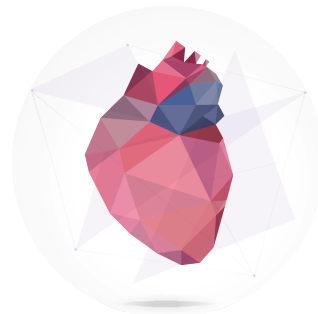


AMIS Plus

25th Jubilee



Collaborations across the Channel and beyond

Dr. med. Florian Wenzl

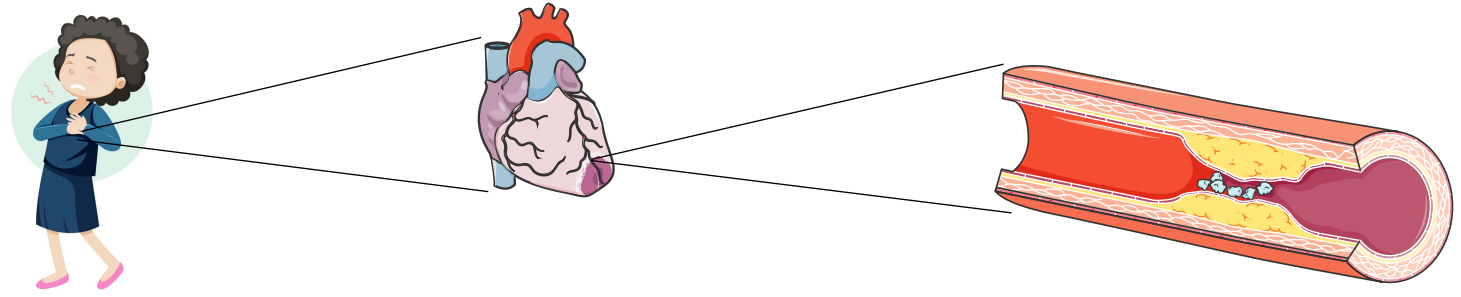


Personal Introduction

Name	Dr. med. Florian Wenzl
Background	Clinical Cardiology
Affiliation	Center for Molecular Cardiology, University of Zurich
Chair	Prof. Dr. med. Thomas F. Lüscher
Research focus	Risk prediction modelling
Topic	Sex-specific evaluation and redevelopment of the GRACE score in non-ST-segment elevation acute coronary syndromes in populations from the UK and Switzerland: a multinational analysis with external cohort validation



Heart attack: Leading cause of death worldwide



Most common ACS type: NSTEMI-ACS

Mortality risk determines time of intervention: High → early, Low → late

Class ^a	Level ^b
I	A

Previously mortality risk was estimated by GRACE 2.0 score: Women underrepresented

Women undertreated for decades → higher mortality rates

Goal: Refine personalized treatment of patients with NSTEMI-ACS



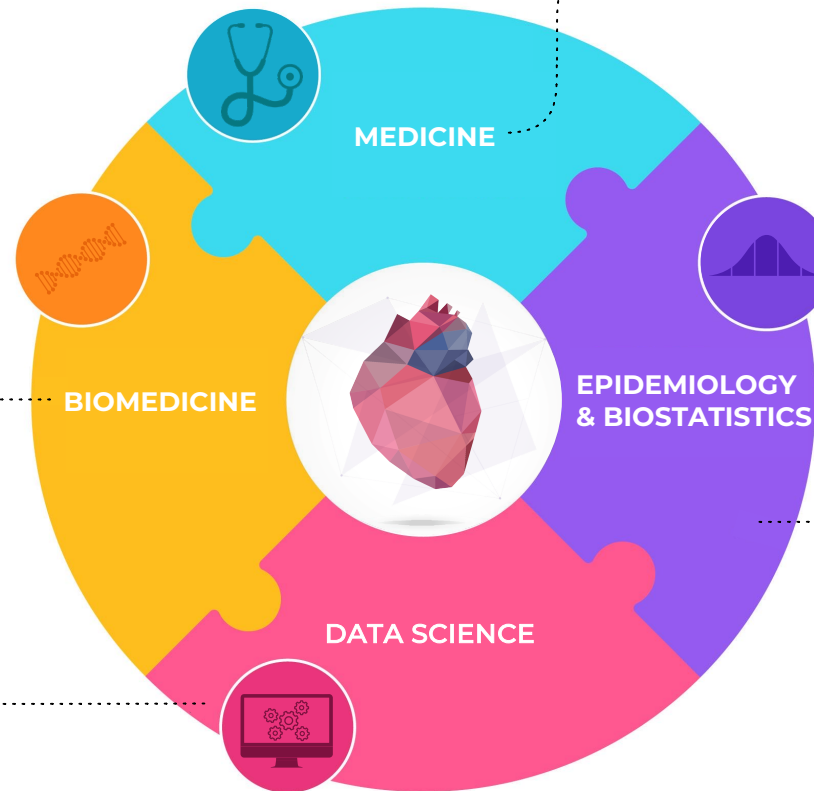
Transdisciplinary Approach

BIOLOGICAL DIFFERENCES

Disease phenotype
Mechanisms of atherogenesis

CLINICAL NEED

Personalized medicine
Modern therapies
Women undertreated



420'781 Patients

HIGH PERFORMANCE ALGORITHMS

Exponential advancements
Success in different fields

20 Imputations

REAL WORLD POPULATION

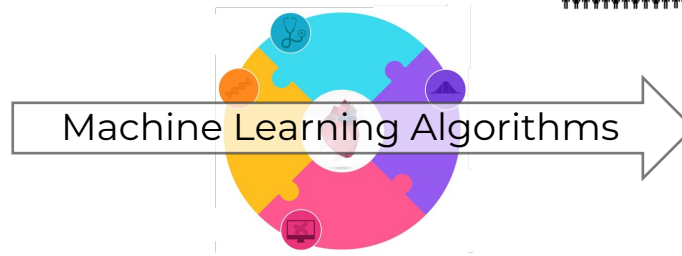
Representative sample
Prospective enrollment
Largest ACS cohorts



Innovation

Development

11'389 Patients

England, Wales, Northern Ireland: **420'781** Patients

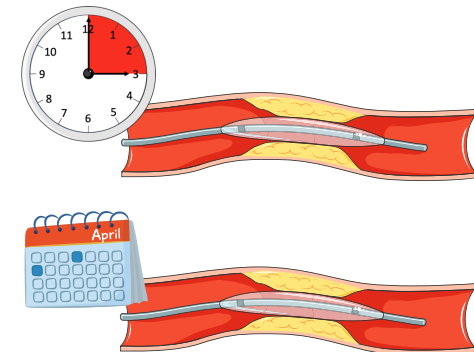
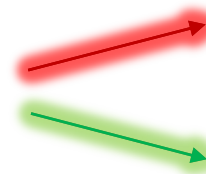


Validation



20'727 Patients


Application





GRACE 3.0 Score

www.grace-3.com





GRACE 3.0 Score

www.grace-3.com

Creatinine mg/dL

Sex
 Female Male

Cardiac arrest
 No Yes

ST-segment deviation on ECG
 No Yes

Troponin elevation
 No Yes

Killip class

Class I. No signs of heart failure

Class II. Findings consistent with mild to moderate heart failure. ⓘ

Class III. Overt pulmonary edema

Class IV. Cardiogenic shock

Background ▾

Why forecast ▾

Individual patient data meta-analyses and predefined analyses of randomized controlled trials have shown that personalised treatment according to baseline mortality risk benefits patients with non-ST-segment elevation acute coronary syndromes. The GRACE 3.0 score estimates in-hospital mortality risk and provides high predictive performance.

When to use ▾

At presentation in patients with non-ST-segment elevation acute coronary syndrome.

Publication

Machine learning-based risk prediction with GRACE 3.0

Lead of the Study Network

Thomas F. Lüscher

Director of Research, Education & Development, Royal Brompton and Harefield Hospitals, London



John Deanfield

Director of the National Institute of Cardiovascular Outcomes Research, London



Dragana Radovanovic

Head of the Swiss national ACS registry AMIS Plus Data Center at the University of Zurich



Creator

Florian A. Wenzl

Medical Doctor at the University of Zurich



Chair of the GRACE Program

Keith A. A. Fox

British Heart Foundation Duke of Edinburgh Professor of Cardiology at the University of Edinburgh



GRACE Program



Results

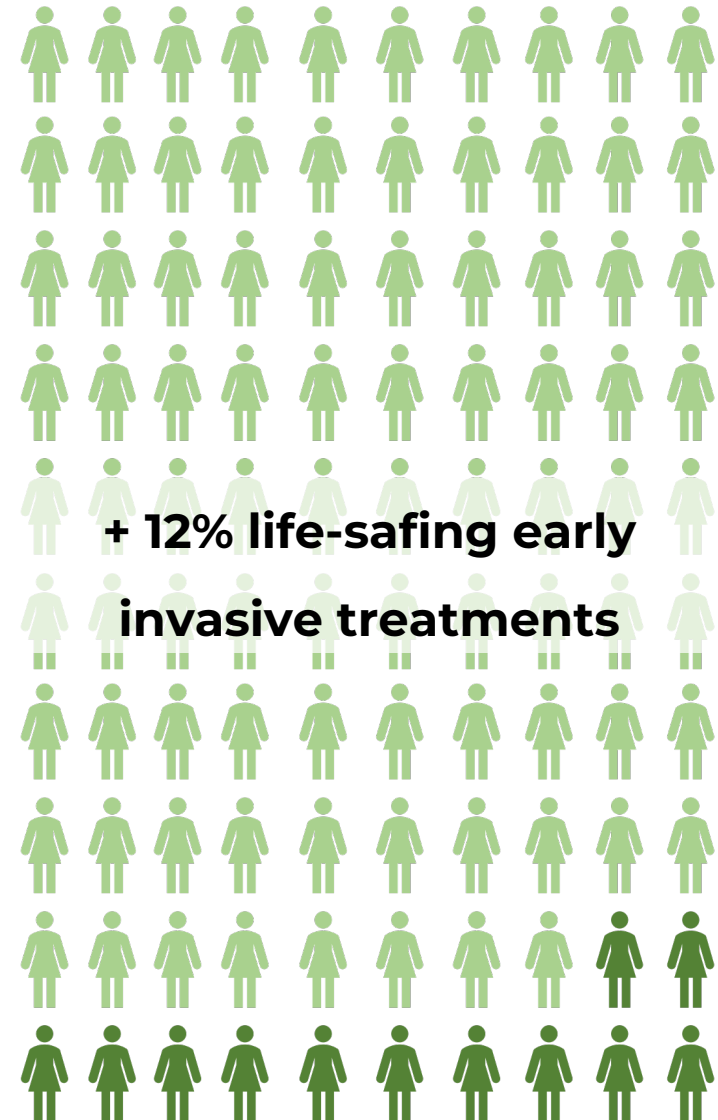


Sex differences in risk profile

Underestimation of mortality risk in females → too few females stratified towards early treatment

GRACE 3.0: Excellent performance in women and men

GRACE 3.0 stratifies more females towards early invasive treatment



Publikationen

Original article in *The Lancet*

Correspondence article in *The Lancet*

Contribution at the *European Society of Cardiology 2022*

Web-Tool for PC and mobile devices: www.grace-3.com



Age	78	years
Heart rate	129	beats/minute
Systolic blood pressure	110	mm Hg
Creatinine	0.9	mg/dL
Sex	<input checked="" type="radio"/> Female <input type="radio"/> Male	
Cardiac arrest	<input checked="" type="radio"/> No <input type="radio"/> Yes	
ST-segment deviation on ECG	<input type="radio"/> No <input checked="" type="radio"/> Yes	
Troponin elevation	<input type="radio"/> No <input checked="" type="radio"/> Yes	
Killip class	<input type="radio"/> Class I. No signs of heart failure <input checked="" type="radio"/> Class II. Findings consistent with mild to moderate heart failure. ⓘ <input type="radio"/> Class III. Overt pulmonary edema <input type="radio"/> Class IV. Cardiogenic shock	

CALCULATE

RESET

Mortality risk

Press coverage

High media interest

Press call for better heart attack treatment in NHS

More accurate treatment of women with heart attacks

More sex specificity in medicine

Medizin

29.08.2022

Kontakt

Künstliche Intelligenz verbessert Behandlung von Frauen mit Herzinfarkt

Verglichen mit Männern sterben Frauen häufiger an einem Herzinfarkt. Gründe sind Unterschiede im Alter und in Begleiterkrankungen, die auch die Risikoabschätzung bei Frauen erschweren. Mit Hilfe künstlicher Intelligenz haben Forschende der Universität Zürich eine neue Risikobewertung entwickelt, die die personalisierte Versorgung von Frauen mit Herzinfarkt verbessert.

Prof. Dr. med. Thomas F. Lüscher
Zentrum für Molekulare Kardiologie
Universität Zürich
Tel. +41 79 300 22 79
[E-Mail](#)

Dr. med. Florian Wenzl
Zentrum für Molekulare Kardiologie
Universität Zürich
Tel. +41 44 635 64 65
[E-Mail](#)

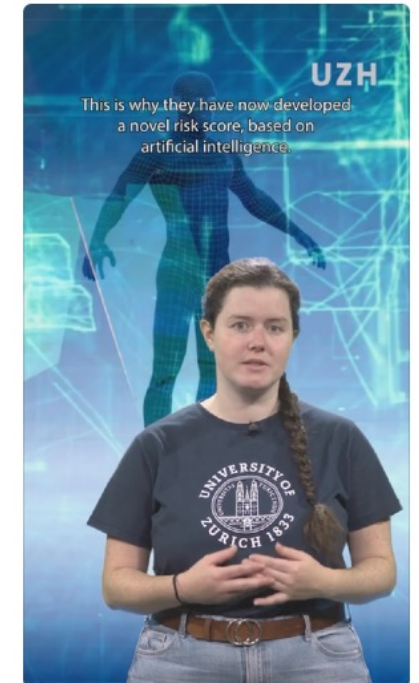
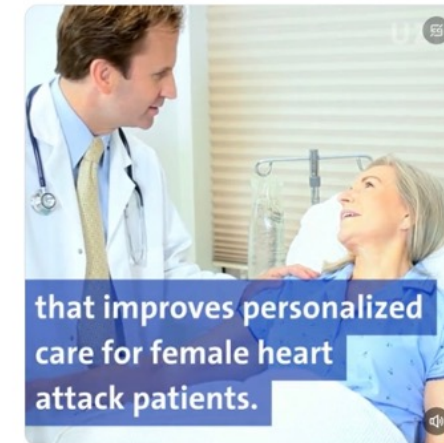
Tags

→ Medienmitteilungen → Forschung
→ Medizin und Zahnmedizin



UZH Universität Zürich
@UZH_ch

Frauen, die einen Herzinfarkt erleiden, haben eine höhere Sterblichkeitsrate als Männer 🍷
news.uzh.ch/de/articles/me... @cmc_uzh
@cardiotfl @wenzl_florian





Reception in Scientific Community



Editorial article in *The Lancet*

Communication by *American College of Cardiology*

GRACE 3.0: Recommended tool for early risk stratification

Multinational Network

Follow-up study





Future: Multinational Collaborations

To make it anywhere you have to be humble, pushy, and *collaborative*

Mohan Satish

Mount Sinai Hospital & Cornell Medical Center

Development → Validation

Cross-country comparisons

Thanks for your attention