HLR rådet
SVENSKA RÅDET FÖR HJÄRT- LUNGRÄDDNING

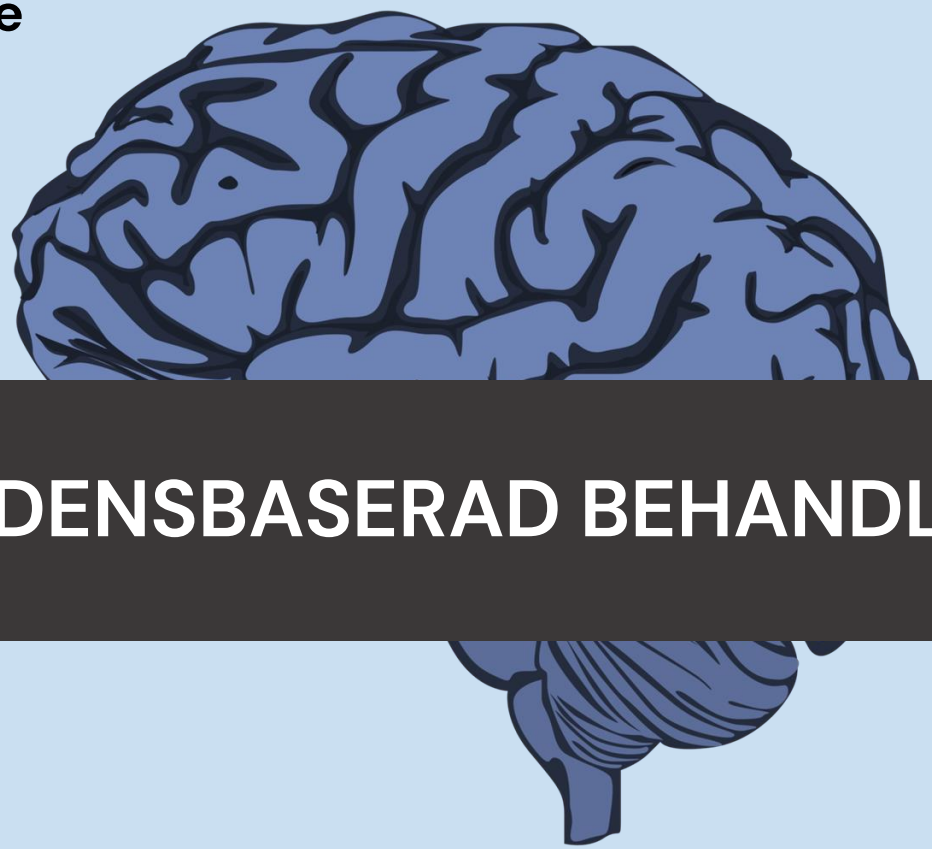
Hypotermibehandling vid hjärtstopp

Emelie Dillenbeck
Ane/IVA Södersjukhuset, Stockholm
Centrum för Hjärtstoppsforskning, KI

HLR KONGRESS
GÖTEBORG
26–27 MAJ
2026

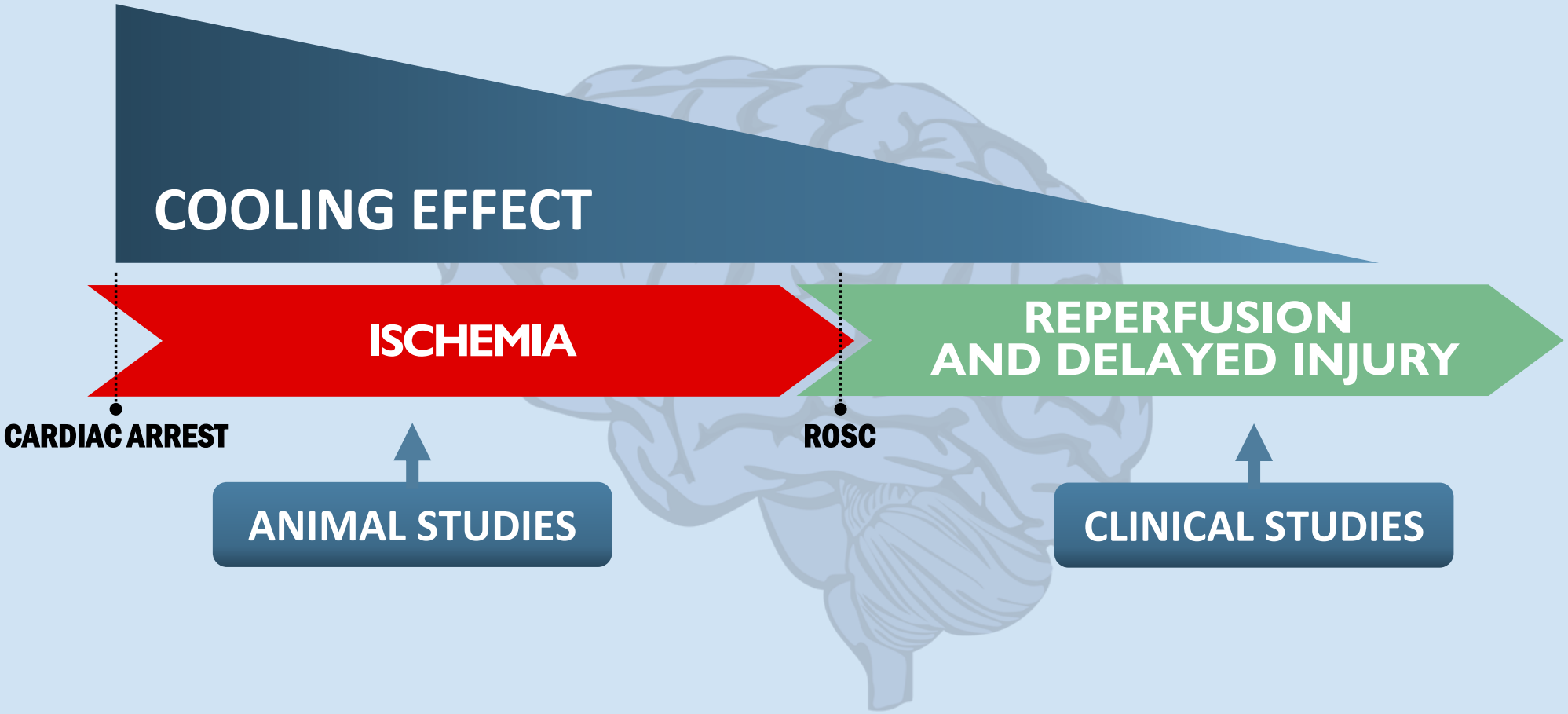
Hjärnskador är vanligaste dödsorsaken efter hjärtstopp

Många överlevare får bestående påverkan på hjärnan



INGEN EVIDENSBASERAD BEHANDLING FINNS

HYPOTERMI


COOLING EFFECT
ISCHEMIA
REPERFUSION
AND DELAYED INJURY
CARDIAC ARREST
ROSC
ANIMAL STUDIES
CLINICAL STUDIES

KLINISKA STUDIER

POSITIVA

INDUCED HYPOTHERMIA AFTER OUT-OF-HOSPITAL CARDIAC ARREST

TREATMENT OF COMATOSE SURVIVORS OF OUT-OF-HOSPITAL CARDIAC ARREST WITH INDUCED HYPOTHERMIA

Stephen A. Bernard, M.B., B.S., Timothy W. Gray, M.B., B.S., Michael D. Buist, M.B., B.S., Bruce M. Jones, M.B., B.S., William Silvester, M.B., B.S., Geoff Gutteridge, M.B., B.S., and Karen Smith, B.Sc.

Bernard 2002

The New England Journal of Medicine

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VOLUME 346 February 21, 2002 NUMBER 8

MILD THERAPEUTIC HYPOTHERMIA TO IMPROVE THE NEUROLOGIC OUTCOME AFTER CARDIAC ARREST

HACA 2002

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Targeted Temperature Management for Cardiac Arrest with Nonshockable Rhythm

HYPERION 2019

NEUTRALA

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Targeted Temperature Management at 33°C versus 36°C after Cardiac Arrest

TTM 2013

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Hypothermia versus Normothermia after Out-of-Hospital Cardiac Arrest

TTM2 2021

GUIDELINES VARIERAR

EUROPEAN RESUSCITATION COUNCIL
esicm The intensive connection

≤37.5°C

European Society of Anaesthesiology and Intensive Care
EUSEM EUROPEAN SOCIETY FOR EMERGENCY MEDICINE

32–34°C

American Heart Association.

32–37.5°C

KUNSKAPSLUCKOR

EUROPEAN RESUSCITATION COUNCIL

esicm The intensive connection

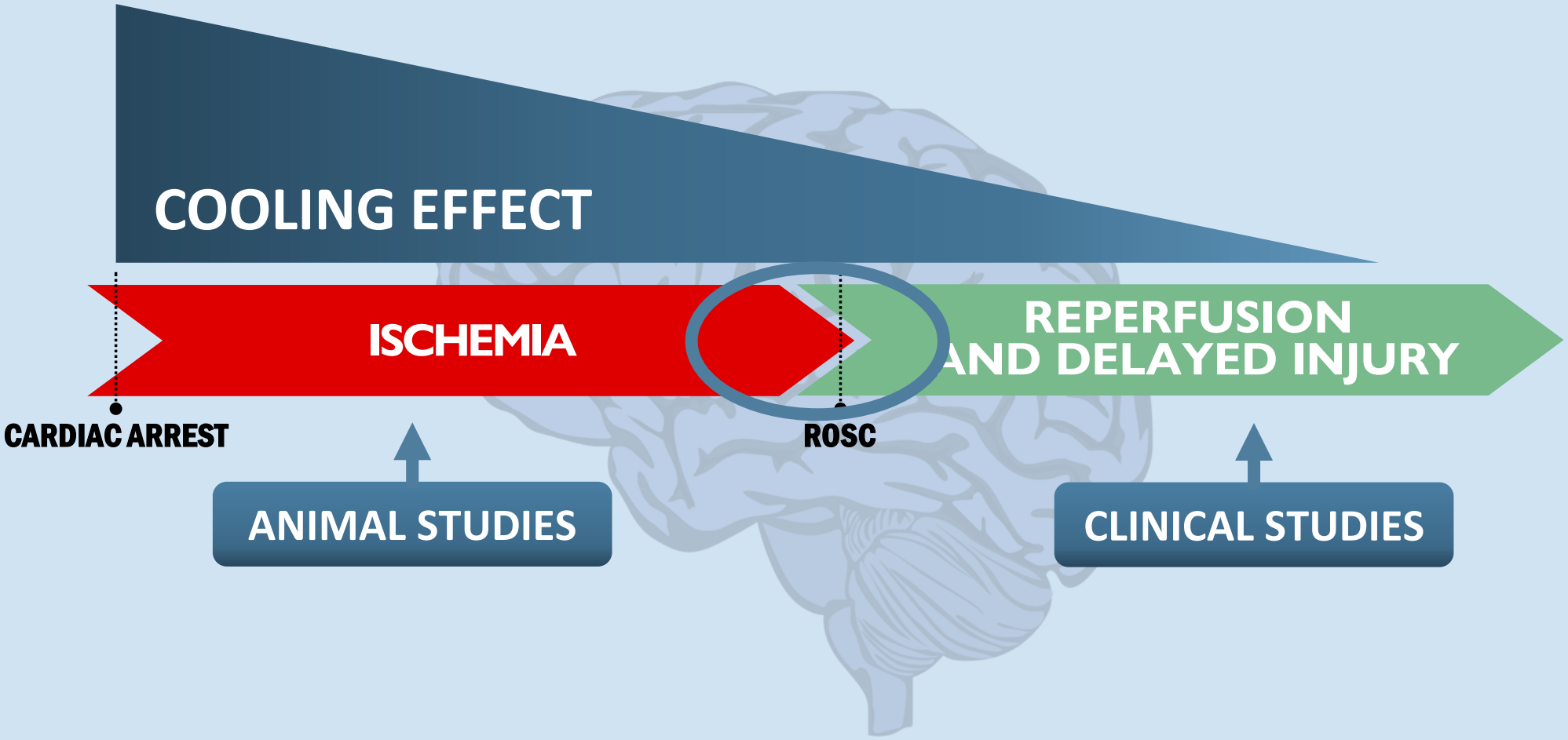
European Society of Anaesthesiology and Intensive Care

EUSEM EUROPEAN SOCIETY FOR EMERGENCY MEDICINE

American Heart Association.

- Tidpunkt för kylning
- Patientgrupper
- Duration

HYPOTERMI – tidig kylstart

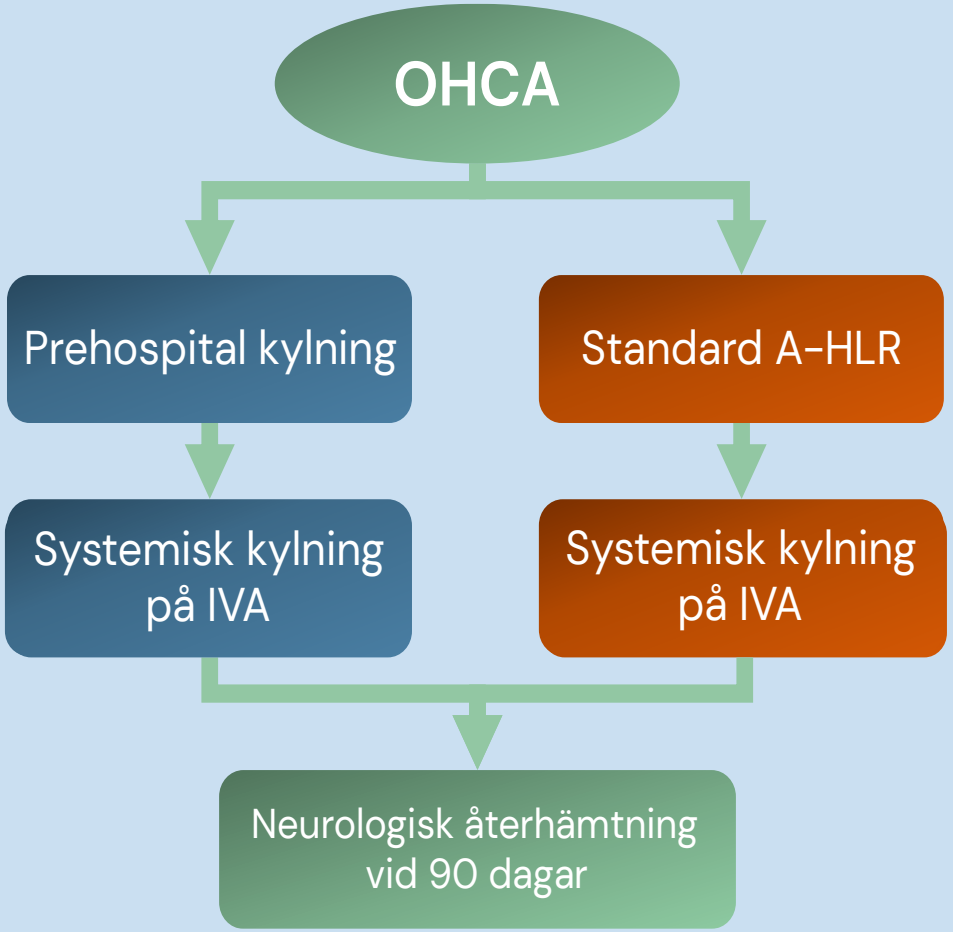


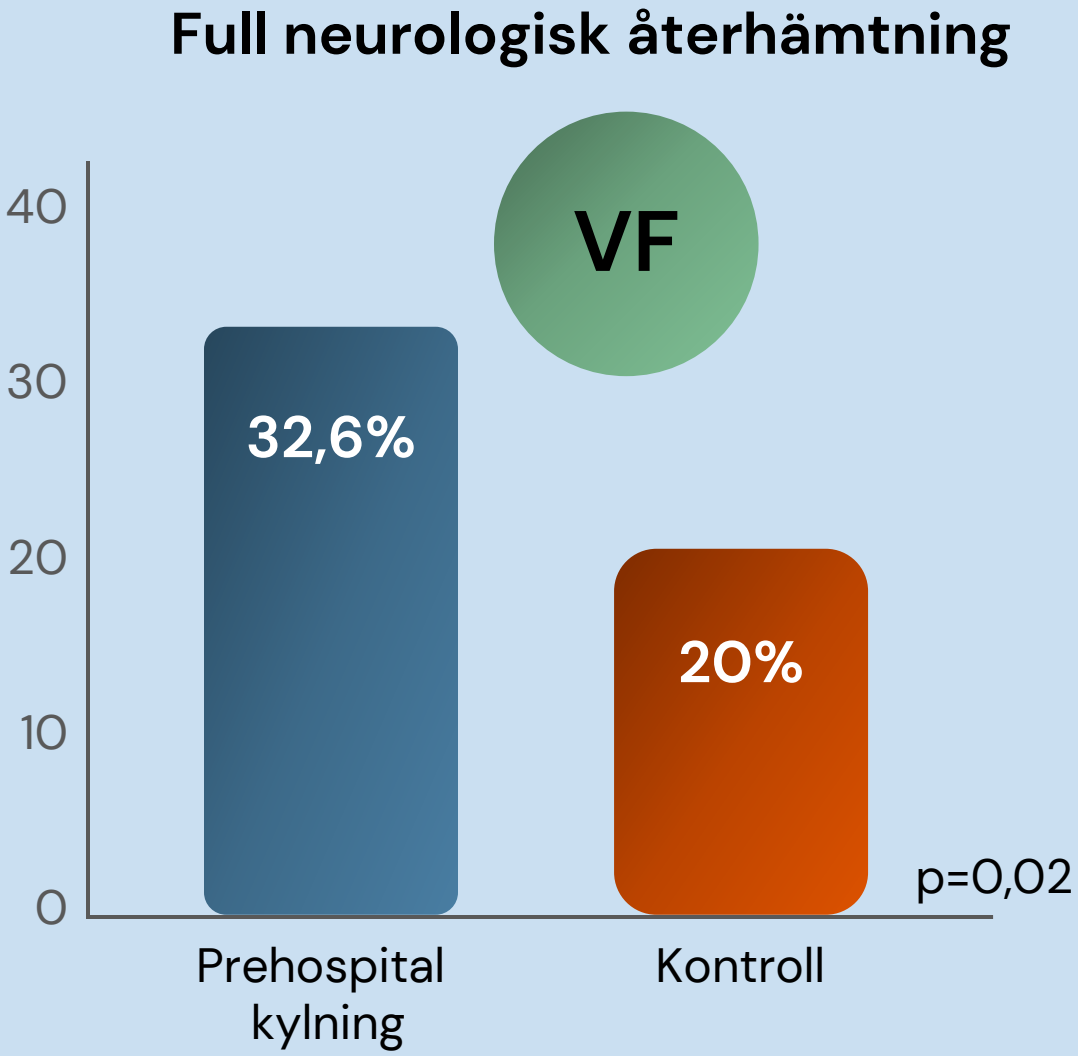
TRANSNASAL KYLNING

- Kyler primärt hjärnan
- Lätt att använda, snabb att starta
- Non-invasiv
- Kontinuerlig kylning
- Ingen volymsbelastning för hjärtat

The RhinoChill™ IntraNasal Cooling System
can be easily deployed during resuscitation efforts.
RhinoChill™ IntraNasal
Cooling System

PRINCESS[1]



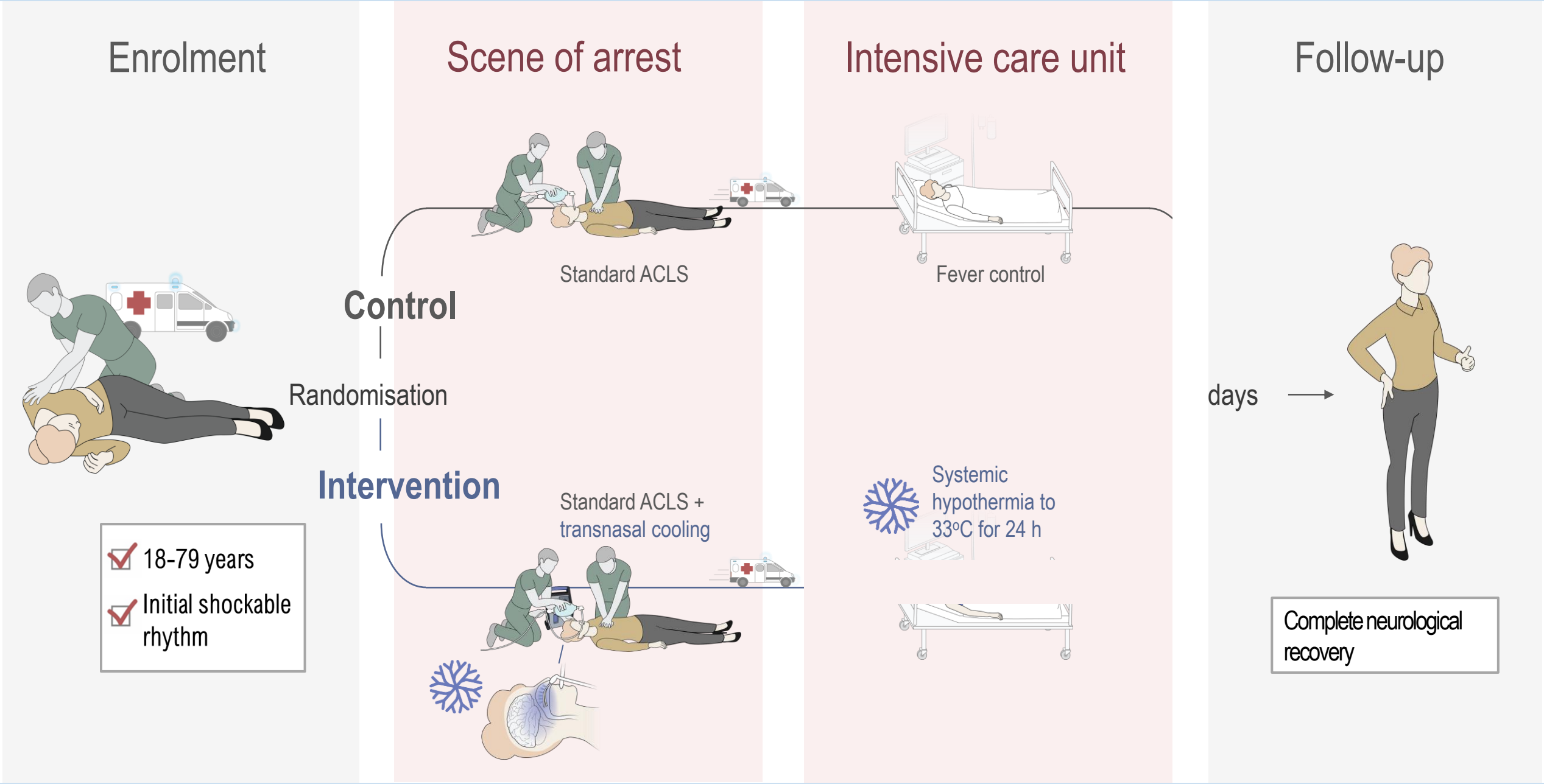


Nordberg et al. JAMA, 2019

PRINCESS^2

Hypotes

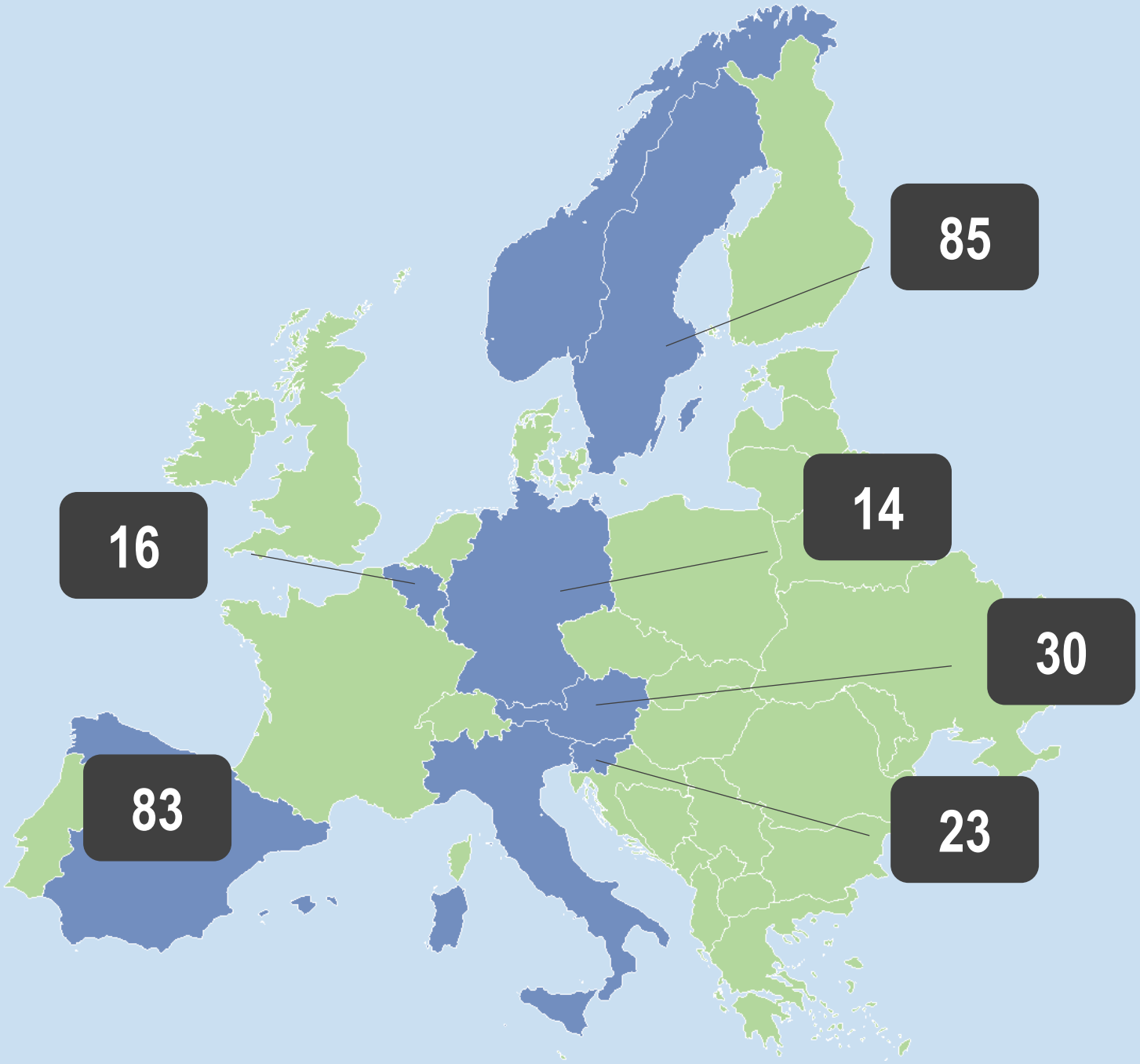
Omedelbar **kylbehandling** vid **defibrillerbar** rytm ökar överlevnaden med **full neurologisk återhämtning** jämfört med normotermi.


Enrolment
Scene of arrest
Intensive care unit
Follow-up
Control
Randomisation
Intervention
Standard ACLS
Fever control
Standard ACLS +
transnasal cooling
Systemic
hypothermia to
33°C for 24 h
days
18-79 years
Initial shockable
rhythm
Complete neurological
recovery

253

patienter

(av planerade 1022)



PILOTFAS

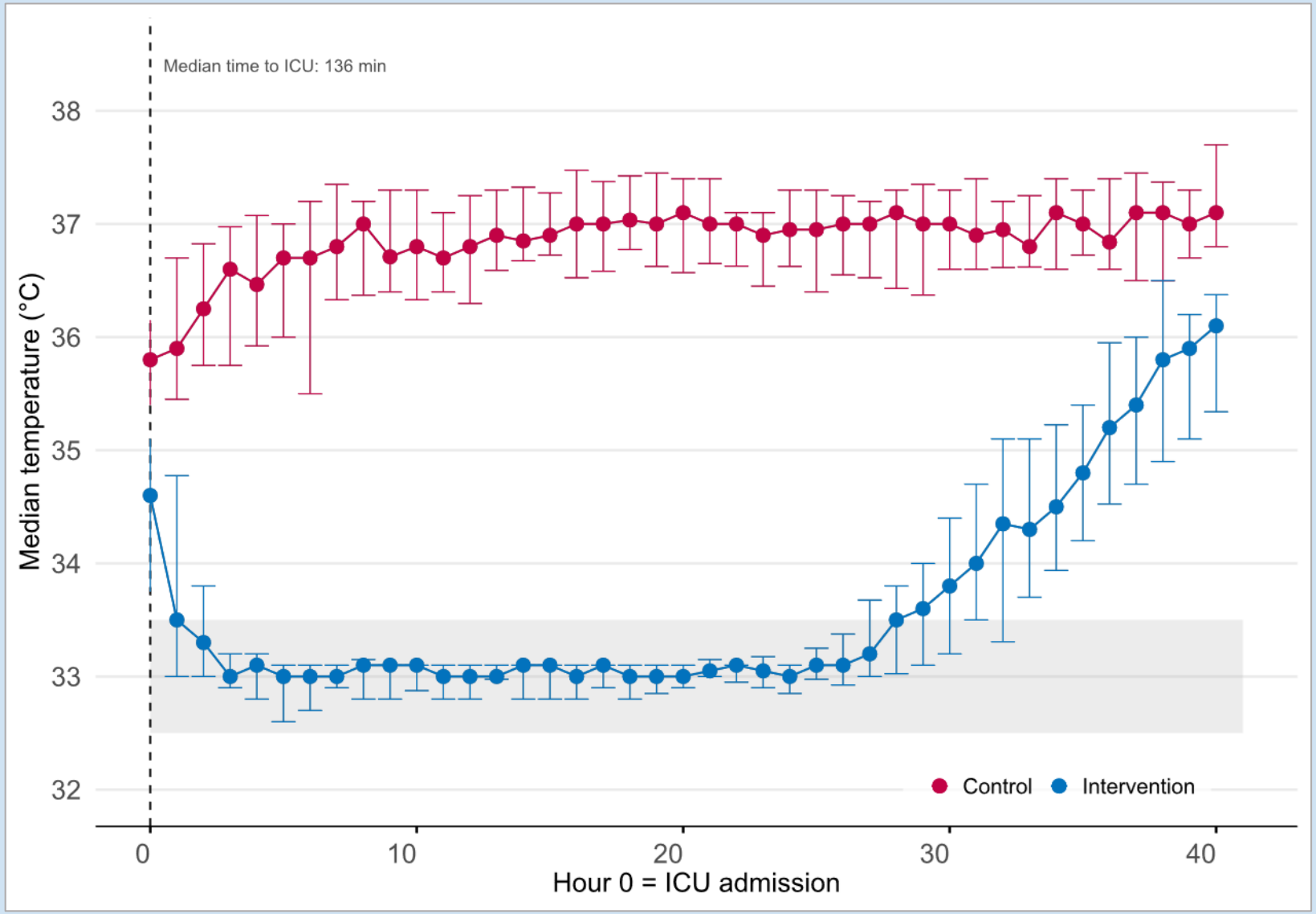
Första 100 patienterna inkluderade i PRINCESS[2]

Slutsats:

- Hög följsamhet till studieprotokollet
- Säkert och genomförbart
- Studien fortsätter enligt plan

Dillenbeck et al, Critical Care, 2026

PILOTFAS – temperaturkurvor



Viktig forskning återstår

emelie.dillenbeck@ki.se