AKUTTMOTTAK SOM ARENA FOR HJERTEFORSKNING

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Disclosures

- K.M.A. has served on advisory board for Roche Diagnostics, SpinChip and Siemens Healthineers, received consultant honoraria form CardiNor, lecturing honorarium from Siemens Healthineers and Snibe Diagnostics and research grants from Siemens Healthineers and Roche Diagnostics.

- Ass lege, medisinsk avdeling, Fylkessjukehuset på Stord frå 2000-2004

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Disposisjon

- Kvifor skal vi drive forskning i akuttmottak?
- Kvifor skal vi drive hjerteforskning i akuttmottak?
- Westcor-studien
- Litt om etablering av forskning i akuttmottak
- Framtidig forskning på pasientar med brystsmerter
- Oppsummering

Kvifor skal vi drive forskning i akuttmottak?

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Akuttmottak
– risikosone for pasientsikkerhet

Læringsnotat fra Kunnskapssenteret

November 2015

Notatet bygger på 452 meldinger knyttet til mottaksavdelinger innkommet til Meldeordningen i 2014. Meldingene viser behov for forbedring på områder som hører til ulike beslutningsnivåer og peker på behovet for samarbeid.

kunnskapssenteret

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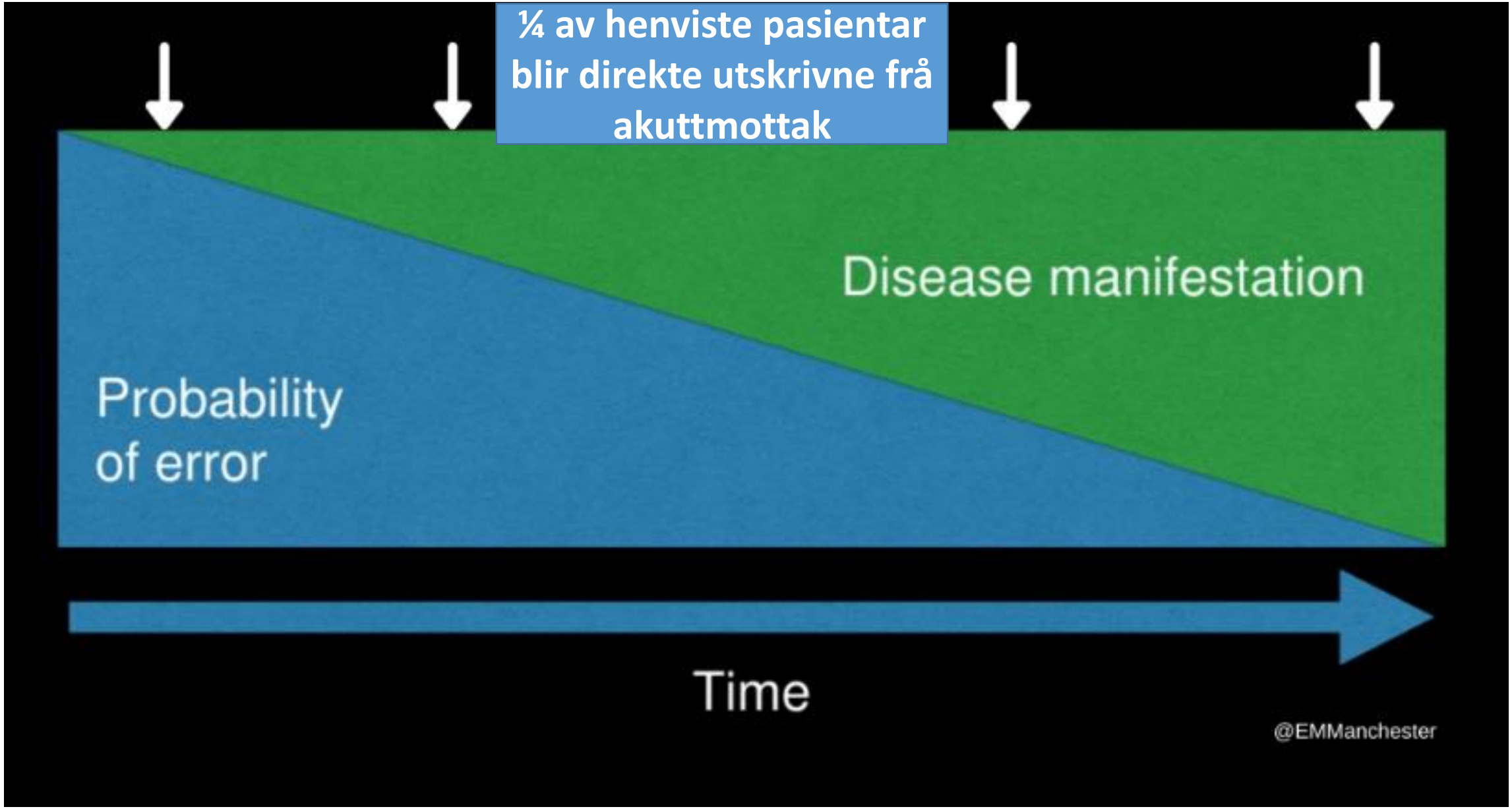
¼ av henviste pasientar blir direkte utskrivne frå akuttmottak



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Performance against the A&E waiting time standard has steadily declined.

Derek Prentice Emerg Med J 2022;39:166-167

EMJ

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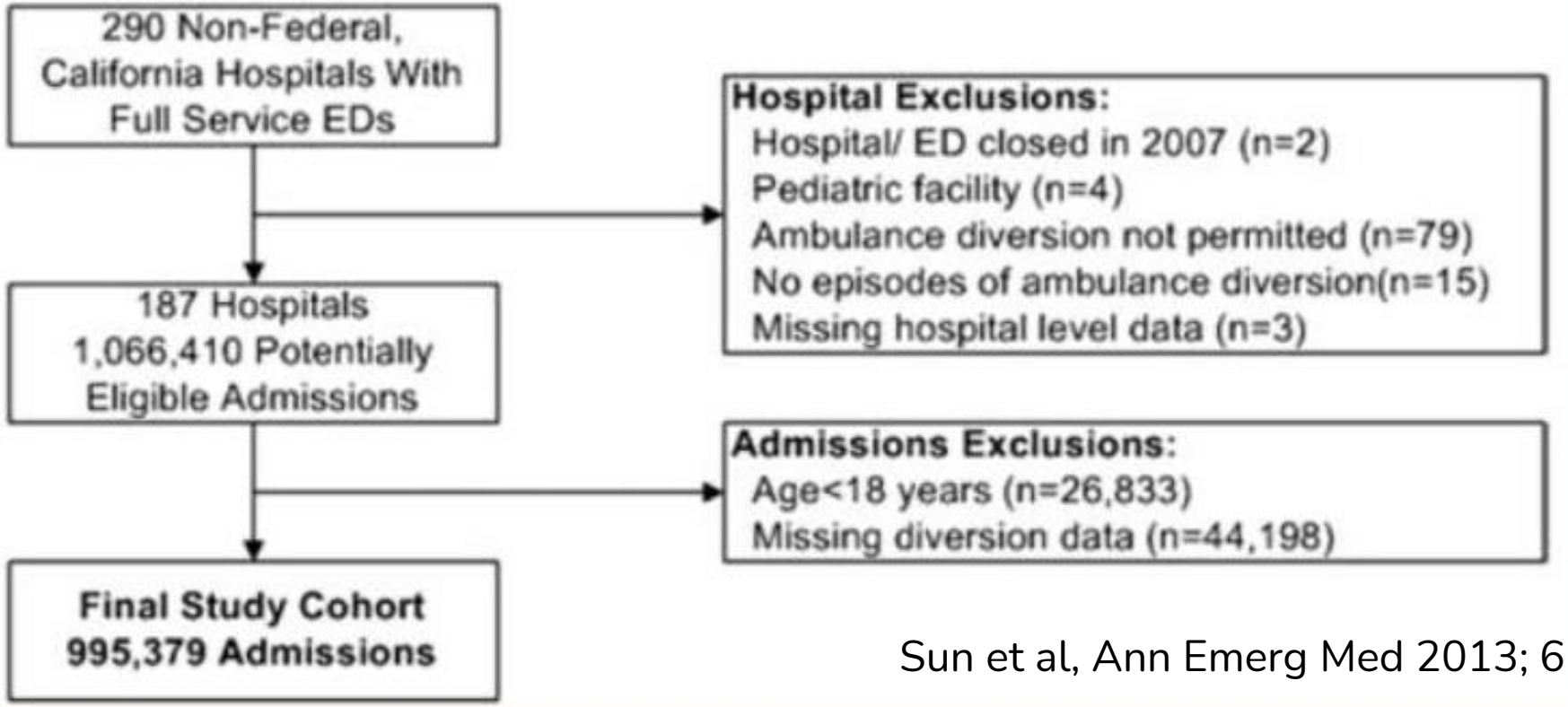
Effect of Emergency Department Crowding on Outcomes of Admitted Patients

Benjamin C. Sun, MD, MPP; Renee Y. Hsia, MD; Robert E. Weiss, PhD; David Zingmond, MD; Li-Jung Liang, PhD; Weijuan Han, MS; Heather McCreath, PhD; Steven M. Asch, MD



Sun et al, Ann Emerg Med 2013; 61(6):605-11

Table 2

Adjusted association between high ED crowding and patient outcomes.*

	Inpatient Mortality, N=995,358		Length of Stay, N=995,358		Costs, N=844,219†	
Variables	**OR**	**95% CI**	**Ratio**	**95% CI**	**Ratio**	**95% CI**
High ED crowding	1.05	1.02–1.08	1.008	1.005–1.012	1.011	1.007–1.015
Selected covariates						
Age (in 5 y)	1.15	1.14–1.15	1.01	1.009–1.010	0.994	0.994–0.995
Male	1.04	1.01–1.06	0.995	0.992–0.998	1.037	1.033–1.040
Nonwhite	0.95	0.92–0.98	1.01	1.007–1.014	1.004	1.000–1.008

Sun et al, Ann Emerg Med 2013; 61(6):605-11

NEJM Catalyst

COMMENTARY

Emergency Department Crowding: The Canary in the Health Care System

The solution for this serious threat to ED staff and harm to patients cannot come from a single department, but through engagement of and ongoing commitment by leaders throughout the hospital and, more broadly, by those in the payer and regulatory segments of the health care system as well.

Authors: Gabor D. Kelen, MD, Richard Wolfe, MD, Gail D'Onofrio, MD, MS, Angela M. Mills, MD, Deborah Diercks, MD, Susan A. Stern, MD, Michael C. Wadman, MD, and Peter E. Sokolove, MD Author Info & Affiliations

NEJM Catalyst | September 28, 2021

Relevante forskningsspørsmål i akuttmottak?

Kvifor skal vi drive hjerteforskning i akuttmottak?

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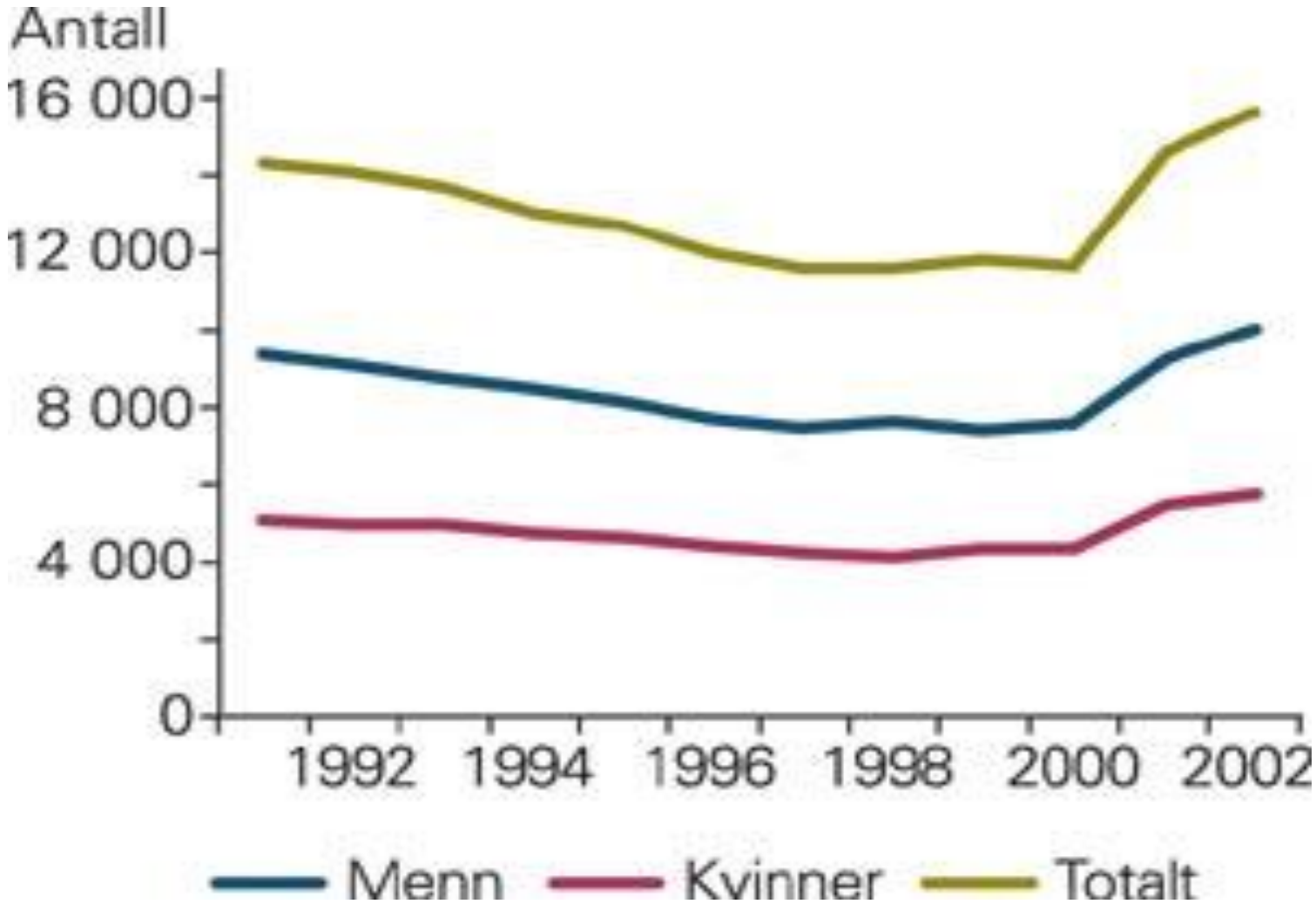
Kardiovaskulær sjukdom

- Ein av verdas vanligste dødsårsaker….

Key facts (WHO)

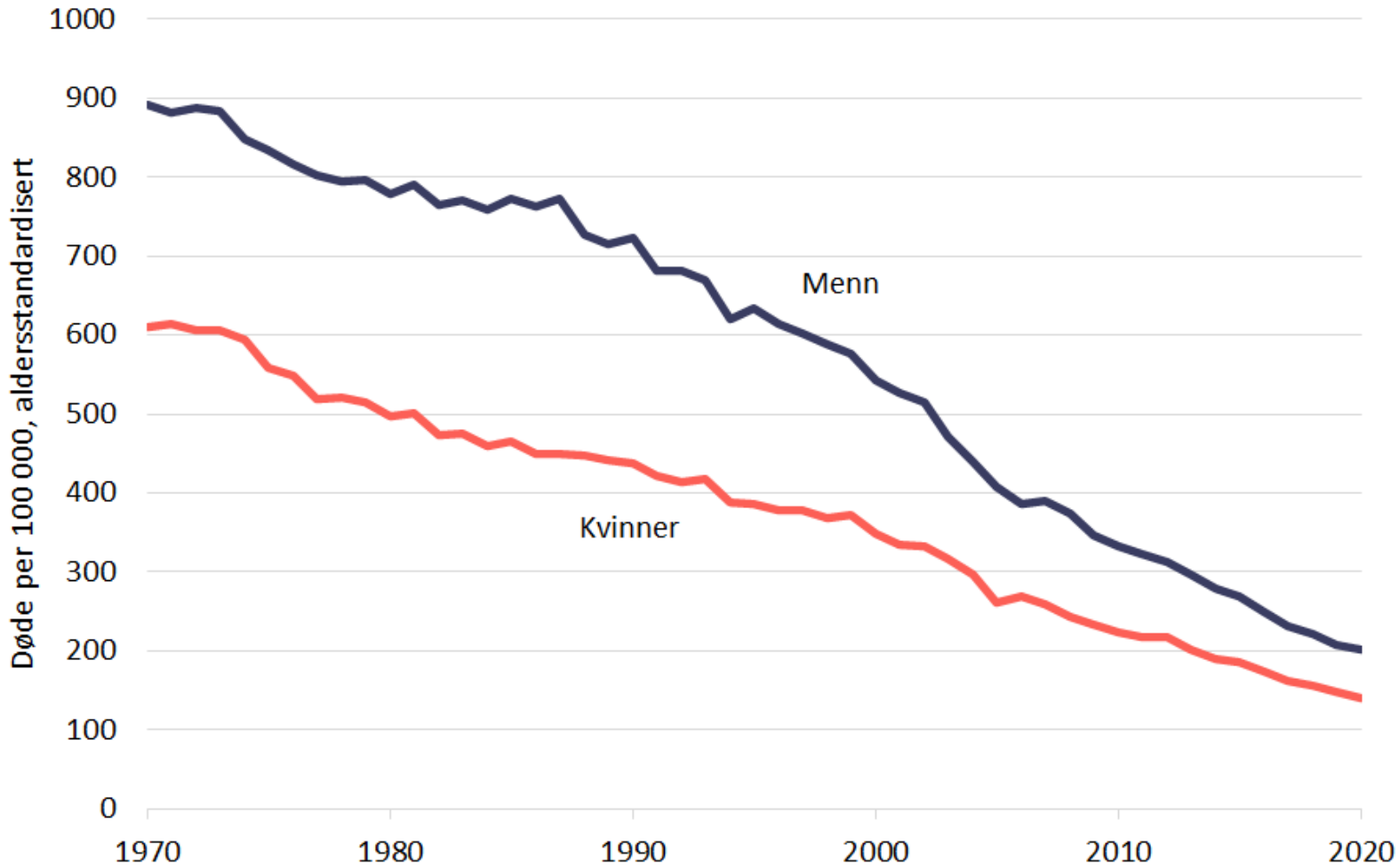
- **Cardiovascular diseases (CVDs) are the leading cause of death globally.**
- **An estimated 17.9 million people died from CVDs in 2019, representing 32% of all global deaths. Of these deaths, 85% were due to heart attack and stroke.**
- **Out of the 17 million premature deaths (under the age of 70) due to noncommunicable diseases in 2019, 38% were caused by CVDs.**
- **It is important to detect cardiovascular disease as early as possible so that management with counselling and medicines can begin.**
- **Over three quarters of CVD deaths take place in low- and middle-income countries.**

Hyppigheit av hjerteinfarkt i Norge



Hagen et al, Tidskrift for norske legeforening, 2003

Dødelighet av hjerte- og karsykdom



FHI

Kilde: Dødsårsaksregisteret/ Norgeshelsa statistikkbank

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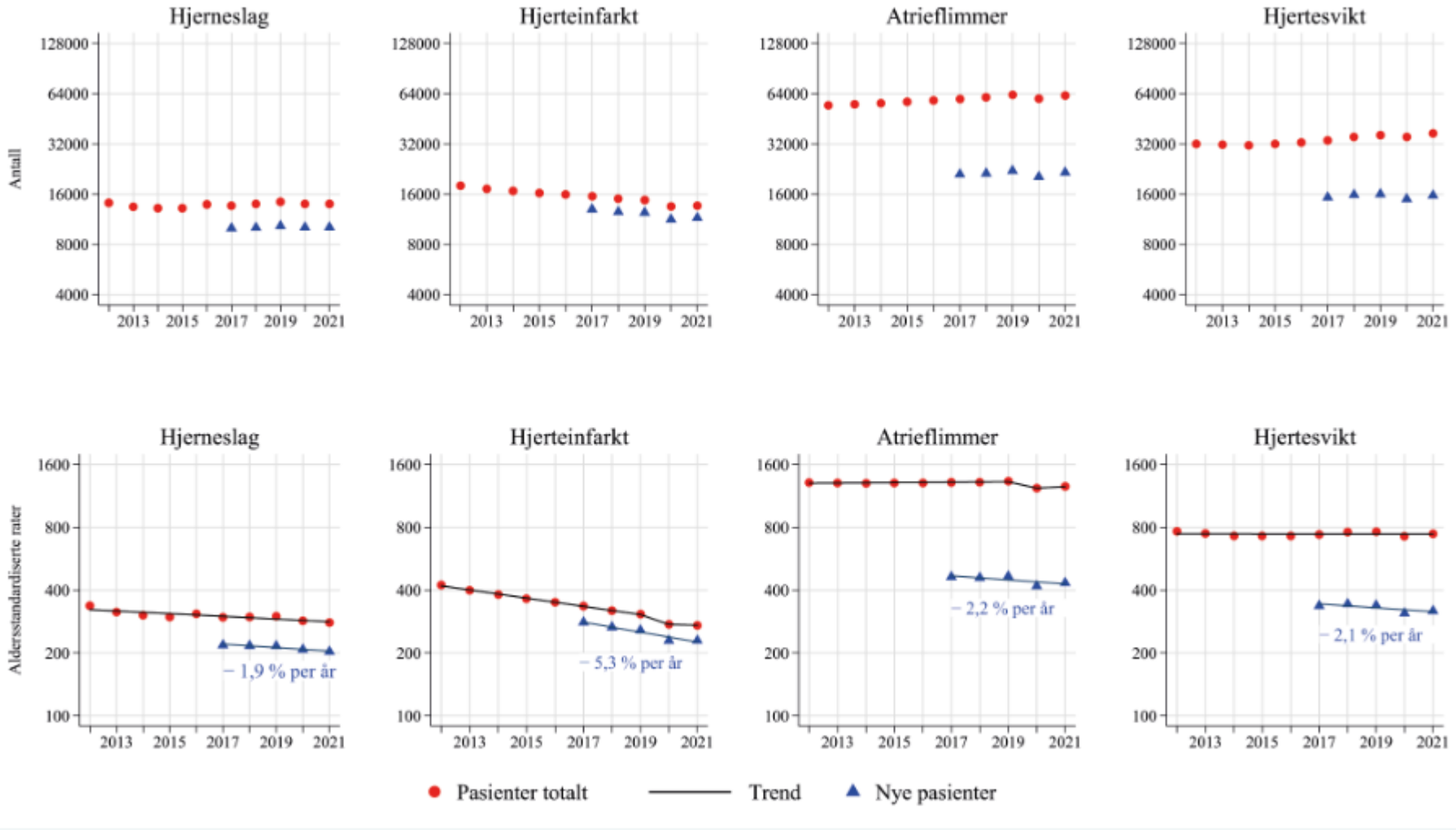
Hjerte-kar registeret



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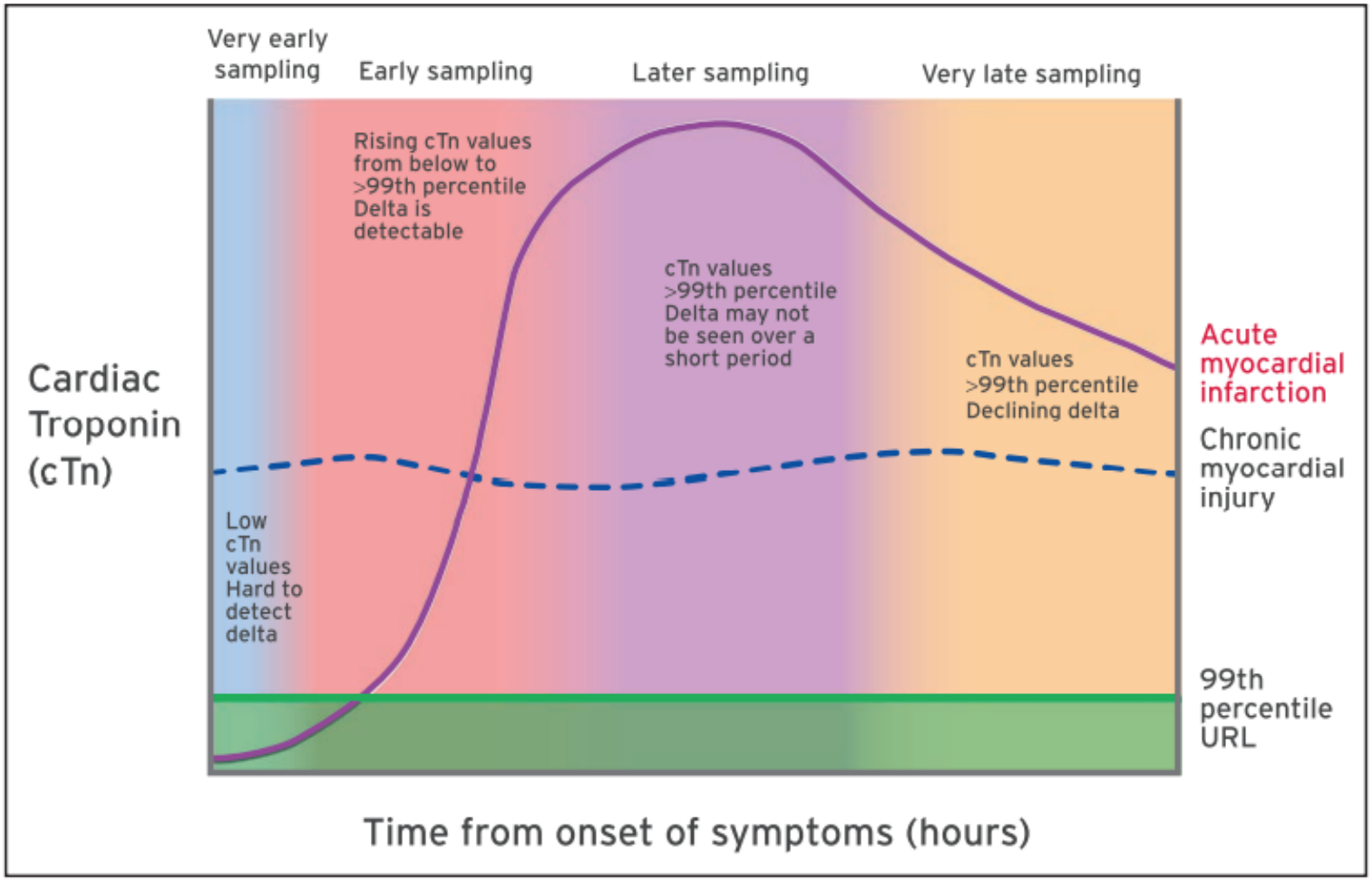
Ein av fem lever med etablert eller høg risiko for CVD - FHI forventar at dette vil auke:

- Most people who suffer an infarction are over 60 years of age. The number of new cases of cardiovascular disease is expected to increase as the post-war generation ages. By 2025, all the cohorts born during the period 1945 to 1955 will have passed 70 years of age.

- A relatively higher proportion of the population suffer less severe myocardial infarction or other cardiovascular disease, thereby increasing the years living with a cardiovascular disease (Mannsverk, 2016). The survival rate for stroke has also improved (NIPH, 2017).

4th Universal Definition of Myocardial Infarction



Thygesen et al. Circulation 2018;138:e618–e651.

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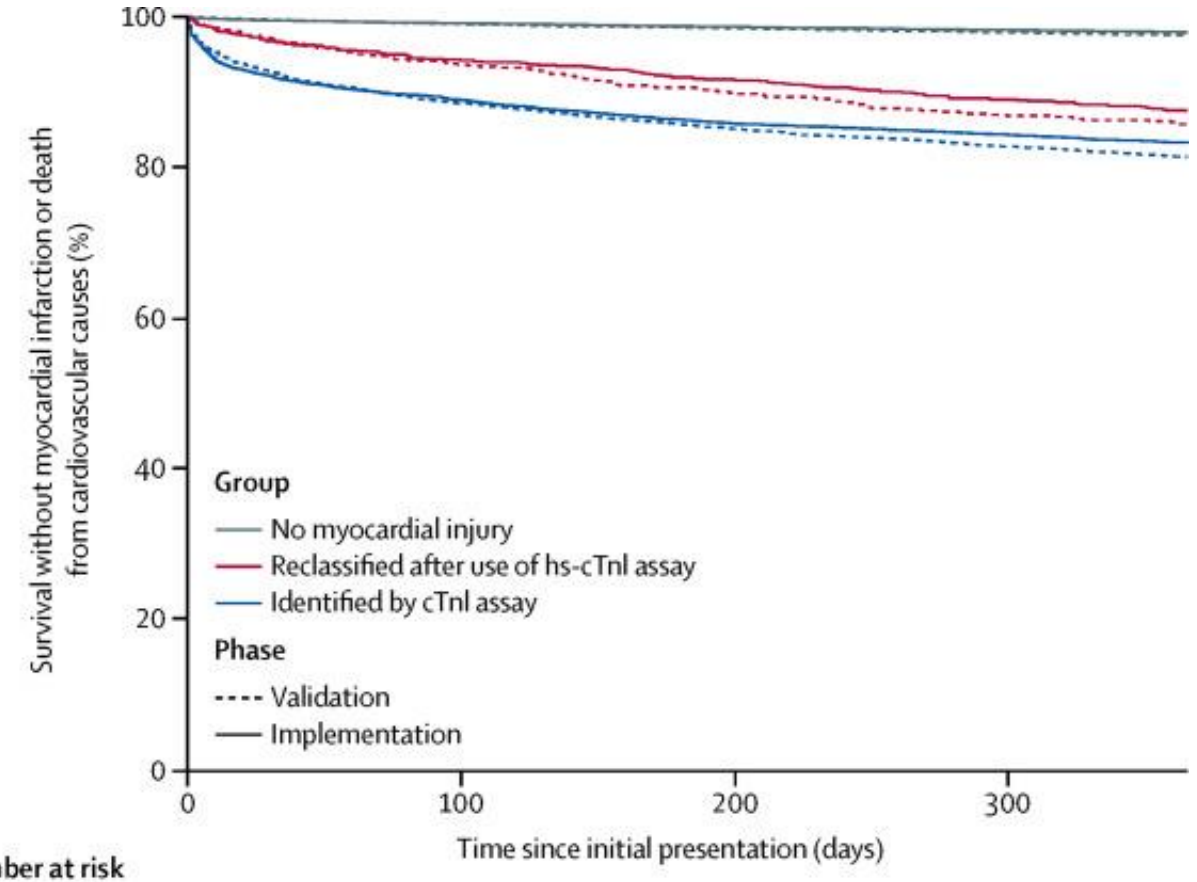
Høg sensitive troponiner



Number at risk				
Validation phase				
No myocardial injury	14862	14715	14631	14545
Reclassified by hs-TnI assay	720	674	646	625
Identified by cTnI assay	3396	3005	2889	2809
Implementation phase				
No myocardial injury	23060	22854	22750	22645
Reclassified by hs-TnI assay	1051	991	963	935
Identified by cTnI assay	5193	4619	4454	4377

Shah et al, Lancet 2018; 392; 918-928

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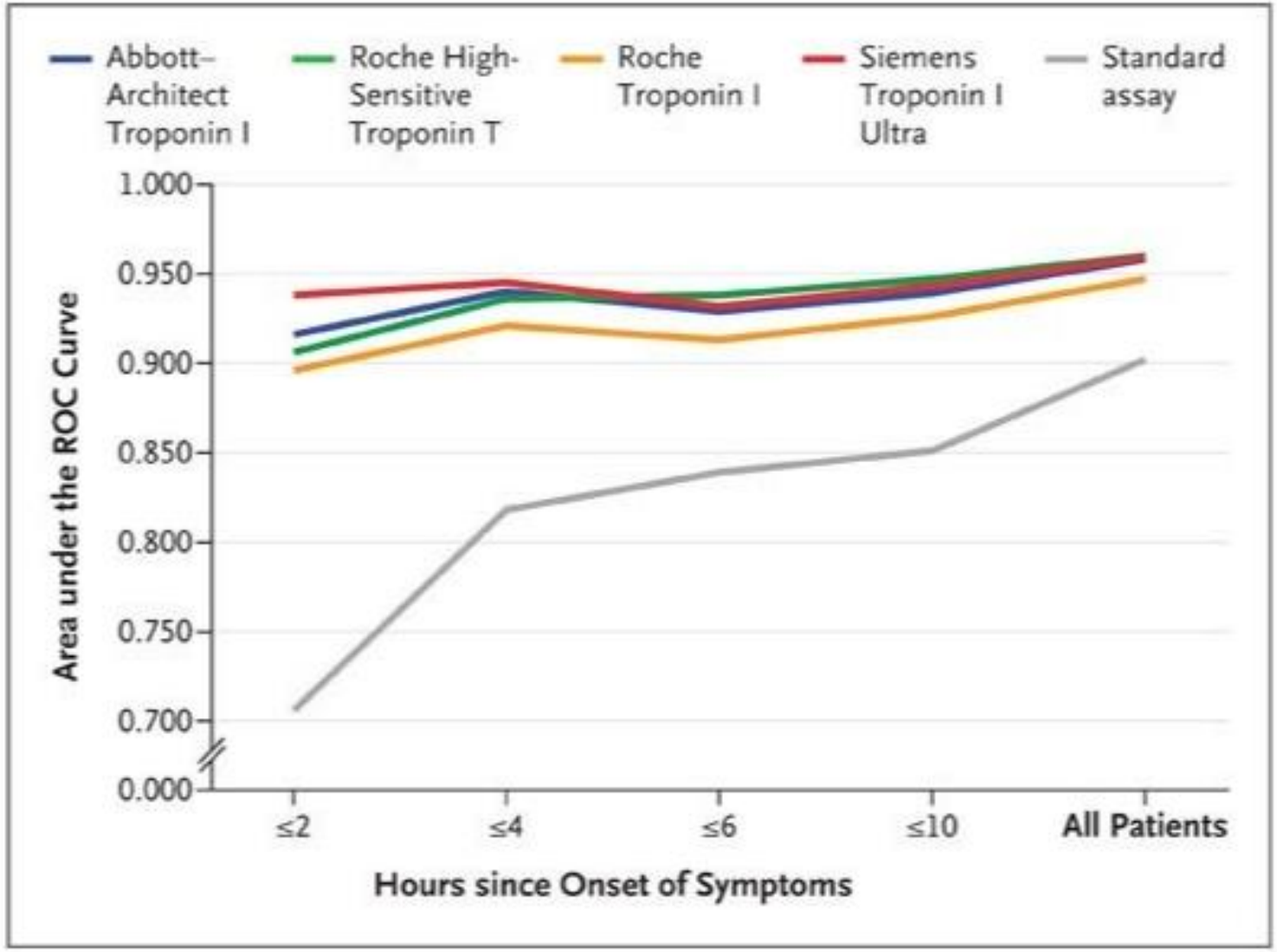
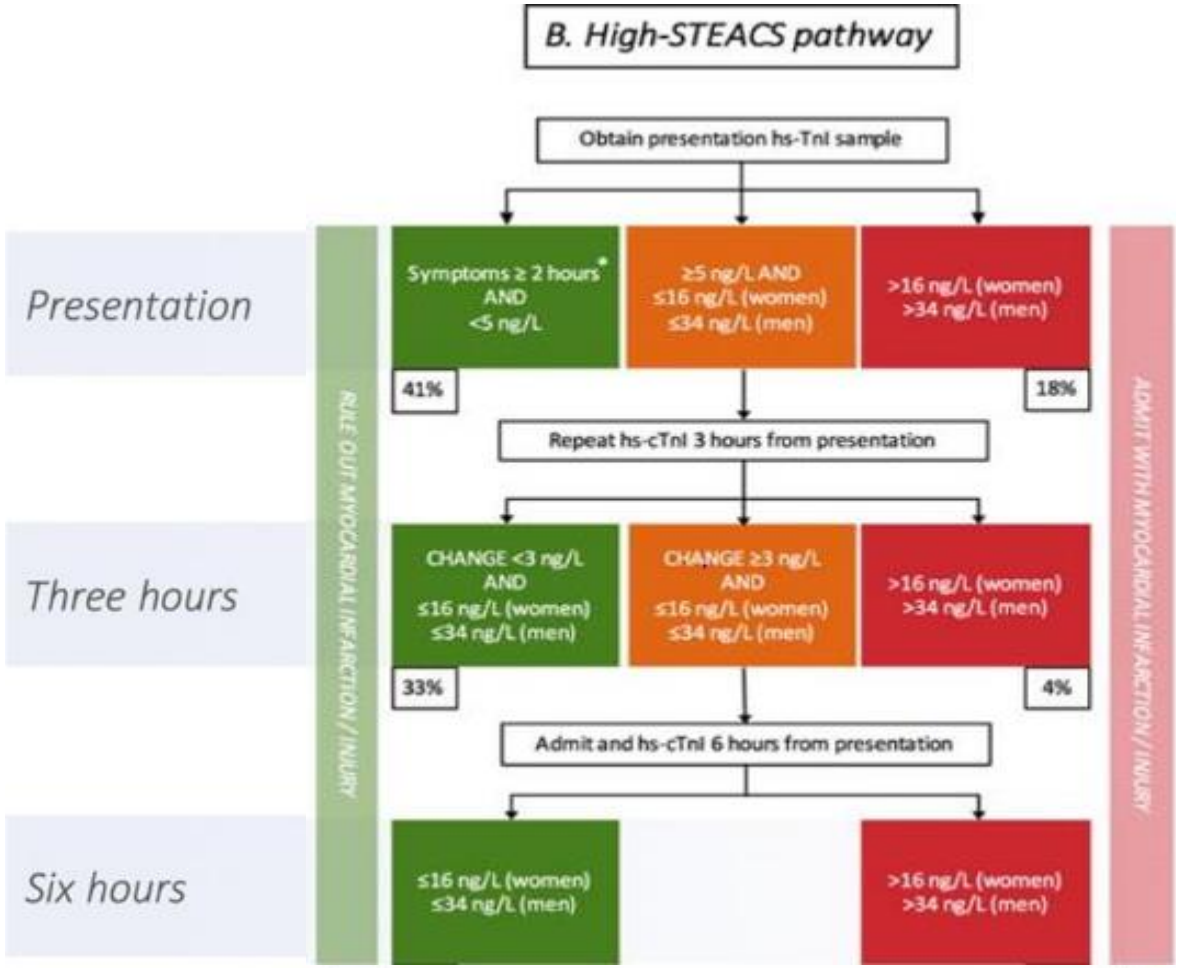
Høg sensitive troponiner

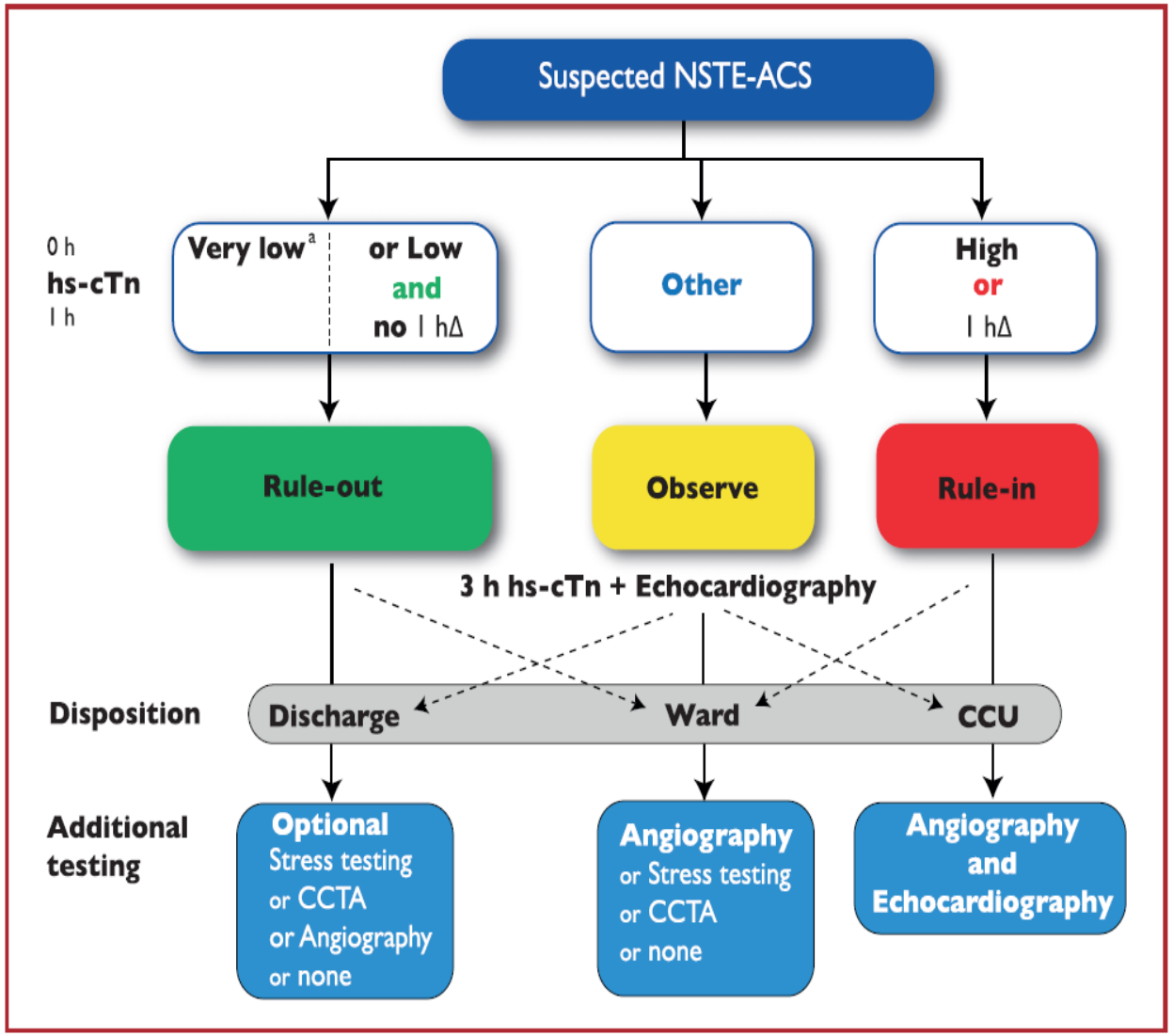
Reichlin et al

N Engl J Med 2009; 361:858-867



«Rule-out» and «rule-in» av NSTEMI i akuttmottak





Chapman and Mills, Circulation. 2017;135:1586–1596

WESTCOR-studien; Balansere risiko mot nytte

Antall pasienter med NSTEMI som blir sendt heim eller får forsinka diagnose (< 1%)

Antall pasienter med behov for re-vaskularisering som blir sendt heim eller får forsinka diagnose

Antall pasienter utan alvorlig akutt sjukdom som kan avklarast raskt

Antall NSTEMI pasienter som blir prioritert til angiografi/PCI

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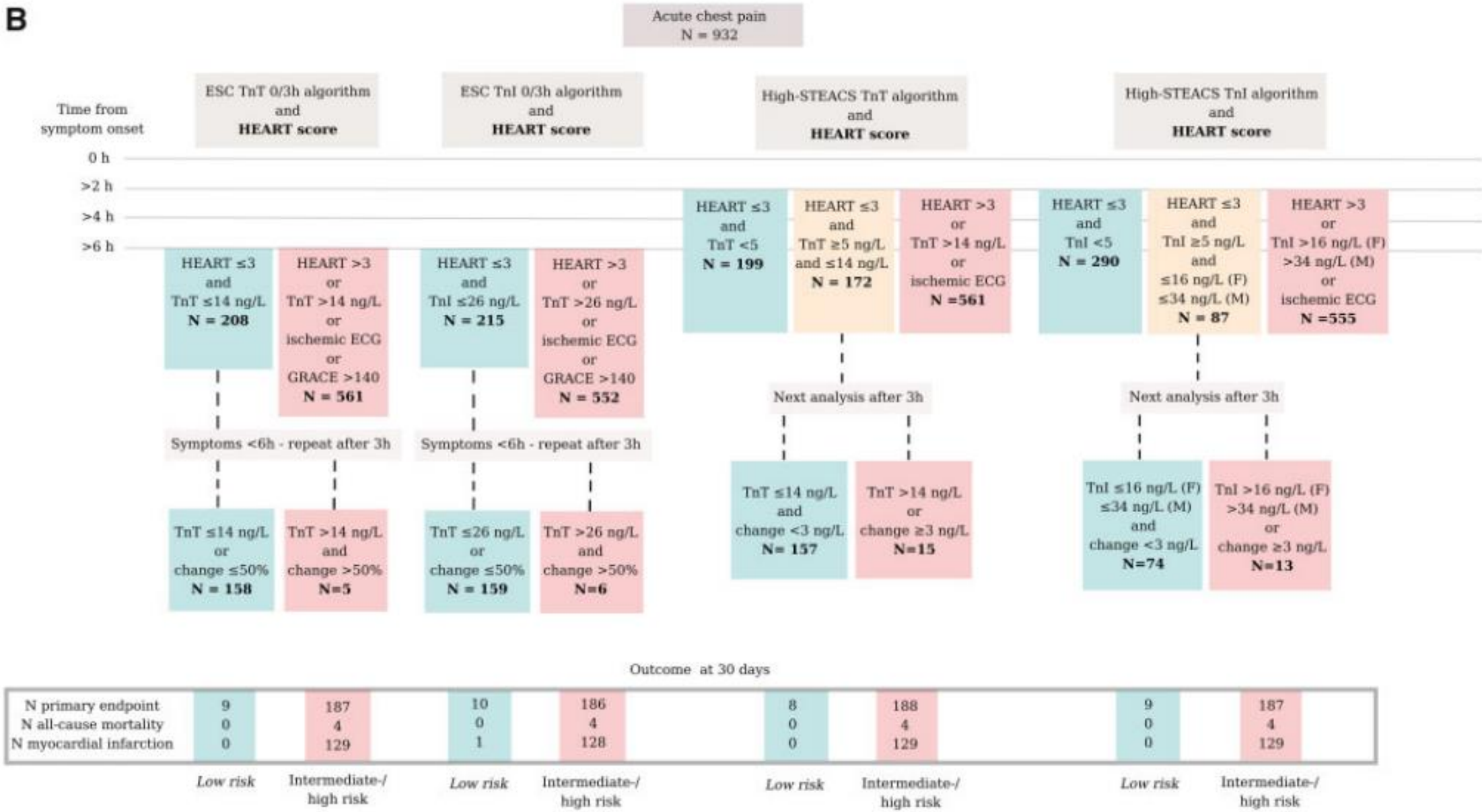
WESTCOR - studien

- Samarbeid mellom HUS ved Laboratorieklinikken, Hjerteavdelingen og Mottaksklinikken og tilsvarende avdelinger ved SUS

- HUS har inkludert 1500 pasienter
  - Deriveringskohort (n=1000)
  - CT kohort (n=500) brukes for validering

- SUS har inkludert 400 pasientar
  - Inklusjon avslutta pga Covid pandemien



Steiro et al. Eur Heart J Acute Cardiovasc Care. 2021 May 11;10(3):287-301

1504 patients admitted with acute chest pain

-diagnostic performance for NSTEMI and UAP

	Sensitivity	NPV	Specificity	PPV	Rule-out rate
3 hour algorithms					
hs-cTnT < 5 ng/L and $\Delta_{0\text{-}3h}$ < 1 ng/L					
Derivation cohort N=982	96.7 (93.6- 98.6)	96.5 (93.3 - 98.2)	30.0 (26.7 – 33.4)	31.1 (30.0 - 32.3)	230 (23.4)
Validation cohort N=482	97.5 (92.9-99.5)	97.2 (91.9-99.1)	29.1 (24.5-34.1)	31.6 (30.0-33.1)	108 (22.4)
hs-cTnI < 2 ng/L and $\Delta_{0\text{-}3h}$ < 1 ng/L					
Derivation cohort N=936	95.7 (92.2-97.9)	94.9 (91.0-97.2)	26.6 (23.3-30.0)	30.0 (28.9-31.2)	197 (20.2)
Validation cohort N=483	87.6 (80.4-92.9)	90.3 (85.1-93.9)	38.6 (32.4-42.5)	32.3 (30.1-34.7)	155 (32.1)

Tjora et al. Accepted for publication in Clin Chem, 2021

Clinical Chemistry 00:0
1–12 (2023)

Other Areas of Clinical Chemistry

Growth Differentiation Factor 15: A Prognostic Marker in Patients with Acute Chest Pain without Acute Myocardial Infarction

Gard MS Myrmel,[a] Ole-Thomas Steiro,[a] Hilde L. Tjora,[b] Jørund Langørgen,[a] Rune Bjørneklett,[b,c] Øyvind Skadberg,[d] Vernon VS Bonarjee,[e] Øistein R. Mjelva,[f] Eva KR Pedersen,[a,g] Kjell Vikenes,[a,g] Torbjørn Omland,[h,i,†] and Kristin M. Aakre[a,g,j,*,†]

Taylor & Francis

vascular Care (2022) 11, 201–212 ORIGINAL SCIENTIFIC PAPER
Biomarkers

kers to high-sensitivity apid non-ST-elevation rule-out protocols

European Society of Cardiology

Journal of the American H

Ingar Ziad Restan[1†], Ana Yufera Sanchez[2,3†], Ole-Thomas Steiro[4], Pedro Lopez-Ayala[2,3], Hilde L. Tjora[5], Jørund Langørgen[4], Torbjørn Omland[6,7], Jasper Boeddinghaus[2,3], Thomas Nestelberger[2,3,8], Bjørneklett[5,12], erg[15], Øistein R. Mjelva[1], stian Mueller[2,3] and

Clinical Chemistry 68:2
291–302 (2022)

Evidence-Based Medicine and Test Utilization

Diagnostic Performance of Novel for the Rule-Out of Non-ST-Eleva Syndrome

Hilde L. Tjora,[a] Ole-Thomas Steiro,[b] Jørund Langørgen,[b] Run Vernon V.S. Bonarjee,[e] Øistein R. Mjelva,[e] Paul Collinson,[f] To Kristin M. Aakre[b,i,j,*]

Open access Original research

BMJ Open

Predictors of long-term symptom burden and quality of life in patients hospitalised with chest pain: a prospective observational study

Nasir Saeed,[1] Tone Merete Norekvål,[1,2] Ole-Thomas Steiro,[2] Hilde Lunde Tjora,[3] Jørund Langørgen,[2] Rune Oskar Bjørneklett,[3,4] Øyvind Skadberg,[5] Vernon Vijay Singha Bonarjee,[6] Øistein Rønneberg Mjelva,[7] Torbjørn Omland,[8,9] Kjell Vikenes,[2] Kristin Moberg Aakre[1,2,10]

Korleis har vi gjort det?

«Avdeli

2014: ….det er ert gjennomgang. Prosjektet ville ke støtteverdig…

2015: Det finn gående studier inkludert størr nne pasientgruppe stillinger som er av klinisk nytt r prediksjonsverdi. ……nådde ikke

2016: Prosjekt potensiell klinisk relevans, dog i ed lite spesifikke hypoteser, noe vil komme betydelige bid osjektet ikke når opp

- 2017: PhD pro else Vest.
- 2018: Prosjekt forskningspros

Emergency Department

Randomization 1:1 fashion

Standard arm (n=750):
- Central laboratory ESC cTn 0/1 hour algorithm
- Biobank
- HEART Score and differential diagnoses
- Discharge or admission by attending clinician

Intervention arm (n=750):
- POC cTnI 0/1 hour algorithm
- Biobank
- HEART Score and differential diagnoses
- Discharge or admission by attending clinician

Primary outcome:
- Efficiency: Length of stay in the Emergency Department
- Safety: Death, myocardial infarction or acute revascularization within 30 days after inclusion
- Costs: Total patient episode costs
- Patient satisfaction: Patient symptom burden and satisfaction at 30 days (phone interview using SAQ7, RAND-12, 2014 Pasopp)

Secondary outcomes:
- Efficiency: Percentage discharged within 3 and 6 hours & Total length of stay
- Safety: Death, myocardial infarction or acute revascularization within 12 months after inclusion (NPR & CDR data)
- Costs: Total patient costs within 12 months from inclusion

Neste steg?

- Pasientnær analyse på legevakt

Neste steg 2.0?

- Pasientnær analyse i ambulanse?

Oppsummering

- Forskning i akuttmottak er avgjerande for pasientsikkerheiten
- Forskning i akuttmottak er avgjerande for å kunne møte eldrebølgen
- Eksempler frå kardiologien viser at dette er absolutt gjennomførbart; internasjonalt og nasjonalt
- Implementeringsforskning er og blir viktig også i framtida