Towards the safer care for the people with multiple chronic conditions: Developing the trigger tool for multimorbid patients in Estonia (MUPETT—MUltimorbid Patients—Estonian Trigger Tool).

Angela Kannukene[1,2], Kaja Põlluste[1], Carola Orrego[3], Margus Lember[1,2]

[1]University of Tartu, Department of Clinical Medicine - Estonia
[2]Tartu University Hospital, Department of Internal Medicine - Estonia
[3]Avedis Donabedian Research Institute, Universitat Autònoma de Barcelona (UAB) - Spain

Background

- The level of multimorbidity (MM) in hospitals is increasing
- Treatment is more complex and patients with MM are at higher risk of suffering patient safety problems

The aim:

MUPETT is intended to be used for **identification** and **measurement** of **adverse events** in multimorbid patients in hospitals. The aim of this poster is to describe the development of the trigger tool.

Methods and results:

	Collection of triggers	Removal of irrelevant triggers	Translation	Selection of triggers for TT
METHODS:	Literature review • articles published 2011-2022	Face validity • agreement of 2 of 3 internal medicine physicians	Independent translation • by a physician and a professional translator • Third professional, a physician fluent in English, chose the best translation	Expert panel on translated triggers • Doctors, nurses and a pharmacologist • Discussions on triggers • Selection to tool by consensus
RESULTS:	• 1422 triggers found • After removing duplicates – 289 triggers remained	• 51 triggers removed as irrelevant • 238 triggers remained	• 238 triggers in Estonian	**62 triggers in five domains** (MUPETT triggers)

Validation (in progress):
- 90 patient records
- Against manual chart review as gold standard

MUPETT triggers

Diagnoses	Analyses	Other
Erythrema multiforme	Clostridoides difficile infection	Emergent hospitalization during 30 days before planned hospitalization due to same problem
TEN/SJS[1]	Hospital acquired MRSA[4]	Repeat hospitalization or emergency room visitation 10 days after hospital discharge or ambulatory surgery
Extrapyramidal disorder	Hospital acquired VRE[5]	Procedural adverse event
Malignant neuroleptic syndrome	Hgb >170 g/l (males), >150 g/l (females)	Any postoperative adverse event
Cushing syndrome	Neutrophils <1.3 E9/L	Repeat operation or interventional radiology within 30 days after surgery
Tumor lysis syndrome	K+ <3.0 or > 5.5 mmol/l	Documented dissatisfaction with treatment or documents that indicate litigation
DRESS[2] syndrome	Na+ >150 or <130 mmol/l	Missed, late or wrong diagnosis
Atrioventricular block (PR >200 ms)	AST or ALT[6] >3x earlier value or absolute value >500 U/L	Documented adverse events
Prolonged QT (Qtc >470 ms males, >480 ms females)	New rise in bilirubin >50 µmol/L	Misunderstandigs with colleagues
Stroke during hospitalisation	INR[7] > 4 (patients on warfarin)	Submitted complaint
Acute myocardial infarction or myocardial ischemia (except type 1)	Creatinine or urea >1,5x during past 7 days or creatinine rise >26 µmol/l 48h	Report (falling, infection control etc)
Anaphylaxis	Blood glucose ≤3 mmol; blood glucose ≥11 mmol on glucocorticoid treatment	Autopsy
DVT[3] or pulmonary embolism after the beginning of hospital treatment	Amicacine peak >30 µg/ml, through >8 µg/ml or Gentamicin peak > 10 µg/mL, through > 2 µg/mL	Other
Bronchospasm	Vancomycin through >20 µg/mL	
	Teophylline > 20 mg/L	
	Digoxin >2 nmol/L	
	TSH8 <0,27 mU/L and history of amiodarone	
	Transfusion reactions	
	hsTnT/TnI[9] >40 ng/l post operatively	

Medications	General care
Start of antibiotics >48h after the beginning of the hospital treatment	Hospital-acquired infection or sepsis
Adrenaline	Wound infection
i/v antihistaminics or glucocorticoids	Accident or injury in hospital
Statin myopathy	Pressure ulcer
Heparin induced thrombocytopenia	Sudden change in cognitive abilities or consciousness
Possible drug reaction mentioned in chart	Phlebitis and/or extravasation
	Urine output <30 ml/h or 360 ml/12h or <720 ml/24h
	Dehydration (from day 3 of hospitalisation)
	Worsening water retention during hospital stay
	Rash (from medication)
	Bleeding

Conclusions:

- This is a first attempt to establish triggers for a TT for multimorbid patients
- Rigorous review of the triggers is essential before applying the TT on any new setting or patient group
- The methodology used could be applied for other patient groups

Relevance to HPH:

- MUPETT will help to improve the quality and safety of care to multimorbid patients by early detection and management of adverse events

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[1]Toxic epidermal necrolysis/Stevens-Johnson syndrome, [2]drug reaction with eosinophilia and systemic symptoms, [3]Deep Venous Thrombosis, [4]Meticillin-resistant Staphylococcus aureus, [5]Vancomycin resistant enterococci, [6]Aspartate aminotransferase or Alanine aminotransferase, [7]International Normalized Ratio, [8]Thyroid stimulating hormone, [9]High-sensitive Troponin T or Troponin I