 pandemics are the main highlights of this lecture, leading to conclusions about the correlation between LUS theoretical advantages and its practical application.

19. Author: Jakub Wiśniewski, Poland

Lung ultrasound in palliative care

There is a brist of research into the use of ultrasound among palliative patients. Examples of clinical situations which could be easily diagnosed and managed at the spot are presented referring to clinical cases. As a conclusion an algorithm for quick differential diagnosis is suggested.

20. Authors: Natalia Buda, Poland & Jolanta Cylwik, Poland & Tomasz Górecki, Poland

Perspective of emergency specialist, internist and anesthesiologist

Case of a week, case of a month and case of a year met in the emergency care, internal medicine department and ICU. Three specialists present their top examples of successful differential diagnosis owing to point-of-care-ultrasound - ranging from very common diagnoses, through highly surprising findings all the way to extremely rare conditions easily overlooked in traditional physical examination.

ROOM 2
Lung Ultrasound in the Emergencies

Session 2.1 Lung Ultrasound in Emergency Medicine
Moderators: Jolanta Cylwik, Krystian Sporysz

21. Author: Giovanni Volpicelli, Italy
COVID in Emergency room
The main clinical presentation of COVID-19 infection is interstitial pneumonia. Only a relatively small percentage of those infected suffer from severe symptoms of the disease. Therefore finding a diagnostic tool, enabling detection of patients with highest risk of severe course, is urgently searched for. Lung ultrasound establishes a promising alternative. A number of findings correlate with various levels of COVID pneumonia probability. The lecturer presents observation results among emergency room patients with positive COVID tests.

22. Author: Narciso Barbancho, Portugal
Lung ultrasound in triage
Causes for respiratory distress in the emergency room can be divided into trauma and respiratory failure. The bedside protocols can be useful in both situations for the diagnostic process as well as life-saving procedures. Results of the speaker's observational studies are presented in the lecture, highlighting the differential ultrasound diagnostics of respiratory failure. Last but not least adjustments done in the protocols due to COVID pandemics are mentioned.

23. Author: Tomasz Górecki, Poland
Lung ultrasound in high-altitude medicine
High-altitude turism rises in popularity. That is why a number of potential health risks associated with it need to be recognised. The pathophysiology of complaints is very complex and requires a broad differential diagnosis, considering both high-altitude specific disabilities as well as diseases occurring in the general population. In the mountainous environment a light, portable ultrasound equipment is an irreplaceable diagnostic tool, even more so in the era of telemedicine. On the other hand a number of technical limitations need to be borne in mind. Lecturer presents his experience from Tbilisi, Georgia.

24. Author: Tomasz Darocha, Poland
Ultrasound in air ambulance system
Ultrasonography is the only option for performing an imaging test in the air ambulance service. The helicopter used to transport patients is equipped with the necessary tools to monitoring patients. The ultrasound examination is performed in a differ significantly from hospital conditions. The author presents the characteristics of work place in a rescue helicopter.

25. Author: Andrew W. Kirkpatrick, Canada
The history and evolution of the eFAST protocol in Point-of-Care trauma care
eFAST protocol is a widely known and practised way of quick detection of life-threatening conditions. Its history dates many years back, over which period it has undergone plenty of modifications and improvements. Coronavirus pandemic has caused many deaths but has also contributed to the development of medicine, among others RSPTMUS. The speaker describes briefly the history of the FAST protocol as well as recent changes resulting from COVID-19 outbreak.

26. Author: Tomas Villen, Spain
Protocols in acute respiratory failure
Respiratory distress is one of the most commonly encountered pathologies in the emergency department, resulting from numerous potential abnormalities. The ultrasound protocols simplify the examination procedure, consequently narrowing down the number of considered diagnoses. Unfortunately, if detached from the clinical data, usage of standardised protocols poses a risk of misdiagnosis. In the presentation the importance of putting US findings in the clinical context is stressed, showing the increased value of obtained images once a preliminary clinical diagnosis had been established.

27. Author: Federico Stefanini, Italy
Acute respiratory failure with „normal" lung image – what then?
Upon meeting a patient with respiratory distress, the lung US is often the first diagnostic step taken. However, not all clinical conditions induce abnormalities visible in this imaging modality, posing clinician with a dilemma regarding further proceedings. The lecture presents the research regarding ultrasound accuracy as a diagnostic tool in respiratory distress, stressing the significance of multiorgan assessment, eventually leading us to the conclusion that a negative ultrasound can be as informative as a positive one.

Session 2.2 Lung Ultrasound in Critical Care and Anesthesia
Moderators: Jolanta Cylwik, Krystian Sporysz

28. Author: Daniel Lichtenstein, France
Lung ultrasound?
LUCI (lung ultrasound in critically ill) incorporates lung assessment of 10 various patterns. The most commonly used protocol is BLUE protocol, which takes approximately 10 minutes to perform. The findings have been proven to be highly sensitive and specific, enabling a quick diagnosis. The lecturer not only describes the examination technique but also explains the misconceptions associated with the protocols.

29. Author: Jolanta Cylwik, Poland

Lung ultrasound in recruitment maneuvers

The role of ultrasound has been widely recognised in the field of regional anaesthesia, however still not enough is spoken of its importance in general anaesthesia. Positioning of intubation tube, detecting pneumothorax, fluid therapy monitoring - just to name a few examples of its usage. One of the underestimated uses is the assessment of the atelectasis, which carry risk of numerous unexpected postoperative complications, consequently increasing the mortality rate of patients after general anesthesia. Early detection is crucial for successful management and implementation of adequate recruitment strategy. Diagnostic approach is explained, presenting results of numerous research and hands-on experience of the speaker.

30. Author: Paweł Andruszkiewicz, Poland

Ultrasonography in assessment of mechanical ventillation weaning probability

Prolonged mechanical ventilation is positively correlated with mortality rate and the length of ICU hospitalisation. Mechanical ventilation weaning process constitutes approx. 40% of the time spent in the ICU and carries a high risk of pulmonary oedema. Both lung ultrasound score (LUSS) and echocardiographic assessment prove advantageous in the prediction of mechanical ventilation weaving process course. Details are discussed by the intensive care specialist, presenting research results and own clinical experience.

31. Author: Wojciech Wierzejski, Australia

Lung ultrasound during consultation outside the ICU

Intensive care specialists are often asked for consultation, especially regarding patients with acute respiratory and circulation failure. In both cases lung ultrasound is an invaluable tool for differential diagnosis, making it an inherent part of intensive care physicians' work, especially since the classic examination methods, such as auscultation, are highly physician dependent. Several research regarding the subject of ultrasound usage in various protocols, both in and outside of ICU, are presented from the perspective of anaesthesiologist. As a conclusion, a suggestion of a lung assessment approach is made.

32. Author: Mateusz Zawadka, Poland

Lung and heart – complementary assessment of patient in ICU

Circulatory failure is a complex clinical problem with a number of potential causes. Physical examination is often insufficient in establishing initial diagnosis and preliminary therapeutic strategy, therefore an integrated heart and lung ultrasound assessment is an inestimable tool. The presentation focuses on diagnostic approaches as well as research related to clinical outcome of therapies (especially fluid therapy) implemented based on the US results.

33. Author: Marek Wiśniewski, Poland
Lung ultrasound in clinical toxicology
In Poland every year there are approx. 100 000 cases of acute poisonings. Professional help can be obtained both in general hospitals and in 9 highly specialistic toxicology centres. Patients hospitalised due to poisoning require immediate diagnostics and life saving procedures, among others acquiring intravenous access for haemodialysis. Ultrasound, as a broadly accessible, portable modality, establishes a perfect tool for those working with intoxicated patients. Speaker shares his experience from the Toxicology Centre in Gdańsk, describing most common findings and their importance in the therapeutic process.

34. Author: Elena Segura-Grau, Portugal
Lung ultrasound in unexpected respiratory failure during general anesthesia
General anaesthesia is one of very special clinical circumstances, carrying a high risk of respiratory failure. Should such a situation occur, the positioning of the patient and necessity to maintain a sterile environment of the operation field make it extremely challenging to examine the patient properly and establish accurate diagnosis. Experienced anaesthesiologist shares cases of unexpected respiratory failure in patients undergoing operative procedures and the success reached owing to the ultrasound use.

Session 2.3 Lung Ultrasound in Interventions
Moderator: Krystian Sporysz

35. Author: Wolfgang Blank, Germany
Lung ultrasound and interventions in pleural cavity
Pathologies in the pleural cavity, particularly pneumothorax, can severely affect respiratory function, which is why an immediate puncture is usually considered a life saving procedure. Bearing in mind a high risk of complications in case of lung tissue puncture, an imaging guidance of procedures is an absolute necessity. The lecturer presents his experience with ultrasound guided procedures in various pleural pathologies encountered in the ICU.

36. Author: Krystian Sporysz, Poland
Lung ultrasound and interventions on ICU
Differentiating pleural effusion and atelectasis in the chest X-ray causes difficulties - in clinical practice most effective assessment is achieved using the ultrasound modality. Especially in case of ICU patients, who are comatosed and unable to cooperate with the physician, ultrasound is a priceless diagnostic tool for free pleural fluid. Participants are guided through the examination technique, probe positioning and *pigtail* drainage performance. Finally, even potential complications and technical difficulties are presented.

37. Author: Zeno Sparchez, Romania

Lung ultrasound and interventional diagnosis of lung lesions

Lung lesions are of varied nature - raging from abscesses and hematomas, through changes in diseases such as TB and sarcoidosis, to neoplasmatic lesions. The only method allowing a definite diagnosis is a biopsy which can be performed using various imaging modalities, with the ultrasound having numerous advantages overthe others. Procedure techniques, the outcome and risks of both peripheral and central lung lesions biopsies are mentioned in this lecture.

ROOM 3
Lung Ultrasound in Ambulatory Care and Pediatric

Session 3.1 Lung Ultrasound in Family Medicine
Moderator: Natalia Buda

38. Author: Mateusz Kosiak, Poland
Point-of-Care Ultrasound in family doctor's office
Diagnostic modalities in the GP's office or during the home visits used to be very limited. Unfortunately, traditional auscultation of the lungs is often not sufficient. Lung ultrasound complements the clinical findings, but should never replace traditional physical examination. Presentation describes ultrasonographic findings in some of the most common conditions and the importance of point-of-care LUS in the diagnostic path - when further investigations are required and when is LUS satisfactory?

39. Author: Sławomir Białek, Poland
Why should my GP perform lung ultrasound examination?
Antibiotics resistant bacteria constitute a significant difficulty in clinical practice. Even though Polish guidelines do not identify radiological changes as a necessity to establish bacterial pneumonia diagnosis, they certainly are an important component of differential diagnosis. Lecturer shares his experience from clinical practice in the south of Poland, explaining how LUS facilitates his diagnostic and therapeutic approach.

40. Author: Piotr Bartela, Poland
Lung ultrasound usefulness in acute lung diseases
General practitioners are spread all over the country, including places really distant from large, academic hospitals, therefore making accessible diagnostic facilities highly limited. Still, a certain percentage of patients seeking help at their GPs will do so due to severe, life-endangering conditions which must be recognised immediately. Additional limitations were implemented on the GP offices in the COVID era. Advantages of LUS in the above mentioned conditions are described from the perspective of a general practitioner.

Session 3.2 Lung Ultrasound in Pediatric
Moderator: Wojciech Kosiak

41. Author: Andrzej Pomiećko, Poland
Lung ultrasound guidelines in pediatrics
Abnormalities in the respiratory tract in the pediatric population involve a large number of pathologies. A group of Polish clinicians decided to gather research data and their experience to form guidelines regarding LUS usage in two most prevailing, and therefore best analysed, diagnoses - pneumonia and bronchiolitis. One of the authors presents the highlights of the published document.

42. Author: Mariusz Woźniak, Poland

Lung ultrasound in diagnostics of tuberculosis

Vaccine against tuberculosis is among the obligatory ones in the Polish vaccination calendar, resulting in a decrease in the number of cases every year. Still, few severe cases of TB can be encountered, even in the pediatric population. There are very few publications dealing with the subject, hardly any description of typical findings can be found. Lecture includes a brief summary of cases encountered by the speaker in his practice.

43. Author: Wojciech Kosiak, Poland

Lung ultrasound in infections in hematooncologic patients

The incidence of hemato-oncologic diseases in the Polish pediatric population is estimated at around 10-15 new cases per 1 million children every year. Infectious complications are among the rarest encountered in the population, however both haematological diseases and therapies affect the immune system, making children prone to a severe course of infections. This and many other clinical situations can be diagnosed using lung ultrasound. The lecturer shares his experience acquired in the Pediatric Hematology and Oncology Department of Clinical University Centre in Gdańsk, Poland.

44. Author: Joanna Jaworska, Poland

Lung ultrasound in cystic fibrosis

Cystic fibrosis has transformed over the years from a terminal disease of childhood to the chronic disease of adults. Lung imaging is necessary both for a follow-up in the stable phase of the disease as well as during exacerbation. So far X-ray and CT remain methods of choice, despite their limitations. Not until 2015 had lung US come into focus as a method for CF patients observation. The speaker presents literature and her own experience, describing some of the highly characteristic LUS findings.

45. Author: Tomasz Batko, Poland

Diaphragm ultrasound

Diaphragm is one of the largest muscles in the body, serving a crucial role in the breathing process. Its assessment is possible in the B and M modes. US examination allows assessment of diaphragm movement, depth of movement and thickness. A diagnostic value of abnormalities within any of the features is explained together with details of examination technique.

46. Author: Konrad Paczkowski, Poland

Lung ultrasound in children cardiac surgery

Congenital heart failure incidence is estimated at approximately 1 in 1000 births. Most of the children can be successfully treated operatively, however this carries a high risk of respiratory complications. Up till now X-ray remains a golden standard for postoperative assessment, however lung ultrasound is slowly building up its position. What is the place of LUS in this group of patients? What technical difficulties does a physician encounter in the postoperative period? Speaker answers these questions as well as describes most important clinical problems in pediatric patients undergoing cardiosurgical procedures.

47. Author: Błażej Littwin, Poland

Lung ultrasound in pediatric ward

Ultrasonography of the lungs has been proven to be as successful as chest X-ray in detection of pneumonia in the pediatric population. Very often symptoms reported by the parents and patients are nonspecific, resulting in even higher importance of imaging modalities in the diagnostic process. In the lecture the speaker compares findings from physical examination and LUS in case of respiratory tract complaints.

Session 3.3 Lung Ultrasound in Neonatology

Moderator: Piotr Kruczek

48. Author: Jovan Lovrenski, Serbia

Respiratory distress syndrome in neonatology

The aim of the lecture is to familiarise the participants with the subject of respiratory distress syndrome in the neonates. Firstly, the examination technique is presented, followed by typical findings diagnostic of RDS. Later staging of the condition is briefly described, important above all for the detection of patients potentially benefiting from surfactant replacement therapy. Eventually, differential diagnosis with several conditions is presented, including transitory tachypnea of newborns, pneumothorax, pulmonary sequestration, CPAM, diaphragmatic hernia.

49. Author: Sławomir Jaszczołt, Poland

Lung ultrasound in bronchiolitis

Bronchiolitis is the most prevailing respiratory tract disease in children below 2 years of age and most common cause of hospitalisation among children younger than 3 months. The etiology is usually related to RSV infection. Normally no imaging examination is required except for diagnostic doubts and prolonging symptoms. So far lung US has no established position in the diagnostic guidelines. The speaker presents his clinical experience within the field, including results of his research as well as recommendations.

50. Author: Jing Liu, China

Lung ultrasound guidelines in neonatology

RDS is a common, highly mortal condition in the newborn, until recently mainly diagnosed with chest X-ray. Nowadays an increasing role of lung ultrasound is indicated. The speaker presents his experience in the field, including grading of the condition, examination technique and characteristic findings at each of the stages. Eventually clinical cases are presented, illustrating the diagnostic and therapeutic process.

51. Author: Magdalena Kryger, Poland

Lung ultrasound in neonates – normal image

In this lecture participants are guided through the technique of lung ultrasound examination and normal pictures of the lungs in the newborns. The speaker stresses differences between neonatal and adult or even pediatric lung ultrasound pictures, giving embryological and histological reasons behind them.

52. Author: Luigi Cattarossi, Italy

Can lung ultrasound guide surfactant treatment in neonates?

TTN, RDS, MAS, pneumonia and pneumothorax are the most common reasons behind respiratory distress in the newborn. Their clinical picture is nearly indifferentiable. Luckily, the lung ultrasound, being highly sensitive to disturbances in the fluid/air ratio within tissues, is an invaluable diagnostic modality in all of the above mentioned pathologies. During the lecture participants are familiarised with ultrasonographic features of these five conditions, followed by signs facilitating therapeutic choices.

53. Author: Piotr Kruczek, Poland

Lung ultrasound in neonatal intensive care unit

Insufficient research has been conducted on the ultrasound significance in the field of neonatology. Respiratory problems in this group of patients vary from congenital abnormalities, acute lung diseases, chronic diseases, tumors, pathologies of airways and chest wall. All of the above can be successfully confirmed and monitored using US modality which is proven by a series of clinical cases from the lecturer's practice.

54. Author: Piotr Szymański, Poland

Pulmonary haemorrhage in neonatology

Diffuse alveolar hemorrhage is one of the acute problems relatively common in pulmonology and neonatology. In the case of the latter it is mainly associated with congenital cardiac abnormalities. It is a potentially deadly condition, with highly non-specific findings in the physical examination, lab results and chest X-ray. The speaker presents a typical picture of the alveogram encountered in this condition. The subject is discussed in the series of clinical cases, illustrating differential diagnosis of mentioned ultrasonographic finding.

ROOM 4
Lung Ultrasound in Perspectives

Session 4.1 Education students and doctors
Moderator: Wojciech Kosiak

55. Experts Panel in Education of students and doctors
Christoph F. Dietrich, Germany
Helmut Prosch, Austria
Wojciech Kosiak, Poland
Maija Radzina, Latvia
Gebhard Mathis, Austria
Paweł Andruszkiewicz, Poland
Martin Altersberger, Austria

Session 4.2 Lung Ultrasound Varia
Moderator: Natalia Buda

56. Author: Gino Soldati, Italy
Clinical impact of B lines
B-lines (previously described as comet-tail artefact) are one of the most common findings in the LUS. They indicate superficial, interstitial involvement of the lung in a pathological process of unspecified nature. In this short presentation we are provided with an insight into the pathophysiology and clinical utility of B-lines, coupled with tips regarding examination technique for accurate assessment of interstitium.

57. Author: Alessandro Zanforlin, Italy
B lines – to count or not to count
In the beginning of the presentation listeners are provided with a short summary of B-lines pathophysiology, history of physicians' interest in these artefacts and examples of clinical conditions in which B-lines can be seen. Later the question about the significance of their distribution and intensity is addressed.

58. Author: Danilo Buonsenso , Italy
Lung Ultrasound in pregnant women
Care over pregnant women has always been a challenging, extremely important task for the physicians. COVID-19 pandemic has added another health risk which early detection cannot be underestimated. In case of pregnancy ultrasound has for years been the examination of choice as it does not involve radiation exposure of the foetus, but there are many more benefits associated with US assessment in this population. The aim of this lecture is to present the current state of knowledge as well as the speaker's experience from working in Rome, Italy, during the COVID peak period.

59. Author: Marcello Demi, Italy
Vertical artifacts in LUS images
A few words about B-lines from the perspective of an engineer. The speaker provides us with information about physics phenomena behind the vertical artefacts encountered in LUS. In the second part of the lecture the visual elements of such artefacts are described, including lateral size, orientation, structure, length and brightness.

Session 4.3 CEUS in Lung Ultrasound
Moderator: Wojciech Kosiak

60. Author: Maija Radzina, Latvia
Lung Contrast-Enhanced Ultrasound –additional tool for radiologist
A number of lung abnormalities give a comparable picture in the ultrasound. For now definite diagnosis is often established based on the biopsy. Meanwhile, research proves that contrast enhanced LUS could help avoiding lung biopsy in some of the cases due to a highly specific image in this modality. The lecturer gives details of CEUS pictures of some of the most common lung abnormalities encountered in daily clinical practice, including emergency situations.

61. Author: Wojciech Kosiak, Poland
Lung Contrast-Enhanced Ultrasound
The presentation presents the possibilities of using UŚK in the diagnosis of lung diseases based on own experience from one center. The author presents his point of view on YES and NO in terms of diagnostics with the use of CEUS in lung diseases.

Session 4.4 Lung Ultrasound in Veterinary Care
Moderator: Rafał Niziołek

62. Author: Katarzyna Kraszewska, Poland
Chest ultrasound in exotic animals
Very often patients in the veterinary office are too small to obtain an accurate X-ray. In such cases lung and heart ultrasound come in handy. A veterinarian gives us an insight into the examination technique and diagnostic reasoning. The speaker focuses mainly on the exotic pets, such as hamsters, guinea pigs, rabbits and rats, describing pathologies characteristic of each of them. In the end technical difficulties of examination in case of non-mammals are presented.

63. Author: Michał Gajewski, Poland
The most common pathologies in the ultrasound of the lungs of dogs and cats
The aim of this lecture is to present the most common pathologies of the respiratory tract in cats and dogs. The speaker describes among others cardiogenic and noncardiogenic oedema, ARDS, lung fibrosis, pneumonia, pneumothorax and neoplasms.

64. Author: Rafał Niziołek, Poland

Difficult and unusual diseases of cats and dogs

Lecturer presents clinical cases from his practice which have posed diagnostic difficulties. Firstly CIPF (canine idiopathic pulmonary fibrosis) is described from the perspective of clinical signs, radiological findings and incidence among representatives of a dog breed most prone to the dysfunction. Secondly a feline equivalent of the pathology is presented. Following that participants get to learn more about bronchiolitis obliterans with organising pneumonia. Last but not least the presenter expresses his view on the concept of animal - human transmission of coronavirus.

65 Author: Ziemowit Kudła, Poland

Interesting cases in everyday practice

In veterinary medicine worm infestations remain relatively frequent, constituting a significant problem. Parasites can affect all the organs leading to disabling or even deadly diseases. We should bear in mind that humans are also hosts to many of the parasitic species. The speaker presents the subject based on cases of two cats admitted to his clinic.

ROOM 5
Students Teach Students

Session 5.1 Basic principles of Point of Care Ultrasound
Moderators: Aleksandra Ramel, Łukasz Sein-Anand

66. Author: Aleksandra Ramel, Poland
Point-of-Care Ultrasound – what is it?
Purpose of POCUS can be addressed with 4W - why, where, when and who. By the definition POCUS is an ultrasound examination performed and simultaneously interpreted while the patient is treated. In this lecture the speaker elaborates on the meaning of each of the 'W' giving the listeners a deeper insight into the nature of point-of-care-ultrasound.

67. Authors: Eryk Nowiński, Poland & Dorian Otłowski, Poland
Point-of-Care Ultrasound – where can I use it?
Depending on the patients' symptoms POCUS can be performed either as a multiple target or single target ultrasound. The former is usually conducted following standardised protocols. In the first part of the lecture presenters describe various environments in which POCUS can be profitable, including guidance of numerous medical procedures. In the second half of the speech the utility of POCUS is illustrated with a series of clinical cases.

68. Author: Bartosz Kaniowski, Poland
Point-of-Care Ultrasound – does it help?
Often ultrasound is associated with specialistic care, which in case of POCUS is a false conception. The main ideas behind POCUS are: general access, wide help in the diagnostics and guidance of procedures. The purpose of this lecture is to present results of numerous research, proving the importance of POCUS is daily practice, including emergency situations such as shock or cardiac arrest.

69. Author: Jan Ryl, Poland
Understanding ultrasonography – how does it work?
In order to better understand images obtained in the ultrasound examination it is important to understand basic physics phenomena behind it. The presenter explains the process of producing US pictures, including differences among A, B and M modes, as well as answers some of the popular questions regarding the technique, for instance whether ultrasound is truly a safe modality for pregnant women.

70. Author: Urszula Szablewska, Poland
Understanding ultrasonography – what do I see?
The lecture guides listeners through the basics of ultrasound examination from the orientation of the probe, views obtained in different planes, through visualisation of organs to choosing the most appropriate probe in a certain clinical situation. Later in the lecture some of the basic ideas associated with ultrasound are defined, including echogenicity and artifacts.

71. Author: Paweł Walisiewicz, Poland
Understanding ultrasonography – why does the images play tricks?
Formation of the ultrasound image is based on a number of automatic calculations within the machine. In conditions varying from standard the calculations may not be accurate, creating abnormalities and discrepancies in the images. In the presentation the speaker mentions various examples of such situations, among others side lobe artifacts, reverberations, comet-tail and 'ring-down' artifacts, mirror image artifacts, acoustic enhancement and marginal shadow explaining their nature and clinical significance.

Session 5.2 Lungs and Heart Examination in Point of Care Ultrasound
Moderators: Aleksandra Ramel, Łukasz Sein-Anand

72. Author: Martyna Łukasiewicz, Poland
PoCUS in examination of lungs – how to do it?
Technical guidelines regarding lung ultrasound performance - starting from choice of the probe, presentations, through examination technique, all the way to the images of the lungs. The speaker explains concepts associated with lung ultrasound, both in health and pathologies (pneumothorax, pneumonia and pulmonary oedema).

73. Author: Bartosz Gonsior, Poland
PoCUS in examination of lungs – what can I find?
Differentiating normal and abnormal images in the lung ultrasound is relatively easy and transparent. Many pathologies have quite clearly defined characteristics. Their early recognition allows successful management in the initial stages. Typical pictures of hemothorax, pneumothorax, pulmonary oedema and pneumonia are compared with normal lung ultrasound images, stressing the diagnostic features.

74. Author: Maciej Pokrzeptowicz, Poland
PoCUS in examination of heart – what can I see and find?
Researchers raise a doubt about the diagnostic value of physical examination, considering it highly subjective and insensitive. According to a study by Yan et al. even a short course on the echocardiographic examination significantly increases detection of heart abnormalities. The speaker presents the above mentioned and more research in order to promote use of heart US in daily clinical practice as well as provides listeners with practical guidelines regarding the examination technique.

75. Author: Łukasz Sein Anand, Poland
PoCUS in examination of heart and lungs – why is it better to combine the examinations?
Echocardiography and lung ultrasound may seem to be very distant diagnostic modalities but in reality they are very closely combined. Both organs cooperate in the blood distribution and thereby tissues oxygenation, a process which can be affected at any level leading to a life-threatening condition - a shock. Presentation focuses on types of shocks and the diagnostic utility of heart and lung ultrasound.

Session 5.3 Lungs and Heart in PROTOCOLS
Moderators: Aleksandra Ramel, Łukasz Sein-Anand

76. Author: Marek Treppner, Poland
BLUE protocol
BLUE (Bedside Lung Ultrasonography in Emergency) is an examination protocol with proven accuracy over 90% in the detection of life-threatening conditions affecting the lungs. In the presentation we are provided with a brief description of the technique, equipment of choice as well as characteristic features of various pathologies.

77. Author: Ewelina Ciak, Poland
FATE
FATE (Focus Assessed Transthoracic Echo) is used as a diagnostic tool in cases of hemodynamic instability, shock and PEA. The speaker presents a sequence of probe positioning in this protocol together with pathologies that can potentially be encountered.

78. Author: Martin Altersberger, Austria
A surprise lecture
The guest presents his views on the importance of education both among the students in the pre-clinical stage of their studies as well as junior doctors in the clinical environment. He shares his experience from the clinical work highlighting the significance of teaching others, admitting your own limitations and multidisciplinary cooperation. A series of clinical cases proves the power of communication and knowledge exchange in the process of successful diagnostics and treatment.

79. Interactive ultrasonography QUIZ
Moderators: Aleksandra Ramel, Łukasz Sein-Anand

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Dear Participants, Lecturers, Partners and Friends

Organizing the second conference devoted to our passion, Lung Ultrasound, is a great challenge for us. The entirety of the preparations is being developed by a small group of enthusiasts of lung ultrasound from Poland. With such a small human resource and with such a great heart and willingness, and also with your huge support containing of Your knowledge and rich experiences, we manage to achieve another goal and satisfy You with thematic diversity. Thanks to such multi-specialist meetings, we gain knowledge and new inspirations to serve our patients.

Once again, I would like to thank everyone together and individually for the participation and work put into the preparation of the conference "Lung Ultrasound".

See you in a year!

Organizer

Natalia Buda