

Feeding, Rehabilitation, Endocrinology & Metabolism

FREM Section Meeting – ESICM LIVES 2026

Monday, 12 October 2026 · 11:30–13:00 · Room 1.07, ESICM LIVES Lisbon (hybrid)

Christian Stoppe

Department of Anesthesiology, Würzburg University, Germany

Department of Cardiac-Anesthesiology Charité Berlin

Agenda

Monday, 12 October 2026 · 12:00–13:30 CET · Room 1.07, ESICM LIVES Lisbon (hybrid) · Chair: Christian Stoppe

#	Time	Agenda item	Min
1	12:00–12:03	Opening – welcome, approval of the agenda	3
2	12:03–12:09	Approval of minutes & key follow-up points	6
3	12:09–12:19	Leadership-Group update – roles, rotation, succession	10
4	12:19–12:21	Social media & website updates	2
5	12:21–12:27	Flash updates – webinars/podcasts, Nutrition Pathway & fellowships, e-learning	6
6	12:27–12:37	Research project updates (1-slide summaries)	10
7	12:37–12:45	New joint publications & viewpoints	
8	12:45–13:00	Research strategy 2026–2028	
9	13:00–13:10	Early-career opportunities & mentorship	
10	13:10–13:20	Congress LIVES 2027 – program update	
11	13:20–13:25	Announcements & other business – incl. ESICM Business: Crisis Preparedness	
12	13:25–13:30	Action items & closing remarks	



18:00

FREM Meet & Greet – informal networking at the venue (to be confirmed)

18:30 in the lobby

Opening

Welcome

Who is new....and who not...

Approval of minutes



- Minutes of the last online FREM Section meeting (May 2026) – circulated

Leadership-Group Update



Current roles

Chair	Christian Stoppe
Research Committee	Kürşat Gündoğan & Stefano Marelli
Academy Sub-Committee	Simone Piva
Social Media	Catarina Domingues & Maria Eloisa Garcia Velasquez
Webinars & FREM meetings	Varsha Asrani & Kyrillos Nassim
Education Course	Annika Reintam Blaser & Jan Gunst
Leadership team	Kristine Koekkoek
Vacant roles	Always happy to meet interested colleagues



Term limits / rotation policy

- Defined term per role, aligned with ESICM section rules?
- Staggered rotation to keep continuity
- Proposal for discussion: strategy for endorsement tbd



Succession planning

- **Chair-elect transition: A. Reintam Blaser from 10/2027**
- Co-lead / shadowing model for incoming members
- Open call for interest – early-career members welcome

Social Media and Communication



Catarina and Eloisa FREM website updates · WhatsApp groups · Others

SMDC Sub-committee leads and responsibilities



Eloisa Velasquez
Ecuador



Catarina Rosa Domingues
Portugal

- Share activities/initiatives in FREM webpage and two WhatsApp groups
- Collaborate in organizing the activities of the FREM month (April) and LIVES Congress
- Participate in monthly meetings with all-sections SMDC representatives meetings

SMDC 2026 highlights and flash updates

**NAVIGATING THE NARROW PATH:
FEEDING STRATEGIES ON ECMO**

EXPERT PANEL MODERATORS

 **CHRISTIAN
STOPPE**  **RANNA
MODIR**

 **CATARINA ROSA
DOMINGUES**  **KYRILLOS
NASSIM**

THURSDAY, 9 APRIL 2026, 16:00-17:00 CEST



ESICM TALK

REDEFINING PRECISION NUTRITION:
WHERE SCIENCE MEETS
THE PATIENT'S BEDSIDE

 **KENNETH B.
CHRISTOPHER**

 **CATARINA ROSA
DOMINGUES**  **SEYMA
BAYKAN**

POWERED BY  **NEXT**

Ongoing LIVES Congress

LIVES
2026
OCTOBER 10-14
LISBON

Sessions, Debates, e-posters
and more...

Education



Online Nutrition Pathway & Fellowships

- Report on ongoing fellowships and courses (Annika, Jan and Martin)
- Outcomes, research projects future collaborations, and host centre opportunities

Education and Educational research

A blended learning pathway in ICU nutrition: eCourse, funded fellowships and research in education



COURSE DIRECTORS

Michael CASAER
Belgium

Annika REINTAM BLASER
Estonia

Martin SUNDSTRÖM REHAL
Sweden

Slides on Education prepared by Melania Istrate (ESICM Office)

Fellowships supported by  **FRESENIUS KABI**

Fellowship host centres



24–28 AUGUST 2026

University Hospitals Leuven

Leuven, Belgium

TUTORS

Michael CASAER
Jan GUNST
and the local team

19–23 OCTOBER 2026

Karolinska University Hospital

Stockholm, Sweden

TUTORS

Olav ROOYACKERS
Martin SUNDSTRÖM REHAL
and the local team

26–30 OCTOBER 2026

Charité Universitätsmedizin Berlin

Berlin, Germany

TUTORS

Andreas EDEL
Julius GRUNOW
and the local team

Publication

The fellowship experience, published in Intensive Care Medicine

Intensive Care Med
<https://doi.org/10.1007/s00134-026-08356-y>

FROM THE INSIDE

From online lessons to bedside insight: learning through the ESICM fellowship experience

Vijay Sundarsingh* 

© 2026 Springer-Verlag GmbH Germany, part of Springer Nature



<https://doi.org/10.1007/s00134-026-08356-y>

Intensive Care Medicine, 2026

FROM THE INSIDE

A fellow's testimonial in Intensive Care Medicine

*"From online lessons to bedside insight:
learning through the ESICM fellowship
experience"*

Fellowships supported by  **FRESENIUS
KABI**

FELICIA study

Does the fellowship change practice? An observational cohort

FELICIA

FELlowship-Enhanced Learning In Critical Illness Nutrition

Despite international ICU nutrition guidelines, implementation still varies. FELICIA evaluates whether the fellowship is associated with higher-level educational and implementation outcomes.

DESIGN

Open (dynamic) cohort with rolling enrolment and longitudinal follow-up.

POPULATION

All ESICM Nutrition Course participants 2022–2026, and all future cohorts while the programme continues.

PRIMARY OBJECTIVE

Compare composite Knowledge, Attitudes and Practices (KAP) scores in ICU nutrition between fellowship participants and course-only participants at follow-up.



Self-reported
change in clinical
practice



Implementation
of nutrition-
related protocols



Leadership,
guideline and
research
involvement

KAP questionnaire

Development of a Knowledge, Attitudes and Practices Questionnaire for Intensive Care Nutrition Training

Jan Gunst¹, Melania Istrate², Michael P. Casar¹, Martin Sundström Rehal³, Stefan J. Schaller⁴, Olav Rooyackers³, Anita Barth², Katalin Kendi², Imre W.K. Kouw^{5,6}, David McWilliams⁷, Christian Stoppe^{8,9}, Arthur R.H. van Zanten^{5,6}, Carole Boulanger¹⁰, Danielle Bear¹¹, Annika Reintam Blaser^{12,13}

¹ KU Leuven, Leuven, Belgium; ² ESICM, Brussels, Belgium; ³ Karolinska University, Stockholm, Sweden; ⁴ Medical University of Vienna, Vienna, Austria; ⁵ Wageningen University & Research, Wageningen, The Netherlands; ⁶ Gelderse Vallei Hospital, Ede, The Netherlands; ⁷ Coventry University, Coventry, UK; ⁸ University Hospital Würzburg, Würzburg, Germany; ⁹ Charité Berlin, Berlin, Germany; ¹⁰ Royal Devon University NHS Foundation Trust, Exeter, UK; ¹¹ Guy's and St Thomas NHS Foundation Trust, London, UK; ¹² University of Tartu, Tartu, Estonia; ¹³ German Cantonal Hospital, Lucerne, Switzerland

INTRODUCTION

Evidence-based nutritional therapy is essential in intensive care. Yet, implementation varies despite international guidelines [1-4]. Educational programs aim to reduce this evidence-to-practice gap. At current, no ICU-specific instrument assesses not only knowledge acquisition, but also attitudinal, behavioral, and implementation-related outcomes.

OBJECTIVES

To develop a structured Knowledge, Attitudes and Practices (KAP) questionnaire for ICU nutrition and establish its use for evaluating ICU nutrition training.

METHODS

Development of a KAP survey:

- In accordance with existing guidance [5,6]
- To evaluate the training on ICU nutrition developed within the ESICM-FREM section

Based on:

- European nutritional guidelines [1-3]
- Current research priorities in ICU nutrition and gastrointestinal dysfunction [7,8].

RESULTS

The resulting instrument contains three domains: Knowledge, Attitudes and Practices (see figure)



CONCLUSIONS

We developed the first ICU nutrition-specific KAP questionnaire. The tool provides a standardized framework to evaluate the educational impact across knowledge, attitudes, and practices domains. The survey will be sent annually to participants of ESICM's training program on ICU nutrition, for up to 5 years after participation.

ACKNOWLEDGEMENTS

ACKNOWLEDGEMENTS

JG has received a senior clinical investigator fellowship grant by Research Foundation – Flanders. The ESICM-ICU Nutrition Fellowships have been supported by an unrestricted grant of Fresenius Kabi. Fresenius Kabi had no role in the content of the courses/fellowships, no role in development of the survey, no role in writing this abstract, and no role in the decision to submit. Figure made by Microsoft Designer.

REFERENCES

1. Singer et al. Clin Nutr 2019;38:48–79; 2. Singer et al. Clin Nutr 2023;42:1671–89; 3. Reintam Blaser et al. ICM 2017;43:380–98; 4. de Man et al. ICM 2024;50:1035–48; 5. Andrade et al. Indian J Psychol Med 2020;42:478–81; 6. Chau et al. Med Sci Monit 2024;30:e941406; 7. Arabi et al. ICM 2017;43:1239–56; 8. Reintam Blaser et al. Crit Care 2020;24:224.

KNOWLEDGE

ATTITUDES

PRACTICES

A gap filled

No ICU-specific instrument assessed knowledge together with attitudinal, behavioural and implementation outcomes.

Evidence-based

Built on European nutrition guidelines and current research priorities, following existing KAP guidance.

Long-term follow-up

Sent annually to participants of ESICM's ICU nutrition training, for up to 5 years.

Tuesday, October 13 at 08:45 - Poster Station E
Presenting author: Jan Gunst

Fellowships supported by



New Joint Publications & Viewpoints



Call for ideas, interest and leads

Which topics should FREM address next? Who wants to lead or contribute?



Linked to the endorsement process

New publication projects go through the FREM endorsement route (see Research Strategy) to ensure visibility and feedback.



Ongoing initiatives (next slides)

Feeding the injured brain · Nutrition on extracorporeal & mechanical support · Gut microbiota review · Micronutrients: practice vs guidelines

ESICM ENDORSEMENT

Two doors to ESICM endorsement

Same society, two committees: choose the door that matches what you will produce.

A Research projects via the Research Committee

FOR	Studies, surveys, educational projects
BRING	ESICM-member lead, full protocol, application form
DECISION	Within 10 weeks of a complete application
CALLS 2026	15 Jun – 13 Jul · 19 Oct – 9 Nov

B Guidance documents via the Guidelines Committee

FOR	Guidelines, consensus statements, position papers, clinical focus guidance
BRING	Proposal Form V3: team, methods, timeline, conflicts of interest
DECISION	Guidelines Committee review, then Executive Committee approval
CALLS 2026	25 May – 22 Jun · 7 Sep – 5 Oct

Step zero for both doors: get your ESICM Section (e.g. FREM) on board before you apply

THE DEAL

What you get, what you owe

A Research projects

YOU GET

- | ESICM logo: “Endorsed by ESICM”
- | Listing on the Endorsed Projects page
- | Newsletter announcement and member mailing
- | Congress poster and meeting room (if space)

YOU COMMIT TO

- | A progress update every 6 months
- | Acknowledge endorsement in publications
- | Results are not official ESICM positions

B Guidance documents

YOU GET

- | Label: “Supported/Endorsed by ESICM”
- | Recognition that the work matters to members
- | Methodology help only if partnered or ESICM-led

YOU COMMIT TO

- | Deliver within the agreed timeline
- | Submit to ICM/ICMx first (no guarantee publication)
- | Progress updates twice a year
- | ICMJE authorship, declared conflicts of interest

In both doors ESICM offers recognition and visibility, not funding

ROADMAP

From idea to endorsement in six steps

1 Check the fit

Does ESICM already cover this? Look for duplicates first.

2 Win your Section

Present to your Section (e.g. FREM) and secure its approval.

3 Pick a door

Research project or guidance document: download that form.

4 Send it in

English form to research@esicm.org, inside a call window.

5 Get reviewed

Reviewers assess it; you may be asked to revise.

6 Deliver and credit

Keep the timeline, send updates, acknowledge ESICM.

Case in point: our FREM–ESPEN proposal

Door B, with ESPEN as partner society and a Delphi consensus as the next step.

Working with another society?

Agree an MoU upfront (roles, timeline, costs). Joint = co-led; collaborative = ESICM represented.

Questions?

THE GAP

Every device leaves a metabolic fingerprint

Guidelines treat ECMO, CRRT, MCS and liver support as incidental modifiers of nutrition care, not as its primary determinants.

VV-ECMO

Respiratory failure
Hyperinflammation, high energy expenditure, circuit adsorption

VA-ECMO

Cardiogenic shock
Gut ischaemia is the main barrier: mesenteric perfusion may gate enteral feeding

Temporary MCS

Impella, IABP
Shock catabolism: lean mass lost within 72 h, refeeding risk often missed

Durable LVAD

Long-term support
Lean mass regained by 6 months, tied to neurohumoral stabilisation, not extra protein

CRRT

CVVH, CVVHDF, SLED
Amino acid losses of about 10–22 g/day, plus water-soluble vitamins, selenium, zinc

Liver support

MARS, Prometheus, SPAD
Strips albumin-bound selenium, zinc and fat-soluble vitamins; no predictive equations

ECMO + CRRT, ECMO + Impella: losses compound into the “**nutrition impossible**” phenotype

THE PROPOSAL

Towards a device-stratified approach

1 Describe the fingerprints

Metabolic perturbations of each device, alone and combined (Table 1)

2 Map the knowledge gaps

Where evidence is missing and practice varies widely: a research roadmap

3 Consolidate current guidance

ESPEN, ELSO and KDIGO in one place as expert opinion

IT IS

- | Expert guidance under uncertainty
- | Narrative review, SANRA-compliant
- | Transparent about low certainty

IT IS NOT

- | A formal guideline
- | A set of firm recommendations

A first step, not an endpoint: Delphi consensus comes next

SEVEN SHARED QUESTIONS, ASKED OF EVERY DEVICE

Timing

Energy

EN vs PN

Macronutrients

Micronutrients

Problems

Monitoring

Research Strategy 2026–2028

Open exchange and discussion



Cross-section collaboration

- Which section priorities for the next 2–3 years?
- Joint projects with NIC, PICS, AKI and other sections



Endorsement process

- ✓ What structure exists today?
- ✓ How to request endorsement and provide feedback



Funding support

- How can FREM help members explore funding: grants, industry partnerships, ESICM research awards?



Others

- Open floor

Endorsement route – proposal for discussion



Early-Career Opportunities & Mentorship



How to get involved

- Contribute to webinars, podcasts and social media
- Join FREM review and publication initiatives
- Apply for fellowships and the Online Nutrition Pathway
- Take a role in LIVES session planning (e.g., NEXT activities)



Mentor / mentee matching

- Proposal: register interest (mentors and mentees)
- Matching by topic and career stage
- Defined period with check-in at the next section meeting
- **Thoughts?...**

Research Projects

ESICM FREM SECTION

RESEARCH COMMITTEE REPRESENTATIVE



Stefano Marelli, MD
Terapia Intensiva ad indirizzo neurologico/neurochirurgico
ASST Grande Ospedale Metropolitano Niguarda

Kürşat Gündoğan, MD PhD

Erciyes University School of Medicine, Professor Medical and Surgical Intensive Care Unit

Congress LIVES 2026 – Program Update



Allocated sessions

- 1 debate, 1 thematic session
- Plus several joint sessions
 - Burn, PICS, NEXT...

- **Submission ideas**

...collection start from November – ideas welcome...

PLEASE SUPPORT OUR SECTION



Challenges & opportunities

- Lesson from LIVES 2026: more interaction with other sections needed
- Joint sessions as the main growth path
- Competition for limited slots

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Amazing Start...

Nutrition in liver and pancreatic diseases



Prof. Dr. J Dionne, Prof. J. Wendon & many more

Announcements and other Business



- Crisis Preparedness Project
- First ESICM and ESPEN cooperation
- Open floor for additional announcements

ESICM Business: Crisis Preparedness Project

Draft for discussion

Why?

Pandemics, armed conflicts, mass-casualty events and recurrent shortages of nutrition products have shown how quickly feeding, metabolic care and rehabilitation are deprioritised under pressure.

Aim

Define FREM's contribution to ESICM crisis preparedness: practical, resource-adapted guidance for nutrition, metabolic & endocrine care and rehabilitation.



Supply-chain resilience

Essential product list (EN/PN, lipids, micronutrients, insulin) and substitution guidance during shortages



Surge & low-resource protocols

Simplified, standardised feeding and glycaemic-control protocols for surge capacity and reduced staffing



Mass casualty & burns

Hypermetabolism, protein needs and recovery pathways; links to burns, NIC and PICS



Recovery & rehabilitation

Maintaining rehabilitation and post-ICU follow-up; minimal nutrition data set for crisis registries

Proposed next steps

1

Align scope with the ESICM crisis-preparedness lead

2

Form a small FREM working group (call for volunteers)

3

Agree deliverable & timeline (e.g., position paper / toolkit)

First ESICM and ESPEN cooperation – Webinar



#ESPENMAW2026
ESPEN webinar
Advances in ICU Nutrition
A SIG NUTICU ESPEN and FREM ESICM Webinar
November 11th, 2026
3:00 - 4:00 pm CET (GMT +1)

Webinar organized
in collaboration with



SCIENTIFIC PROGRAM

3:00 pm **Introduction and Moderation**
Pierre Singer (ESPEN, Israel)
Christian Stoppe (ESICM, Germany)

3:05 pm **Is Indirect Calorimetry Helpful in Intensive Care?**
Arthur van Zanten (Netherlands)

3:15 pm **Protein Delivery in Critical Illness: An Overview of Protein-Dose Clinical Trials and Their Implications for Practice**
Lee Zheng Yii (Malaysia)

3:25 pm **Nutrition During CRRT: What We Know, What We Do and What Remains Unclear**
Arabella Fischer-Hammerschmied (Austria)

3:35 pm **The Challenges of Post-ICU Nutrition**
Antonella Cotoia (Italy)

3:45 pm **Q/A and Closing Remarks**

FREE REGISTRATION



Scan the QR code
or click on it
to register
for the webinar



MALNUTRITION AWARENESS WEEK
 NOVEMBER 9-13, 2026
www.espen.org/activities/malnutrition-awareness-week

www.espen.org

ORGANIZING SECRETARIAT
NOEMA

Via degli Orefici 4 - 40124 Bologna (Italy)
 Ph. +39 051 230... noemacongressi.it - www.noemacongressi.it



ESPEN FACT SHEETS

NUTRITION IN THE INTENSIVE CARE UNIT

Malnutrition is frequent, worsens outcomes, and may be modifiable with personalized medical nutrition therapy

MALNUTRITION IN THE ICU

Prevalence of malnutrition at ICU admission

38%–78% according to SGA¹

15%–68% according to GLIM²



ICU
in the unit

Skeletal muscle wasting occurs at a rate of nearly **2% per day** during the first week of critical illness and the average rate of muscle loss **does not appear to slow after ICU discharge**³

COMPLICATIONS A diagnosis of malnutrition is independently associated with¹:



LONGER ICU LENGTH OF STAY



HIGHER ICU READMISSION RATES



INCREASED INCIDENCE OF INFECTION



GREATER RISK OF HOSPITAL MORTALITY

Delivery gap⁴

On average, patients received **61.2%** of their prescribed calorie requirements and received **57.6%** of their prescribed protein requirements.

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Please promote...!



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Research Activities

Open section – few slide per activity; further projects can be added using the template slide at the end



Bio Micro

EU funded education project



OPTIMAL

Study concept



RESQ



Ultrasound

..



FAST ICU

Annika Reintam Blaser –
placeholder



Gut Ready

Annika Reintam Blaser –
placeholder



ACUTE

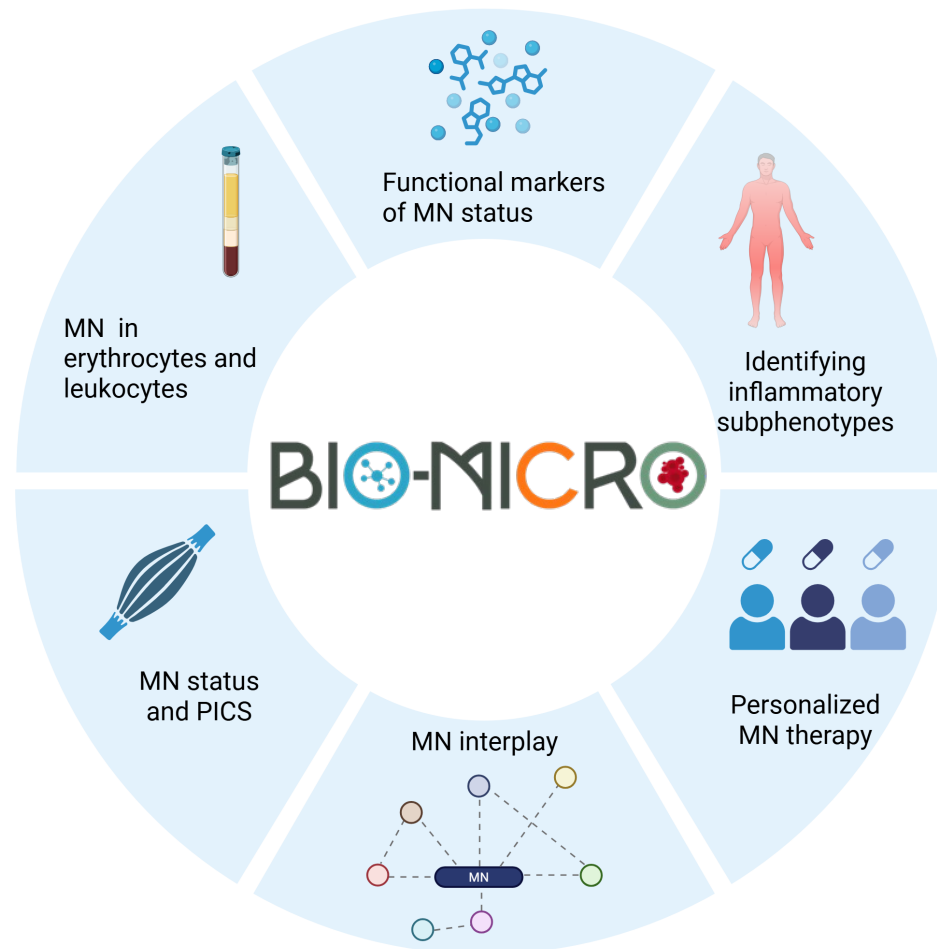
International registry



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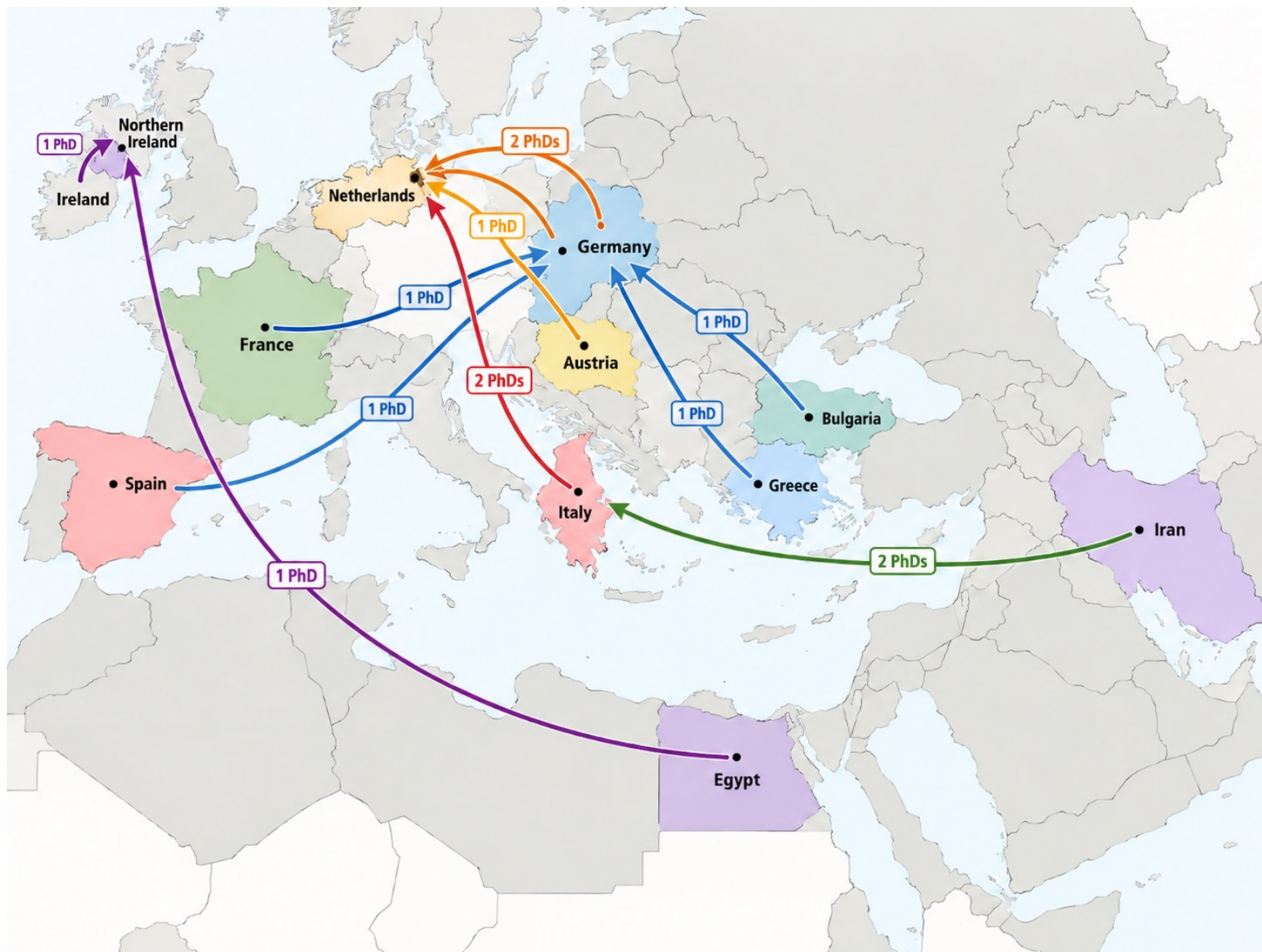
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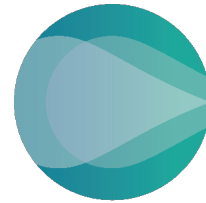
BIO-MICRO



- 13 PhD students
- 4 countries: the Netherlands, Germany, Northern Ireland, Italy
- 6 scientific work packages
- Observational study: BIO-MICRO CLEAR

<https://bio-micro.eu/>





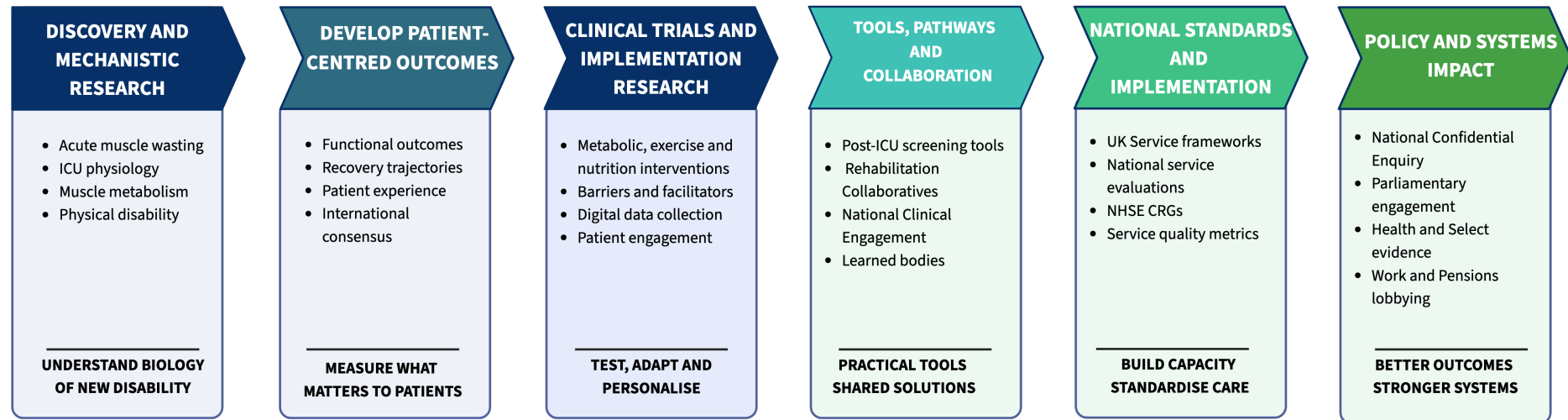
RHMD



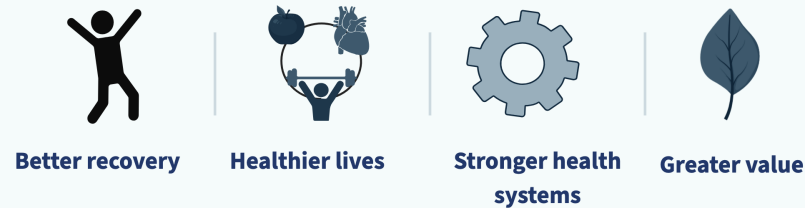
Università di Foggia



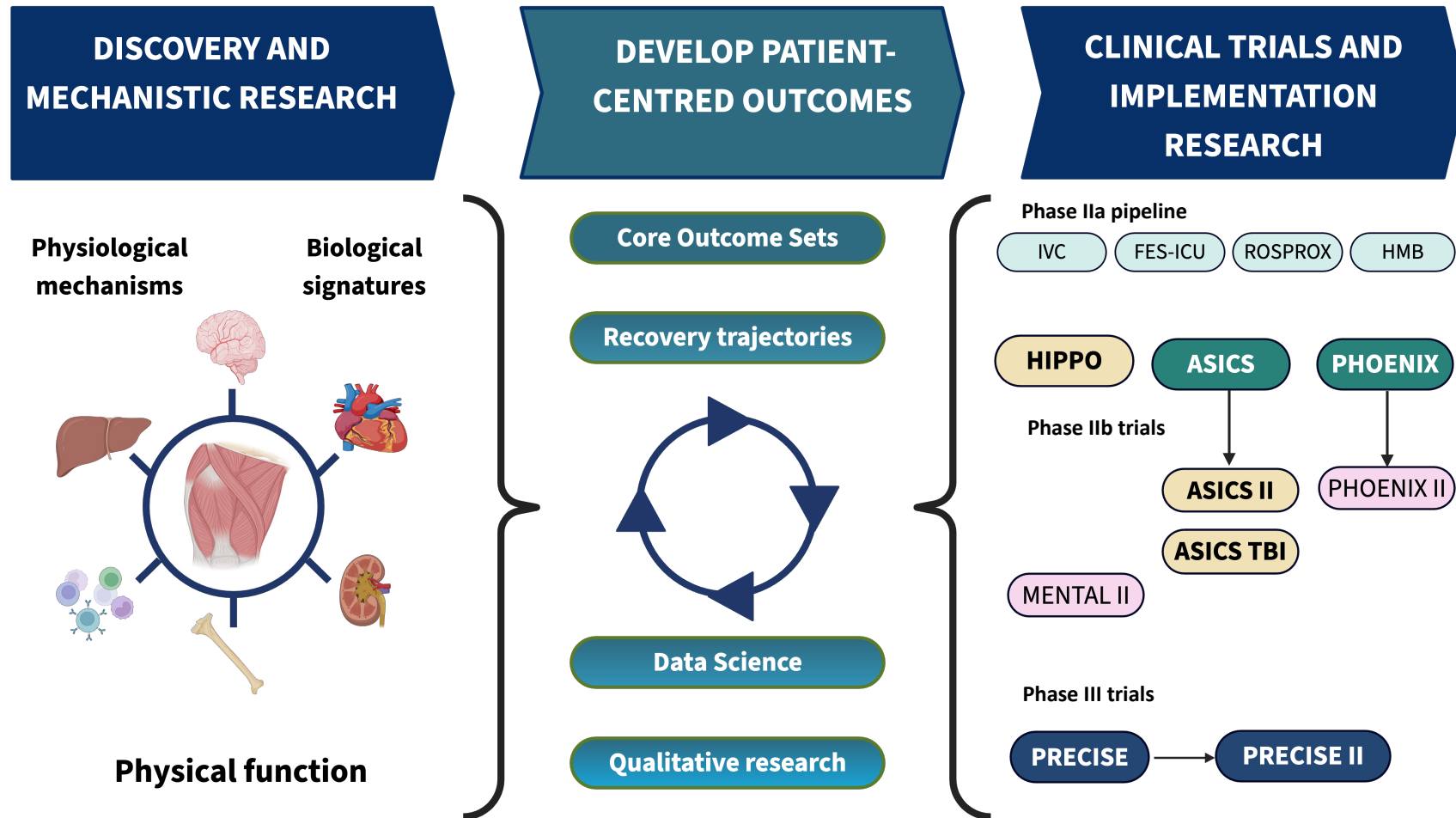
Research to policy: real-world impact on patient care and outcomes



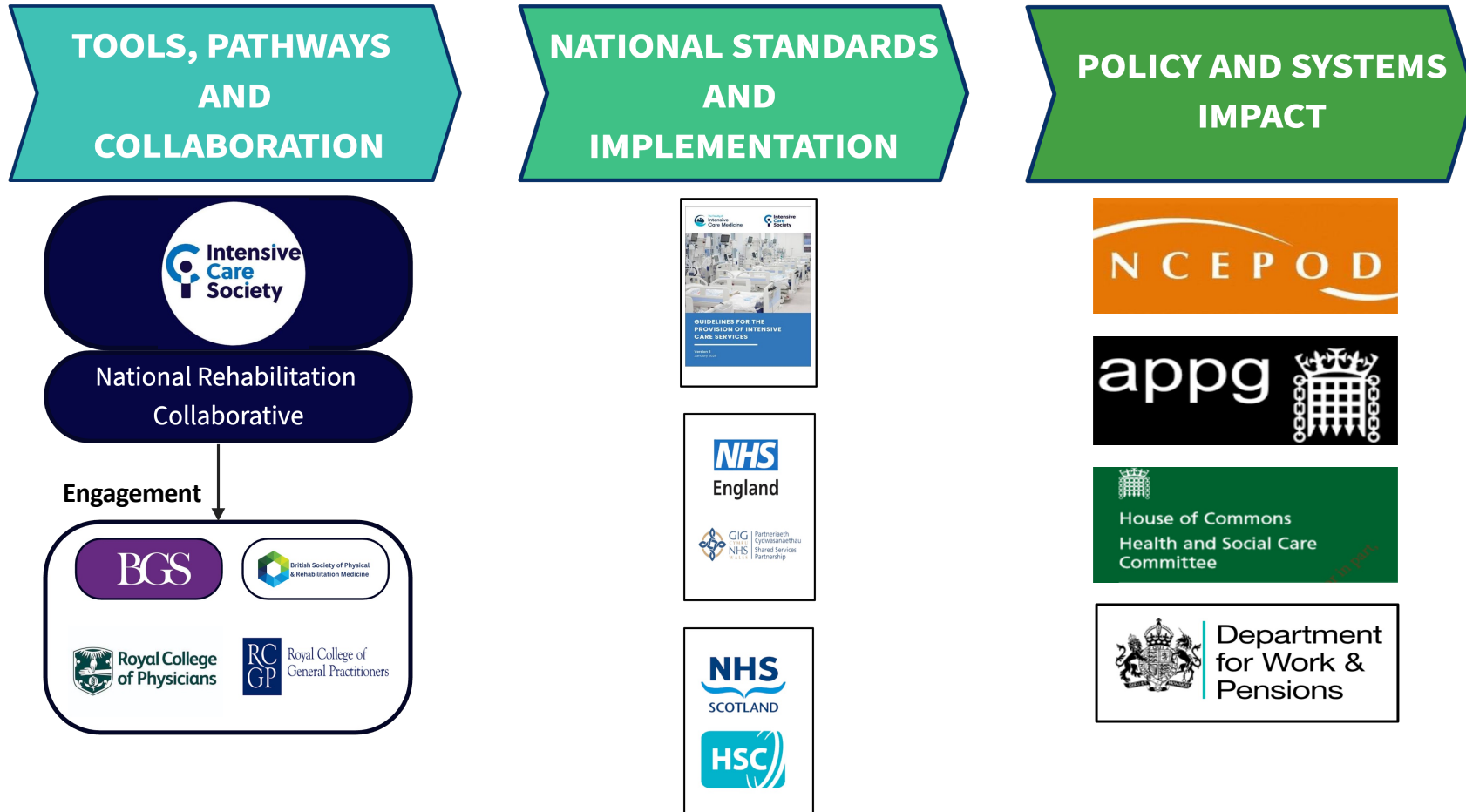
A translational pathway in critical illness, rehabilitation and recovery



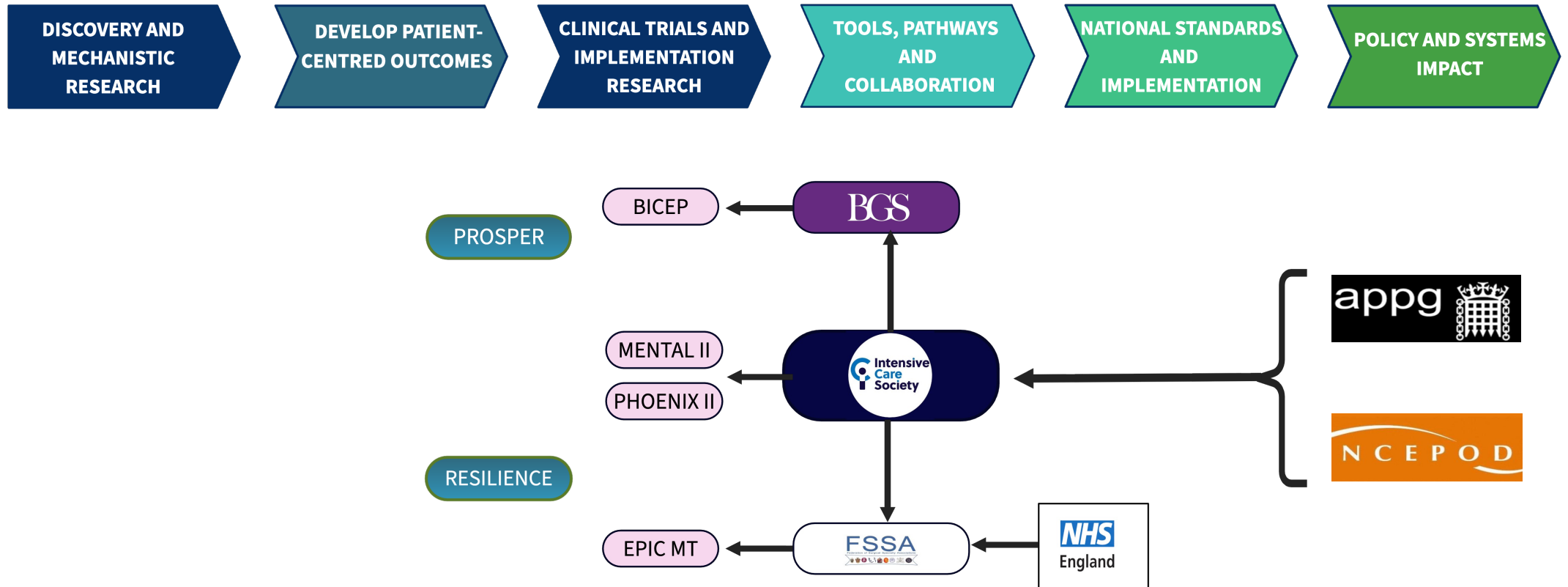
Translational research pipeline



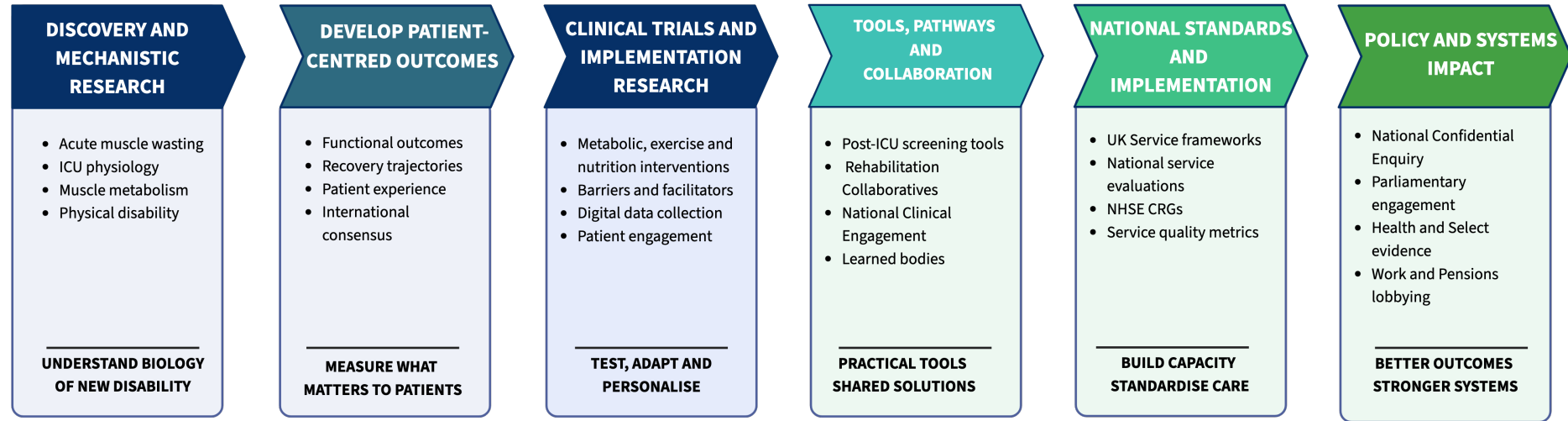
Policy and impact pipeline



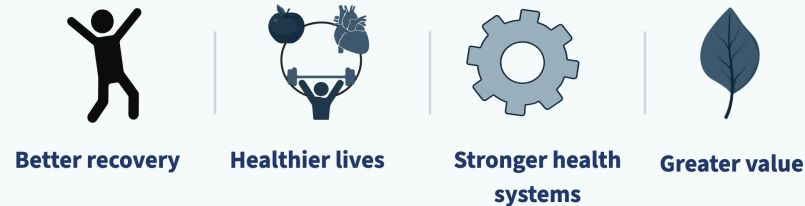
Bidirectional pipelines



Shared goals and non-academic collaboration are the keys to success



A translational pathway in critical illness, rehabilitation and recovery



Clinical research completed in 2026

GUTPHOS Part A

2679 ICU patients

ESICM award

Estonian grant

Critical Care

RESEARCH | Article in Press

Validation of the GastroIntestinal Dysfunction Score (GIDS): prospective observational multicentre study (GUTPHOS Study)

Annika Reintam Blaser¹ · Merli Koitmäe² · Arthur R. H. van Zanten³ · Oskar Appelberg⁴ · Yaseen M. Arabi⁵ · Varsha Asrani⁶ · Anca Balintescu⁷ · Guillaume Besch⁸ · Jonas Blixt⁹ · Giuliano Bolondi¹⁰ · Laura Borgstedt¹¹ · Michael P. Casaer¹² · Henri Cattier¹³ · Zhigang Chang¹⁴ · Samantha Cook¹⁵ · Antonella Cotoia¹⁶ · František Duška¹⁷ · Hans-Erik Ehrlich¹⁸ · Ligia C. Fonseca Höflinger¹⁹ · Ola Friman²⁰ · Yao Fu²¹ · Kristina Fuest²² · Jan Gunst²³ · Adi Hadzibegovic²⁴ · Benjamin Hess²⁵ · Claire-Anne Hurni²⁶ · Bojan Jovanovic²⁷ · Imre Kouw²⁸ · Torben Krieger²⁹ · Hongxiang Li³⁰ · Rebecca Lindström³¹ · Juan C. Lopez-Delgado³² · Cecilia Inés Loudet³³ · Liivi Maddison³⁴ · Ramprasad Matsa³⁵ · Daniela M. Moran³⁶ · Karim Muhamedjanov³⁷ · Olivier Pantet³⁸ · Bastian Pasieka³⁹ · Giorgia Perini⁴⁰ · Sirak Petros⁴¹ · Uroš Ristic⁴² · Raul M. Sanchez Leon⁴³ · Stefan J. Schaller⁴⁴ · Jovana Stanisavljevic⁴⁵ · Joel Starkopf⁴⁶ · Martin Sundström Rehal⁴⁷ · Maria Theodorakopoulou⁴⁸ · Greet Van den Berghe⁴⁹ · Jacqueline Vilca Becerra⁵⁰ · Anna-Liisa Voomets⁵¹ · Natalija Vukovic⁵² · Rebecka Rubenson Wahlin⁵³ · Luping Wang⁵⁴ · Yucong Wang⁵⁵ · Linus Warner⁵⁶ · Qin Wu⁵⁷ · Pia Zetterqvist⁵⁸ · Dong Zhang⁵⁹ · Alice Efstathia Zouridaki⁶⁰ · Martin Padar⁶¹ · GUTPHOS Study Group

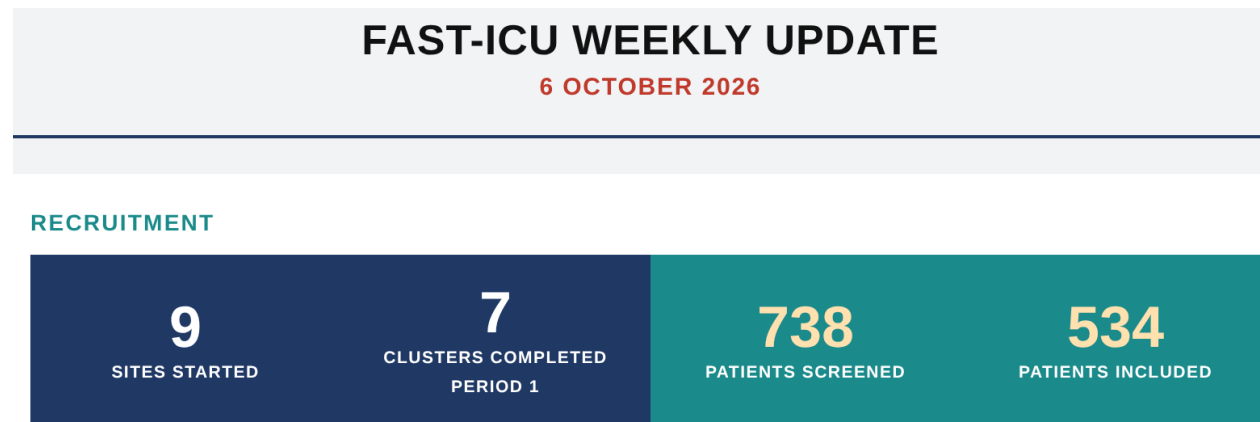
Received: 27 June 2026 / Accepted: 12 September 2026

Research ongoing

- GUTPHOS Part B (Arthur van Zanten)
- GUTPHOS Metabolomics (Martin Sundström Rehal/Olav Rooyackers, Swedish Grant)
- FAST-ICU (Kadri Tamme and Martin Sundström Rehal), Estonian Grant
 - cluster-randomized cross-over non-inferiority study, 2 x 4 weeks of study period
 - primary hypothesis: withholding EN, PN and glucose containing maintenance fluids during the first 72h is not inferior to standard of care regarding hypoglycemia.

16 clusters

Austria (4)
Belgium (1)
Estonia (2)
Germany (1)
India (1)
Italy (1)
Saudi Arabia (2)
Sweden (2)
Switzerland (2)



Figures as at 6 October, 10:30 EEST.

Target: 15 clusters/~2160 patients, recruitment completed end of 2026
Study protocol submitted to Clin Nutr ESPEN (Varsha Asrani)

Research in pipeline

GUT-TIMING RCT

Multicentre Randomised Open-Label Controlled Trial on Timing of Nutrition and Gastrointestinal Management Strategies in Critically Ill Adults

Total budget 225 000 EUR for sites (ca 120 EUR per patient plus taxes)

Target: 15 sites and 1500 patients worldwide

Ethics approval in Estonia obtained

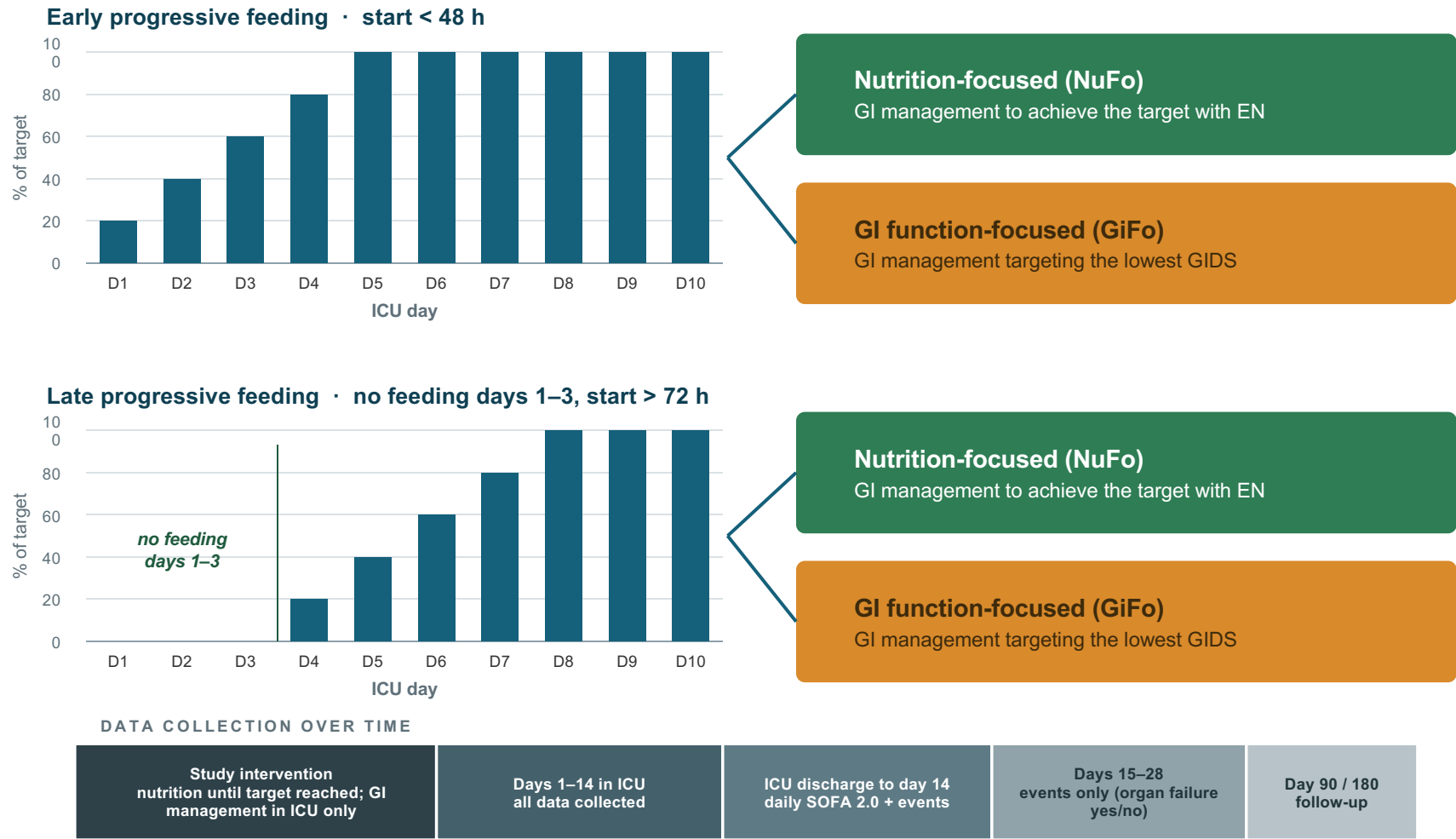
Site recruitment ongoing

NOTE: highly complex study protocol
Only sites with sufficient research experience

Figure 1

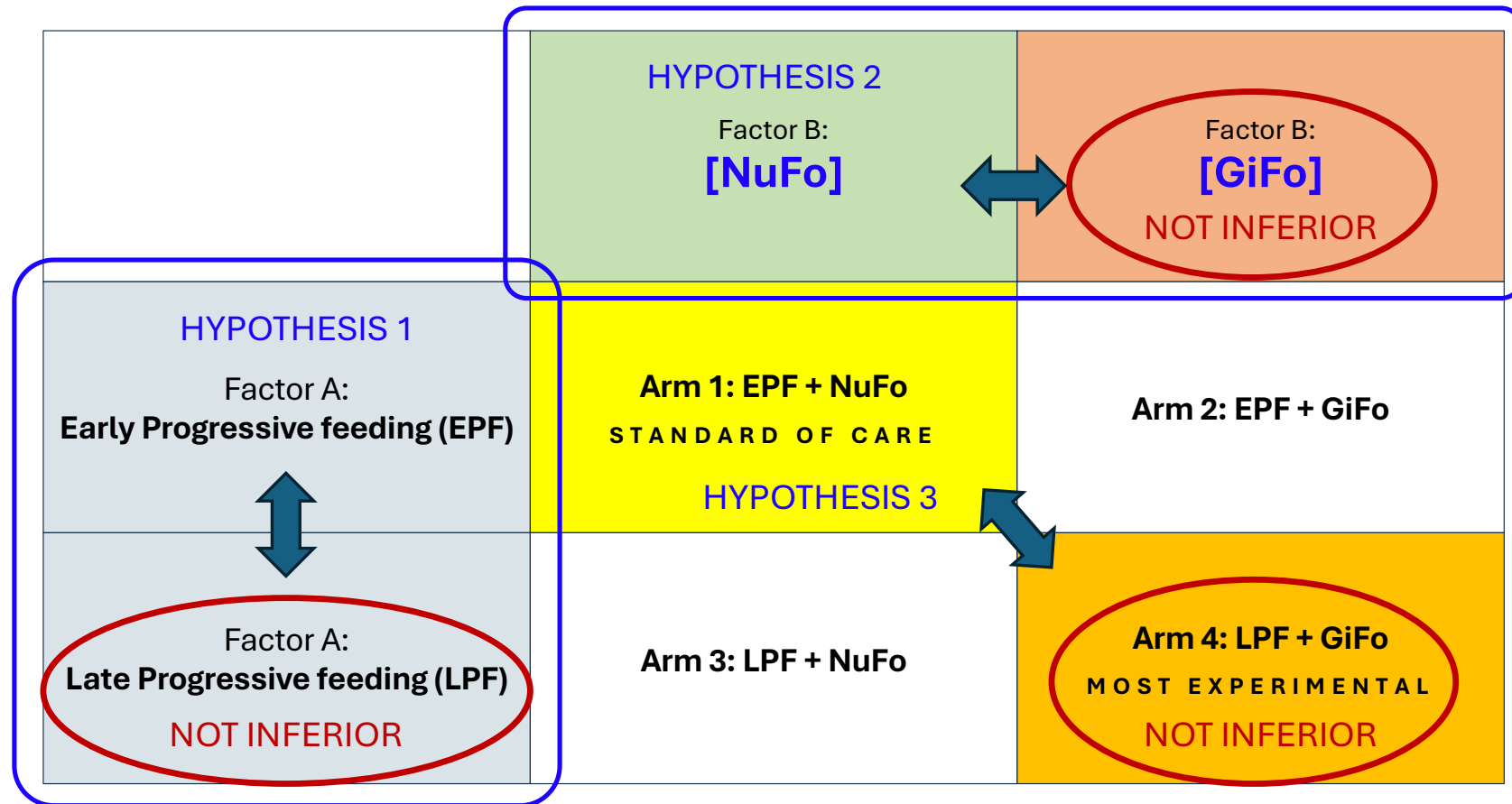
Study arms and data-collection timeline

2 × 2 factorial feeding timing (EPF / LPF) × GI management (NuFo / GiFo)



Tiered data collection: full daily detail for days 1–14 in the ICU → SOFA 2.0 + events through day 14 → events only through day 28 → follow-up at day 90 and day 180. Feeding advances 20% of target per day; on reaching 100% the target is maintained (see Figure 3).

2×2 factorial allocation



Secondary/co-primary: GI-focused approach of GI management is **superior** to nutrition-focused GI approach in terms of cumulative organ dysfunction quantified by SOFA AUC over days 1–14



ACUTE Registry – Progress Update

**ESICM LIVES 2026 - FREM Section Meeting
October 12, 2026**

Carina Güttler · University Hospital Würzburg

Study overview



Design

- Prospective, multicenter observational study conducted on ICUs
- Multiple calls over 10 years
- Target: **≥20 patients per site and call**

Population

- Adult patients expected to require **≥48h of ICU support** and receiving any type of **nutrition support**

Primary objective

- To **describe nutrition practices in critically ill patients** treated on ICUs worldwide

Data collection

- Baseline characteristics, nutritional assessment, ICU interventions and clinical outcomes
- Daily nutrition data: **from ICU admission up to 28 days in the ICU**
- Hospital follow-up: **up to 60 days**
- Optional long-term follow-up: **up to 12 months**

Current project status and future perspectives



First project → Assessment of nutritional practices in general ICU patients

>160

ICUs have expressed interest

100

Site registrations

37

Sites with ethics approval

19

Active sites

First site activated: October 21, 2025

10

Countries

214

Patients enrolled

FPI: November 24, 2025

Beyond the first project – Expanding the ACUTE Registry

- **ECMO project:** nutritional practices in ICU patients receiving ECMO support
- **Investigator-driven sub-studies and different project ideas** under development
- **Pediatric ICU expansion** under exploration

Join ACUTE and bring in
your research ideas!

Contact: Carina Güttler
(Guettler_C@ukw.de)

The first registry based RCT in Acute!...

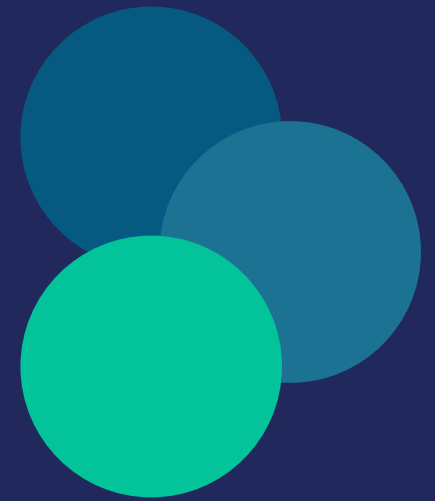
OPTIMAL

Optimizing Protein Targets In critically ill Adults with **obesity**

Does the reference body weight used to prescribe protein change what a patient actually receives?...and does it influence patients outcomes?!

A pragmatic, registry-embedded feasibility trial — Invitation to Collaborate

Prof. Dr. Christian Stoppe · University Hospital Würzburg · ACUTE Registry Steering Committee



The Reference Weight Problem

SAME PATIENT, SAME NOMINAL ORDER

A protein order of "1 g/kg/day" for a 150 kg, 180 cm ICU patient means a different amount of protein depending on which body weight it is calculated against:

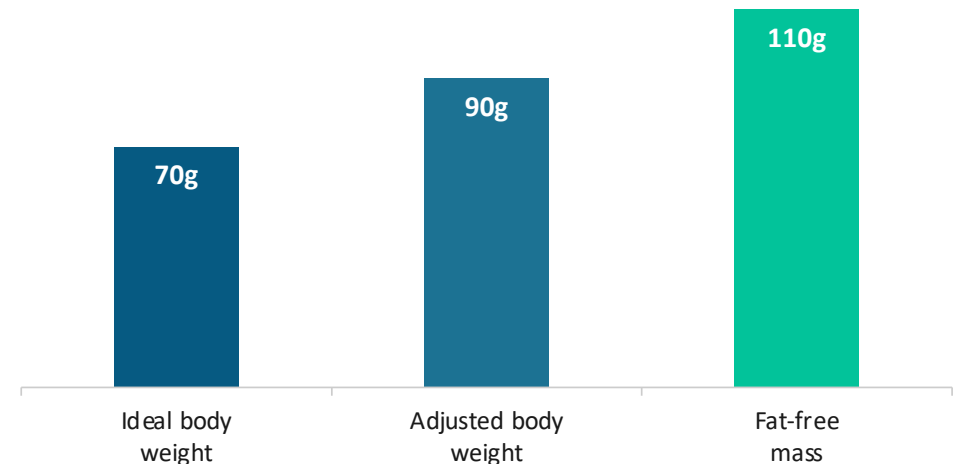
Result: up to 50%+ difference in actual protein delivered

>50% *from what reads, on paper, as an identical order*

GUIDELINES DISAGREE ON WHICH WEIGHT TO USE

- 8 of 12 current guidelines: ideal body weight (IBW)
- 2 of 12: adjusted body weight (aBW)
- 1 permits either; 1 does not specify
- **No randomized trial has ever tested reference weight itself — EFFORT Protein, TARGET Protein and PRECISE all varied dose, not the denominator dose is calculated against**

1 g/kg/day, same patient — grams delivered



EFFORT Protein prescribed protein exclusively by IBW. If IBW under-estimates the metabolically active compartment in obesity, its null result may reflect under-dosing relative to fat-free mass, not a true absence of effect.

A Pragmatic, Registry-Embedded Feasibility Trial

P

POPULATION

Critically ill adults with obesity ($\text{BMI} \geq 30 \text{ kg/m}^2$) requiring invasive mechanical ventilation and vasopressor support at ICU admission, expected to need artificial nutrition ≥ 4 days, enrolled at a participating ACUTE site.

D

DESIGN

3-arm, 1:1:1 randomized ($n=300$), embedded in the ACUTE registry. All arms follow an identical energy/protein schedule — only the reference weight against which it is calculated differs.

O

OUTCOMES

Hierarchical feasibility gates: (1) randomization success $\geq 80\% \rightarrow$ (2) between-arm protein separation $\geq 15 \text{ g/day} \rightarrow$ (3) protocol adherence - directly informing a confirmatory Phase III trial.

Prim. endpoint for the seamless following RCT: Time to Discharge Alive

No trial-specific visits, blood draws, or imaging — all data come from routine ICU care and fields the ACUTE registry already collects.

THE THREE ARMS

Arm A — $n=100$

Ideal body weight

Devine formula

Arm B — $n=100$

Adjusted body weight

ESPEN factor

Arm C — $n=100$

Fat-free mass

Janmahasatian equation

Why This Matters — And Why Now

>140

ICUs already
expressed interest

19

sites already
activated

190

patients already
enrolled

A NARROW WINDOW OF OPPORTUNITY

Three large, null dose-comparison trials (2023–2025) + a guideline shift toward fat-free-mass reasoning with no supporting trial data + an already-activated international registry converge into a window that will not stay open indefinitely.

Join OPTIMAL as a site or collaborator

Prof. Dr. Christian Stoppe · University Hospital Würzburg · christian.stoppe@gmail.com



RES-Q NUTRI ICU — THE PROJECT

Minimum nutrition standards for resource-limited ICUs

AIM

International expert consensus on **realistic minimum standards** for assessing, starting, delivering and monitoring nutrition in resource-limited ICUs

DESIGN

Modified Delphi · ACCORD

EXPERT PANEL

40–50 experts, ≥60% LMIC

PROFESSIONAL MIX

≥1/3 non-physicians

CONSENSUS

≥80% rate 7–9 (9-pt)

ROUNDS

Until response stability

PATIENT VOICE

5–10 ICU survivors / carers

FIVE STATEMENT DOMAINS

1 Screening & assessment

2 Timing, route & delivery

3 Monitoring & metabolic control

4 Mobilisation, micronutrients & special situations

5 Team care, task-shifting & QI

Resource-limited is defined by available resources, not by geography or income group — including temporary surge conditions.



RES-Q NUTRI ICU — PROGRESS

Where we are: September 2026

COMPLETED

✓ Steering Committee formed

✓ ESICM endorsement

✓ First SC meeting · 23 Sep

✓ Protocol v1.2 · 25 Sep

✓ Ethics approval

IN PROGRESS

1 PPIE ethics amendment

2 Protocol registration

3 Protocol manuscript

NEXT

1 Systematic search

2 Round 1 statements

3 Panel recruitment

4 Delphi rounds + PPIE



MODIFY
CARDIAC SURGERY

Rationale & hypothesis

Background

- Cardiac surgery with **cardiopulmonary bypass (CPB)** exposes the heart to ischemic stimuli and reperfusion injury
- The resulting **systemic inflammatory response and oxidative stress** drive most postoperative complications and organ dysfunction

Research gap

- Effects of parenteral fish oil (FO) on inflammatory, immunologic and metabolic processes are unclear
- Unknown whether FO improves outcomes in **high-risk patients** undergoing complex cardiac surgery

Hypothesis

- Patients with combined, prolonged procedures (**longer CPB time**, more inflammation) benefit most from parenteral FO supplementation

Endpoints

Primary endpoint

- **Atrial fibrillation after cardiac surgery (AFACS):** atrial fibrillation, flutter or tachycardia within 7 days after surgery
- Detected by continuous ICU ECG monitoring and extracted from medical records, so **careful monitoring and documentation** are essential

Secondary endpoints

- **Organ function:** AKI (KDIGO 1–3), persistent organ dysfunction + death, Δ SOFA, stroke, CPB weaning attempts
- **Support duration:** mechanical ventilation, inotropes/vasopressors, mechanical support
- **Recovery:** ICU and hospital stay, time to discharge alive, days alive and out of hospital (30 days), readmissions, survival
- **Patient-reported:** daily activities (Katz ADL, Lawton IADL), quality of life (SF-36)
- **Safety:** infections, postoperative bleeding, adverse events and SAEs

Study population

Inclusion

- Adults (≥18 years) with written informed consent
- Elective cardiac surgery with CPB in a **high-risk procedure**: valve, CABG, valve + CABG, multiple valves, combined cardiac, aortic, or combined cardiac and aortic surgery
- **Plus ≥1 enrichment factor**:
 - EuroSCORE II predicted mortality ≥8%
 - Age ≥70 years
 - Clinical Frailty Score ≥4
 - Urgent surgery (within 24–48 h of admission)
 - LVEF <35%

Key exclusions

- **Prior atrial fibrillation**, flutter or atrial tachyarrhythmia
- Hypersensitivity to fish oil, fish products or egg protein; pregnancy or lactation
- Already receiving FO-enriched nutrition
- ECLS, IABP, VAD or total artificial heart
- **Severe comorbidity**: Child-Pugh C, GFR <30 ml/min, severe coagulopathy, BMI <18.5, diabetic ketoacidosis or hyperosmolar coma
- Expected survival <48 h or no commitment to full care (isolated DNR accepted)
- Other interventional trials only with sponsor approval

Study conduct & recruitment

Study schedule

- Give the **preoperative IMP dose** whenever possible
- A missed preoperative dose for organizational or medical reasons is **not a protocol deviation**

Sites

- **10 German sites:** Kiel, Hamburg, Rostock, Berlin, Münster, Bonn, Göttingen, Mainz, Stuttgart, Augsburg
- **More sites and countries (e.g., Italy) to follow: interested in joining?**

Recruitment to date

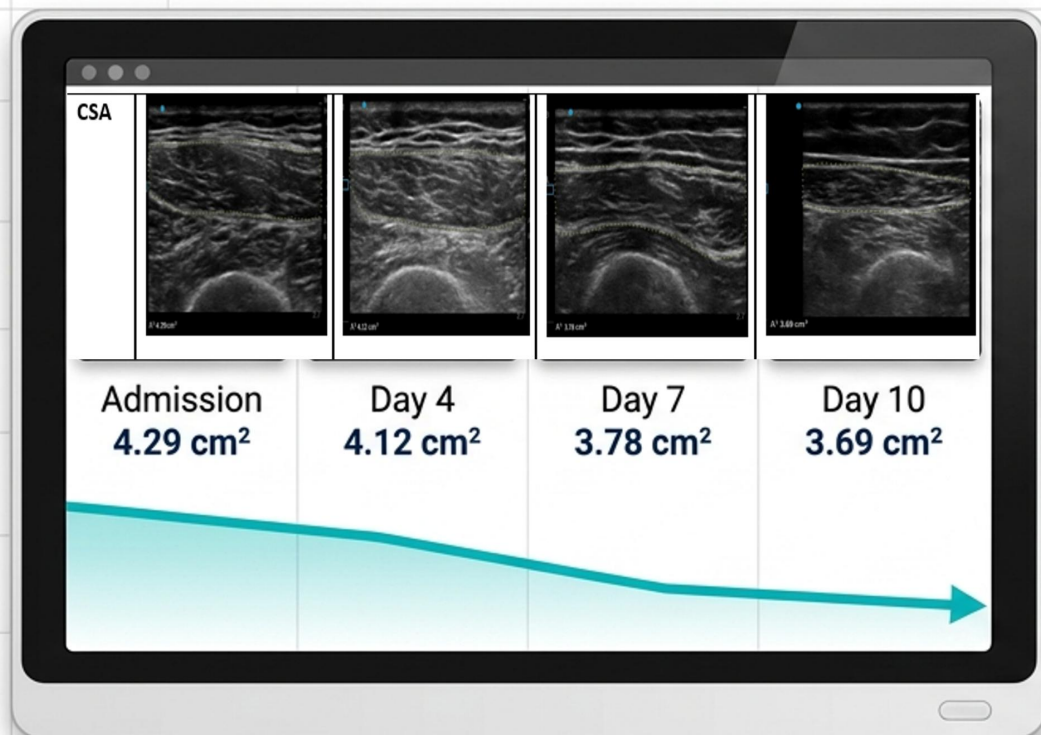
217 / 550



patients enrolled, 39% of the target sample

The Clinical Reality — Muscle Failure Begins Long Before Clinical Weakness

Representative Images



By the time an MRC score can be assessed, how much muscle have your ventilated patients already lost?

What the Literature Says

Rectus Femoris CSA Loss in Critical Illness

Daily, week 1:	By day 10:	MOF, day 7:
-2.1%	-17.7%	-15.7%

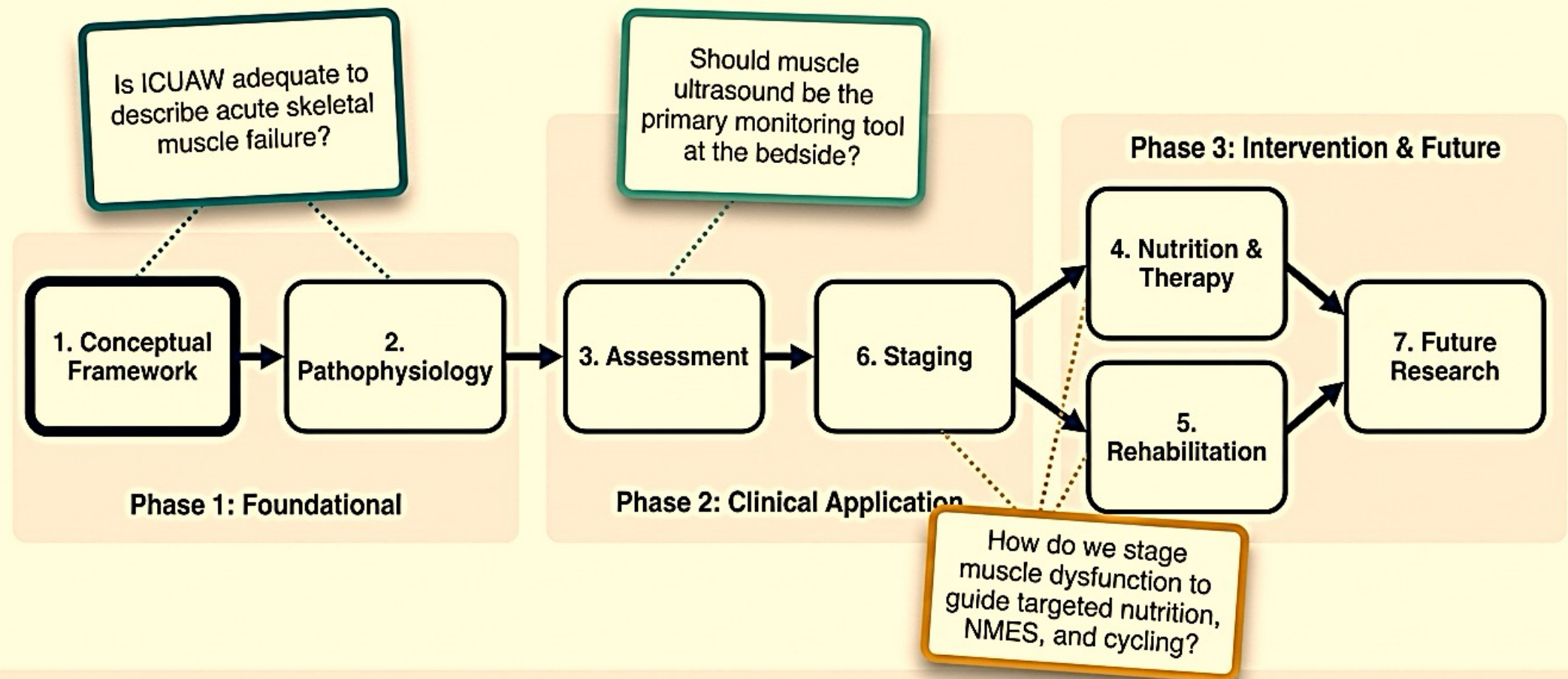
Biopsy, day 7: myofibre area -17.5% · protein:DNA -29.5%

MRC-SS still needs an awake, cooperative patient

Fazzini, Crit Care 2023 · Puthuchear, JAMA 2013 · Vanhorebeek et al., ICM 2020

ICUAW is late, binary, and unactionable — skeletal muscle is an acutely failing organ system.

The ESICM Position Paper — A 7-Domain Multidimensional Roadmap



Objective: Expanding ICUAW to an early, actionable, multidimensional framework for definition, staging, and muscle-directed therapy.

GUT-FIRST

Gut-Focused Investigation of Response to Targeted Nutrition

Nutrition practices and gastrointestinal dysfunction in critically ill patients

RESEARCH QUESTION

How do nutrition route, timing and delivery pattern relate to GIDS change over time?

AIMS

- Compare nutrition strategies across GIDS severity
- Describe GIDS trajectories after ICU admission
- Explore how changes in support relate to GIDS

Retrospective, multicentre cohort nested in GUTPHOS n = 2,680 patients | 28 ICUs

DATA POINTS

Nutrition in days 1–3

- Route
- Duration of initiation
- Daily energy and protein
- Delivery trajectory
- Reasons to withhold or reduce EN

GIDS TRAJECTORY AND PATTERNS

- Daily GIDS, days 1–7

Improving | Worsening | Stable | Fluctuating

- Admission severity
- Prokinetics, laxatives and propofol
- ICU / hospital stay and mortality

GIDS RESPONSE

**0–1 No dysfunction
2 Dysfunction
3–4 Failure**

PRIMARY OUTCOME

Association of nutrition groups with change in daily GIDS at days 3, 5 and 7

SECONDARY OUTCOMES

- Time to improvement;
- GIDS 0–1 by day 7;
- Cumulative GIDS burden;
- Effects of changing nutrition strategy and prokinetic use

ANALYSIS Adjusted mixed-effects models for daily GIDS, trajectory modelling and clustering, plus Cox time-to-improvement analysis with death as a competing risk.

GIDS may help assess response to nutrition and guide more tailored ICU nutrition trials.

EPIC-RECOVER

European Programme for Integrated Care and Recovery
after Critical Illness

Preventing long-term disability and
promoting independent living through
personalised prediction, early intervention
and integrated rehabilitation



A HORIZON EUROPE 2027 INITIATIVE

Call: HORIZON-HLTH-2027-01-STAYHLTH-01

Addressing disabilities through the life course to support independent living and inclusion

PRESENTATION AT ESICM LIVES 2026

PICS & REHABILITATION SECTION MEETING

Lisbon, Portugal | October 2026



A HEALTHIER
EUROPE
FOR PEOPLE
AFTER CRITICAL
ILLNESS

EPIC-RECOVER

European Programme for Integrated Care and Recovery after Critical Illness

Preventing long-term disability and promoting independent living through personalised prediction, early intervention and integrated rehabilitation.

A EUROPEAN RESPONSE TO A GROWING CHALLENGE



> 12 million
Europeans survive severe infections every year



~ 50%
experience long-term physical, cognitive or psychological impairments



High burden
on patients, families and healthcare systems

ACUTE ILLNESS



ICU SURVIVAL

More patients survive...

POST-CRITICAL ILLNESS



...but many face **long-term challenges**

- Physical impairment
- Cognitive dysfunction
- Psychological distress
- Reduced participation

OUR AIM



RECOVERY



Personalised care and rehabilitation

INDEPENDENT LIVING



Better function, quality of life and societal participation



1. UNDERSTAND

A multicountry European cohort of critically ill patients (with sepsis as a key model)



2. PREDICT

Multidimensional phenotyping (biomarkers, clinical data, PROs) and AI-based risk models



3. INTERVENE

Early mobilization and innovative rehabilitation strategies (including home-based telerehabilitation)



4. IMPLEMENT

Scalable care pathways, health system integration and policy recommendations



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1 EUROPEAN COHORT

A real-world, multicountry platform

- Adults admitted to ICU (with sepsis as key model)
- Multiple European centres
- Harmonised data collection and follow-up (3, 6, 12, 24 months)
- Clinical, biological and patient-reported outcomes

> 10,000 patients across Europe

2 PHENOTYPING & PREDICTION

From mechanisms to risk stratification

- Multidimensional phenotyping (clinical, functional, cognitive, psychological, biological)
- Biomarkers (blood, EVs, neuroinflammatory, muscle/PNS, endothelial, metabolic)
- AI-based prediction models and recovery trajectories
- Clinically meaningful phenotypes to guide personalised care

3 EARLY INTERVENTION

Testing scalable strategies

- Early mobilisation + neuromuscular stimulation (multicentre RCT)
- Home-based telerehabilitation (multicentre RCT)
- Digital tools and remote monitoring
- Patient-centred and feasible interventions

4 IMPLEMENTATION

From evidence to practice and policy

- Integration into care pathways and health systems
- Health economic evaluation
- Policy recommendations and scalability
- Active involvement of patients, caregivers and stakeholders

EXPECTED IMPACT

- Less long-term disability after critical illness
- Better quality of life and social participation
- More sustainable healthcare systems
- Evidence to inform policy and clinical practice

MULTIDISCIPLINARY EUROPEAN CONSORTIUM



CLINICAL | RESEARCH | TECHNOLOGY | POLICY | PATIENTS



Understand the problem

Identify those at risk

Prevent and treat disability

Enable independent living

TOWARDS A FUTURE WITH LESS DISABILITY

AND MORE LIFE



SURVIVE

RECOVER

REGAIN FUNCTION

LIVE FULLY

A CALL FOR COLLABORATION

We invite the PICS & Rehabilitation community to join and contribute to this European initiative.



LET'S WORK TOGETHER



European Programme for Integrated Care and Recovery after Critical Illness

Thank you
for your attention

 **simone.piva@unibs.it**



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Addressing disabilities through the life course to support independent living and inclusion

PRESENTED AT ESICM LIVES 2026

PICS & REHABILITATION SECTION MEETING

Lisbon, Portugal | October 2026



**A HEALTHIER
EUROPE
FOR PEOPLE
AFTER CRITICAL
ILLNESS**

Ultrasound Assessment of Skeletal Muscle and Nutritional Status in Critical Illness

ESICM Research Agenda and Proposal for Future Research

Abstract

Background: Malnutrition, sarcopenia and ICU-acquired weakness are common in critical illness. Ultrasound is emerging as a bedside tool for monitoring muscle quantity and quality. Objective: Define priority research questions and a framework for future studies. Methods: Five domains are proposed including biomarkers, clinical assessment, muscle architecture, respiratory muscles and ultrasound-guided nutrition. Conclusions: Coordinated multicenter studies are needed.

Overall Aim

To establish a rationale for integrating ultrasound into nutritional assessment, muscle monitoring, prognostication, and personalized therapy in critical care.

Domain 1. Integration of Ultrasound With Laboratory Biomarkers

Objectives: improve diagnosis of ICU-acquired weakness and malnutrition; evaluate dynamic biomarker changes; develop a composite Ultrasound-Nutrition Risk Index.

Methods: multicenter observational cohorts with RF-CSA, quadriceps thickness, echogenicity, SAT thickness, albumin, prealbumin, CRP and lactate.

Domain 2. Clinical Assessment, Functional Scales and Ultrasound

Objectives: correlate ultrasound with NRS-2002, mNUTRIC, GLIM and frailty measures; evaluate functional recovery; identify occult sarcopenia. Methods: prospective cohorts with HGS, MRC score, Barthel Index and EQ-5D.

Ultrasound Assessment of Skeletal Muscle and Nutritional Status in Critical Illness

CONTINUED....

Domain 3. Muscle Mass, Architecture and Quality

Objectives: validate echogenicity, determine reliability and MDC, evaluate sarcopenic dysphagia. Methods: Heckmatt grading, grayscale analysis, interobserver studies and swallowing assessments.

Domain 4. Respiratory and Non-Skeletal Muscle Structures

Objectives: examine SAT depletion, diaphragm function and advanced ultrasound technologies. Methods: diaphragm thickness fraction, excursion, elastography and ARFI studies.

Domain 5. Nutritional Interventions and Ultrasound-Guided Therapy

Objectives: evaluate high-protein feeding, ultrasound-guided nutrition and combined rehabilitation interventions. Methods: randomized controlled and factorial trials.

Proposed ESICM Program

Phase I: standardization. Phase II: international cohort validation. Phase III: ultrasound-guided intervention trials.

Conclusions

Ultrasound offers a promising platform for precision nutrition and muscle-preserving strategies in critically

Closing remarks...



FREM Meet & Greet

Informal networking, 18:00 at the venue – details shortly before the congress

Date for next meeting to be determined ...



Many Thanks for Your Attention

christian.stoppe@gmail.com



@CStoppe
@CriticalCareNu1

