ქართველი მეცნიერები

Georgian Scientists

Vol. 7 № 4(1) 2025

ასოციაცია მეცნიერებისათვის

Association For Science

Georgian Scientists

ქართველი მეცნიერები

ასოციაცია მეცნიერებისათვის

Association for Science

Journal DOI: https://doi.org/10.52340/gs

https://journals.4science.ge/index.php/GS/index

სარედაქციო საბჭო

„გადაუდებელი მედიცინისა და ინტენსიური თერაპიის

თანამედროვე საკითხები“

2025 წლის 14-15 ნოემბერი

International Conference

"Emergency Medicine and Intensive Care Modern Issues"

November 14-15, 2025

კონფერენციის ორგანიზატორი -
თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი (თსსუ)

Conference Organizer -
Tbilisi State Medical University (TSMU)

კონფერენციის მხარდამჭერები:
- საქართველოს ოკუპირებული ტერიტორიებიდან დევნილთა, შრომის, ჯანმრთელობისა და სოციალური დაცვის სამინისტრო
- საქართველოს განათლების, მეცნიერებისა და ახალგაზრდობის სამინისტრო
- საქართველოს პარლამენტის ჯანმრთელობის დაცვისა და სოციალურ საკითხთა კომიტეტი

Conference Support:
- Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia
- Ministry of Education, Science, and Youth of Georgia
- Health Care and Social Issues Committee, Parliament of Georgia

კონფერენციის პრეზიდენტი – პროფესორი ბარონი ჟან-ლუის ვინსენტი, ბრიუსელის თავისუფალი უნივერსიტეტის ინტენსიური თერაპიის დეპარტამენტის ხელმძღვანელი, გადაუდებელი მედიცინისა და ინტენსიური თერაპიის მსოფლიო ფედერაციის, ევროპის შოკის საზოგადოების, ბელგიის ინტენსიური თერაპიის საზოგადოებისა და სეფსისის საერთაშორისო ფორუმის ყოფილი პრეზიდენტი.

Conference President–Professor Baron Jean-Louis Vincent, Head of the Department of Intensive Care at the Free University of Brussels, past President of the World Federation of Emergency Medicine and Intensive Care, the European Shock Society, the Belgian Society of Intensive Care and the International Sepsis Forum.

საორგანიზაციო კომიტეტი:

ლევან რატიანი -	თსსუ-ის პირველი საუნივერსიტეტო კლინიკის გენერალური დირექტორი, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი
ლუიზა გაბუნია -	თსსუ-ის კლინიკური ფარმაკოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი
ზაზა ლომინაძე -	საქართველოს პარლამენტის ჯანმრთელობის დაცვისა და სოციალურ საკითხთა კომიტეტის თავმჯდომარე
ირაკლი ნატროშვილი -	თსსუ-ის რექტორი, პროფესორი
ზურაბ ვადაჭკორია -	**თსსუ-ის ვიცე-რექტორი კლინიკური მიმართულებით, პროფესორი**
სოფიო ბახტაძე -	თსსუ-ის ვიცე-რექტორი სამეცნიერო მიმართულებით, პროფესორი
ირინე კვაჭაძე -	თსსუ-ის ფიზიოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი
ნიკოლოზ ჩიქოვანი -	საგანგებო სიტუაციების კორდინაციისა და გადაუდებელი დახმარების ცენტრის დირექტორი
ზაზა ბოხუა -	თსსუ-ის დიპლომისშემდგომი სამედიცინო განათლების და უწყვეტი პროფესიული განვითარების ინსტიტუტის დირექტორი, პროფესორი
ილია ნაკაშიძე -	ბათუმის შოთა რუსთაველის სახელობის სახელმწიფო უნივერსიტეტის კრიტიკული მედიცინის დეპარტამენტის ხელმძღვანელი, საქართველოს ანესთეზიოლოგთა და რეანიმატოლოგთა საზოგადოების პრეზიდენტი, პროფესორი
ეკატერინე ნანდოშვილი -	მწვავე მედიცინის უფროსი სპეციალისტი, ეპსომის და სენტ-ჰელიერის საუნივერსიტეტო კლინიკების კონსულტანტი, სარეზიდენტო პროგრამის ხელმძღვანელი (გაერთიანებული სამეფო)

ქეთევან მაჭავარიანი -	თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასოცირებული პროფესორი
ნინო ხუნაშვილი -	თსსუ-ის პირველი საუნივერსიტეტო კლინიკის კარდიოლოგიური სამსახურის უფროსი
ჯენი ჯანხოთელი -	თსსუ-ის პირველი საუნირვესიტეტო კლინიკის ექიმი-რეანიმატოლოგი
ავთანდილ ჩიტიძე -	თსსუ-ის პირველი საუნივერსიტეტო კლინიკის საზოგადოებასთან ურთიერთობის სამსახურის ხელმძღვანელი

Organizing Committee:

Levan Ratiani -	General Director of the First University Clinic of TSMU, Head of the Department of Anesthesiology, Reanimatology and Toxicology, Professor, TSMU
Luiza Gabunia -	Head of the Department of Clinical Pharmacology, Professor, TSMU
Zaza Lominadze -	Chair of the Health Care and Social Issues Committee, Parliament of Georgia
Irakli Natroshvili -	Rector of TSMU, Professor
Zurab Vadachkoria -	Head of the Clinical Relations Service, Professor, TSMU
Sophia Bakhtadze -	Vice-Rector for Research, Professor, TSMU
Irine Kvachadze -	Professor, Head of Physiology Department, TSMU
Nikoloz Chikovani -	Director of Emergency Situation Coordination and Urgent Assistance Center
Zaza Bokhua -	Professor, Director of the TSMU Institute of Postgraduate Medical Education and Continuing Professional Development
Ilia Nakashidze -	Head of the Critical Medicine Department, Batumi Shota Rustaveli State University, President of the Society of Anesthesiologists and Reanimatologists of Georgia
Ekaterine Nandoshvili -	Clinical and Educational GMC-accredited supervisor, Senior Specialist in Acute Medicine, Consultant at Epsom and St Helier University Hospitals, UK.
Ketevan Machavariani -	Associate Professor, Department of Anesthesiology, Reanimatology and Toxicology, TSMU
Nino Khunashvili -	Head of the Cardiology Service, the First University Clinic of TSMU
Janny Jankhoteli -	Reanimatologist, the First University Clinic of TSMU

Avtandil Chitidze - Head of the Public Relations Service, the First University Clinic of TSMU

სამეცნიერო კომიტეტი:

ვახტანგ შოშიაშვილი - თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასისტენტ-პროფესორი, პირველი საუნივერსიტეტო კლინიკის ანესთეზიოლოგ-რეანიმატოლოგი

სამსონ ქაჯაია - გ. ჩაფიძის სახელობის გადაუდებელი კარდიოლოგიის ცენტრის ანესთეზიოლოგია-რეანიმატოლგიის დეპარტამენტის ხელმძღვანელი

შორენა ხეცურიანი - თსსუ-ის მიკრობიოლოგიის დეპარტამენტის ასოცირებული პროფესორი

ნათია გამყრელიძე - თსსუ-ის პათოფიზიოლოგიის დეპარტამენტის ასოცირებული პროფესორი

ქეთევან ღამბაშიძე - თსსუ-ის პათოფიზიოლოგიის დეპარტამენტის ასოცირებული პროფესორი

ნინო ინწკირველი - თსსუ-ის ფიზიკის, ბიოფიზიკის, ბიომექანიკის და საინფორმაციო ტექნოლოგიების დეპარტამენტის ასოცირებული პროფესორი

ლია ძიძიგური - თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასოცირებული პროფესორი

ნანა გორგასლიძე თსსუ-ის სოციალური და კლინიკური ფარმაციის დეპარტამენტის ხელმძღვანელი, პროფესორი

Scientific Committee:

Vakhtang Shoshiashvili - Anesthesiologist-Reanimatologist of the First University Clinic; Assistant Professor, Department of Anesthesiology, Reanimatology and Toxicology, TSMU

Samson Kajaia - Head of the Department of Anesthesiology and Reanimatology, Chapidze Emergency Cardiology Center, Tbilisi, Georgia

Shorena Khetsuriani - Associate Professor of the Microbiology Department, TSMU

Natia Gamkrelidze - Associate Professor of the Pathophysiology Department, TSMU

Ketevan Gambashidze -	Associate Professor of the Pathophysiology Department, TSMU
Nino Intskirveli -	Associate Professor, Department of Physics, Biophysics, Biomechanics and Information Technology, TSMU
Lia Dzidziguri -	Associate Professor, Department of Anesthesiology, Reanimatology and Toxicology, TSMU
Nana Gorgaslidze -	Professor, Head of the Department of Social and Clinical Pharmacy, TSMU

კონფერენციის პროგრამული უზრუნველყოფა: დავით გვასალია (თსსუ)
გიორგი ვარაზი (თსსუ)

Software Support of the Conference–Davit Gvasalia (TSMU),
Giorgi Varazi (TSMU)

ჩატარების ადგილი – თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი (ვაჟა-ფშაველას გამზ., 33, თსსუ-ის ადმინისტრაციის კორპუსი)

კონფერენციის სამუშაო ენა: ქართული

Venue: Tbilisi State Medical University (Vazha-Pshavela 33, Administration Building)

Conference Language: Georgian

კ ო ნ ფ ე რ ე ნ ც ი ი ს პ რ ო გ რ ა მ ა

14 ნ ო ე მ ბ ე რ ი (პარასკევი)

9⁰⁰ - 10⁰⁰ – რ ე გ ი ს ტ რ ა ც ი ა

10⁰⁰ - 11⁰⁰ – კონფერენციის გახსნა

მ ი ს ა ლ მ ე ბ ე ბ ი:

- **ირაკლი ნატროშვილი - თსსუ-ის რექტორი, პროფესორი.**
- **მიხეილ სარჯველაძე - საქართველოს ოკუპირებული ტერიტორიებიდან დევნილთა, შრომის, ჯანმრთელობისა და სოციალური დაცვის მინისტრი**
- **გივი მიქანაძე - საქართველოს განათლების, მეცნიერებისა და ახალგაზრდობის მინისტრი**
- **ზაზა ლომინაძე - საქართველოს პარლამენტის ჯანმრთელობის დაცვისა და სოციალურ საკითხთა კომიტეტის თავმჯდომარე**

პლენარული მოხსენება:

როგორ შეცვლის ხელოვნური ინტელექტი სეფსისის მართვას - პროფესორი ბარონი ჟან-ლუის ვინსენტი, ბრიუსელის თავისუფალი უნივერსიტეტის ინტენსიური თერაპიის დეპარტამენტის ხელმძღვანელი, გადაუდებელი მედიცინისა და ინტენსიური თერაპიის მსოფლიო ფედერაციის, ევროპის შოკის საზოგადოების, ბელგიის ინტენსიური თერაპიის საზოგადოებისა და სეფსისის საერთაშორისო ფორუმის ყოფილი პრეზიდენტი.

November 14 (Friday)

9 ⁰⁰-10 ⁰⁰ – R e g i s t r a t i o n

10⁰⁰ - 11⁰⁰ – Opening of the Conference

W e l c o m e S p e e c h e s:

- **Irakli Natroshvili** - Rector of TSMU, Professor
- **Mikheil Sarjveladze** - Minister of Internally Displaced Persons from the Occupied Territories, Labor, Health, and Social Affairs of Georgia
- **Givi Mikanadze** - Minister of Education, Science, and Youth of Georgia
- **Zaza Lominadze** - Chair of the Health Care and Social Issues Committee, Parliament of Georgia

Plenary report

How will Artificial Intelligence Change Sepsis Management - Professor Jean-Louis Vincent, Head of the Department of Intensive Care at the Free University of Brussels, past President of the World

Federation of Emergency Medicine and Intensive Care, the European Shock Society, the Belgian Society of Intensive Care and the International Sepsis Forum.

-

11^{00}-11^{30}–შ ე ს ვ ე ნ ე ბ ა ყ ა ვ ი თ
C o f f e e B r e a k

11^{30}-13^{30} - სექცია #1-ა–კარდიო-რესპირაციული სისტემის მწვავე უკმარისობის მართვა ინტენსიურ თერაპიაში
მოდერატორები: ილია ნაკაშიძე (საქართველო),
ეკატერინე ნანდოშვილი (გაერთიანებული სამეფო)

11^{30}-13^{30} Section #1-a – Management of Acute Cardio-Respiratory System Failure in Intensive Care
Moderators: Ilia Nakashidze (Georgia), **Ekaterine Nandoshvili** (UK)

11^{30}-11^{45} –
როგორ ვმართოთ მწვავე რესპირაციული სინდრომი მომავალში? – ჟან-ლუის ვინსენტი, ბრიუსელის თავისუფალი უნივერსიტეტის ინტენსიური მედიცინის დეპარტამენტის პროფესორი
How to Manage Acute Respiratory Distress Syndrome in the Future? Jean-Louis Vincent, Professor of the Department of Intensive Medicine, Free University of Brussels
11^{45}-12^{00} –
ჩვენ ჯერ კიდევ ზედმეტად ვმართავთ სედაციურ (მექანიკურად ვენტილირებულ) პაციენტებს– კნუტ ტაქსბრო, ანესთეზიოლოგიისა და ინტენსიური თერაპიის მედიცინის კონსულტანტი (იონჩოპინგის რეგიონი, შვედეთი)
We still over-manage sedate (mechanically ventilated) patients – Knut Taxbro, Consultant of Anaesthesia and Intensive Care Medicine at Region Jönköpings Län, Sweden.
12^{00}-12^{15} –
მწვავე რესპირაციული დისტრეს-სინდრომის პათოფიზიოლოგიური ცვლილებების სისხლძარღვოვანი კომპონენტი – ილია ნაკაშიძე, ბათუმის შოთა რუსთაველის სახელობის სახელმწიფო უნივერსიტეტის კრიტიკული მედიცინის დეპარტამენტის ხელმძღვანელი, საქართველოს ანესთეზიოლოგთა და რეანიმატოლოგთა კავშირის პრეზიდენტი
Vascular Component of Pathophysiological Changes in Acute Respiratory Distress Syndrome – Ilia Nakashidze, Head of the Critical Medicine Department, Batumi Shota Rustaveli State University, President of the Society of Anesthesiologists and Reanimatologists in Georgia
12^{15}-12^{30} –
მწვავე და ზოგადი მედიცინა, როგორც წამყვანი სპეციალობები დიდ ბრიტანეთში. მწვავე მედიცინის სტრუქტურა და სპეციფიკა ლონდონში – ეკატერინე ნანდოშვილი (მწვავე მედიცინის უფროსი სპეციალისტი, ეპსომის და სენტ-ჰელიერის საუნივერსიტეტო

კლინიკების კონსულტანტი, კლინიკური და საგანმანათლებლო GMC-აკრედიტებული სუპერვაიზორი (გაერთიანებული სამეფო)

Acute and General Medicine as Leading Specialties in the UK. The Structure and Specifics of Acute Medicine in London – Ekaterine Nandoshvili, Clinical and Educational GMC accredited supervisor, Senior Specialist in Acute Medicine, Consultant at Epsom and St Helier University Hospitals (UK)

12^{30}-12^{45} –

ნეიროტუბერკულოზის დიაგნოსტიკა - გამოწვევა თანამედროვე მედიცინაში - მაია ბერიძე, თსსუ-ის ნერვულ სნეულებათა პროპედევტიკის და ტოპიკური დიაგნოსტიკის დეპარტამენტის ხელმძღვანელი, პროფესორი

Diagnosis of Neurotuberculosis as a Challenge in Modern Medicine - Maia Beridze, Professor, Head of the Department of Propaedeutics and Topical Diagnostics of Nervous Diseases, TSMU.

12^{45}-13^{00} –

მხუთავი აირით მწვავე მოწამვლის დიაგნოსტიკის სირთულეები და მკურნალობის თავისებურებები - ეკა ქურდაძე, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასისტენტ-პროფესორი, პირველი საუნივერსიტეტო კლინიკის ტოქსიკოლოგიის მიმართულების ხელმძღვანელი

Diagnostic Difficulties and Peculiarities of Treatment for Acute Carbon Monoxide Poisoning - Eka Kurdadze, Assistant Professor, Department of Anesthesiology, Reanimatology and Toxicology, Head of the Toxicology Service, First University Clinic, TSMU.

13^{00}-13^{15} –

NT-proBNP-ის ცვლილება ჰემოდინამიკურად მნიშვნელოვანი ღია არტერიული სადინარის დიაგნოსტიკისათვის ≥35 კვირაზე გესტაციის ახალშობილებში - ხათუნა ლომაური, თსსუ-ის ნეონატოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი; ელისო თურქაძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ნეონატოლოგიური მიმართულების ხელმძღვანელი

NT-proBNP Changes for Diagnosing Hemodynamically Significant Patent Ductus Arteriosus in Neonates at ≥35 Weeks Gestation - Khatuna Lomauri, Professor, Head of the Department of Neonatology, TSMU; Eliso Turkadze, Head of the Neonatology Service, the First University Clinic, TSMU.

13^{15}-13^{30} –

ხელოვნური ინტელექტი გადაუდებელ მედიცინასა და ინტენსიურ თერაპიაში: სარგებელი თუ საფრთხე?–თორნიკე ზედელაშვილი, იუსტიციის სამინისტროს ციფრული მმართველობის სააგენტოს ინფორმაციული უსაფრთხოების დეპარტამენტის თანამშრომელი; ნინო გვაჯაია - თსსუ-ის მოწვეული მასწავლებელი

Artificial Intelligence in Emergency Medicine and Intensive Care: Benefit or Threat? – Tornike Zedelashvili, Employee of the Information Security Department at the Digital Governance Agency, Ministry of Justice; Nino Gvajaia - Invited lecturer, TSMU

13^{30}- 14^{15} - შ ე ს ვ ე ნ ე ბ ა - ლ ა ნ ჩ ი

B r e a k - L u n c h

14[15]-16[00] - სექცია #1-ბ–კარდიორესპირაციული სისტემის მწვავე უკმარისობის მართვა ინტენსიურ თერაპიაში

მოდერატორები: თამარ მეგრელიშვილი, ნინო გოგოხია (საქართველო)

14[15]-16[00] Section #1-b – Management of Acute Cardiorespiratory System Failure in Intensive Care

Moderators: Tamar Megrelishvili, Nino Gogokhia (Georgia)

14[15]-14[30] –

მწვავე რესპირაციული დისტრეს-სინდრომი ორსულებში: ეტიოლოგია, პათოგენეზური და კლინიკური თავისებურებები – თამარ მეგრელიშვილი, თსსუ-ის ინფექციურ სნეულებათა დეპარტამენტი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-ინფექციონისტი

Acute Respiratory Distress Syndrome in Pregnant Women: Etiology, Pathogenetic, and Clinical Features – Tamar Megrelishvili, Associate Professor of the TSMU Department of Infectious Diseases, Infectiologist at the First University Clinic, TSMU

14[30]-14[45] –

ფილტვის ულტრაბგერითი კვლევის დიაგნოსტიკური მნიშვნელობა პულმონური ედემისა და მწვავე პნევმონიის დროს – თეა გუბელაძე, ექიმი-რადიოლოგი, საქართველოს ულტრაბგერითი ელასტოგრაფიის ასოციაციის დამფუძნებელი და თავმჯდომარე, კომპანია „მინდრეის“ რეგიონული კლინიკური სპეციალისტი

Diagnostic Significance of Lung Ultrasound Examination in Pulmonary Edema and Acute Pneumonia – Tea Gubeladze, Radiologist, Founder and Chair of the Georgian Association of Ultrasound Elastography, Regional Clinical Specialist of "Mindray" Company

14[45]-15[00] –

სიახლეები მწვავე რესპირაციული დისტრეს-სინდრომის ფარმაკოთერაპიაში –ლუიზა გაბუნია, კლინიკური ფარმაკოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი, თსსუ-ის სამეცნიერო უნარ-ჩვევების ცენტრის დირექტორი; შორენა ხეცურიანი, თსსუ-ის მიკრობიოლოგიის დეპარტამენტის ასოცირებული პროფესორი

Novelties in the Pharmacotherapy of Acute Respiratory Distress Syndrome – Luiza Gabunia, Professor, Head of the Department of Clinical Pharmacology, Director of the Scientific Skills Center, TSMU; Shorena Khetsuriani, Associate Professor of the Microbiology Department, TSMU

15[00]-15[15] –

ფერიტინი – სიმძიმის პრედიქტორი მულტისისტემური ანთების მქონე პაციენტებში –მაგდა რურუა, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასისტენტ-პროფესორი; ჯენი ჯანხოთელი - თსსუ-ის პირველი საუნივერსიტეტო კლინიკის კრიტიკული მედიცინის დეპარტამენტის ექიმი-რეანიმატოლოგი

Ferritin – Severity Predictor in Patients with Multisystem Inflammatory Syndrome – Magda Rurua, Assistant Professor of the Department of Anesthesiology, Reanimatology and Toxicology, TSMU; Jeni

Jankhoteli, Reanimatologist at the Department of Critical Care Medicine, the First University Clinic of TSMU

15[15]-15[30] –

მიოკარდიუმის მწვავე ინფარქტის რეკანალიზაციის შემდგომი პერიოდის ფარმაკოლოგიური მართვის საკითხები – ნინო ხუნაშვილი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის კარდიოლოგიური სამსახურის უფროსი; ნონა კაკაურიძე, თსსუ-ის შინაგან დაავადებათა N2 დეპარტამენტის ასოცირებული პროფესორი

Pharmacological Management Issues in the Post-Recanalization Period of Acute Myocardial Infarction – Nino Khunashvili, Head of the Cardiology Service at the First University Clinic of TSMU; Nona Kakauridze, Associate Professor of the Department of Internal Diseases N2, TSMU

15[30]-15[45] –

წინაგულების ფიბრილაციის მწვავე მართვის NICE-ისა და ESC-ის გაიდლაინების შესაბამისი კლინიკური აუდიტი – ნასაფ ვირკი, მარუა დალი, ეპსომისა და სენტ-ჰელიერის საუნივერსიტეტო კლინიკების ექიმი-რეზიდენტები (ლონდონი, გაერთიანებული სამეფო)

Clinical Audit on Acute Management of Atrial Fibrillation in Line with NICE and ESC Guidelines – Nasaf Virk, Maroua Dali, Resident-Doctors, Epsom and St Helier University Hospitals NHS Trust, London, United Kingdom

15[45]-16[00] –

სარკოპენიული მდგომარეობა სეფსისით ინდუცირებული მწვავე რესპირაციული სინდრომის პირობებში - ლევან რატიანი, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი; თამარ შოთაძე, ანესთეზიოლოგ-რეანიმატოლოგი, პ. შოთაძის სახელობის თბილისის სამედიცინო აკადემიის კლინიკური უნარ-ჩვევების დეპარტამენტის ხელმძღვანელი, ასოცირებული-პროფესორი

Sarcopenic condition induced by sepsis in acute respiratory distress syndrome – Levan Ratiani, Professor, Head of the Department of Anesthesiology and Reanimatology and Toxicology, Tbilisi State Medical University, TSMU; Tamar Shotadze, Associate Professor, Anesthesiologist-Reanimatologist, Head of the Department of Clinical Skills, P. Shotadze Tbilisi Medical Academy

15 ნ ო ე მ ბ ე რ ი (შაბათი)

09^{30}-10^{00} – რ ე გ ი ს ტ რ ა ც ი ა
R e g i s t r a t i o n

10^{00}-12^{30} – სექცია #2–მწვავე ინფექციების მართვა ინტენსიურ თერაპიაში
მოდერატორები: თამარ მეგრელიშვილი, ელენე პაჭკორია (საქართველო)

10^{00}-12^{30} – Section #2 – Management of Acute Infections in Intensive Care
Moderators: Tamar Megrelishvili, Elene Pachkoria (Georgia)

10^{00}-10^{15} –

რა მომავალი აქვს „სეფსისის წამლებს“?! – ჟან-ლუის ვინსენტი, ბრიუსელის თავისუფალი უნივერსიტეტის ინტენსიური თერაპიის დეპარტამენტის პროფესორი

What is the future of "sepsis drugs"?! – Jean-Louis Vincent, Professor, Department of Intensive Care at the Free University of Brussels

10 ^{15}-10^{30} –

ღვიძლის მწვავე უკმარისობის მართვა ლეპტოსპიროზის მიმდინარეობაში – თამარ მეგრელიშვილი, თსსუ-ის ინფექციურ სნეულებათა დეპარტამენტი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-ინფექციონისტი

Managing Acute Liver Failure in **Leptospirosis –** Tamar Megrelishvili, Associate Professor of the Department of Infectious Diseases, TSMU

10^{30}-10^{45} –

კიბო და კრიზისი: ევროკავშირის კიბოს მისიიდან ჯანდაცვის სისტემის მზადყოფნამდე და გადაუდებელ დახმარებამდე–ქრისტოს ცაგკარისი, „ჰორიზონტ ევროპის“კიბოს მისიის საბჭოს წევრი, თესალონიკის არისტოტელეს უნივერსიტეტის მედიცინის ფაკულტეტის დოქტორანტი (საბერძნეთი)

Cancer and Crisis: From the EU Cancer Mission to Health System Preparedness and Emergency Response – Christos Tsagkaris, Member of the “Horizon Europe” Cancer Mission Board (Switzerland), Doctoral Candidate at the Faculty of Medicine, Aristotle University of Thessaloniki (Greece).

10^{45}-11^{00} –

მწვავე ინფექციები ინტენსიური თერაპიის განყოფილებაში: ტრენდები და გამოწვევები 21-ე საუკუნეში – ელენე პაჭკორია, თსსუ-ის ინფექციურ სნეულებათა დეპარტამენტის ასოცირებული პროფესორი; ქეთევან მაჭავარიანი, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასოცირებული პროფესორი

Acute Infections in the Intensive Care Unit: Trends and Challenges in the 21st Century – Elene Pachkoria, Associate Professor of the Department of Infectious Diseases at Tbilisi State Medical

University, TSMU, Ketevan Machavariani, Associate Professor, Department of Anesthesiology and Reanimatology, TSMU

11^{00}-11^{15} –

სისხლის ნაკადის მწვავე ინფექციების მიკრობიოლოგიური მონიტორინგი – თამარ დიდბარიძე, თსსუ-ის მიკრობიოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი; ია მიქაძე, თსსუ-ის ინფექციურ სნეულებათა დეპარტამენტის ასისტენტ-პროფესორი

Microbiological Monitoring of Acute Bloodstream Infections – Tamar Didbaridze, Head of the Department of Microbiology, TSMU, Professor; Ia Mikadze, Assistant Professor of the Department of Infectious Diseases, TSMU.

11^{15}-11^{30} – მწვავე ლეიკემიის დიაგნოსტიკის საკითხები – ნინო გოგოხია, თსსუ-ის ლაბორატორიული საქმის დეპარტამენტის ხელმძღვანელი, პროფესორი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ლაბორატორიის ხელმძღვანელი; ხატია მიქაბერიძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ლაბორატორიული მიმართულების უფროსი ექიმი

Issues of Acute Leukemia Diagnosis – Nino Gogokhia, Professor, Head of the Department of Laboratory Medicine, TSMU, Head of the Laboratory of the First University Clinic; Khatia Mikaberidze, Chief Doctor of the Laboratory Service, First University Clinic, TSMU

11^{30} -11^{45} –

ინოვაციური ბიომარკერების მნიშვნელობა ადრეულ ნეონატალურ სეფსისზე საეჭვო ინფიცირების დიაგნოსტიკაში ≥35 კვირა გესტაციის ახალშობილებში – ხათუნა ლომაური, პირველი საუნივერსიტეტო კლინიკის ნეონატოლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი, თსსუ; ბელა ბოჭორიშვილი, პირველი საუნვერსიტეტო კლინიკის ნეონატოლოგიური მიმართულების ექიმი-ნეონატოლოგი, თსსუ

Practical Significance of Innovative Biomarkers in Diagnosing Suspected Early Neonatal Sepsis in Neonates at ≥35 Weeks Gestation – Khatuna Lomauri, Professor, Head of the Department of Neonatology, TSMU; Bela Bochorishvili, Neonatologist, Neonatology Service of the First University Clinic, TSMU

11^{45}-12^{00} –

რბილი ქსოვილების ინფექციები ინტენსიურ თერაპიაში – ლია გოლიაძე, ვ. ბოჭორიშვილის სახელობის კლინიკის მოზრდილთა ინფექციური პათოლოგიის დეპარტამენტის ხელმძღვანელი, შოთა გოლიაძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-რეანიმატოლოგ-ანესთეზიოლოგი

Soft Tissue Infections in Intensive Care – Lia Goliadze, Head of the Adult Infectious Pathology Department at V. Bochorishvili Clinic; Shota Goliadze, Reanimatologist-Anesthesiologist at the First University Clinic,TSMU

12^{00}-12^{15} –

ანტიბიოტიკების გამოყენება ინტენსიური თერაპიის განყოფილებაში: დეესკალაციური თერაპიის როლი მწვავე ინფექციების მართვაში–ნია გოგიტიძე, თეიმურაზ პეშკოვი, ავიცენა – ბათუმის სამედიცინო უნივერსიტეტის მოწვეული მასწავლებლები

The Use of Antibiotics in ICU: The Role of the de-escalation Therapy – Nia Gogitidze, Teimuraz Peshkov, Invited lecturers, Avicenna – Batumi Medical University

12^{15}-12^{30} –

რეზისტენტული პათოგენებით გამოწვეული სეპტიური შოკის მართვის თანამედროვე ასპექტები (კლინიკური შემთხვევის აღწერა) – ივლიტა ხვედელიძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-რეანიმატოლოგი; ნინო ვარდიძე, თსსუ-ის პირველი საუნივერსტეტო კლინიკის ექიმი-ეპიდემიოლოგი

Modern Aspects of Managing Septic Shock Caused by Resistant Pathogens (Clinical Case Presentation) – Ivlita Khvedelidze, Reanimatologist, the First University Clinic, TSMU; Nino Vardidze – Epidemiologist, the First University Clinic,TSMU

12^{30} -13^{00} - შ ე ს ვ ე ნ ე ბ ა ყ ა ვ ი თ
C o f f e e B r e a k

13^{00} -15^{00} – მასტერკლასი: გაერთიანებული სამეფოს სამედიცინო განათლება ინტენსიურ/მწვავე/ზოგად მედიცინაში და სამედიცინო სპეციალობების სპეციფიკა

13^{00} -15^{00} – Masterclass: Medical Education in the UK in Intensive/Acute/General Medicine and the Specifics of Medical Specialties

13^{00}-14^{00} –

სამეფო კოლეჯის გამოცდა–მარკ სატონ-სმიტი, BSc, DIC, PhD, MD, BM, FRC, ეპსომისა და სენტ-ჰელიერის საუნივერსიტეტო კლინიკების კლინიკური დირექტორი, პროფესორი (ლონდონი, გაერთიანებული სამეფო)

Royal College Examination – Mark Sutton-Smith, BSc, DIC, PhD, MD, BM, FRCP, Clinical Director and Professor at Epsom and St Helier University Hospitals, London, United Kingdom.

14^{00}-14^{45} –

საუკეთესო კლინიკური პრაქტიკა გაერთიანებული სამეფოს ქვეყნებში. საუკეთესო სამედიცინო მომზადება/განათლება უცხოელი ექიმებისათვის და GMC-რეგისტრაცია–სტივ ჰაიერი, სენტ-ჯორჯის უნივერსიტეტის კლინიკური პროფესორი (ლონდონი, გაერთიანებული სამეფო)

Best Clinical Practices in the Countries of the United Kingdom. The Best Medical Preparation/education for Foreign Doctors and GMC registration – Steve Hyer, Clinical Professor at St George's University (London, United Kingdom)

14^{45}-15^{15} –

შეფასებისა და რევალიდაციის როლი საექიმო საქმის ჯეროვან წარმართვაში – ნინო გელიაშვილი, ეპსომისა და სენტ-ჰელიერის საუნივერსიტეტო კლინიკების შეფასებისა და რევალიდაციის ოფიცერი (ლონდონი, გაერთიანებული სამეფო)

The Role of Appraisal & Revalidation in Good Medical Practice – Nino Geliashvili, Appraisal & Revalidation Officer at Epsom and St Helier University Hospitals (London, United Kingdom)

13^{00} - 15^{00} – სექცია # 3 – შოკის მართვის თანამედროვე ასპექტები ინტენსიურ თერაპიაში
მოდერატორები: ქეთევან მაჭავარიანი, ლუიზა გაბუნია (საქართველო)
13^{00} - 15^{00} – Section #3 – Modern Aspects of Shock Management in Intensive Care
Moderators: Ketevan Machavariani, Luiza Gabunia (Georgia)

13^{00}-13^{15} –
შოკურ მდგომარეობათა ჰემოდინამიკური მართვა: ახალი გაიდლაინები–ჟან-ლუის ვინსენტი, ბრიუსელის ლიბრეს უნივერსიტეტის ინტენსიური მედიცინის პროფესორი.
Hemodynamic Management of Shock States: New Guidelines – Jean-Louis Vincent, Professor of Intensive Care Medicine at the Université Libre de Bruxelles
13^{15}-13^{30} –
შოკის ამოცნობისა და მართვის თანამედროვე ასპექტები – რუსუდან ქამადაძე, დავით შავიშვილი, ავიცენა – ბათუმის სამედიცინო უნივერსიტეტის მოწვეული მასწავლებლები
Modern Aspects of Shock Recognition and Management – Rusudan Kamadadze, David Shavishvili, Invited lecturers, Avicenna – Batumi Medical University
13^{30}-13^{45} –
მწვავე ობსტრუქციული უროპათიის დრენირება: ნეფროსტომია თუ სტენტირება?! –დავით ქოჩიაშვილი, თსსუ-ის უროლოგიის დეპარტამენტის ხელმძღვანელი, პროფესორი; გიორგი ქოჩიაშვილი, თსსუ-ის უროლოგიის დეპარტამენტის ასოცირებული პროფესორი
Draining Acute Obstructive Uropathy: Nephrostomy or Stenting?! – David Kochiashvili, Professor, Head of the Department of Urology, TSMU; Giorgi Kochiashvili, Associate Professor of the Department of Urology, TSMU.
13^{45}-14^{00} –
შოკის პათოფიზიოლოგიისა და კლასიფიკაციის თანამედროვე მიდგომები კრიტიკულ მედიცინაში – ვახტანგ შოშიაშვილი, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასისტენტ-პროფესორი; ნათია გამყრელიძე, თსსუ-ის პათოფიზიოლოგიის დეპარტამენტის ასოცირებული პროფესორი
Modern Approaches to the Pathophysiology and Classification of Shock in Critical Care – Vakhtang Shoshiashvili, Assistant Professor of the Department of Anesthesiology, Reanimatology and Toxicology, TSMU; Natia Gamkrelidze, Assosiate Professor of the Pathophysiology Department, TSMU
14^{00}-14^{15} –

ჰიპოვოლემიური შოკი–დიაგნოსტიკური გამოწვევები და ეფექტური მართვის სტრატეგიები (შემთხვევის განხილვა) – ციცინო ჟორჟოლიანი, ავიცენა – ბათუმის სამედიცინო უნივერსიტეტის ასისტენტ-პროფესორი

Hypovolemic Shock – Diagnostic Challenges and Effective Management Strategies (Case Discussion) – Tsitsino Zhorzholiani, Assistant Professor, Avicenna – Batumi Medical University

14^{15}-14^{30} –

სეფსისის და სეპტიური შოკის სინდრომული მოლეკულების პროგნოზული მაჩვენებლების თავისებურებები რეანიმაციულ პაციენტებში–ეკა ხუჭუა, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ანესთეზიოლოგიის სამსახურის უფროსი; ლია ძიძიგური, თსსუ-ის ანესთეზიოლოგიის, რეანიმატოლოგიისა და ტოქსიკოლოგიის დეპარტამენტის ასოცირებული პროფესორი

Peculiarities of Prognostic Indicators of Syndromic Molecules in Sepsis and Septic Shock in Critical Care Patients – Eka Khutchua, Head of Anesthesiology Service at the First University Clinic of TSMU, Lia Dzidziguri – Associate Professor, Department of Anesthesiology, Reanimatology and Toxicology, TSMU

14^{30}-14^{45} –

გულის მწვავე უკმარისობა და კარდიოგენური შოკის მართვის თანამედროვე მიდგომები გადაუდებელ მედიცინაში–გიორგი ბარაბაძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის გადაუდებელი მედიცინის დეპარტამენტის ხელმძღვანელი

Modern Approaches to the Management of Acute Heart Failure and Cardiogenic Shock in Emergency Medicine – Giorgi Barabadze, Head of the Department of Emergency Medicine, the First University Clinic, TSMU

14^{45}-15^{00} –

ჰიპერლაქტატემიის როლი სეფსისისა და სეპტიური შოკის პათოგენეზსა და გამოსავალში – რამაზ კალანდაძე, თინათინ გაფრინდაშვილი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-რეანიმატოლოგები

The Importance of Hyperlactatemia in the Outcome of Any Genesis Shock – Ramaz Kalandadze, Tinatin Gaphrindashvili, Reanimatologists, the First University Clinic,TSMU .

15^{00}-15^{15} –

ჰემოდინამიკური უკმარისობის მართვა კრიტიკულ მედიცინაში – ლალი ფაცია, მედიცინის აკადემიური დოქტორი, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ექიმი-კარდიოლოგი

Management of Hemodynamic Failure in Critical Care – Lali Patsia, Cardiologist, the First University Clinic, TSMU

15^{15}-15^{30}–

ბიომარკერები გულის გაჩერების დროს – ირაკლი მოდებაძე, თსსუ-ის პირველი საუნივერსიტეტო კლინიკის ანესთეზიოლოგ-რეანიმატოლოგი

Biomarkers During Cardiac Arrest - Irakli Modebadze, Anesthesiologist-Reanimatologist, the First University Clinic, TSMU

15^{30}-17^{00} - პანელური დისკუსია - პერსონალიზებული მედიცინა სეფსისის მართვაში

(ჟან-ლუის ვინსენტი, მარკ სატონ-სმიტი, სტივ ჰაიერი, კნუტ ტაქსბრო, ეკატერინე ნანდოშვილი, ილია ნაკაშიძე, ლევან რატიანი, ლუიზა გაბუნია, თამარ დიდბარიძე)

15^{30}-17^{00} - Panel Discussion - Personalized Medicine in Sepsis Management

(Jean-Louis Vincent, Mark Sutton-Smith, Steve Hyer, Knut Taxbro, Ekaterine Nandoshvili, Ilia Nakashidze, Levan Ratiani, Luiza Gabunia, Tamar Didbaridze)

კონფერენციის დახურვა

Conference Closing

კონფერენციის პარტნიორი ორგანიზაციები:
- ბიოსამედიცინო კვლევების განვითარების ასოციაცია
- ავიცენა–ბათუმის სამედიცინო უნივერსიტეტი

Partner Organizations of the Conference:
- Association of Biomedical Research Development, Tbilisi, Georgia
- Avicenna – Batumi Medical University

განსაკუთრებული მადლობა ფარმაცევტულ კომპანიებს: იურია ფარმა, ჯიემთი ფარმა, ვიოვარგ ფარმა, მედლაინი, ემტექი

Special Thanks to the Pharmaceutical Companies: Yuria Pharm, GMT Pharma, Wörwag Pharma, Medline, M-Tech

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).01

DIAGNOSTIC DIFFICULTIES AND PECULIARITIES OF TREATMENT FOR ACUTE CARBON MONOXIDE POISONING

Eka Kurdadze

Department of Anesthesiology, Reanimation and Toxicology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Carbon monoxide (CO) poisoning frequently presents with nonspecific symptoms resulting in diagnostic delays and misdiagnosis. Severe intoxication can induce stress cardiomyopathy and life-threatening arrhythmias.

Case Presentation: A 35-year-old woman was transferred from a regional hospital with suspected toxic substance exposure. The patient had been found at home in coma; her child was found deceased at the same location. Upon arrival to our facility, the patient developed cardiac arrest with refractory ventricular fibrillation requiring 30 minutes of continuous cardiopulmonary resuscitation and multiple defibrillations. Standard Advanced Cardiac Life Support (ACLS) medications proved ineffective. Administration of magnesium sulfate resulted in successful ventricular fibrillation termination and return of spontaneous circulation.

Clinical Findings: Post-resuscitation investigations revealed severe Takotsubo cardiomyopathy with troponin T 4.4 ng/ml (110-fold elevation), creatine kinase >6000 U/L, and critically reduced ejection fraction of 18% with apical akinesia. Hemodynamic instability necessitated maximum vasopressor-inotropic support with norepinephrine, phenylephrine, and dobutamine. The refractory ventricular fibrillation was attributed to critical magnesium deficiency induced by CO toxicity and catecholamine storm.

Management and Outcome: Treatment consisted of high-flow oxygen (FiO_2 100%), mechanical ventilation, aggressive hemodynamic support, and electrolyte optimization. Complete cardiac recovery occurred within 7 days (ejection fraction 18%→52%). Vasopressors were discontinued on the fifth day, extubation was achieved on the seventh day, with full neurological recovery. The patient was discharged on 16-17th day, with 100% functional recovery and no delayed neuropsychiatric sequelae.

Conclusion: This case emphasizes three critical points: (1) CO poisoning requires high clinical suspicion when multiple household members present with nonspecific neurological symptoms; (2) magnesium sulfate should be considered early in refractory ventricular fibrillation associated with CO poisoning and stress cardiomyopathy; and (3) severe cardiac dysfunction from Takotsubo cardiomyopathy is completely reversible with appropriate intensive support. Magnesium deficiency represents an under-recognized but treatable complication of severe CO intoxication that may prove fatal if unaddressed.

Keywords: CO poisoning, Takotsubo cardiomyopathy, refractory ventricular fibrillation, magnesium sulfate, reversible cardiomyopathy.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).02

ACUTE INFECTIONS IN THE INTENSIVE CARE UNIT: TRENDS AND CHALLENGES IN THE 21ST CENTURY

Elene Pachkoria[1], Ketevan Machavariani[2]

[1]Department of Infectious Diseases, Tbilisi State Medical University, Tbilisi, Georgia; [2]Department of Reanimatology, Anesthesiology and Toxicology, Tbilisi State Medical University,Tbilisi, Georgia.

Acute infections in the Intensive Care Unit (ICU) pose a critical threat to patient survival and healthcare systems globally. As we progress through the 21st century, the landscape of infectious diseases in the ICU has evolved dramatically due to changing pathogen profiles, increased antimicrobial resistance (AMR), and heightened patient complexity. This abstract provides an overview of key trends, emerging challenges, and essential strategies for addressing acute infections in critical care settings.

One of the most concerning trends is the rise of multidrug-resistant (MDR) organisms, including carbapenem-resistant Enterobacterales, methicillin-resistant *Staphylococcus aureus* (MRSA), and *Acinetobacter baumannii*. These pathogens complicate empirical treatment choices, increase morbidity and mortality, and place substantial financial strain on hospitals. Additionally, ICU patients often immunocompromised, mechanically ventilated, or catheterized are particularly vulnerable to healthcare-associated infections (HAIs), including ventilator-associated pneumonia (VAP), central line-associated bloodstream infections (CLABSIs), and catheter-associated urinary tract infections (CAUTIs).

New infectious threats have emerged, driven by globalization, climate change, and evolving microbial ecology. Diseases such as COVID-19, avian influenza, and fungal pathogens like *Candida auris* have infiltrated ICUs worldwide, revealing gaps in preparedness and infection control. Critical care clinicians now face not only bacterial but increasingly viral, fungal, and polymicrobial infections, often underpinned by immune dysregulation and sepsis.

The challenges of diagnosing and managing acute infections in the ICU are compounded by delays in microbiologic identification, limitations in predictive biomarkers, and overlapping clinical presentations with non-infectious syndromes. Precision medicine tools, including rapid molecular diagnostics and AI-driven infection prediction models, show promise in guiding timely interventions but require broader implementation and validation.

Strategies for improving outcomes encompass a multifaceted approach, integrating antimicrobial stewardship, enhanced infection prevention measures, and continuous surveillance. Stewardship efforts must tailor empiric therapy to local epidemiology while prioritizing de-escalation based on culture results. Meanwhile, interdisciplinary collaboration including infectious disease specialists, microbiologists, and critical care teams remains vital for comprehensive patient management. Looking forward, the path to combating acute infections in the ICU hinges on innovation, education, and policy support. Prioritizing investments in antimicrobial research, expanding global health security frameworks, and strengthening ICU capacity particularly in low- and middle-income countries will be essential. Ultimately, a combination of technological advancements, clinical vigilance, and public health commitment will determine our ability to face the evolving challenges of infectious diseases in critical care.

Keywords: Infection, ICU, Trends, Challenges.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).03

NOVELTIES IN THE PHARMACOTHERAPY OF ACUTE RESPIRATORY DISTRESS SYNDROME

Luiza Gabunia[1], Shorena Khetsuriani[2], Gvantsa Janigashvili[3], Nodari Sulashvili[4]

1. Department of Clinical Pharmacology, Scientific Skills Center, Tbilisi State Medical University, Tbilisi, Georgia
2. Department of Microbiology, Tbilisi State Medical University, Tbilisi, Georgia
3. Department of Clinical Pharmacology, Tbilisi State Medical University, Tbilisi, Georgia
4. Department of Clinical Pharmacology, Tbilisi State Medical University, Tbilisi, Georgia

Acute respiratory distress syndrome (ARDS) is characterized by a rapid onset of hypoxemia and bilateral pulmonary infiltrates not fully explained by cardiac failure or fluid overload.

For decades, ARDS management has relied on supportive, non-pharmacological interventions to mitigate lung injury and optimize gas exchange.

Recent clinical trials have re-evaluated corticosteroid use in ARDS, showing significant mortality benefits. In the DEXA-ARDS trial, ARDS patients received dexamethasone, which reduced 60-day mortality and increased ventilator-free days. In the RECOVERY Trial large cohort, COVID-19 patients with ARDS, who received dexamethasone, reduced 28-day mortality.

JAK inhibitors (baricitinib) target the Janus kinase (JAK) pathway, crucial for cytokine signaling and immune cell activation. Oral JAK1/2 inhibitor shows promise in COVID-19 patients with ARDS, reduces inflammation, and improves clinical outcomes. IL-6 receptor antagonists (tocilizumab and sarilumab) block the IL-6 receptor, inhibiting its inflammatory effects. Target IL-6, a key pro-inflammatory cytokine, is particularly effective in patients with high inflammatory markers. Initial studies in COVID-19 ARDS showed mixed results.

Research continues into other agents targeting various inflammatory pathways: TNF-alpha inhibitors and complement inhibitors block complement system activation. These agents target different points in the inflammatory cascade still investigational for ARDS. They block specific inflammatory pathways, reduce cytokine release, protect alveolar-capillary barrier, and modulate immune cell function.

Statins reduce inflammation and improve lung function in ARDS patients. Anticoagulants prevent microvascular thrombosis and improve pulmonary perfusion. Novel endothelial barrier stabilizers reduce pulmonary edema and improve lung function. Cell-based therapies - mesenchymal stem/stromal cells (MSCs) demonstrate immunomodulatory and regenerative properties, show safety, and potential efficacy.

Personalized medicine is moving toward phenotype-guided treatment to identify patient subgroups most likely to benefit from specific therapies. It offers us moving beyond a "one-size-fits-all" approach by identifying distinct ARDS phenotypes and endotypes to tailor treatments more effectively.

Ongoing Clinical Trials involve essential validation of emerging therapies, refinement of treatment protocols, and integration of novel pharmacological agents into standard care. Understanding the complex interplay of inflammation, coagulation, and tissue repair in ARDS is important for developing more targeted and effective interventions.

Keywords: Acute Respiratory Distress Syndrome, Pharmacotherapy, Glucocorticoids, Personalized Medicine.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).04

SARCOPENIC CONDITION INDUCED BY SEPSIS IN ACUTE RESPIRATORY DISTRESS SYNDROME

Levan Ratiani[1], Tamar Shotadze[2]

[1]Department of Anesthesiology and Reanimatology and Toxicology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia; [2]P. Shotadze Tbilisi Medical Academy, Tbilisi, Georgia

Sepsis remains a major cause of morbidity and mortality among critically ill patients and is frequently complicated by multiple organ dysfunction, including acute respiratory distress syndrome (ARDS) and severe skeletal muscle wasting, known as sepsis-associated sarcopenia. ARDS is a form of non-cardiogenic respiratory failure characterized by diffuse alveolar damage, increased capillary permeability, and refractory hypoxemia requiring advanced ventilatory support. Its pathogenesis in sepsis involves a dysregulated immune response in which pathogen- and damage-associated molecular patterns trigger toll-like receptor signaling and nuclear factor-κB–mediated transcription of pro-inflammatory cytokines. This cascade disrupts endothelial and epithelial barriers, promotes neutrophil infiltration, and leads to oxidative tissue injury and surfactant dysfunction, resulting in impaired gas exchange and decreased lung compliance.

Simultaneously, sepsis induces profound metabolic and hormonal disturbances that accelerate skeletal muscle catabolism. Elevated cytokines such as tumor necrosis factor-α, interleukin-1β, and interleukin-6 inhibit anabolic signaling and suppress the mechanistic target of rapamycin (mTOR) pathway, thereby reducing protein synthesis. Activation of forkhead box O (FOXO) transcription factors enhances the expression of muscle-specific E3 ubiquitin ligases, MuRF1 and Atrogin-1, which drive proteasome-mediated degradation of contractile proteins. Mitochondrial dysfunction and impaired oxidative phosphorylation further contribute to muscle fatigue and atrophy, while autophagy–lysosome activity exacerbates structural and metabolic deterioration. These mechanisms collectively lead to rapid and severe sarcopenia, often developing within days of critical illness. A key clinical concern is the involvement of respiratory muscles, particularly the diaphragm. Diaphragmatic atrophy diminishes ventilatory strength, prolongs mechanical ventilation, and complicates weaning in ARDS patients. Thus, sepsis-induced ARDS and sarcopenia form a self-perpetuating cycle in which respiratory failure accelerates muscle wasting, and muscle loss worsens respiratory insufficiency. This interaction increases ICU stay, disability, and mortality rates. Despite advances in supportive care, effective therapies to prevent or reverse sepsis-associated sarcopenia remain limited. Early mobilization, optimized ventilation, and adequate protein supplementation offer partial benefit but fail to fully counteract underlying catabolic mechanisms. Future translational research should focus on identifying molecular targets to interrupt the cycle of inflammation, mitochondrial injury, and proteolysis driving both ARDS and sarcopenia. A deeper understanding of their shared pathways could lead to novel, mechanism-based interventions that improve survival and long-term functional recovery in critically ill septic patients.

Keywords: Sepsis, ARDS, sarcopenia, inflammation, critical illness.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).05

PECULIARITIES OF PROGNOSTIC INDICATORS OF SYNDROMIC MOLECULES IN SEPSIS AND SEPTIC SHOCK IN CRITICAL CARE PATIENTS

Eka Khutchua,[1] **Lia Dzidziguri**[2]

1. Anesthesiology Service, the First University Clinic of Tbilisi State Medical University, Tbilisi, Georgia
2. Department of Anesthesiology, Reanimatology and Toxicology, the First University Clinic of Tbilisi State Medical University, Tbilisi, Georgia

Sepsis is a life-threatening condition resulting from a dysregulated immune response to infection, leading to systemic inflammation, tissue injury, and organ dysfunction. Despite significant advances in critical care medicine, sepsis remains a major cause of mortality worldwide. Early recognition and diagnosis are essential for initiating timely and appropriate treatment, which has been shown to significantly improve patient outcomes. Consequently, there is a critical need for reliable biomarkers, or *syndrome molecules*, that can facilitate the rapid and accurate diagnosis of sepsis, enabling clinicians to initiate targeted interventions at an early stage.

Monitoring various biological parameters in patients with sepsis and septic shock can substantially improve clinical outcomes. The most important prognostic syndrome molecules include lactate, an indicator of tissue hypoperfusion, where elevated levels (>2 mmol/L) are associated with poor prognosis; procalcitonin (PCT), a specific marker of bacterial infection, whose dynamic changes are useful for evaluating the effectiveness of antibiotic therapy; and C-reactive protein (CRP), a nonspecific marker of inflammation, where high concentrations indicate active infection. Interleukin-6 (IL-6) and other cytokines are also closely associated with the severity of the inflammatory response. Additionally, platelet count serves as an important prognostic indicator, as thrombocytopenia frequently correlates with disease severity. A combined analysis of these biomarkers provides greater diagnostic and prognostic accuracy than the assessment of any single parameter alone.

Syndrome molecules such as IL-6, sTREM-1, CRP, and PCT play a pivotal role in the early detection of sepsis by providing objective indicators of the host immune response. These molecular markers not only facilitate the rapid identification of sepsis but also assist in monitoring disease progression, guiding therapeutic decisions, and predicting patient outcomes.

As research continues to advance, the development of multiplex biomarker panels and point-of-care diagnostic platforms holds great promise for improving the early diagnosis and management of sepsis, ultimately enhancing survival rates and reducing the global burden of this life-threatening condition. Timely assessment of prognostic biomarkers enables clinicians to identify high-risk patients, determine the appropriate intensity of treatment, modify antibiotic therapy, monitor organ function, and implement early interventions. In contemporary critical care practice, an individualized approach is preferred—one in which the combination of biomarker dynamics and clinical presentation guides patient management.

Keywords: syndrome molecules; sepsis; septic shock; bacterial infection; prognostic biomarkers

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).06

MODERN APPROACHES TO THE PATHOPHYSIOLOGY AND CLASSIFICATION OF SHOCK IN CRITICAL CARE

Vakhtang Shoshiashvili,[1] Natia Gamkrelidze[2]

1. Department of Anesthesiology, Reanimatology and Toxicology, Tbilisi State Medical University; Tbilisi, Georgia
2. Department of Pathophysiology, Tbilisi State medical University, Tbilisi, Georgia

The word “shock” is derived from the French “choc,” meaning a clash or collision between two opposing forces. Historically, numerous definitions of shock have been proposed. The current understanding is largely based on Alfred Blalock’s theory, which defines shock as a disorder of blood volume.

Global hypoperfusion leads to an imbalance between oxygen supply and demand, resulting in insufficient ATP synthesis, anaerobic respiration, and lactic acidosis. Therefore, shock is a life-threatening medical emergency characterized by inadequate delivery of oxygen-rich blood to tissues and organs. Shock leads to a dangerous drop in blood pressure and reduced blood flow. The underlying pathophysiological mechanism of shock is widespread circulatory failure resulting in inadequate tissue perfusion and oxygen delivery.

Shock can be classified into four main types: hypovolemic, cardiogenic, obstructive, and distributive. The distributive category includes septic, anaphylactic, and neurogenic shock. Among these, septic shock is the most common in intensive care units, followed by cardiogenic and hypovolemic shock. When oxygen supply becomes inadequate, the body initiates several adaptive mechanisms to maintain perfusion pressure and oxygen delivery. This compensatory period is known as compensated shock, during which early clinical signs may be detected. The initial response to hypoperfusion involves activation of the baroreceptor reflex and the renin–angiotensin–aldosterone system. Aldosterone acts on the principal cells of the renal collecting tubules to increase sodium reabsorption, resulting in fluid retention and improved cardiac output. When compensatory mechanisms fail and oxygen delivery (DO_2) declines beyond a critical threshold, shock progresses to the uncompensated stage. Prolonged hypoxia and anaerobic metabolism cause rapid clinical deterioration. The final stage, termed irreversible or refractory shock, is typically associated with multiple organ dysfunction syndrome (MODS) and carries a mortality rate of 96–99%. A common mechanism underlying MODS is ischemia–reperfusion injury, which contributes significantly to mortality among intensive care patients.

Recent advancements in understanding shock pathogenesis emphasize the critical role of microcirculatory dysfunction and endothelial injury**,** even when traditional "macro" measures like blood pressure appear stable. This has led to the development of new diagnostic and therapeutic strategies focused on the cellular and microvascular levels.

Keywords: shock, hypoperfusion, oxygen supply, hypoxia, intensive care

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).07

MICROBIOLOGICAL MONITORING OF ACUTE BLOODSTREAM INFECTIONS

T. Didbaridze[1], I. Mikadze[2]

1. Department of Microbiology, Tbilisi State Medical University, Tbilisi, Georgia
2. Department of Infectious Diseases, Tbilisi State Medical University, Tbilisi, Georgia

Bloodstream infection (BSI) is a critical global health concern, frequently leading to sepsis and carrying a high mortality rate directly proportional to delays in appropriate antimicrobial treatment. While conventional blood culture (BC) remains the microbiological gold standard, its protracted turnaround time (TAT) — often requiring 24 to 48 hours for organism identification (ID) and definitive antimicrobial susceptibility testing (AST) — necessitates broad-spectrum empirical therapy, contributing to antibiotic resistance.

Recent advancements in clinical microbiology have focused on expediting this diagnostic process. Key culture-based enhancements include Matrix-Assisted Laser Desorption/Ionization-Time of Flight Mass Spectrometry (MALDI-TOF MS) for rapid ID from positive BC bottles, and the implementation of automated phenotypic systems like the Accelerate PhenoTest for faster AST results (within 7 hours). Complementing these are molecular diagnostic platforms, such as multiplex Polymerase Chain Reaction (PCR) panels (e.g., FilmArray, Verigene), which rapidly identify common bacterial and fungal pathogens and crucial antimicrobial resistance determinants (*e.g.*, mecA, vanA/B) directly from positive cultures in under two hours.

Further pushing the diagnostic timeline are culture-independent methods, including T2 magnetic resonance and metagenomic Next-Generation Sequencing (mNGS) performed directly on whole blood, which promise comprehensive pathogen detection in less than 8 hours, even in culture-negative sepsis cases.

The integration of these rapid diagnostic technologies into laboratory workflows is vital for implementing effective antimicrobial stewardship programs. By providing earlier, actionable results, these methods enable targeted therapy de-escalation, ultimately leading to improved patient prognosis and a more effective public health response to multidrug-resistant organisms.

Keywords: Sepsis, antimicrobial treatment, bloodstream infection, blood culture.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).08

SOFT TISSUE INFECTIONS IN INTENSIVE CARE

Lia Goliadze[1], Shota Goliadze[2]

1. The Adult Infectious Pathology Department, V. Bochorishvili Clinic, Tbilisi, Georgia
2. The First University Clinic, TSMU, Tbilisi, Georgia

Skin and soft tissue infections (SSTI) represent a broad clinical spectrum ranging from superficial cellulitis to life-threatening necrotizing soft tissue infections. In the intensive care Unit (ICU), they are both a common reason for admission and a frequent complication in patients with critical illness. Timely diagnosis, rapid surgical source control, and targeted antimicrobial therapy are crucial for better outcomes.

Methicillin-resistant *Staphylococcus aureus*, β-hemolytic streptococci, and polymicrobial flora remain leading pathogens. Treatment of multidrug-resistant organisms complicates empiric treatment. Early and aggressive debridement within 6–12 hours, broad-spectrum coverage guided by local resistance patterns, and continuous hemodynamic support remain the main principles of management. Additional treatments — including intravenous immunoglobulin for severe streptococcal toxic shock, hyperbaric oxygen therapy in experienced centers, and investigational immunomodulators such as reltecimod — still have limited or uncertain evidence that are not part of current standard treatment, should be used selectively, meanwhile SSTI must be addressed without surgical delay.

This presentation reviews recent information on SSTIs in the ICU, includes clinical case examples from ICU practice and focuses on three key challenges: diagnosing these infections can be difficult, compounded by rapidly rising antibiotic resistance, timely, multidisciplinary patient care is vital to achieve better outcomes.

Keywords: SSTI, necrotizing fasciitis, source control, antimicrobal resistance.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).09

MANAGEMENT OF HEMODYNAMIC FAILURE IN CRITICAL CARE

Lali Patsia[1], Levan Ratiani[2], Nodar Sulashvili[3]

1. Cardiology Department, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia
2. ICU Department, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia
3. Pharmacology Department, the Tbilisi State Medical University, Tbilisi, Georgia

Hemodynamic monitoring in critically ill patients includes all techniques that evaluate and monitor the hemodynamic state of patients. For the basic initial monitoring, recent studies emphasized the importance of clinical signs of hypoperfusion and arterial pressure. This basic monitoring is not sufficient in patients resistant to initial treatment. Hemodynamic monitoring in critically ill patients involves a spectrum of non-invasive, minimally invasive and invasive techniques used to assess cardiovascular function, guide therapy and ensure adequate tissue oxygenation. The primary goal is to identify and manage hemodynamic instability, such as shock or heart failure, to prevent organ dysfunction and improve patient outcomes. Monitoring of cardiac output makes it possible to detect cardiovascular failure early and to apply treatment, sometimes using algorithms, which have been shown to improve the prognosis, particularly by reducing complications of high-risk patients. For more continuous monitoring, non-invasive and minimally invasive tools are insufficiently reliable and informative, as recently confirmed. The most invasive techniques, transpulmonary thermodilution and the pulmonary arterial catheter, are more suitable. Their effect on outcome is lacking, although recent studies showed their benefit in acute heart failure. For assessing tissue oxygenation, recent publications better defined the meaning of the indices derived from the partial pressure of carbon dioxide. The integration of all data by artificial intelligence is the subject of early research in critical care. Hemodynamic monitoring methods are selected based on the patient's condition, the required level of detail and the associated risks. A multimodal and patient-centred approach, integrating clinical judgment with the appropriate monitoring tools, is currently considered the most effective strategy for managing critically ill patients.

Keywords: Hemodynamic monitoring, critically ill patient.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).10

MANAGING ACUTE LIVER FAILURE IN LEPTOSPIROSIS

Tamara Megrelishvili

Department of Infectious Diseases, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Leptospirosis is a widespread zoonotic infection caused by pathogenic spirochetes of the genus Leptospira. The disease is prevalent in tropical and subtropical regions, but sporadic cases are increasingly reported in Europe and the United States.

It presents in two major clinical forms: anicteric leptospirosis — a mild, self-limiting febrile illness— and icteric leptospirosis (Weil's disease), which may progress to multiorgan involvement, including acute hepatic and renal failure. In Georgia, multiple Leptospira serovars have been identified, such as *L. icterohemorrhagica*, *L. automualis*, *L. mankarsto*, *L. wolffii*, and *L. canicola*. Since 2011, the incidence of leptospirosis has increased significantly, reaching 1.81 per 100,000 population, with icteric and anicteric forms occurring at nearly equal rates (44.6% and 55.4%, respectively).

Icteric forms were frequently associated with hepatic and renal failure in approximately one-third of patients, while hemorrhagic manifestations and pneumonia occurred in 5.3% and 3.6% of cases, respectively. In 2023, a clinical study at the First University Clinic of TSMU investigated patients with prolonged fever exceeding five days and no catarrhal symptoms. Serological testing (IgM ELISA) confirmed leptospiral infection in 40 patients (64.5%), aged 17–80 years, from both urban (51.6%) and rural (48.3%) areas. The most common presentation was pneumonia (35.5%), whereas icteric forms were less frequent (12.9%).

These findings indicate that the epidemiological and clinical characteristics of leptospirosis have changed in recent years. The disease now more frequently affects urban populations and often manifests as prolonged febrile illness with lower respiratory involvement and intoxication syndrome. Severe cases are mainly complicated by acute respiratory failure, typically without multiorgan dysfunction. Early recognition and timely etiological diagnosis through serological testing are essential for appropriate management and prevention of complications.

Keywords: leptospirosis, acute liver failure, Weil's disease, pneumonia, ELISA.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).11

ACUTE RESPIRATORY DISTRESS SYNDROME IN PREGNANT WOMEN: ETIOLOGY, PATHOGENETIC AND CLINICAL FEATURES

Tamara Megrelishvili

Department of Infectious Diseases, Tbilisi State Medical University; the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Acute respiratory distress syndrome (ARDS) is a rare but severe condition occurring during pregnancy and the peripartum period. It may result from pregnancy-associated risk factors or from the heightened susceptibility to respiratory complications during gestation. Diagnosis is based on clinical presentation, arterial blood gas analysis, chest X-ray, and computed tomography findings. Management of ARDS in pregnancy involves a multidisciplinary approach including lung-protective ventilation (lower tidal volumes, higher respiratory rates, and positive end-expiratory pressure titration), maintenance of negative fluid balance, use of neuromuscular blocking agents, prone positioning, inhaled nitric oxide, high-frequency oscillatory ventilation, extracorporeal membrane oxygenation (ECMO), extracorporeal carbon dioxide removal, corticosteroid therapy, and supportive care. AT the First University Clinic of TSMU during the COVID-19 pandemic (2020–2022), 8055 patients were treated, and 6.55% of cases occurred 6.55%. Among them are presented 1841 pregnant women, only 52 patients (2.8%) required intensive or critical care, due to complications such as pneumonia leading to acute respiratory failure, ARDS, and 8 deaths (0.7%) were recorded.

Major risk factors included obesity, age>35 years, and pre-existing comorbidities. Complications observed among pregnant women with COVID-19 included pneumonia, pulmonary fibrosis, acute respiratory failure, respiratory distress, multiple organ dysfunction, cytokine storm, and sepsis. The disease course was mild to moderate in most cases, while severe cases accounted for 3.5%. Fatal outcomes were associated primarily with the development of ARDS and pulmonary fibrosis. Cesarean delivery was performed based on predictors of disease progression. Only one case of vertical transmission of SARS-CoV-2 was identified. During 2022-2024, 30 pregnant women were admitted with viral pneumonia complicated by acute respiratory failure. Among them, 17 were confirmed to have influenza A virus infection by PCR testing. None of these patients developed ARDS, and no deaths cases occurred. The favourable outcomes were attributed to the timely inclusion of antiviral agents in combination with pathogenic and symptomatic therapy.

Keywords: Acute respiratory distress syndrome, pregnancy, arterial blood gas, corticosteroids, SARS-CoV-2.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).12

DIAGNOSTIC SIGNIFICANCE OF LUNG ULTRASOUND EXAMINATION IN PULMONARY EDEMA AND ACUTE PNEUMONIA

Tea Gubeladze

Regional Clinical Specialist at Mindray, Georgian Ultrasound Elastography Association, Tbilisi, Georgia

Background: Lung ultrasound (LUS) has become an essential bedside imaging technique for the evaluation of acute respiratory failure, providing rapid, radiation-free, and reliable assessment of pulmonary conditions. The BLUE (Bedside Lung Ultrasound in Emergency) protocol, introduced by Lichtenstein, offers a structured, evidence-based approach to differentiate the major causes of dyspnea, particularly pulmonary edema and acute pneumonia, through characteristic sonographic patterns.

Clinical relevance: In patients presenting with acute dyspnea, the ability to distinguish cardiogenic pulmonary edema from inflammatory or infectious consolidation is critical for early therapeutic decision-making. The BLUE protocol identifies reproducible ultrasound patterns, including the A-profile, B-profile, and C-profile, which correspond to different pathophysiologic mechanisms of lung involvement. Recognition of multiple bilateral B-lines with preserved lung sliding suggests interstitial alveolar edema, whereas focal, asymmetric B-lines with subpleural consolidations are typical of bacterial pneumonia.

Technological integration: The introduction of Mindray's Smart B-Lung, an automated AI-assisted application integrated into Mindray ultrasound platforms, enhances the precision and reproducibility of B-line detection and quantification. This innovation facilitates objective assessment of extravascular lung fluid and supports the standardization of the BLUE protocol across different clinical settings. Automated B-line counting and pleural-line tracking reduce inter-observer variability and accelerate decision-making in critical care and emergency environments.

Conclusion: Implementation of the BLUE protocol, complemented by automated quantification using Mindray Smart B-Lung, represents a modern paradigm in pulmonary ultrasound diagnostics. This integration of clinical methodology and intelligent technology enables accurate differentiation between pulmonary edema and acute pneumonia, improving diagnostic confidence and patient outcomes. Furthermore, the standardized workflow contributes to education, training, and consistency in ultrasound practice, reinforcing the role of lung ultrasound as a frontline tool in modern respiratory medicine.

Keywords: Lung ultrasound, BLUE protocol, pulmonary edema, pneumonia, Mindray Smart B-Lung.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).13

BIOMARKERS DURING CARDIAC ARREST

Irakli Modebadze

Department of Anesthesia and Intensive Care, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia.

Post-cardiac arrest syndrome is a multifaceted clinical condition defined by widespread ischemia–reperfusion injury, neurological deficits, and heart dysfunction following successful resuscitation. A variety of circulating biomarkers have been explored to improve prognostic assessment in patients, yet their relative predictive value is still not fully understood.

This narrative review involved a thorough examination of the PubMed database to locate studies that scrutinize inflammatory, neurological, and cardiac biomarkers in adult populations after experiencing cardiac arrest. The findings suggest that these biomarkers can be useful tools for evaluating outcomes post-cardiac arrest. Notably, inflammatory and neurological biomarkers seem to hold greater prognostic significance compared to cardiac markers, highlighting the crucial impact of systemic inflammation and ischemic brain injury on the pathophysiology of post-cardiac arrest syndrome.

Combining biomarker data with clinical evaluations, neuroimaging results, and electroencephalography can enhance the precision of outcome predictions. However, there is currently no single biomarker with enough discriminative power to independently forecast survival or neurological recovery. Ongoing research is focused on unraveling the mechanistic and prognostic roles of these biomarkers to improve risk stratification after resuscitation and inform future treatment approaches.

Keywords: cardiac arrest, myocardial dysfunction, inflammation, biomarkers.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).14

FERRITIN – SEVERITY PREDICTOR IN PATIENTS WITH MULTISYSTEM INFLAMMATORY SYNDROME

Magda Rurua[1], Jeni Jankhoteli[2]

1. Intensive Care Unit, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia.
2. Anesthesiology and Intensive Care Unit, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia.

Ferritin is a major intracellular protein responsible for regulating the bioavailability and storage of free iron. By sequestering iron atoms within its structure, ferritin protects cells from the toxic effects of iron-induced free radical generation. Beyond its role in iron metabolism, ferritin also functions as an acute-phase reactant, with serum levels rising in response to inflammation, infection, and tissue injury. In the intensive care unit (ICU), hyperferritinemia is frequently associated with multisystem inflammatory processes, including sepsis, COVID-19, hemophagocytic lymphohistiocytosis (HLH), and other cytokine storm syndromes. Markedly elevated ferritin levels in such patients may reflect not only iron dysregulation but also macrophage activation and the release of pro-inflammatory cytokines. Ferritin synthesis is upregulated by inflammatory mediators such as IL-1β, IL-6, and TNF-α, which activate hepatocytes and macrophages. Consequently, ferritin serves as a biomarker of systemic inflammation, with high levels correlating with disease severity, organ dysfunction, and mortality risk. Therefore, monitoring ferritin levels in ICU patients can provide valuable prognostic information, aiding clinicians in assessing disease progression, inflammatory activity, and therapeutic response. Evidence from PubMed-sourced literature supports the role of ferritin as an integrated indicator of systemic inflammation, emphasizing that its interpretation should always be made within the appropriate clinical and laboratory context.

Keywords: Ferritin, iron metabolism, ICU patients, inflammation marker, prognostic biomarker.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).15

DRAINING ACUTE OBSTRUCTIVE UROPATHY: NEPHROSTOMY OR STENTING?!

David Kochiashvili, George Kochiashvili, Kakhaberi Kviloria

Department of Urology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

There is always a question: using percutaneous nephrostomy or ureteral stenting? There are a number of international studies that show no reliable difference between them. According to the European Urology guideline, both are equally effective. We were interested in comparing these two methods of drainage in the reality of Georgia.

The present comparison is presented in the form of a retrospective study model and represents only an analysis of the facts. The comparison is presented on 10 10 patients. Patients with acute obstruction (24-48-hour anamnesis) were selected as the selection criteria. Leukocyte initial >11.0* 10^9/L, Age 22-55, Gender male+female, No other catheter (of any type) of the urinary system is mentioned. It does not represent a complication of medical intervention. There are no uro-oncological diseases.

Comparison criteria taken as: Length of delay in the clinic stoma is better 25%, Normalization of leukocytosis median 0.5% better in the stoma. The dynamics of the CRP median 41% better in the stoma. Dynamics of creatinine median 30% better in stoma, presence of urethral catheter in stoma 0% in stent 100 %, Elimination of dilatation in stoma 3% is better, P.O. painkillers in stoma 30% in stent 100 %, general anesthesia, in stoma 0% in stent 100 % P.O. Dysuria in stoma 0% in stent 100 %. In a total of 136 nephrostomy patients, the incidence of reoperation was 3 -2%. In a total of 144 patients after ureteral stenting, the incidence of reoperation. In a total of 136 nephrostomy patients, hematuria was 0 - 0%. A total of 144 cases of hematuria after ureteral stenting was 121 - 84%. In total, in 54 nephrostomy patients who were transferred to lithotripsy treatment, removal of stones, elimination of obstruction and nephrostomy decannulation without additional intervention were observed in 48 patients, 96%. In 71 patients after stenting of the ureter, who were referred to lithotripsy treatment, removal of stones, elimination of obstruction and decanulation without additional intervention were observed in 55 patients - 77%. According to the analysis of statistics and facts, the only where the dominance of the stent is visible is the experience of relatives, while other factors indicated the absolute dominance of nephrostoma.

Keywords: Percutaneous nephrostomy, ureteral stenting.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).16

DIAGNOSIS OF NEUROTUBERCULOSIS AS A CHALLENGE IN MODERN MEDICINE

Maia Beridze

Department of Neurology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Among different forms of Tuberculosis (TB), Neurotuberculosis is considered to be the most dangerous one, needing vast clinical experience for correct diagnosis and treatment. Diagnostics of Neurotuberculosis requires serious clinical experience and involvement. neurologists, infectious disease specialists, neurosurgeons, pulmonologists, and hospitalists to be able to integrate clinical information, radiological findings and laboratory data. The affected sites of the infection can be represented by meningeal, cerebral parenchymal, or spinal cord areas. Sometimes the diagnosis is made without microbiological confirmation.

Case report: The case of encephalomyelitis (ADEM) is presented, confirmed by MR investigation (1.5 Tesla). The precise laboratory data excluded viral (herpes simplex 1/2 viruses, cytomegalovirus, Epstein-Barr, varicella zoster, herpes 6) and bacterial (*Borrelia burgdorferi, Chlamydia pneumonia*) infections. Cerebrospinal fluid (CSF) test showed no substantial abnormalities but the decreased glucose level- 28 mg/dl; CSF culture for *Mycobacterium tuberculosis* was negative. Initial treatment with Methylprednisolone-1000mg/iv for 5 days followed by plasmapheresis 2 procedures, no results, while the patient's clinical status deteriorated to the extent of full tetraplegia with pseudo bulbar component (harsh voice, swallowing difficulties). The special tests (GeneXpert in sputum sample, QuantiFERON-TB Gold) do not support the existence of mycobacteria, and only detailed analysis of anamnesis, CSF data, and clinical judgment prompted to suspicion of the presence of Neurotuberculosis. The treatment started with a combination of intravenous infusion of antibiotics (amikacin, moxifloxacin, meropenem) until the clinical course of the disease had been significantly improved, and continued by consecutive treatment with rifampicin and isoniazid, with excellent results.

Conclusion: Central nervous system TB is still a serious challenge when prompt diagnosis and clinical management is required. ADEM is a rare complication of TB infection, and if recognized timely, can mostly be treated successfully.

Keywords: Neuroinfection, encephalomyelitis, mycobacteria, GeneXpert, diagnosis.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).17

PHARMACOLOGICAL MANAGEMENT ISSUES IN THE POST-RECANALIZATION PERIOD OF ACUTE MYOCARDIAL INFARCTION

Nino Khunashvili, Lado Kvatchadze, Nona Kakauridze

Department of Cardiology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Acute myocardial infarction (AMI) remains a leading global cause of morbidity and mortality, despite continuous progress in interventional and medical cardiology. Early recanalization through percutaneous coronary intervention (PCI) or thrombolysis has revolutionized survival outcomes by restoring coronary blood flow and limiting myocardial necrosis. However, the reopening of an artery does not always correspond to full myocardial recovery. The post-recanalization period is a dynamic phase characterized by oxidative stress, calcium overload, mitochondrial dysfunction, endothelial injury, and sterile inflammation. These processes initiate microvascular obstruction, trigger maladaptive left ventricular remodeling, and eventually lead to progressive heart failure. Pharmacological therapy in this stage aims to preserve viable myocardium, limit structural damage, and prevent recurrent ischemic events. Dual antiplatelet therapy - aspirin combined with a P2Y12 inhibitor such as clopidogrel, ticagrelor, or prasugrel remains the cornerstone for thrombosis prevention. Beta-blockers reduce myocardial oxygen consumption and arrhythmic burden, while ACE inhibitors and angiotensin receptor blockers (ARBs) counteract ventricular dilation and neurohormonal activation. Angiotensin receptor–neprilysin inhibitors (ARNIs) further improve cardiac remodeling and clinical outcomes. Statins and PCSK9 inhibitors provide intensive lipid lowering and plaque stabilization, playing a pivotal role in secondary prevention. Inflammation control has emerged as a new therapeutic target. Low-dose colchicine and IL-1β inhibitors have demonstrated reductions in systemic inflammation and recurrent myocardial infarction rates. Tight management of comorbidities such as diabetes, hypertension, and chronic kidney disease further enhances survival. Close follow-up with echocardiographic and biomarker assessment allows early detection of remodeling and optimization of therapy. A multidisciplinary and patient-centered approach combining timely reperfusion, evidence-based pharmacotherapy, and lifestyle modification defines the modern standard of care in post-infarction management. Understanding the biological continuum from reperfusion injury to fibrotic remodeling offers novel therapeutic opportunities to preserve myocardial integrity and improve long-term outcomes. The paradigm is shifting from merely reopening arteries to genuinely restoring myocardial health and improving overall clinical effectiveness through integrated, mechanism-driven care.

Keywords: Acute myocardial infarction, reperfusion injury, remodeling, inflammation, pharmacotherapy.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).18

MODERN ASPECTS OF MANAGING SEPTIC SHOCK CAUSED BY RESISTANT PATHOGENS (CLINICAL CASE PRESENTATION)

Ivlita Khvedelidze[1], Nino Vardidze[2]

1. Department of Reanimation, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia;
2. Department of Epidemiology and Infection Control, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Septic shock represents the most severe clinical manifestation of sepsis, characterized by systemic infection, hemodynamic instability, microcirculatory dysfunction, and multiple organ failure. Mortality rates range between 30% and 40%, with resistant pathogens significantly complicating therapeutic management and worsening patient outcomes. Multidrug-resistant (MDR), extensively drug-resistant (XDR), and pandrug-resistant (PDR) bacteria, particularly Gram-negative species such as *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and *Acinetobacter baumanii*, pose critical challenges in clinical practice.

This report presents the clinical case of a 31-year-old male patient with septic shock caused by pandrug-resistant *Klebsiella pneumoniae*. The patient had been transferred from Turkey after a month of rehabilitation. Upon admission, the patient's condition was severe, involving hypoxic brain injury, coma, and multiple pressure ulcers. He was mechanically ventilated via tracheostomy and exhibited signs of sepsis with multi-organ involvement. Initial empirical therapy included piperacillin-tazobactam and amikacin, later adjusted based on microbiological results. Cultures revealed pandrug-resistant *Klebsiella pneumoniae* in blood and multidrug-sensitive *Pseudomonas aeruginosa* in urine, sputum, and pressure ulcer samples, all of which were susceptible to colistin. Therapy was tailored accordingly, with prolonged infusion of beta-lactams and the addition of colistin. Strict infection control measures—including patient isolation, invasive device replacement, hand hygiene protocols, and environmental disinfection—were implemented to prevent nosocomial spread.

Following targeted treatment, the patient showed significant clinical improvement: stabilization of hemodynamics, cessation of vasopressor support, normalization of temperature, and neurological recovery. These outcomes underscore the importance of timely microbiological diagnosis, antibiotic stewardship, and comprehensive infection control in managing septic shock caused by resistant pathogens. In conclusion, the rise of pandrug-resistant organisms severely limits available antibiotic options and increases the mortality risk for septic shock patients. However, integrative management strategies, combining precise antimicrobial therapy, rigorous infection control, and multidisciplinary care, can improve prognosis even in the face of highly resistant infections.

Keywords: septic shock, antibiotic resistance, PDR pathogens, infection control, Klebsiella pneumoniae

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).19

THE IMPORTANCE OF HYPERLACTATEMIA IN THE OUTCOME OF SEPSIS AND SEPTIC SHOCK

Tinatin Gaphrindashvili, Ramaz Kalandadze

Intensive Care Unit, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Sepsis and septic shock are leading causes of morbidity and mortality in intensive care units worldwide. Hyperlactatemia, defined as elevated serum lactate levels, is frequently observed in these conditions and serves as both a biomarker and mediator of disease severity. Lactate accumulation reflects an imbalance between production and clearance, often indicating tissue hypoperfusion, mitochondrial dysfunction, and catecholamine-driven metabolic alterations. Understanding its pathophysiological role is crucial for prognosis and therapeutic management.

This abstract reviews current evidence on the mechanisms of hyperlactatemia in sepsis and septic shock, highlighting its clinical implications and impact on patient outcomes. Increased lactate production primarily occurs through anaerobic glycolysis caused by tissue hypoperfusion, while catecholamine-stimulated aerobic glycolysis may further elevate lactate levels. Impaired clearance, mainly due to hepatic and renal dysfunction, exacerbates accumulation. Inflammatory cytokines and mitochondrial impairment contribute to metabolic dysregulation.

Clinically, elevated lactate is strongly associated with organ dysfunction and increased mortality. Serial lactate measurements provide valuable information for guiding resuscitation and therapeutic interventions, including fluid management, vasopressor administration and optimization of tissue oxygen delivery. Early recognition of hyperlactatemia and targeted interventions based on lactate trends can improve outcomes, reduce complications, and support individualized critical care strategies.

In conclusion, hyperlactatemia is a key marker in the pathogenesis and progression of sepsis and septic shock. It reflects underlying metabolic derangements, tissue hypoxia and impaired oxygen utilization, contributing to multi-organ dysfunction. Monitoring lactate levels and promoting lactate clearance are essential for effective resuscitation and patient management. A comprehensive understanding of hyperlactatemia allows clinicians to implement timely interventions, optimize perfusion, and improve prognosis in critically ill patients.

Keywords: Hyperlactatemia, sepsis, septic shock, lactate clearance, prognosis.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).20

HYPOVOLEMIC SHOCK – DIAGNOSTIC CHALLENGES AND EFFECTIVE MANAGEMENT STRATEGIES (CASE DISCUSSION)

Tsitsino Zhorzholiani

AVICENNA - Batumi Medical University, Batumi, Georgia

Pediatric shock is a leading contributor to global mortality and morbidity in children. Because children maintain compensated physiology until late stages, the presence of hypotension signals immediate decompensation, necessitating rapid and decisive management. The principal obstacle is the broad variation in age-dependent hemodynamic parameters and pharmaceutical dosing, often leading to errors and non-standardized care, particularly in general hospital settings. A consolidated, practical methodology for clinicians is essential. This investigation sought to construct an innovative, synthesized educational and procedural framework for pediatric hypotensive shock, integrating fundamental global protocols (PALS, SSC) into a unified algorithm to optimize clinical response time.
Methods: We performed a focused narrative synthesis of established international clinical guidelines, notably the 2020 AHA PALS and the 2020 Surviving Sepsis Campaign Pediatric Guidelines. The resulting framework organizes treatment around three specific physiological groups: infants (0–12 months), young children (1–5 years), and school-age children (6–12 years). The derived protocol details sequential management, from early detection and initial volume expansion (20 mL/kg fluid boluses) to the critical juncture of initiating pharmacologic support. A dual-citation method is utilized to robustly link clinical steps to their evidence base.
The framework precisely defined minimal intervention thresholds for systolic blood pressure based on age, such as < 70 mmHg for infants and < 70 + (2 x Age in Years) mmHg for older pediatric patients. Crucially, the selection of the initial vasoactive agent was tailored to the presumed shock profile: Epinephrine or Dopamine was prioritized for infants (0–12 months) due to prevalence of "cold shock," while Norepinephrine was favored for school-age children (6–12 years), aligning with protocols emphasizing direct vasopressor action for generalized vasodilation ("warm shock"). This clear differentiation significantly diminishes clinical ambiguity and error potential.
Conclusion**:** This newly developed age-adjusted training framework delivers an efficient, evidence-supported strategy for prompt pediatric shock stabilization. This unified approach effectively minimizes the occurrence of dosing and protocol deviations, proving highly beneficial for both critical care education and adherence to guidelines in diverse clinical environments.

Keywords: pediatric shock; hypotension; age-stratified protocol; international guidelines; clinical education.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).21

MODERN ASPECTS OF SHOCK RECOGNITION AND MANAGEMENT

Rusudan Kamadadze[1], Davit Shavishvili[2]

1. Department of Clinical Medicine, Avicenna – Batumi Medical University, School of Medicine, Batumi, Georgia.
2. Department of Public Health and Basic Medicine, Avicenna – Batumi Medical University, School of Medicine, Batumi, Georgia.

Shock is a life-threatening condition characterized by inadequate tissue perfusion leading to cellular dysfunction and organ failure. Effective management requires timely recognition and a comprehensive, multidisciplinary approach. Modern strategies combine classical therapeutic protocols with innovative technologies and precision medicine principles.

Fluid resuscitation remains the cornerstone of shock management. Balanced crystalloids are preferred for restoring intravascular volume and optimizing tissue oxygenation. When adequate fluid replacement fails to stabilize hemodynamics, vasopressors are administered to maintain mean arterial pressure and ensure vital organ perfusion. In severe refractory cases, mechanical circulatory support such as extracorporeal membrane oxygenation (ECMO) provides temporary stabilization until recovery of cardiac or pulmonary function.

Continuous hemodynamic and metabolic monitoring—through parameters such as central venous pressure, arterial pressure, and oxygen saturation—facilitates early detection of deterioration and guides therapeutic adjustments. The integrated team-based approach involving intensivists, surgeons, anesthesiologists, and other specialists ensures coordinated decision-making and rapid intervention.

Personalized medicine has become increasingly important, allowing therapy to be tailored to patient-specific factors such as age, comorbidities, and response to treatment. Furthermore, post-shock psychological support and rehabilitation significantly contribute to long-term recovery and quality of life.

In conclusion, modern shock management emphasizes rapid diagnosis, goal-directed resuscitation, and interdisciplinary collaboration supported by technological innovation. These advancements substantially improve survival rates and functional outcomes in critically ill patients.

Keywords: Shock management, fluid resuscitation, vasopressors, ECMO, personalized medicine.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).22

THE USE OF ANTIBIOTICS IN ICU: THE ROLE OF DE-ESCALATION THERAPY

Nia Gogitidze[1], Teimuraz Peshkov[2]

1. Department of Public Health and Basic Medicine, Avicenna – Batumi Medical University, School of Medicine, Batumi, Georgia.
2. Department of Clinical Medicine, Avicenna – Batumi Medical University, School of Medicine, Batumi, Georgia.

Early broad-spectrum antimicrobial therapy remains a cornerstone of sepsis and septic shock management, where timely adequate coverage is essential for survival. The clinical challenge emerges after stabilization: ongoing unnecessarily broad therapy accelerates multidrug-resistance development, disrupts the microbiome, increases drug toxicity risk, and inflates cost of care. Antibiotic de-escalation provides a deliberate and evidence-supported strategy to narrow the antimicrobial spectrum while preserving clinical efficacy. This presentation focuses on how to safely and confidently de-escalate therapy in the ICU, emphasizing the critical 48-72-hour reassessment window where clinical trajectory, source control, microbiologic data, and diagnostic context converge. Key myths that hinder de-escalation are addressed directly, including the misconception that narrowing equates to undertreatment or requires culture positivity. Instead, we highlight probability-based decision-making founded in site-specific pathogens, local resistance epidemiology, and host risk factors. Practical bedside strategies will be demonstrated, including the use of MRSA nasal PCR to discontinue vancomycin, rapid molecular identification panels to accelerate targeted therapy, selective procalcitonin use to guide duration, and pharmacokinetics/pharmacodynamics (PK/PD) optimization such as extended β-lactam infusions to maintain efficacy while narrowing spectrum. A case-based algorithm will illustrate when to narrow, when to hold, and how to adjust therapy without compromising patient safety. The overarching aim is to equip clinicians with a clear, reproducible mental model for antimicrobial de-escalation that is clinically confident, pharmacologically precise, and stewardship-conscious - preserving today's survival while protecting tomorrow's antimicrobial effectiveness.

Keywords: Antibiotic de-escalation; septic shock; antimicrobial stewardship; infectious diseases; Pharmacokinetic/pharmacodynamic optimization

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).23

CLINICAL AUDIT ON ACUTE MANAGEMENT OF ATRIAL FIBRILLATION IN LINE WITH NICE AND ESC GUIDELINES

Nasaf Virk[1], Maroua Dali[2]

1. Department of Acute Medicine, London, United Kingdom. Epsom and St Helier University Hospitals NHS Trust
2. Department of Cardiology, London, United Kingdom, Epsom and St Helier University Hospitals NHS Trust

Atrial fibrillation (AF) is the most common cardiac arrhythmia and a major contributor to cardiovascular morbidity and mortality in UK. It is estimated that around 1.7 million people in the UK have been diagnosed with atrial fibrillation, but a significant proportion of them are not treated effectively. Adherence to guideline-based management is essential for optimising rate and rhythm control, as well as reducing thromboembolic risk and healthcare cost. This audit aimed to assess compliance with the National Institute for Health and Care Excellence (NICE) and European Society of Cardiology (ESC) guidelines in managing AF at Epsom and St Helier University Hospitals NHS Trust.

A retrospective audit was conducted including patients aged ≥18 years who presented with AF with Rapid Ventricular Response (RVR) (heart rate >110 bpm at rest). Of 93 patients reviewed, 46 met the inclusion criteria. Data were analysed regarding demographics, diagnosis status, CHA_2DS_2-VASc score, rate control medications, and anticoagulation prescription.

The mean CHA_2DS_2-VASc score was 3.3. Identified areas of non-compliance included concurrent use of bisoprolol and diltiazem, failure to titrate monotherapy to the maximum tolerated dose before introducing a second agent, and inconsistent documentation regarding anticoagulation decisions. Recognition of AF was satisfactory; however, improvements are needed in rate control management, thromboembolic risk assessment, and record-keeping.

In conclusion, this audit highlights the need for better adherence to AF management guidelines. Implementation of a standardised local protocol based on NICE and ESC guidelines will ensure safe, effective, and consistent care, while reducing hospital length of stay and overall healthcare costs. Furthermore, such a protocol will aid resident doctors in making consistent evidence-based decisions, particularly during out-of-hours periods when senior support may be limited and when admitting new patients. Enhanced clinician education is recommended to further improve practice and patient outcomes.

Keywords: Atrial fibrillation, NICE guidelines, ESC guidelines, rate control, anticoagulation.

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).24

CANCER CARE IN TIMES OF CRISIS: THE EXPERIENCE OF THE INSTITUTE OF CANCER AND CRISIS (ICC)

Christos Tsagkaris[1,2]; Jemma Arakelyan [2]

1. Faculty of Medicine, Aristotle University of Thessaloniki, Greece
2. Institute of Cancer and Crisis (ICC), Yerevan, Armenia

The intersection between oncology and crisis response represents a growing frontier in global health and emergency medicine. The Institute of Cancer and Crisis (ICC), established in 2021 in Yerevan, Armenia, with the support of the City of Smile Charitable Foundation, emerged in direct response to the profound disruptions cancer patients face during wars, natural disasters, and large-scale emergencies. As an independent, not-for-profit organization, the ICC aims to ensure that every cancer patient continues to receive appropriate, equitable, and uninterrupted care—regardless of crisis conditions.

The establishment of the ICC was motivated by evidence from conflict and disaster settings, where oncology services are among the first to be compromised. Patients frequently encounter delays in diagnosis, interruptions in treatment, and psychological distress, all of which worsen outcomes. Recognizing this gap, the ICC brings together experts from oncology, public health, behavioral sciences, and crisis management to address these multifaceted challenges through research, advocacy, and partnership.

Since its establishment, the ICC has led several initiatives, including the *Global Summit on War and Cancer (2023)*, which convened international experts to share strategies for safeguarding cancer care in conflict-affected regions and resulted in publishing the a manifesto on improving cancer care in conflict-impacted populations. The Institute also conducts applied research on the direct and indirect effects of crises on cancer care systems, aiming to inform both humanitarian and policy responses. In parallel, ICC's advocacy efforts promote the inclusion of noncommunicable diseases (NCDs) and oncology within emergency preparedness and response frameworks.

The ICC's mission—"Every cancer patient should receive appropriate care, regardless of any crisis they may face"—reflects a commitment to human dignity and clinical continuity even under the most adverse conditions. Through its work, the ICC seeks to strengthen the niche between emergency medicine, oncology, and health systems resilience, contributing to a future where cancer care remains accessible and compassionate in times of crisis.

Keywords: cancer care, crisis response, emergency preparedness, health equity, resilience

Georgian Scientists

ქართველი მეცნიერები

Vol. 7 Issue 4(1), 2025

https://doi.org/10.52340/gs.2025.07.04(1).25

ISSUES OF ACUTE LEUKEMIA DIAGNOSIS

Nino Gogokhia, Khatia Mikaberidze

Department of Laboratory Medicine, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Acute leukemia is a rapidly progressing disease. It is difficult to detect it in its early stages and the clinical picture usually appears only when the bone marrow is already significantly infiltrated by tumor blast cells — that is, when there is massive infiltration by blast cells and extramedullary metastases have also developed. The situation is further complicated by the fact that leukemia has no single pathognomonic symptom; Therefore, patients are often admitted to the clinic with unclear diagnoses and various manifestations, already in a very severe condition. In such cases, management of the critical condition is required and the main diagnosis is established in parallel with resuscitative measures. Based on the examples from our clinic, we describe various clinical pictures, critical conditions, resuscitative measures performed and key aspects of the morphological diagnosis in patients diagnosed with acute leukemia.

Keywords: Acute leukemia, critical conditions

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).26

VASCULAR COMPONENT OF PATHOPHYSIOLOGICAL CHANGES IN ACUTE RESPIRATORY DISTRESS SYNDROME

Ilia Nakashidze, Zeinab Pagava, Shota Nakashidze

Critical Care Department, Faculty of Natural Sciences and Health Care, Batumi Shota Rustaveli State University (BSU), Batumi Republican Clinical Hospital, Batumi, Georgia

ARDS is a clinical syndrome of lung injury with hypoxic respiratory failure. Definition ARDS: Ashbaught (1967), AECC (1994), Berlin (2012), Kigali (2016), Global (2023). There are:1. Timing: ≤ 1 week of risk factor or new/worsening respiratory symptoms. 2. Imaging: Bilateral opacities on X-ray/CT or ultrasound (B-lines, consolidation). 3. Origin of edema: Same as Berlin; pulmonary edema not primarily cardiac. 4. Oxygenation: $PaO_2/FiO_2 \leq 300$ or $SpO_2/FiO_2 \leq 315$ ($SpO_2 \leq 97\%$), includes non-intubated (HFNO, NIV). 5. Ventilatory support: May include HFNO ≥ 30 L/min, NIV, or mechanical ventilation. 6. Setting adaptation: Universal – applicable in all settings. 7. Severity classification: Maintained (mild/moderate/severe) in intubated cases.

ARDS accounts for approximately 1-9 % of admissions to the ICU. Shock, sepsis, and drowning are the most common causes of ARDS. The average mortality rate is 52% (range 28.5%-90%). In patients with ARDS, death is primarily due to sepsis or multiple organ dysfunction. Generally ARDS are the end result of an aggressive inflammatory present scientific thinking suggests that the balance between pro-inflammatory and anti-inflammatory mediators.

ARDS as a syndrome has its own pathophysiological stages, which determine the clinical picture. The clinical picture also has its own staging based on the pathophysiological changes. Over the past two decades, pathophysiological research has focused primarily on pathophysiological changes in the alveoli, neglecting the fact that the acinus is the structural unit of lung tissue. This has become a stereotype, and as a result, less and less attention has been paid to the vascular portion of the acinus.

COVID-19 has brought attention to vascular changes in ARDS, which sometimes become generalized. Vascular changes in ARDS require further study and the search for effective treatment and prevention methods for intensive care programs for patients with ARDS.

This fact requires more effective (and perhaps early and timely) use of existing methods for preventing vascular damage to lung tissue. Critical care specialists must take this into account when developing a comprehensive intensive care program to maximize tissue blood flow, using both pharmacological and instrumental means. It seems relevant to expand the indications for the use of ECMO in critical medicine practice for ARDS.

Keywords: ARDS, definition, acinus, vascular changes

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).27

MODERN APPROACHES TO THE MANAGEMENT OF ACUTE HEART FAILURE AND CARDIOGENIC SHOCK IN EMERGENCY MEDICINE

Giorgi Barabadze

Emergency Medicine Department, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Cardiogenic shock and acute heart failure represent critical cardiovascular emergencies that require a multidisciplinary, timely, and evidence-based management approach. Cardiogenic shock typically develops as a consequence of myocardial infarction, decompensated chronic heart failure, or mechanical complications, and is characterized by a severe reduction in tissue perfusion and multiorgan hypoperfusion. Contemporary therapeutic strategies focus on early diagnosis using invasive monitoring, optimization of hemodynamic parameters, utilization of mechanical circulatory support devices (IABP, Impella, ECMO), and targeted treatment of the underlying etiology.

Management of acute heart failure involves careful balancing of preload and afterload, administration of diuretic, vasodilator, and inotropic therapy, as well as the integration of novel agents such as levosimendan and sacubitril/valsartan. Recent studies emphasize individualized management based on the patient's hemodynamic profile, early revascularization, and the standardization of care within intensive therapy settings.

The ultimate goal of modern approaches is to improve survival outcomes, preserve organ function, and optimize long-term prognosis.

Keywords: cardiogenic shock, acute heart failure, mechanical circulatory support, modern therapy.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).28

PRACTICAL SIGNIFICANCE OF INNOVATIVE BIOMARKERS IN DIAGNOSING SUSPECTED EARLY NEONATAL SEPSIS IN NEONATES AT ≥35 WEEKS GESTATION

Khatuna Lomauri, **Bela Bochorishvili**
Department of Neonatology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Neonatal sepsis remains one of the leading causes of morbidity and mortality in newborns. Its timely diagnosis still represents a major clinical challenge. The integration of innovative biomarkers into clinical practice guidelines may facilitate the early verification of neonatal sepsis, reduce the need for unnecessary antibiotic therapy, and improve overall clinical outcomes. Currently used conventional diagnostic methods for sepsis, such as blood culture, complete blood count, and C-reactive protein (CRP) have multiple limitations in terms of both specificity and sensitivity. Recent studies have demonstrated the diagnostic potential of innovative biomarkers, including interleukin-6 (IL-6) and presepsin (sCD14-ST), in this regard. Objective: The aim of this study is to evaluate the role of innovative biomarkers in the diagnosis of suspected early-onset neonatal sepsis among newborns with a gestational age of ≥35 weeks. Methods: The study focuses on the application of innovative biomarkers, including interleukin-6 (IL-6), interleukin-8 (IL-8), and presepsin (sCD14-ST) complemented by combined "omics" strategies (proteomics). Results: Determining innovative biomarkers (including IL-6, IL-8, presepsin, and procalcitonin) enables the identification of neonates with suspected early-onset sepsis within a shorter time interval, helping to avoid unnecessary antibiotic administration. Implementation of these findings may also positively impact treatment-related costs. Conclusion: The use of innovative biomarkers in the early diagnosis of neonatal sepsis represents an important advancement in modern neonatology. Although their widespread clinical implementation is still under investigation, current evidence demonstrates that this approach significantly improves diagnostic accuracy, accelerates the initiation of treatment, and ultimately enhances neonatal survival rates.

Keywords: Innovative biomarkers, early-onset neonatal sepsis, interleukin-6, interleukin-8, presepsin, procalcitonin.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).29

NT-proBNP Changes for Diagnosing Hemodynamically Significant Patent Ductus Arteriosus in Neonates at ≥35 Weeks Gestation

Khatuna Lomauri, Eliso Turkadze

Department of Neonatology, the First University Clinic, Tbilisi State Medical University, Tbilisi, Georgia

Hemodynamically significant patent ductus arteriosus (PDA) is a major cause of neonatal morbidity. Its incidence is inversely proportional to gestational age; however, in a proportion of term and late preterm neonates, it remains clinically significant and may require hospitalization. Early identification and assessment of ductal hemodynamic significance are essential for optimal management and outcomes. N-terminal B-type natriuretic peptide (NT-proBNP) is a sensitive biomarker of cardiac function, reflecting left ventricular stroke volume and pulmonary blood flow, both of which are impaired in the presence of hemodynamically significant PDA. Objective: To evaluate the prognostic value of NT-proBNP in diagnosing hemodynamically significant PDA (hsPDA) in neonates with a gestational age of ≥35 weeks, and to determine its role as an adjunct marker for assessing the severity, progression, and treatment response in PDA-associated cardiac dysfunction.

Methods: This prospective study will include neonates ≥35 weeks of gestation. Venous blood samples will be collected within 48–72 hours of life to determine NT-proBNP levels. Echocardiographic parameters—including PDA diameter, left atrium-to-aorta (LA/Ao) ratio, and left ventricular output-to-superior vena cava (LVO/SVC) index—will be evaluated to correlate NT-proBNP concentrations with ductal hemodynamic significance. Data will be analyzed using appropriate statistical methods for both prospective and retrospective comparisons.

Results: Preliminary findings indicate that mean NT-proBNP levels are significantly higher in neonates with hemodynamically significant PDA. The biomarker demonstrates high sensitivity and specificity in predicting hsPDA, supporting its diagnostic and prognostic value in neonatal cardiac assessment.

Conclusion: NT-proBNP serves as a reliable biomarker for identifying and monitoring hemodynamically significant PDA in neonates. Its application can aid clinicians in assessing disease prognosis, guiding treatment decisions, and evaluating the effectiveness of conservative management. A declining NT-proBNP trend correlates with spontaneous ductal closure, offering a valuable tool for noninvasive monitoring.

Keywords: NT-proBNP, patent ductus arteriosus, hemodynamics, neonate, prognosis.

Georgian Scientists
ქართველი მეცნიერები
Vol. 7 Issue 4(1), 2025
https://doi.org/10.52340/gs.2025.07.04(1).30

ARTIFICIAL INTELLIGENCE IN EMERGENCY AND INTENSIVE CARE MEDICINE - BENEFIT OR RISK?

Tornike Zedelashvili[1], Nino Gvajaia[2]

1 Information Security Department of the Ministryof Justice. Tbilisi Georgia
2 Department of Medicine, TSMU, American MD program, Tbilisi, Georgia

Artificial intelligence (AI) is transforming emergency and intensive care medicine by enabling earlier detection, faster diagnosis, and more precise decision-making in time-critical situations. AI-based systems are increasingly used to interpret chest X-rays, CT scans, ultrasound images, and ECGs for identifying pneumothorax, pneumonia, acute respiratory distress syndrome (ARDS), arrhythmias, and ischemia with remarkable accuracy.

The U.S. Food and Drug Administration (FDA) has approved an AI-powered system that automatically detects pneumothorax with 100% sensitivity for large and 96% for small cases, and 94% specificity - substantially reducing false alarms. Such models help distinguish genuine emergencies from artifacts caused by motion, sensor errors, or benign physiological variations, improving workflow efficiency and clinical prioritization.

A key example of successful integration is the Targeted Real-time Early Warning System (TREWS), validated in a multicenter prospective study. TREWS enabled earlier identification and treatment of sepsis, reducing absolute mortality by approximately 4.5%. When clinicians responded to alerts within three hours, mortality decreased by 18% relative to baseline. The system demonstrated 82% sensitivity and was well accepted by clinicians (89%), highlighting its clinical reliability and usability.

A PRISMA-guided meta-analysis of prospectively validated studies further confirmed the effectiveness of AI-based Early Warning Systems (EWS). Compared with traditional scores such as NEWS and APACHE II/III, which rely mainly on vital signs, AI models using neural networks, logistic regression, and random forest algorithms achieved superior predictive performance. Pooled results indicated significantly lower mortality (OR = 0.69, 95% CI 0.60–0.79) and shorter hospital stays (- 0.35 days, p = 0.04). Rapid Response Team activations were also reduced, suggesting better early recognition of deterioration.

Despite these benefits, challenges persist. The limited interpretability of “black-box” models, need for clinician training, data quality concerns, and ethical considerations around fairness and access must be addressed to ensure safe implementation.

AI has proven its potential as a powerful ally in emergency and critical care - enhancing accuracy, efficiency, and patient outcomes - yet its responsible use requires transparency, collaboration, and continuous evaluation to maintain trust and safeguard patient safety.

Keywords: Artificial intelligence, emergency medicine, intensive care, early warning systems.