PITTSBURGH 2019

MODELS OF ACUTE PANCREATITIS

HUNGARIAN PANCREATIC STUDY GROUP

Péter Hegyi

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TRANSZLÁCIÓS MEDICINA

HEALTH CARE

QUESTION

PRACTICE

SCIENCE

BASIC SCIENCE PURE FUNDAMENTAL RESEARCH	APPLIED SCIENCE DEVELOP KNOWLEDE FOR PRACTICAL APPLICATION	CLINICAL SCIENCE PRACTICAL APPLICATION
DISCOVERING NEW MECHANISMS AND TARGETS	DEVELOPING NEW DRUGS AND INTERVENTIONS	UNDERSTANDING SAFTEY AND EFFECTIVENESS
MOLECULAR BIOLOGY CELLULAR IMAGING PHYSIOLOGY	PHARMACOLOGY DEVICE D. INTERVENTIONAL D.	META-ANALYSIS INTERVENTIONAL CT OBSERVATIONAL CT PROSPECTIVE DA RETROSPECTIVE DA

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EDUCATION
GRADUATE AND POSTGRADUATE EDUCATION, PATIENT CLUBS
DISSEMINATION OF INFORMATION

- FOR PROFESSIONALS
- FOR NON-PROFESSIONALS

EDUCATION

SCEINTIFIC PUBLICATION

KNOWLEDGE PUBLICATION

KNOWLEDGE

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CONSULTANT

PhD STUDENTS

DISCIPLINES

ER

LAB MEDICINE

RADIOLOGY

ICU

SURGERY

RESIDENT

DATA MANAGERS

NURSE

PATIENTS COORDINATOR

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PhD STUDENT

PATIENTS' CLUB LEADER

PATIENTS COORDINATOR

NURSES

RESIDENT

CONSULTANTS

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WHAT WE KNOW

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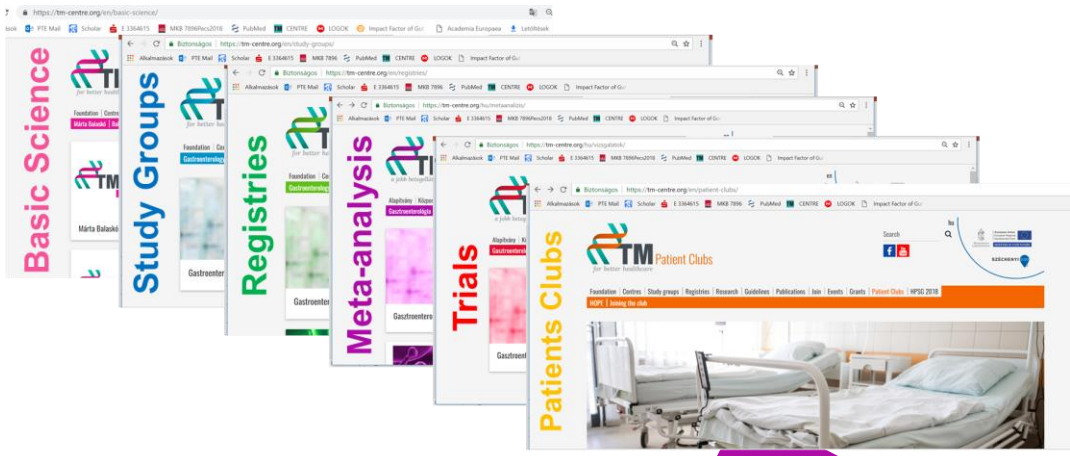
Centre for TRANSLATIONAL MEDICINE

WHAT WE DON'T KNOW

University of Pécs
Centre for TRANSLATIONAL MEDICINE



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HEALTHCARE

QUESTION

PRACTICE

SCIENCE

BASIC SCIENCE	APPLIED SCIENCE	CLINICAL SCIENCE
PURE FUNDAMENTAL RESEARCH	DEVELOP KNOWLEDE FOR PRACTICAL APPLICATION	PRACTICAL APPLICATION
DISCOVERING NEW MECHANISMS AND TARGETS	DEVELOPING NEW DRUGS AND INTERVENTIONS	UNDERSTANDING SAFTEY AND EFFECTIVENESS
MOLECULAR BIOLOGY	PHARMACOLOGY	META-ANALYSIS
CELLULAR IMAGING	DEVICE D.	INTERVENTIONAL CT
PHYSIOLOGY	INTERVENTIONAL D.	OBSERVATIONAL CT
		PROSPECTIVE DA
		RETROSPECTIVE DA

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EDUCATION

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THEORETICAL KNOWLEDGE

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CLINICAL PRACTICE EBM

BASIC SCIENCE	APPLIED SCIENCE	CLINICAL SCIENCE
PURE FUNDAMENTAL RESEARCH	DEVELOP KNOWLEDE FOR PRACTICAL APPLICATION	PRACTICAL APPLICATION
DISCOVERING NEW MECHANISMS AND TARGETS	DEVELOPING NEW DRUGS AND INTERVENTIONS	UNDERSTANDING SAFTEY AND EFFECTIVENESS

MOLECULAR BIOLOGY
IMAGING
SYSTEM BIOLOGY

PHARMACOLOGY
DEVICE D.
INTERVENTIONAL D.

META-ANALYSIS
INTERVENTIONAL CT
OBSERVATIONAL CT
PROSPECTIVE DA
RETROSPECTIVE DA

TEACHING

TEACHING PATIENTS CARE

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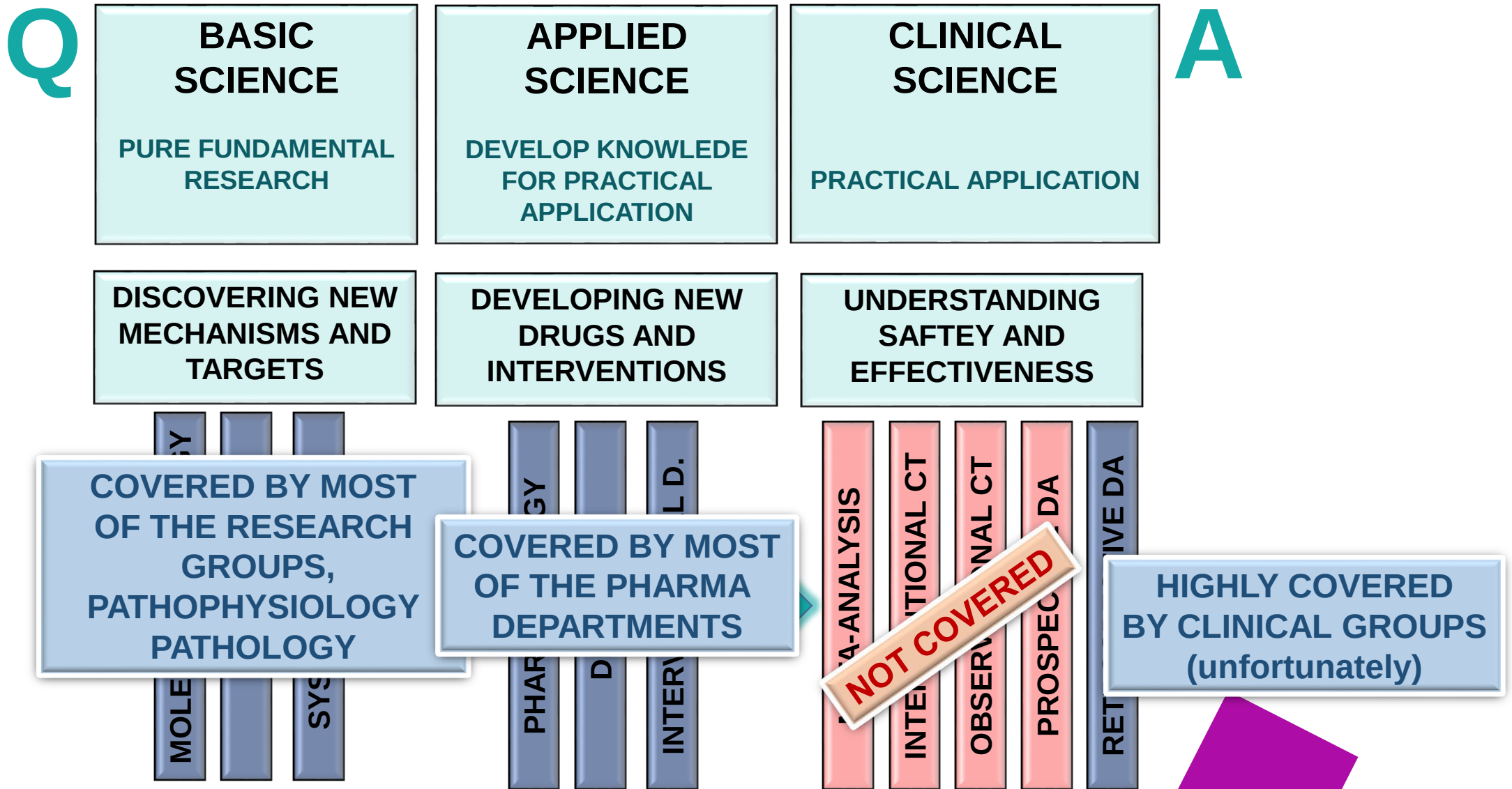

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QUESTION

PRACTICE

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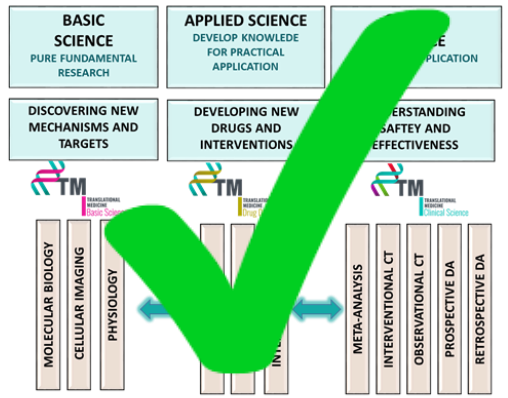

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Pancreatology 13 (2013) e1–e15

Contents lists available at SciVerse ScienceDirect

Pancreatology

journal homepage: www.elsevier.com/locate/pan

Original article

IAP/APA evidence-based guidelines for the management of acute pancreatitis

Working Group IAP/APA Acute Pancreatitis Guidelines[a,b,*,1]

[a] International Association of Pancreatology, UNSW Clinical School Locked Bag 7103, Liverpool, BC NSW 1871, Australia
[b] American Pancreatic Association, PO Box 14906, Minneapolis, MN 55414, USA

ARTICLE INFO

Article history:
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Keywords:
Acute pancreatitis
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Guidelines
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Prediction
Prevention
Treatment
Intervention
Nutrition
Surgery
Radiology
Gastroenterology

ABSTRACT

Background: There have been substantial improvements in the management of acute pancreatitis since the publication of the International Association of Pancreatology (IAP) treatment guidelines in 2002. A collaboration of the IAP and the American Pancreatic Association (APA) was undertaken to revise these guidelines using an evidence-based approach.

Methods: Twelve multidisciplinary review groups performed systematic literature reviews to answer 38 predefined clinical questions. Recommendations were graded using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system. The review groups presented their recommendations during the 2012 joint IAP/APA meeting. At this one-day, interactive conference, relevant remarks were voiced and overall agreement on each recommendation was quantified using plenary voting.

Results: The 38 recommendations covered 12 topics related to the clinical management of acute pancreatitis: A) diagnosis of acute pancreatitis and etiology, B) prognostication/predicting severity, C) imaging, D) fluid therapy, E) intensive care management, F) preventing infectious complications, G) nutritional support, H) biliary tract management, I) indications for intervention in necrotizing pancreatitis, J) timing of intervention in necrotizing pancreatitis, K) intervention strategies in necrotizing pancreatitis, and L) timing of cholecystectomy. Using the GRADE system, 21 of the 38 (55%) recommendations, were rated as 'strong' and plenary voting revealed 'strong agreement' for 34 (89%) recommendations.

Conclusions: The 2012 IAP/APA guidelines provide recommendations concerning key aspects of medical and surgical management of acute pancreatitis based on the currently available evidence. These recommendations should serve as a reference standard for current management and guide future clinical research on acute pancreatitis.

2013

OFFICIAL JOURNAL OF IAP AND EPC

2018

Pancreatology 18 (2018) 146–160

Contents lists available at ScienceDirect

Pancreatology

journal homepage: www.elsevier.com/locate/pan

EPC/HPSG evidence-based guidelines for the management of pediatric pancreatitis

Andrea Párniczky [a, b], Maisam Abu-El-Haija [c], Sohail Husain [d], Mark Lowe [e], Grzegorz Oracz [f], Miklós Sahin-Tóth [g], Flóra K. Szabó [h], Aliye Uc [i], Michael Wilschanski [j], Heiko Witt [k], László Czakó [l], Tassos Grammatikopoulos [m, n], Ib Christian Rasmussen [o], Robert Sutton [p, q], Péter Hegyi [b, l, *]

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[d] Department of Pediatrics, Children's Hospital of Pittsburgh of University of Pittsburgh Medical Center, Pittsburgh, PA, USA
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[m] Paediatric Liver, GI & Nutrition Centre, King's College Hospital, London, United Kingdom
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[o] Department of Surgery, Uppsala University Hospital, Uppsala, Sweden
[p] Department of Molecular and Clinical Cancer Medicine, Institute of Translational Medicine, University of Liverpool, Liverpool, UK
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Available online 4 January 2018

ABSTRACT

Background: Pediatric pancreatitis is an underdiagnosed disease with variable etiology. In the past 10–15 years the incidence of pediatric pancreatitis has increased, it is now 3.6–13.3 cases per 100,000 children. Up-to-date evidence based management guidelines are lacking for the pediatric pancreatitis. The European Pancreatic Club, in collaboration with the Hungarian Pancreatic Study Group organized a consensus guideline meeting on the diagnosis and management of pancreatitis in the pediatric

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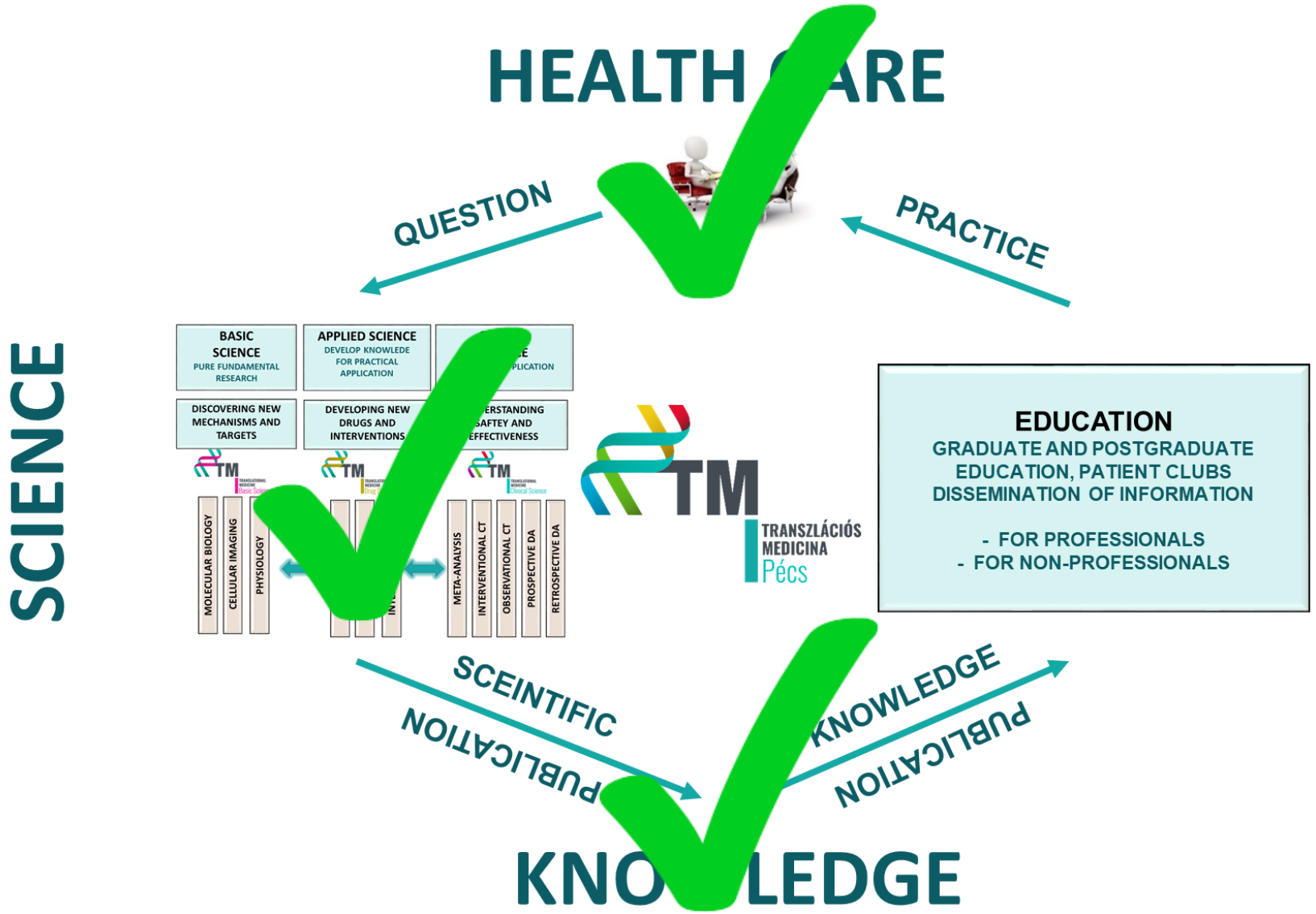

AVAILABLE EBM GUIDELINES

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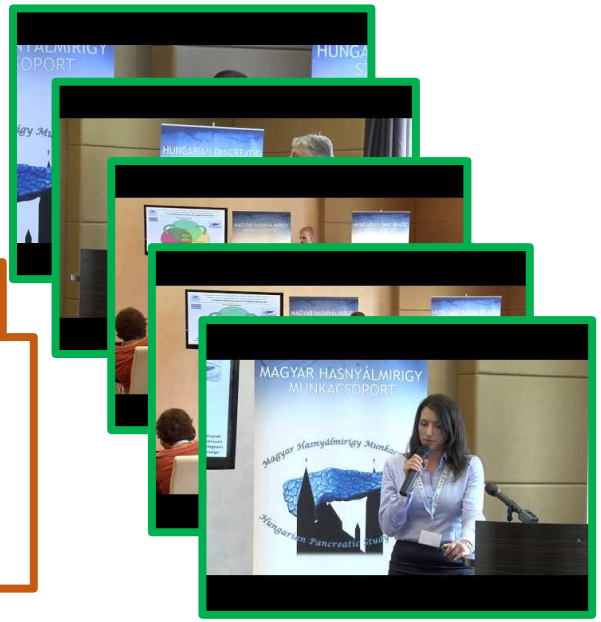

www.pancreas.hu

Hungarian Pancreatic Study Group – Magyar Hasnyálmirigy Munkacsoport

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KÖZÖSSÉGI TÁJÉKOZTATÓ A TRANSZLÁCIÓS MEDICINA KÖZPONT KUTATÁSI EREDMÉNYEIRŐL
2016-2018

tm-centre.org

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ÚJ TERÁPIÁS
A CFTR KLÓR

A heveny hasi
közleményben
Fibrózis kialakul
tölt be a heveny
az összefoglaló
csatorna működ
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Pathomechanism+a

A DOHÁNYZÁ
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A KRÓNIKUS HA
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Pancreatic+Cancer+Ris

TRANSZLÁCIÓS MEDICINA KÖZPO
KÖZÖSSÉGI TÁJÉKOZTAT

A VÍZCSATORNÁK

A hasnyálmirigy nap
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Hasnyálmirigy gyulla
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KORAI TÁPLÁLÁS

Heveny hasnyálmiri
Mindössze a súlyos,
azaz a szondán keres
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hasnyálmirigy-gyulla
javítja a betegség kim
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a mindennapi klinikai
(közlemény: https://www.

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KÖZÖSSÉGI TÁJÉKOZT

KUTATÁSI TREN

A kutatási trendek
gyógyszerek megj
hogy az adott bete
Dr. Szentesi Andre
fel a figyelmet, ho
csökkent a többi gy
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betegeink érdekéb
(közlemény: https://jo

AZ ACHALASIA

Az achalasia a nyel
fogyással, hányáss
és az endoszkópos
kezelési módszert
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esetében jobb volt,
endoszkópos tágít
(közlemény: http://ww

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KÖZÖSSÉGI TÁJÉKOZTATÓ

A KAPSZAICIN ÉS

Az elhízás napjaink
csípőspaprika fogyasz
mert fűszeres étele
fogyasztanak. Dr. Zsi
egészséges testtöme
fogyasztás kimutatha
esetén jelentősen nö
okoz. A vizsgálat arra
biztonságos terápiás
(közlemény: https://www.

HASNYÁLMIRIGYF
MAGYARORSZÁGI

A Dr. Lakatos Gábor
magyarországi helyz
kérdőívek és klinika
daganattal diagnoszti
mutatóira, a betegség
a stádium meghatár
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KÖZÖSSÉGI TÁJÉKOZTATÓ A TRANSZLÁCIÓS MEDICINA KÖZPONT KUTATÁSI EREDMÉNYEIRŐL *2016-2018*

A CUKORBETEGSÉG HATÁSA A HEVENY HASNYÁLMIRIGY-GYULLADÁS KIMENETELÉRE

Első szerző: Mikó Alexandra
Utolsó szerző: Czakó László

2018 *Pancreas*

Preexisting Diabetes Elevates Risk of Local and Systemic Complications in Acute Pancreatitis: Systematic Review and Meta-analysis

A heveny hasnyálmirigy-gyulladás egy súlyos, világszerte egyre több kórházi felvételt okozó kórkép, melynek súlyos formája halálhoz is vezethet. A cukorbetegség előfordulása szintén növekedést mutat. Dr. Mikó Alexandra és munkatársai több száz közleményt áttekintve az alábbi fontos megfigyeléseket tették a cukorbetegekben kialakuló heveny hasnyálmirigy-gyulladásra vonatkozóan: cukorbetegekben 1) több komplikáció alakul ki 2) többször alakul ki veseelégtelenség 3) tendenciát látunk a nagyobb arányú halálozásraés lokális szövődmények kialakulására, valamint 4) a cukorbetegek tovább tartózkodnak a kórházban és gyakrabban igényelnek intenzív osztályos ellátást heveny hasnyálmirigy-gyulladás során. A vizsgálat felhívja a figyelmet a cukorbetegséggel élő heveny hasnyálmirigy-gyulladásban szenvedő betegek szorosabb monitorozására.

(közlemény: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6133223/)

A KRÓNIKUS VESEELÉGTELENSÉG HATÁSA A GASZTROINTESZTINÁLIS VÉRZÉS KIMENETELÉRE

Első szerző: Hágendorn Roland
Utolsó szerző: Mikó Alexandra

2017 *World J Gastroenterol*

Chronic kidney disease severely deteriorates the outcome of gastrointestinal bleeding: A meta-analysis.

A gasztrointesztinális vérzés egy potenciálisan halálos akut állapot, amelynél a súlyosabb kimenetelt okozó rizikó faktorok ismerete kiemelt jelentőségű. Korábbi tanulmányok kimutatták, hogy a krónikus veseelégtelen betegek gasztrointesztinális vérzésre hajlamosabbak. Dr. Mikó Alexandra és munkatársai a szakirodalom áttanulmányozásával a vizsgálatban az alábbi fontos megfigyeléseket tették: 1) végstádiumú veseelégtelenségben a halálozás rizikója két és félszeres 2) kóros vesefunkció esetén az újravérzés két és félszergyakoribb és hosszabb a kórházban tartózkodás 3) kóros vesefunkciójú betegek több transzfúziót igényeltek. A vizsgálat felhívta a figyelmet a gasztrointesztinális vérzésben szenvedő krónikus veseelégtelen betegek szorosabb megfigyelésére.

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6133512/)

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Evidence Based Patients' Information

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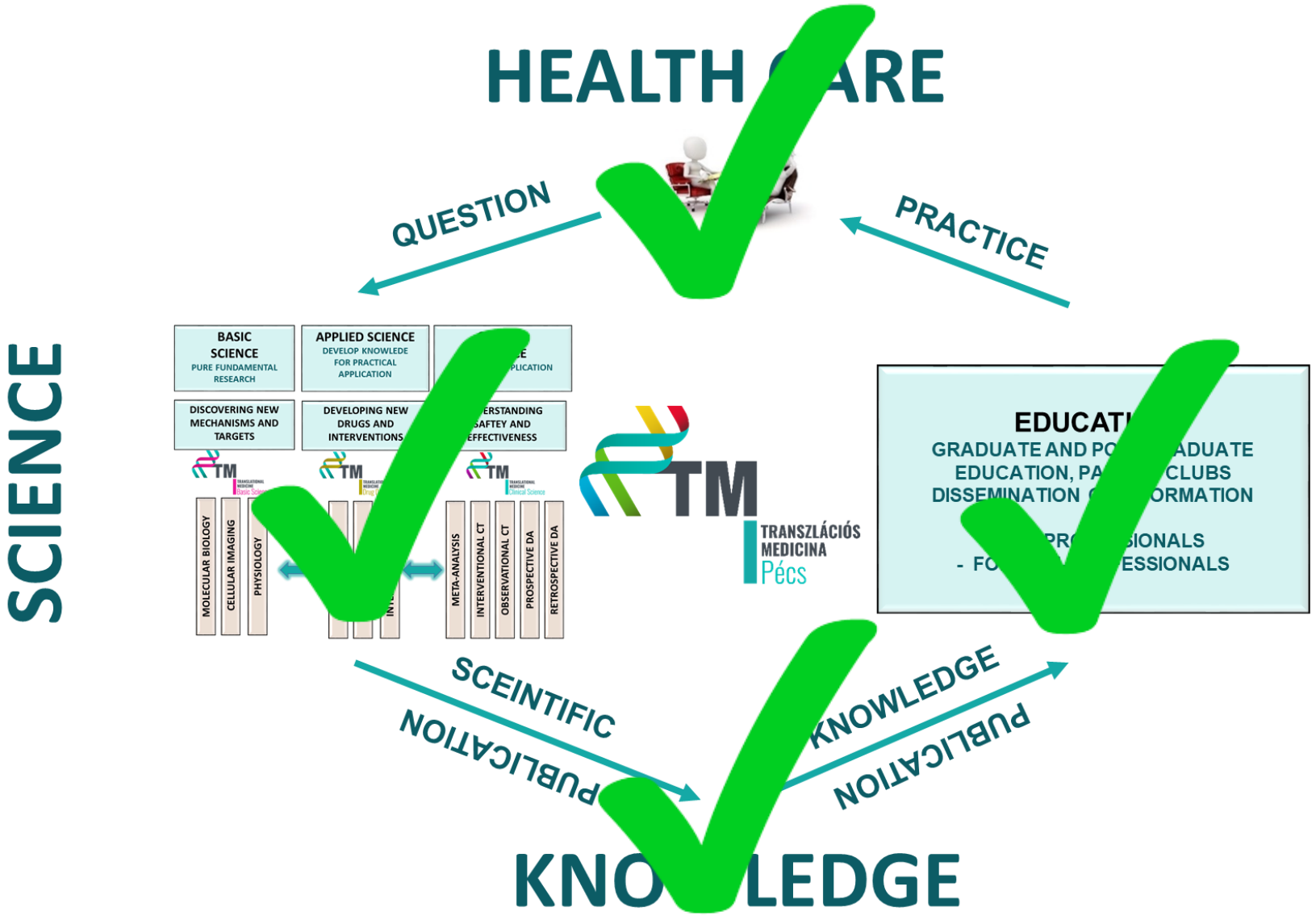

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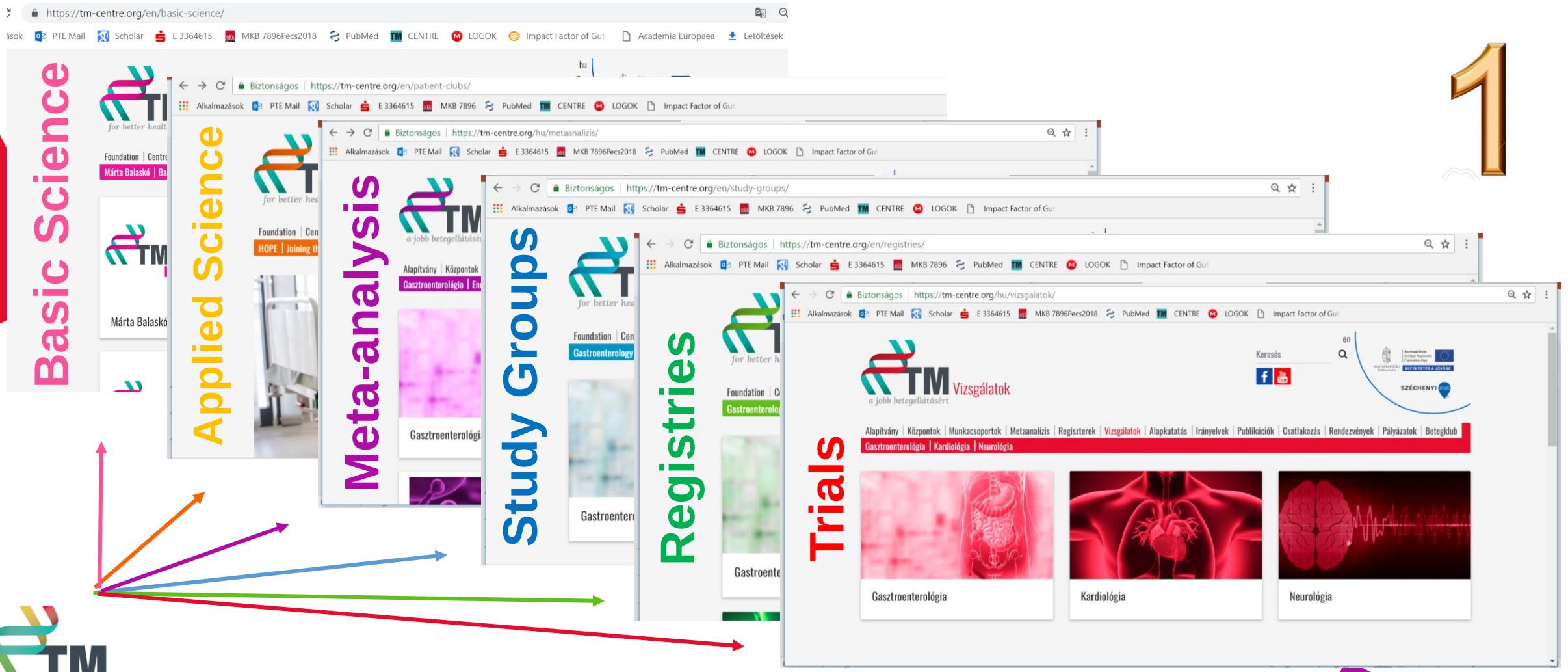

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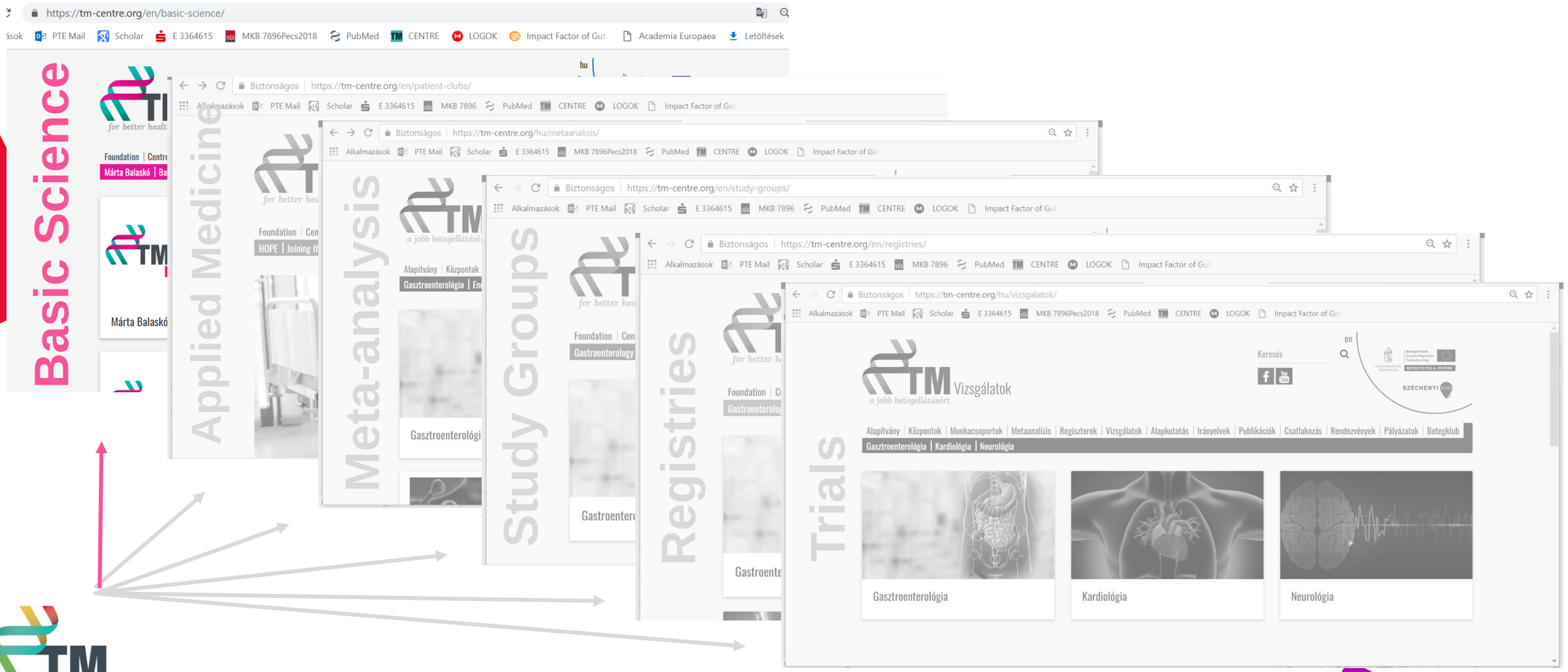

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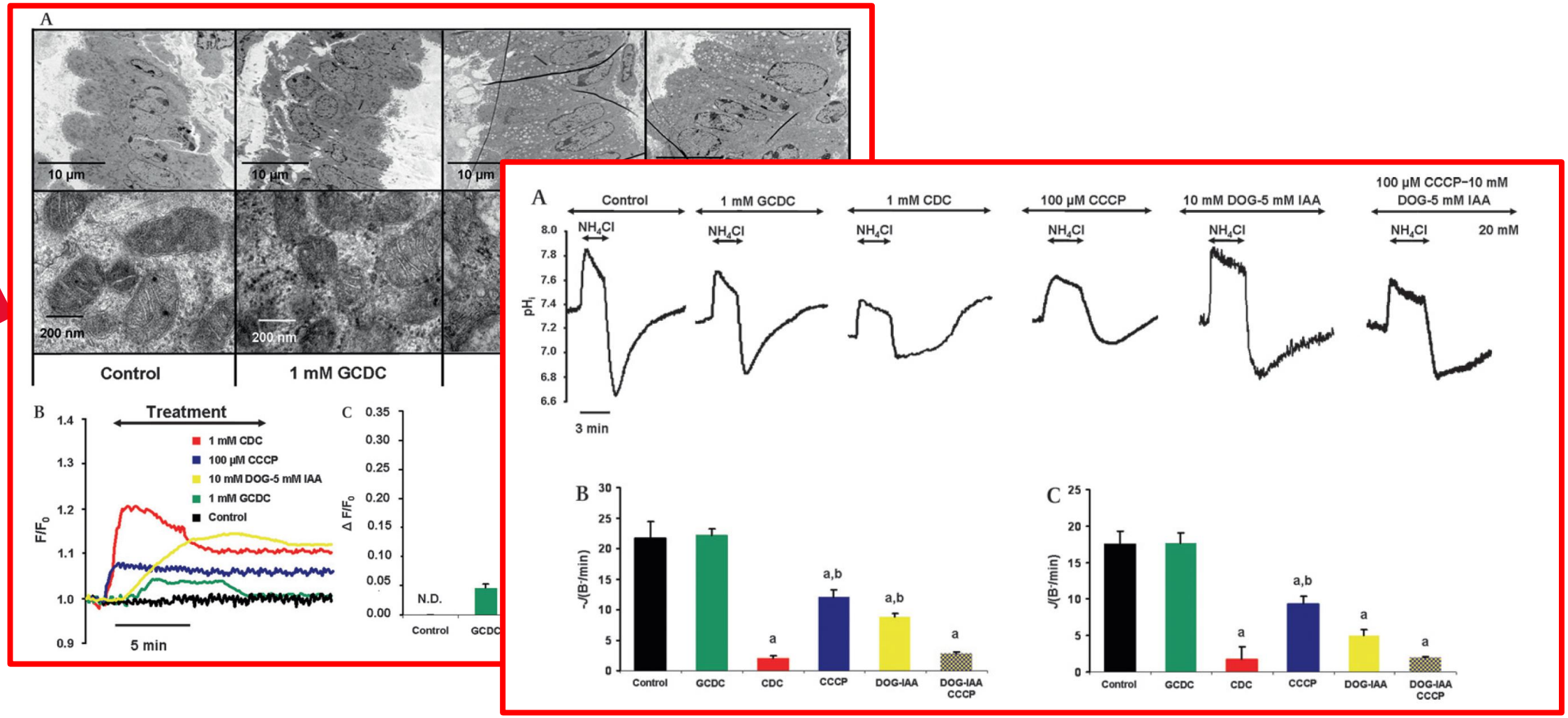

Maléth J, et al. Non-conjugated chenodeoxycholate induces severe mitochondrial damage and inhibits bicarbonate transport in pancreatic duct cells. Gut. 2011 Jan;60(1):136-8.

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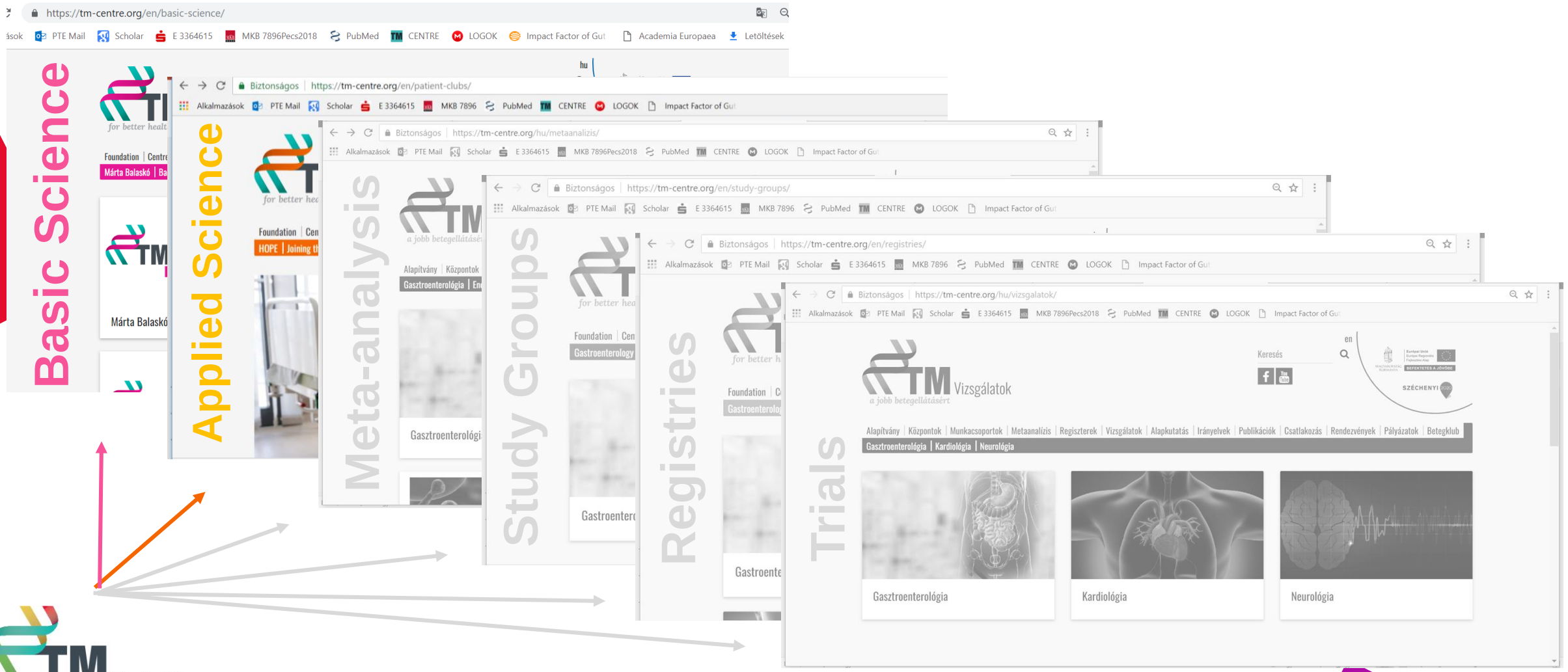

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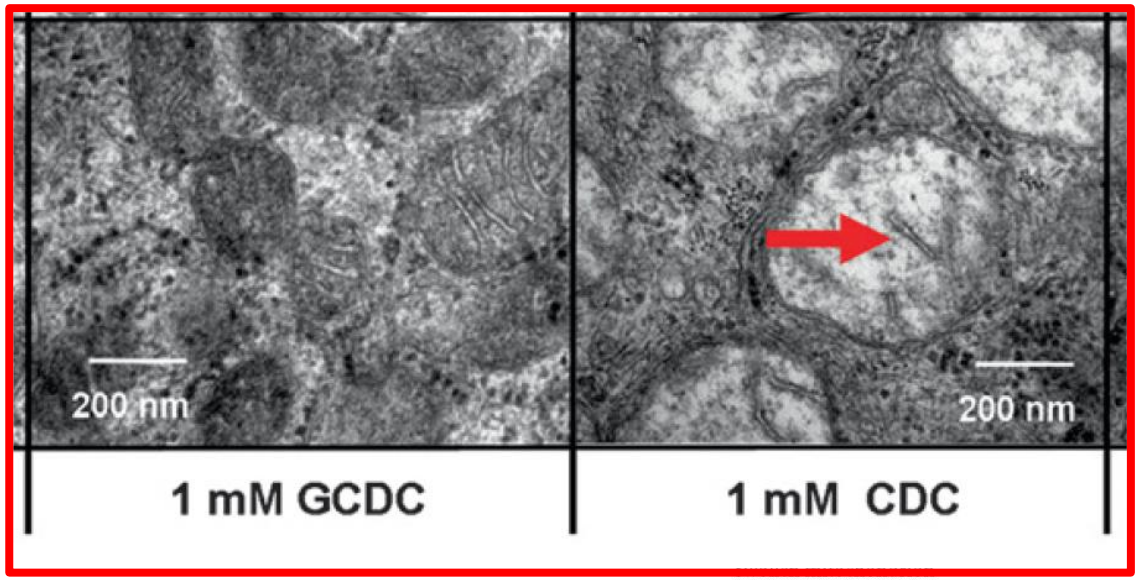

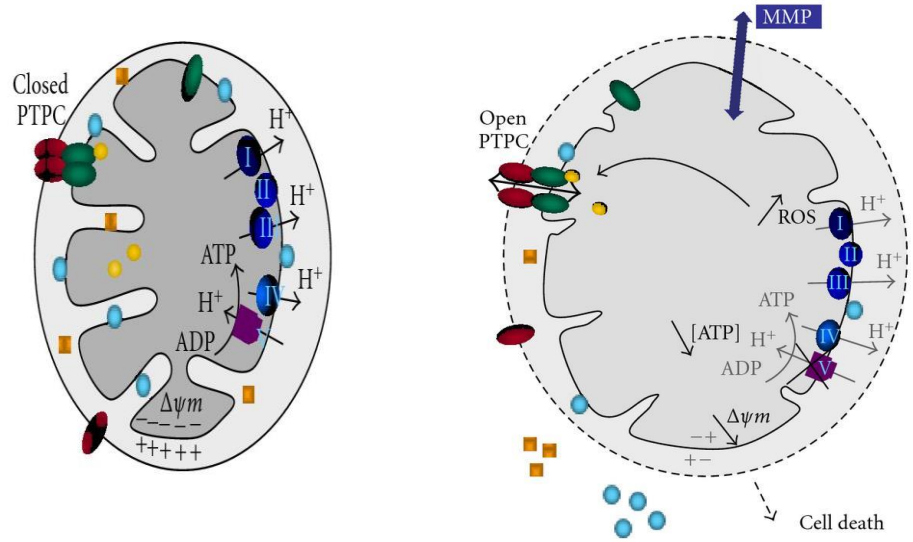

MPTP

Mitochondrial
Permeability
Transition
Pore

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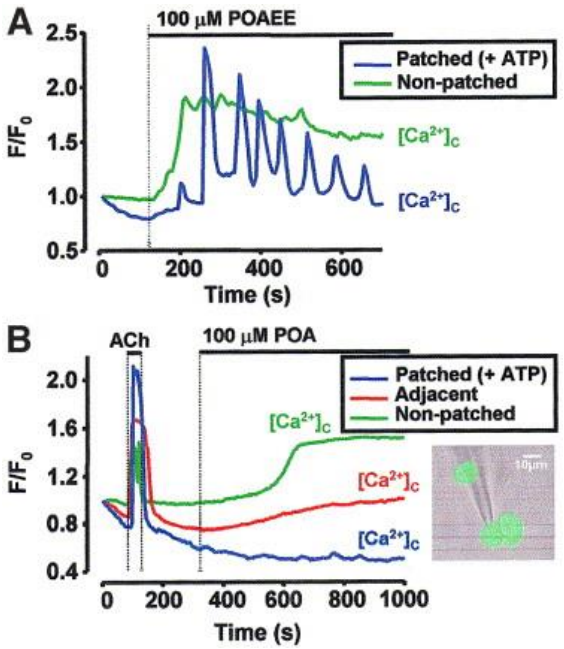
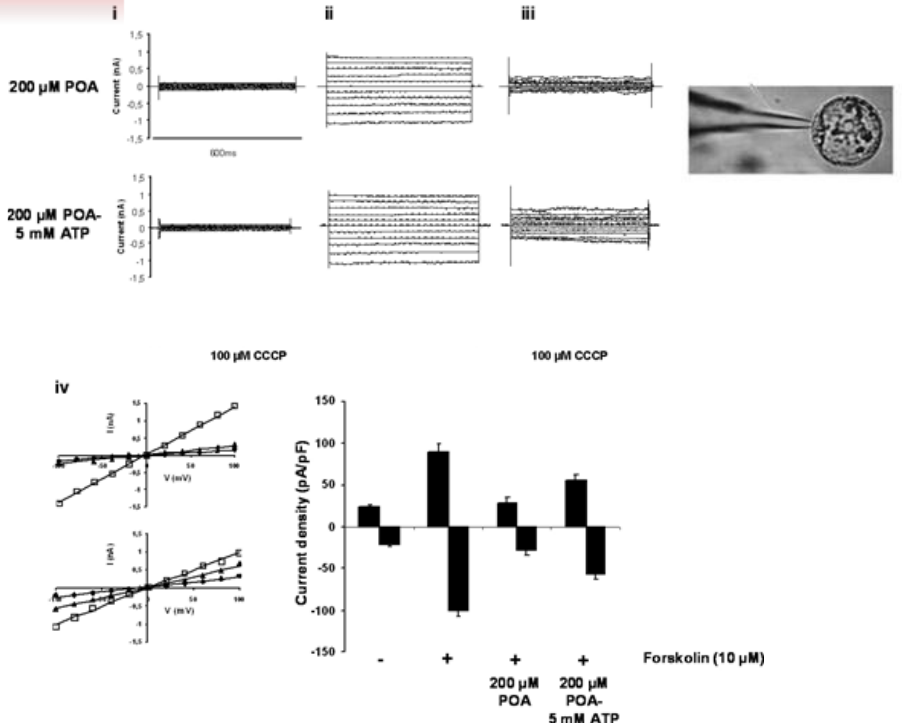
acinar cell — ATP — ductal cell





Criddle D et al.. Fatty acid ethyl esters cause pancreatic calcium toxicity via inositol trisphosphate receptors and loss of ATP synthesis. Gastroenterology. 2006 Mar;130(3):781-93.

Judák L et al.. Ethanol and its non-oxidative metabolites profoundly inhibit CFTR function in pancreatic epithelial cells which is prevented by ATP supplementation. Pflugers Arch. 2014 Mar;466(3):549-62.

P. Hegyi

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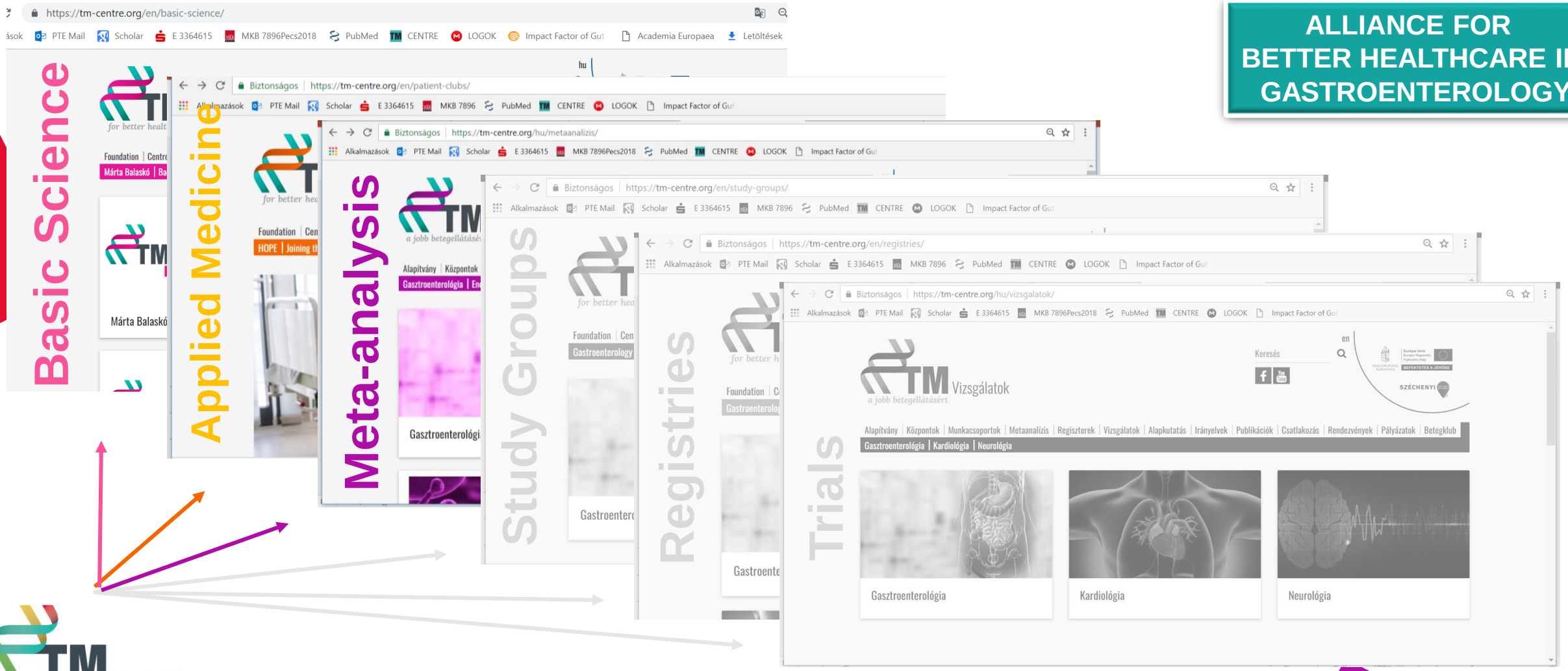
ALLIANCE FOR BETTER HEALTHCARE IN GASTROENTEROLOGY



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Márta K et al.. Meta-Analysis of Early Nutrition: The Benefits of Enteral Feeding Compared to a Nil Per Os Diet Not Only in Severe, but Also in Mild and Moderate Acute Pancreatitis. **Int J Mol Sci.** 2016 Oct 20;17(10).

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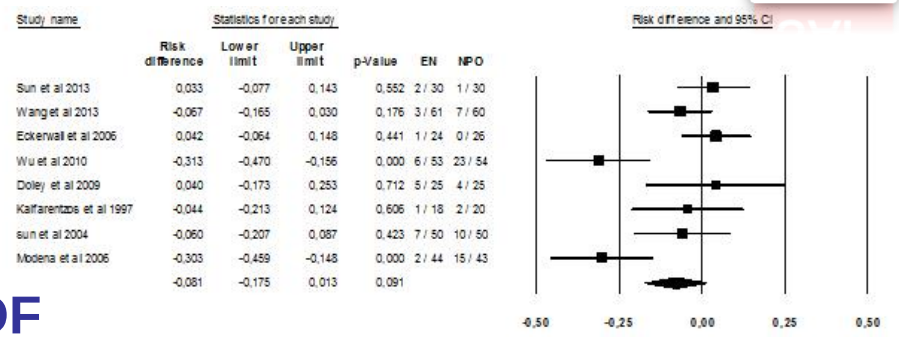
Mortality

SAP MAP

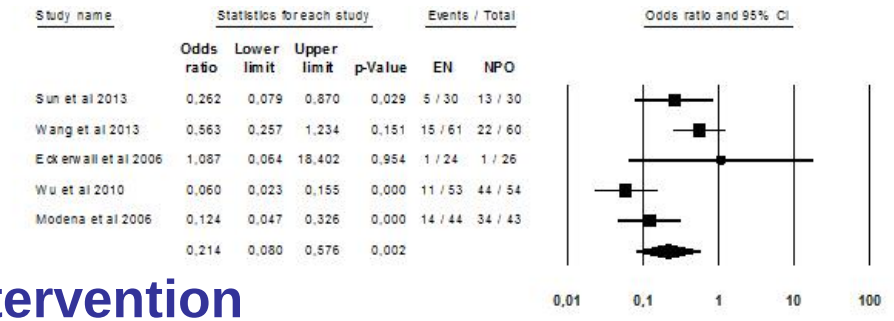


Study name	Risk difference	Lower limit	Upper limit	p-Value	EN	NPO
Sun et al 2013	0,033	-0,077	0,143	0,552	2 / 30	1 / 30
Wang et al 2013	-0,067	-0,165	0,030	0,176	3 / 61	7 / 60
Eckerwall et al 2006	0,042	-0,064	0,148	0,441	1 / 24	0 / 26
Wu et al 2010	-0,313	-0,470	-0,156	0,000	6 / 53	23 / 54
Doley et al 2009	0,040	-0,173	0,253	0,712	5 / 25	4 / 25
Kalfarentzos et al 1997	-0,044	-0,213	0,124	0,606	1 / 18	2 / 20
sun et al 2004	-0,060	-0,207	0,087	0,423	7 / 50	10 / 50
Modena et al 2006	-0,303	-0,459	-0,148	0,000	2 / 44	15 / 43
	-0,081	-0,175	0,013	0,091		

Statistics for each study — Risk difference and 95% CI

-0,50 -0,25 0,00 0,25 0,50

MOF

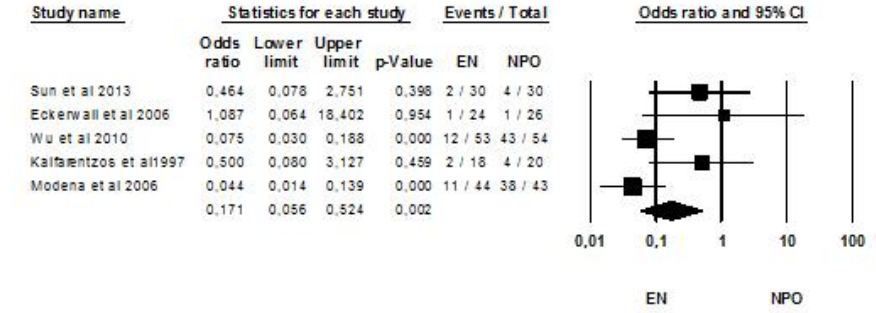


Study name	Odds ratio	Lower limit	Upper limit	p-Value	EN	NPO
Sun et al 2013	0,262	0,079	0,870	0,029	5 / 30	13 / 30
Wang et al 2013	0,563	0,257	1,234	0,151	15 / 61	22 / 60
Eckerwall et al 2006	1,087	0,064	18,402	0,954	1 / 24	1 / 26
Wu et al 2010	0,060	0,023	0,155	0,000	11 / 53	44 / 54
Modena et al 2006	0,124	0,047	0,326	0,000	14 / 44	34 / 43
	0,214	0,080	0,576	0,002		

Statistics for each study — Events / Total — Odds ratio and 95% CI

0,01 0,1 1 10 100

Intervention

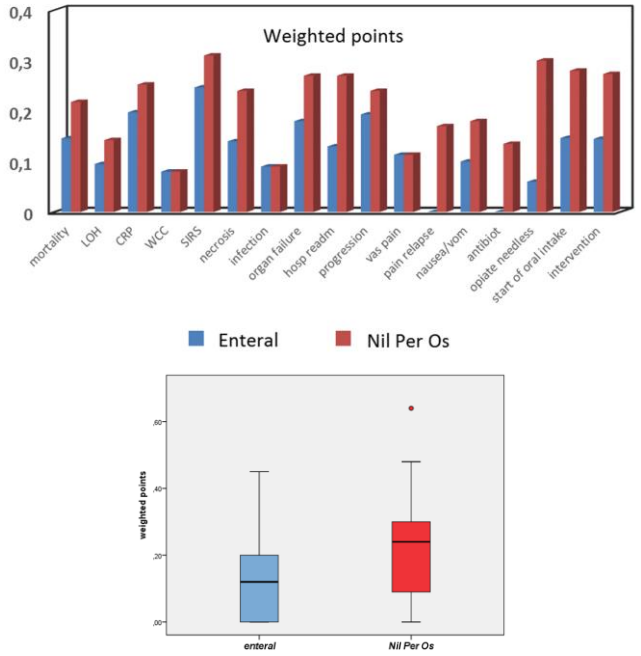


Study name	Odds ratio	Lower limit	Upper limit	p-Value	EN	NPO
Sun et al 2013	0,464	0,078	2,751	0,398	2 / 30	4 / 30
Eckerwall et al 2006	1,087	0,064	18,402	0,954	1 / 24	1 / 26
Wu et al 2010	0,075	0,030	0,188	0,000	12 / 53	43 / 54
Kalfarentzos et al1997	0,500	0,080	3,127	0,459	2 / 18	4 / 20
Modena et al 2006	0,044	0,014	0,139	0,000	11 / 44	38 / 43
	0,171	0,056	0,524	0,002		

Statistics for each study — Events / Total — Odds ratio and 95% CI

0,01 0,1 1 10 100

EN NPO



EN > **NPO**

Márta K et al.. Meta-Analysis of Early Nutrition: The Benefits of Enteral Feeding Compared to a Nil Per Os Diet Not Only in Severe, but Also in Mild and Moderate Acute Pancreatitis. **Int J Mol Sci.** 2016 Oct 20;17(10).

P. Hegyi

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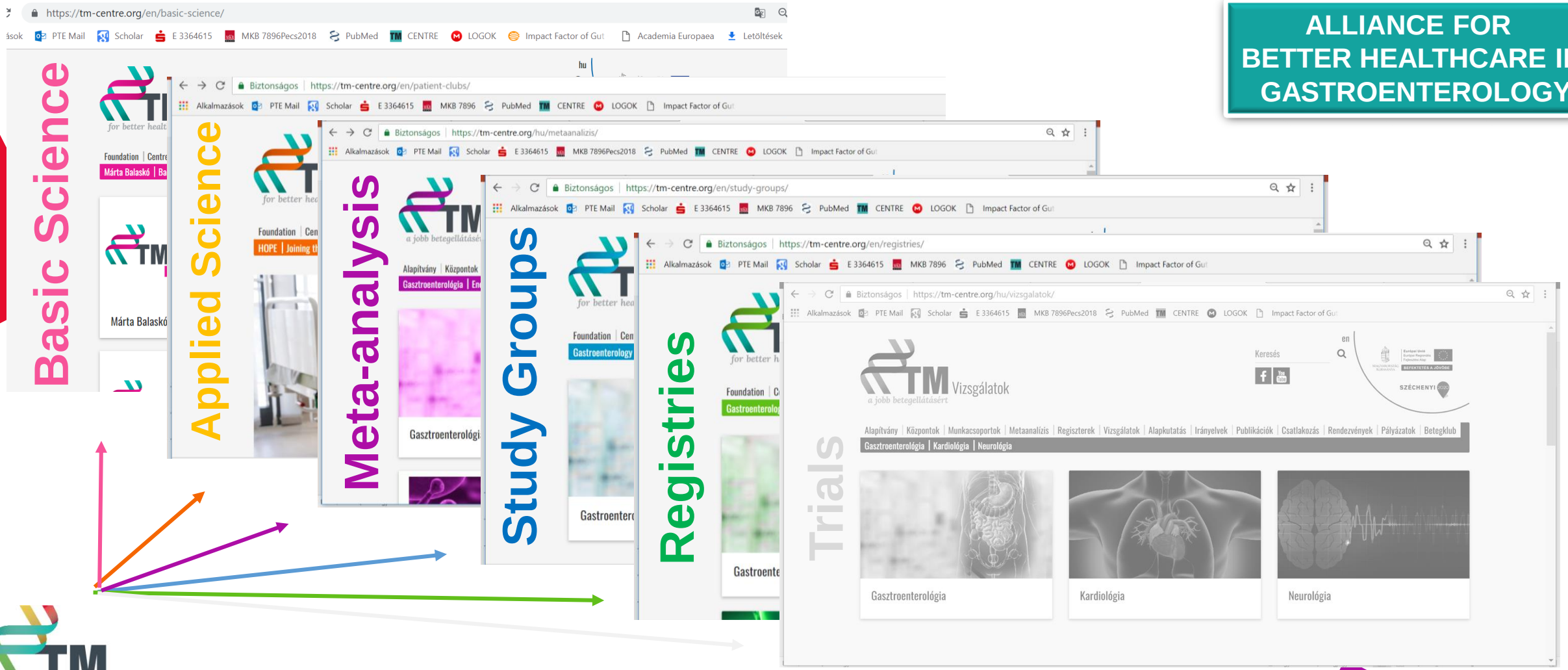
ALLIANCE FOR BETTER HEALTHCARE IN GASTROENTEROLOGY



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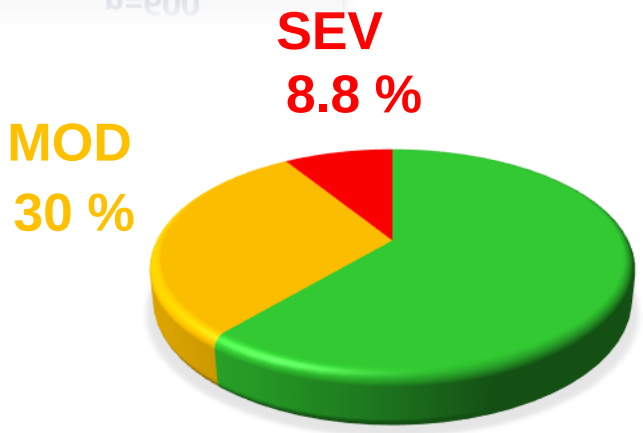
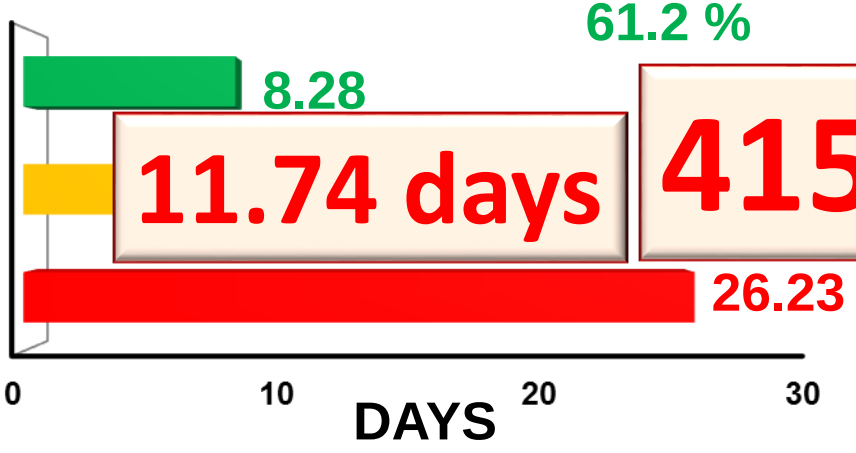
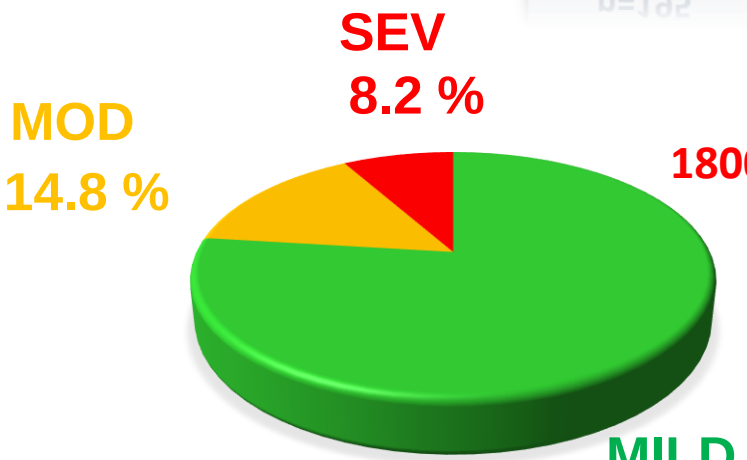
HUNGARIAN COHORT
n=600

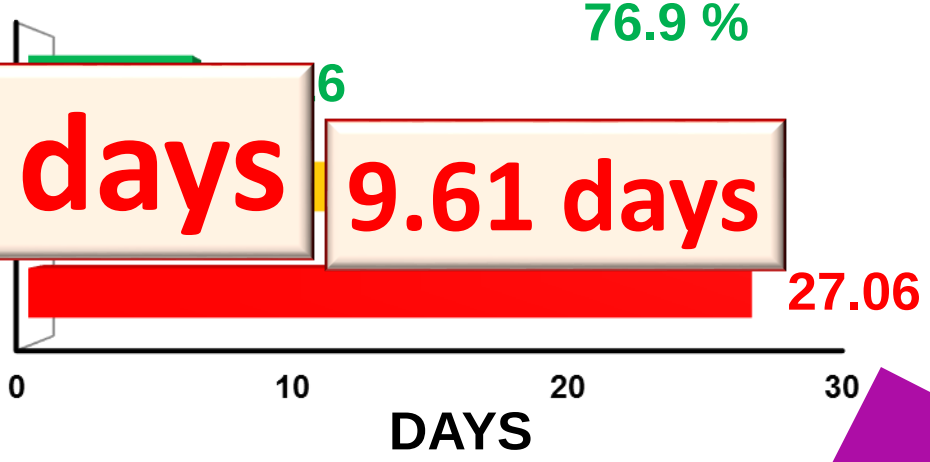




NG FEEDING
n=195



1800kcal/day



415 days

2018

P. Hegyi

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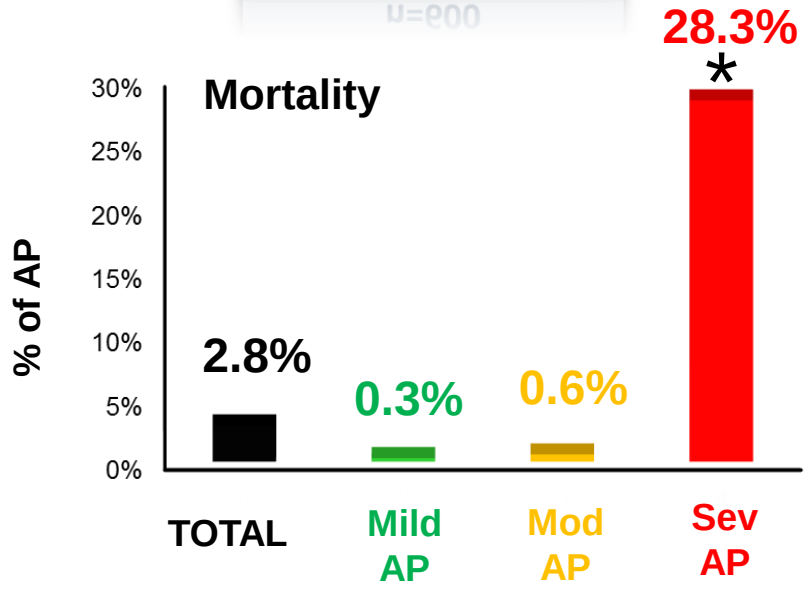
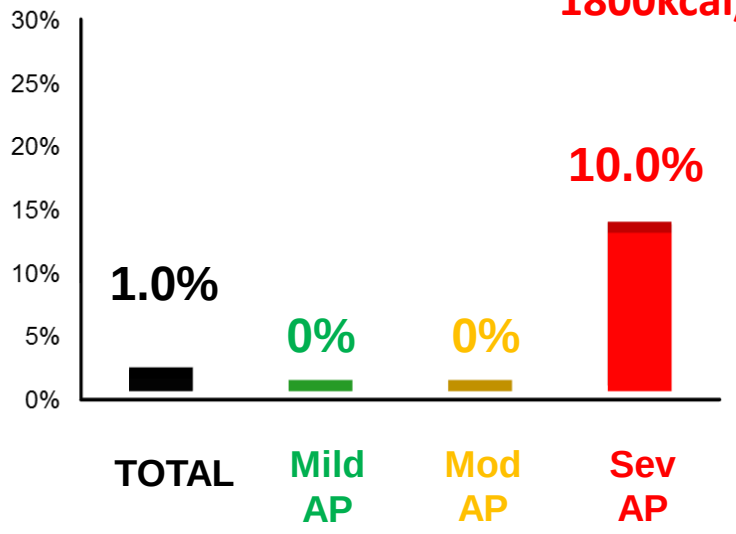
HUNGARIAN COHORT n=600



NG FEEDING n=195

1800kcal/day



Antibiotic

Necrosis 13.7%

MILD 70%

MOD 86%

SEV 100%

Antibiotic

MILD 34%

MOD 65%

SEV 94%

Necrosis 9.1%

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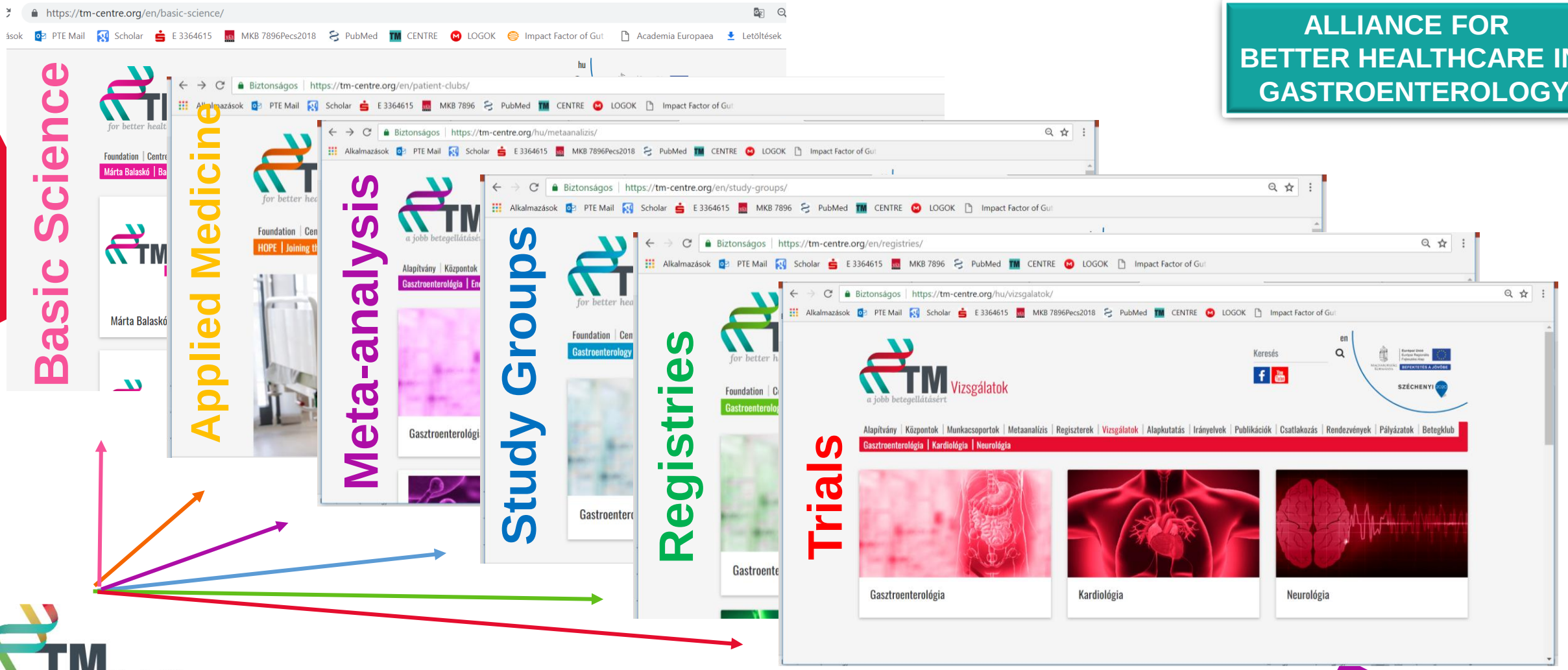

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TMGOULASH

HUNGARIAN PANCREATIC STUDY GROUP

General Utilization of earLY energy in Acute pancreatitiS

Open Access Protocol

BMJ Open

High versus low energy administration in the early phase of acute pancreatitis (GOULASH trial): protocol of a multicentre randomised double-blind clinical trial

Katalin Márta,[1] Anikó N Szabó,[1] Dániel Pécsi,[1] Péter Varjú,[1] Judit Bajor,[1,2] Szilárd Gódi,[1,2] Patrícia Sarlós,[1,2] Alexandra Mikó,[1,2] Kata Szemes,[2] Mária Papp,[3] Tamás Tornai,[3] Áron Vincze,[2] Zsolt Márton,[2] Patrícia A Vincze,[4] Erzsébet Lankó,[4] Andrea Szentesi,[1,5] Tímea Molnár,[1] Roland Hágendorn,[2] Nándor Faluhelyi,[6] István Battyáni,[6] Dezső Kelemen,[7] Róbert Papp,[7] Attila Miseta,[8] Zsófia Verzár,[9] Markus M Lerch,[10] John P Neoptolemos,[11] Miklós Sahin-Tóth,[12] Ole H Petersen,[13] Péter Hegyi,[1,5] on behalf of the Hungarian Pancreatic Study Group

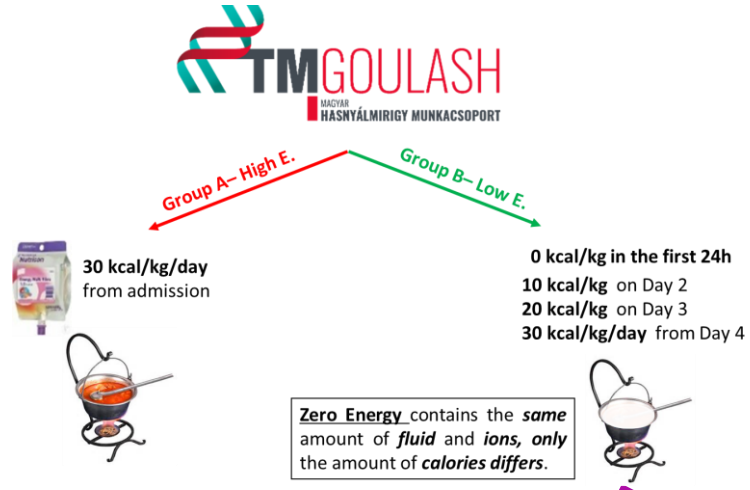
Registration: ISRCTN63827758

Started: 28/01/2017

Expected end date: 01/12/2022

Enrolled patients: 325/957

Joined centers: 4



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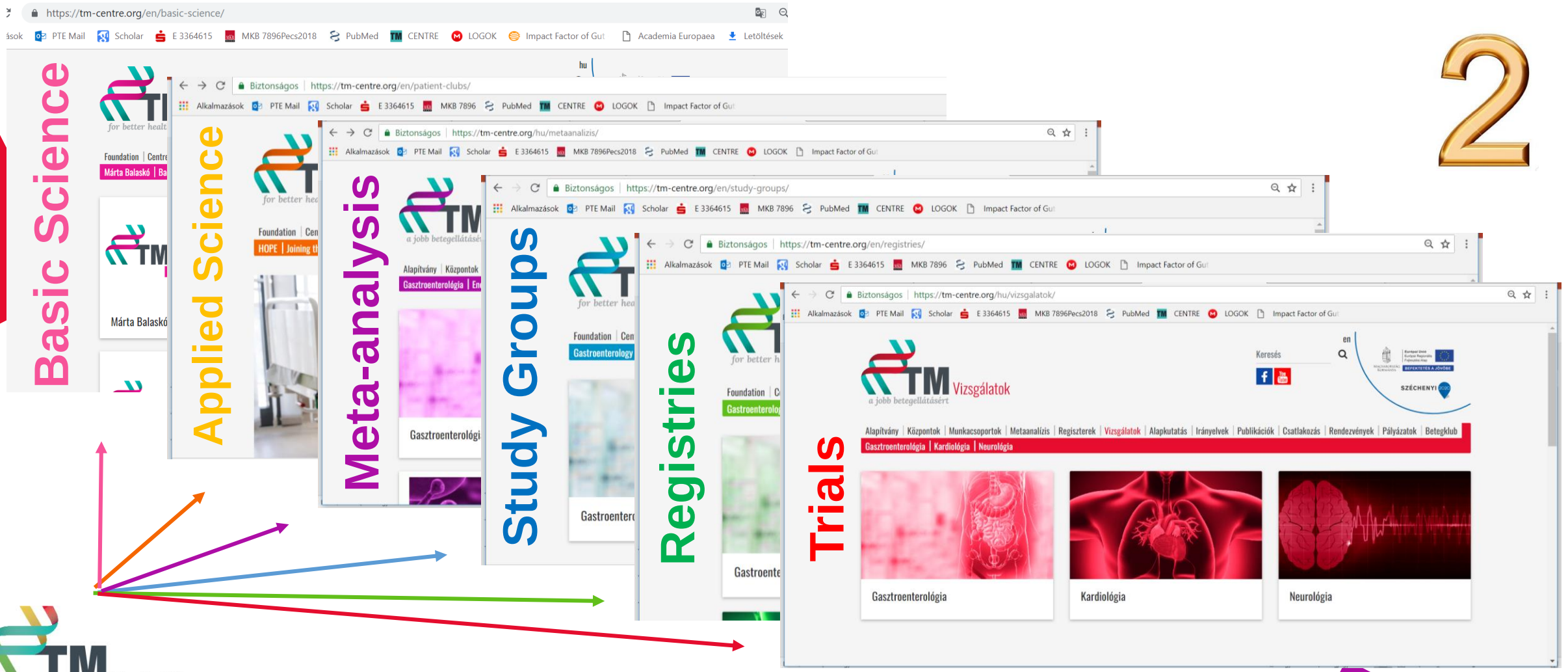

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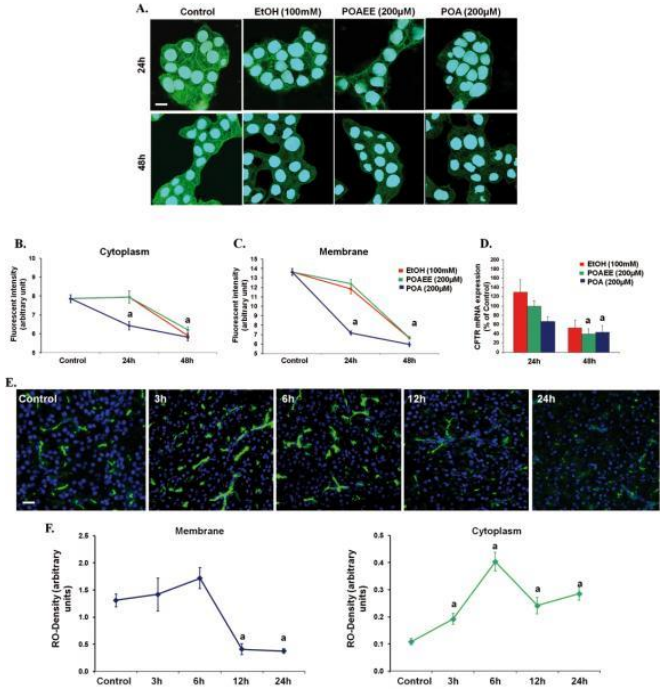
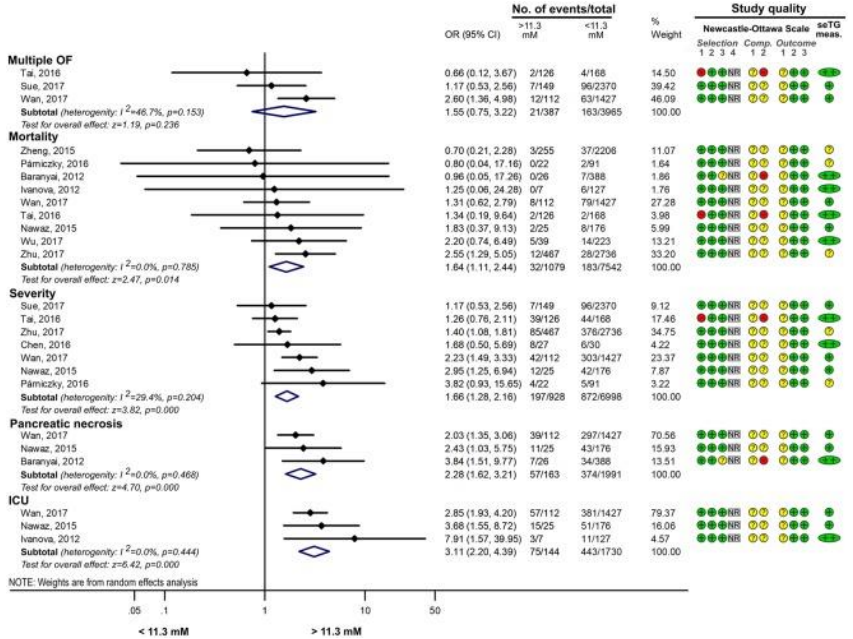
FATTY ACIDS



Maléth J et al. Alcohol disrupts levels and function of the cystic fibrosis transmembrane conductance regulator to promote development of pancreatitis. *Gastroenterology* 2015



Kiss L et al. The effect of serum triglyceride concentration on the outcome of acute pancreatitis: systematic review and meta-analysis. *Scientific Reports,* 2018

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FATTY ACIDS

Groups	Triglycerid level (mmol/l)	n	%	Mild (%)	Moderate (%)	Severe (%)	
1	<1.7	497	69.4	75.9	20.9	3.2	1
NORMAL TG		497	69.4	75.9	20.9	3.2	1
2	1.7-2.19	57	8.0	70.2	26.3	3.5	1
3	2.2-5.59	77	10.8	67.5	27.3	5.2	1
4	5.6-11.19	30	4.2	63.3	33.3	3.3	1
5	11.2-22.39	16	2.2	31.3	62.5	6.3	1
6	>22.4	39	5.4	38.5	46.2	15.4	1
ELEVATED TG		219	30.6	59.8	33.8	6.4	1
TOTAL		716	100				

TM ELEFANT
HUNGARIAN PANCREATIC STUDY GROUP

EarLy Elimination of Fatty Acids iN hypertriglyceridemia-induced acuTe pancreatitis (ELEFANT trial): protocol of an open-label multicenter randomized clinical trial.

Registration: ISRCTNXXXXXX
Started: 01/10/2019
Expected end date: 01/12/2022
Enrolled patients: 0/457
Joined centers: 4

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TMEASY
HUNGARIAN PANCREATIC STUDY GROUP

TMPINEAPPLE
HUNGARIAN PANCREATIC STUDY GROUP

TMGOULASH
HUNGARIAN PANCREATIC STUDY GROUP

TMPREPAST
HUNGARIAN PANCREATIC STUDY GROUP

TMEMILY
HUNGARIAN PANCREATIC STUDY GROUP

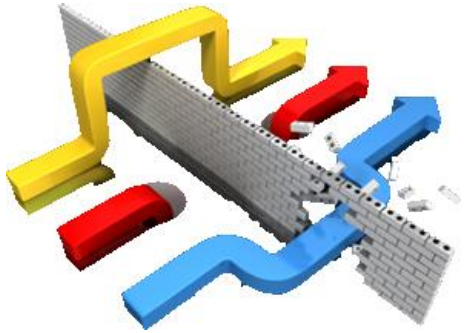
TMAPPLE
HUNGARIAN PANCREATIC STUDY GROUP

TMLIFESPAN
HUNGARIAN PANCREATIC STUDY GROUP

TMELEFANT
HUNGARIAN PANCREATIC STUDY GROUP

TMANTILOPE
HUNGARIAN PANCREATIC STUDY GROUP

KEY ELEMENTS OF SUCCESSFULL REGISTRIES AND CLINICAL TRIALS



INTERDISCIPLINARY

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CENTRAL INTERDISCIPLINARY UNIT

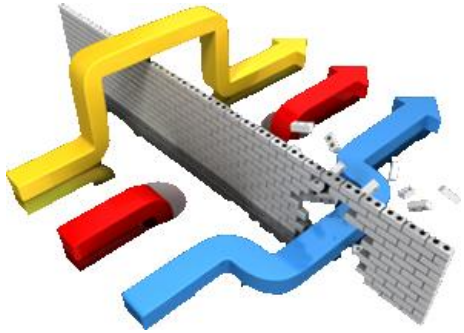
TM CENTRAL INTERDISCIPLINARY UNIT
for better healthcare

MEDICAL GROUP
COORDINATORS

DATA MANAGEMENT GROUP
STATISTICAL GROUP
IT GROUP

HEALTH ECONOMICS GROUP
MEDIA GROUP
PATIENT CLUB COORDINATOR
HR AND FINANCIAL GROUP

2019



SELF ASSESSMENT

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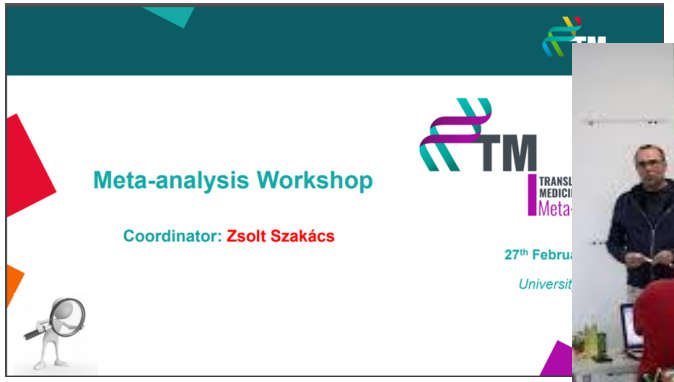
Ensuring data quality

- Professional coordination
- Courses and trainings
- Data upload control system
  - local administrator check (1.)
  - local investigator check (2.)
- In-house monitoring
  - central administrator (3.)
  - central investigator (4.)
- On-site monitoring

Meta-analysis course



CRA Training

"A" form

Inpatient day	Form id	State	Approval state	Physician	Form date	Recording date	Bio samples	Actions
1	AP448/A19061205	await inspection	●●●○	r. Bajor Judit	6/12/2019 7:50 AM	6/19/2019 10:11 AM		

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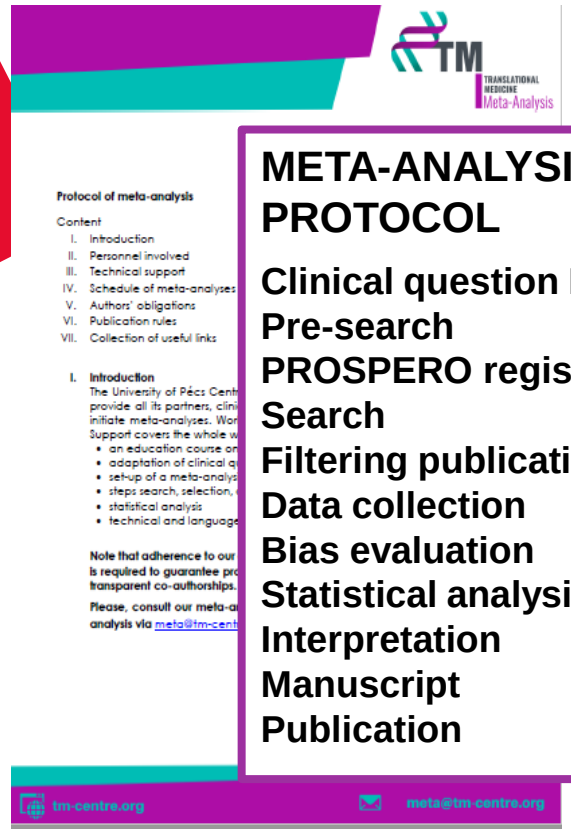
Meta-analyses



META-ANALYSIS PROTOCOL

- Clinical question PICO
- Pre-search
- PROSPERO registration
- Search
- Filtering publications
- Data collection
- Bias evaluation
- Statistical analysis
- Interpretation
- Manuscript
- Publication

2019

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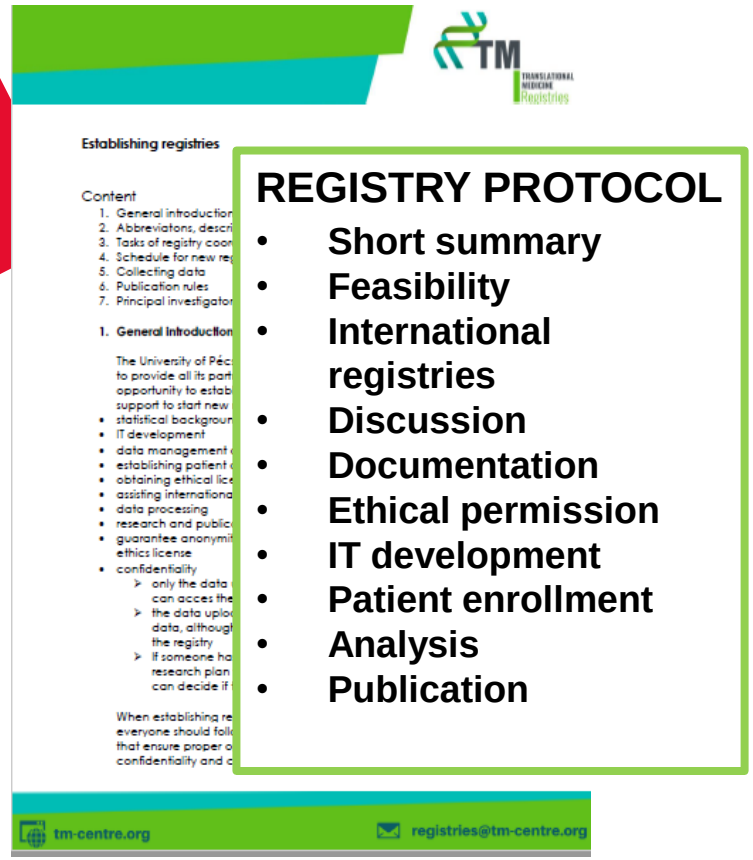
Patient Registries



REGISTRY PROTOCOL

- Short summary
- Feasibility
- International registries
- Discussion
- Documentation
- Ethical permission
- IT development
- Patient enrollment
- Analysis
- Publication

2019

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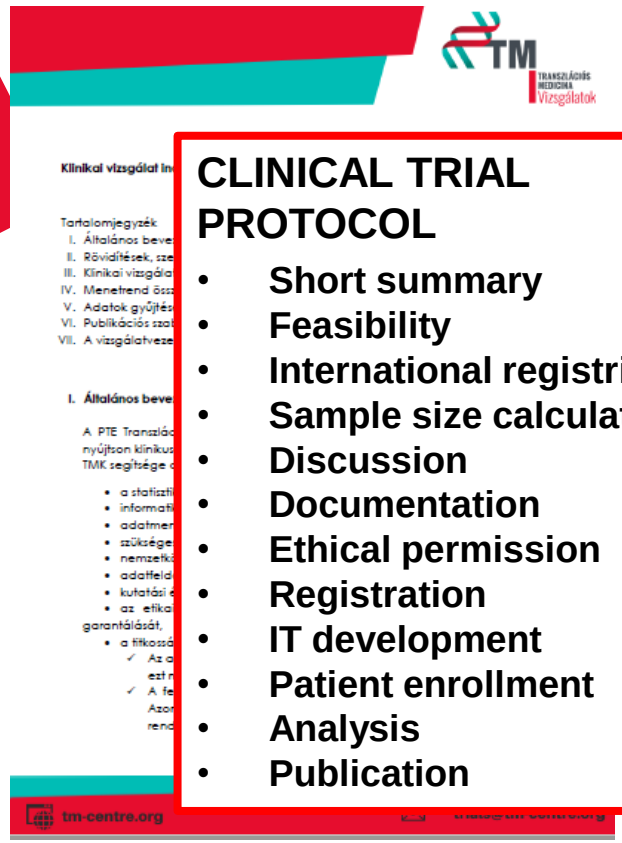
Clinical Trials



CLINICAL TRIAL PROTOCOL

- Short summary
- Feasibility
- International registries
- Sample size calculation
- Discussion
- Documentation
- Ethical permission
- Registration
- IT development
- Patient enrollment
- Analysis
- Publication

2019

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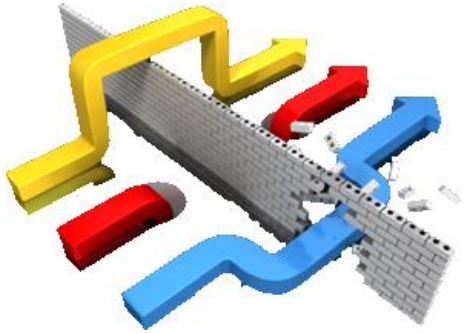

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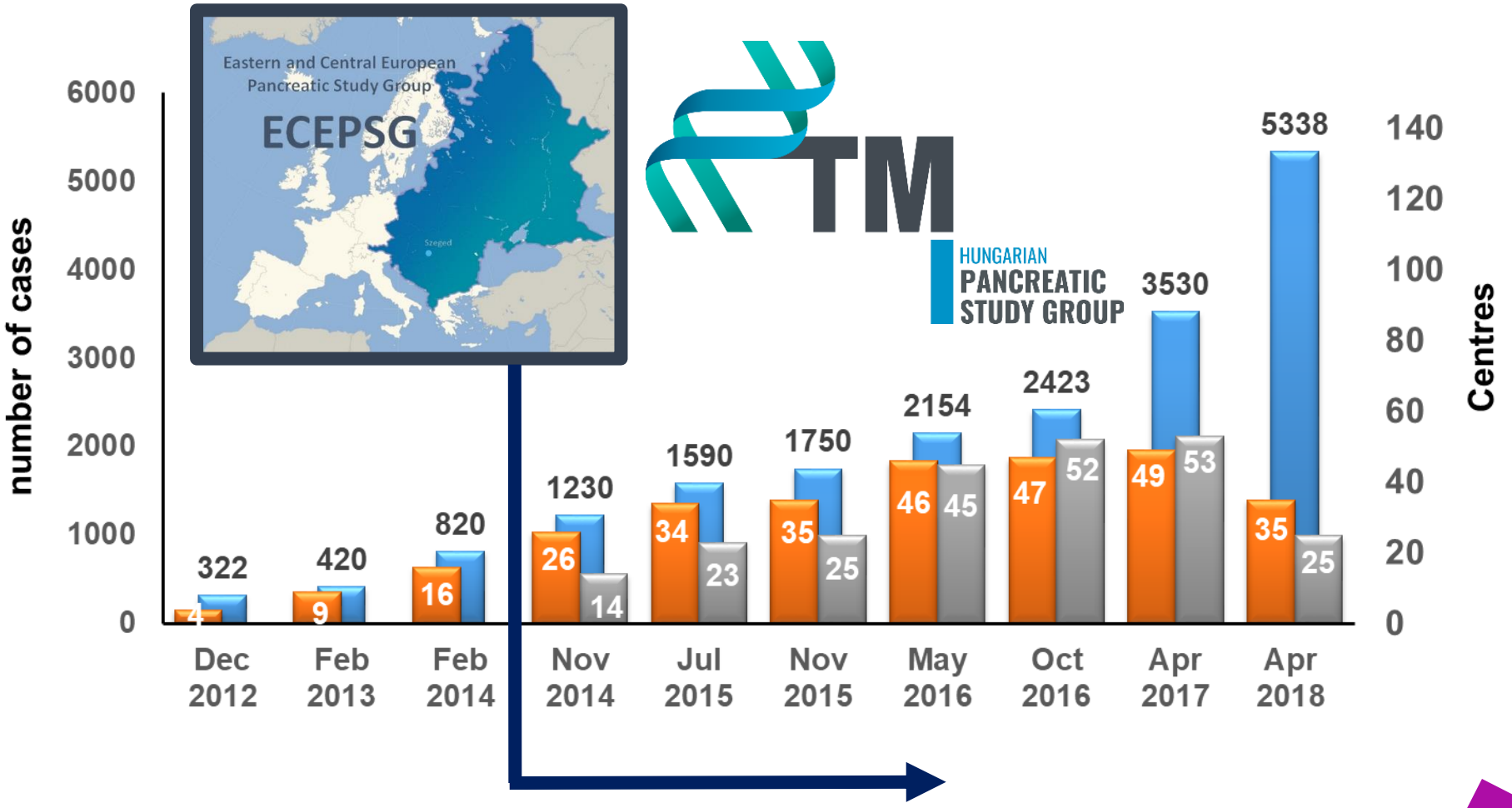
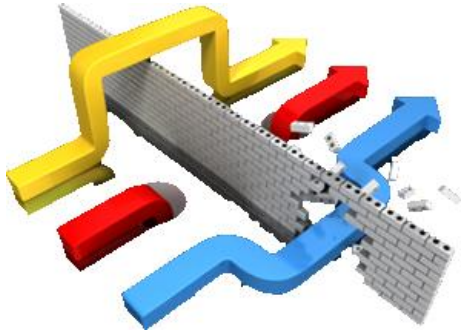
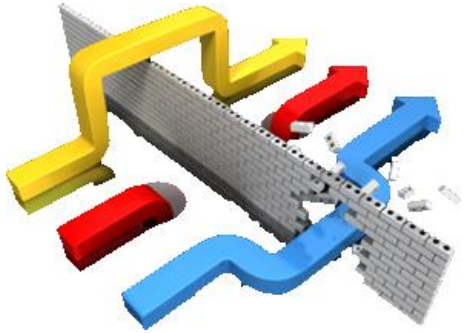




YOUNG TALENTS

40 HPSG

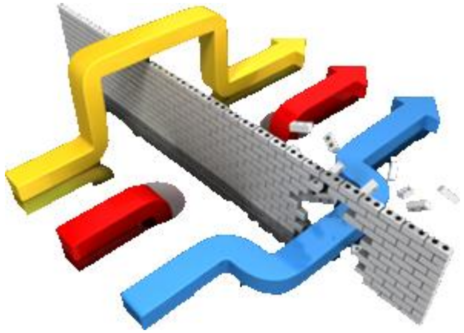
Medical students	7
PhD students	12
Residents	5
Under 35	10
Seniors	6



TRANSPARENCY

AUTHORSHIP TABLE

Hu, Szeged, SZTE I. sz. Belgyógyászati Klinika, SZTE II. sz. Belgyógyászati Klinika, SZTE	**670**	**424**	**130**	**116**	**37**	**7**
Hu, Pécs, PTE I.sz. Belgyógyászati Klinika	**439**	**358**	**34**	**47**	**27**	**7**
Hu, Székesfehérvár, Fejér Megyei Szent György Kórház	**336**	**226**	**73**	**37**	**16**	**7**
Hu, Budapest, Bajcsy-Zsilinszky Kórház	**159**	151	7	1	3	3
Hu, Pécs, PTE Sebészeti Klinika	**115**	2	84	29	6	4
Hu, Szeged, SZTE Sebészeti Klinika	**106**	12	54	40	5	3
Hu, Békéscsaba, Réthy Pál Kórház-Rendelőintézet	**102**	61	26	15	3	3
Hu, Szentes, Dr. Bugyi István Kórház, Belgyogyaszat	**65**	58	2	5	3	3
Hu, Budapest, SE I. sz. Sebészeti Klinika	**61**		53	8	5	5
Hu, Gyula, Békés Megyei Pándy Kálmán Kórház	**60**	40	13	7	5	3
Hu, Budapest, Országos Onkológiai Intézet	**52**	1	34	17	2	2
Hu, Debrecen, DEKK Belgyógyászati Intézet	**40**	25	12	3		
Hu, Budapest, Heim Pál Gyermekkórház	**36**	30		6	7	6
Hu, Makó, CSMEK Hódmezővásárhely	**25**	19	5	1	2	2
Hu, Debrecen, DEKK Sebészeti Intézet	**24**	12	6	6	3	3
Hu, Kecskemét, Bács-Kiskun Megyei Kórház	**22**	18	1	3	6	4
Hu, Miskolc, B.-A.-Z. Megyei Kórház és Egyetemi Oktató Kórház	**19**	17		2	1	1
Hu, Szeged, SZTE Onkoterápiás Klinika	**19**		19		2	2
Hu, Budapest, SE I. sz. Gyermekgyógyászati Klinika	**13**	11		2	3	2




sharing
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users
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collaboration
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Sharing
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cooperation
need
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Antibiotic therapy in acute pancreatitis: From global overuse to evidence based recommendations

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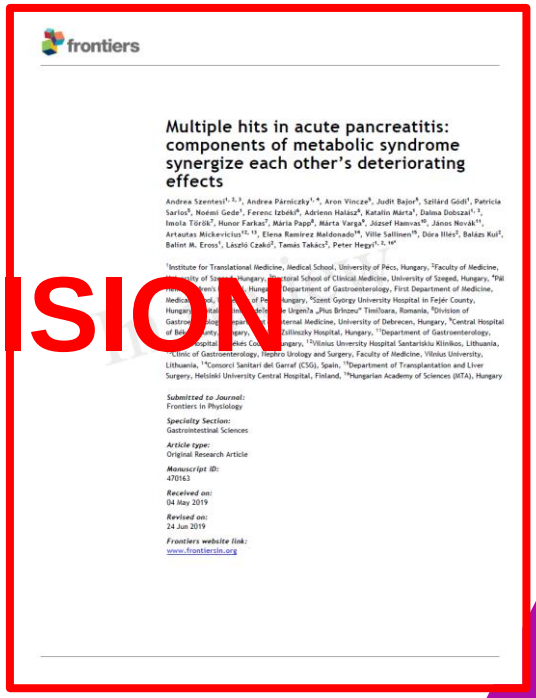

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