

Stroke – Akut behandling og belægning

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DSC

Danish Stroke Centre

Disclosures

Guidelines:

Medforfatter til neurologiske behandlingsvejledning indenfor Stroke

“Iskæmisk apopleksi – akut udredning og behandling”

Speakers fee:

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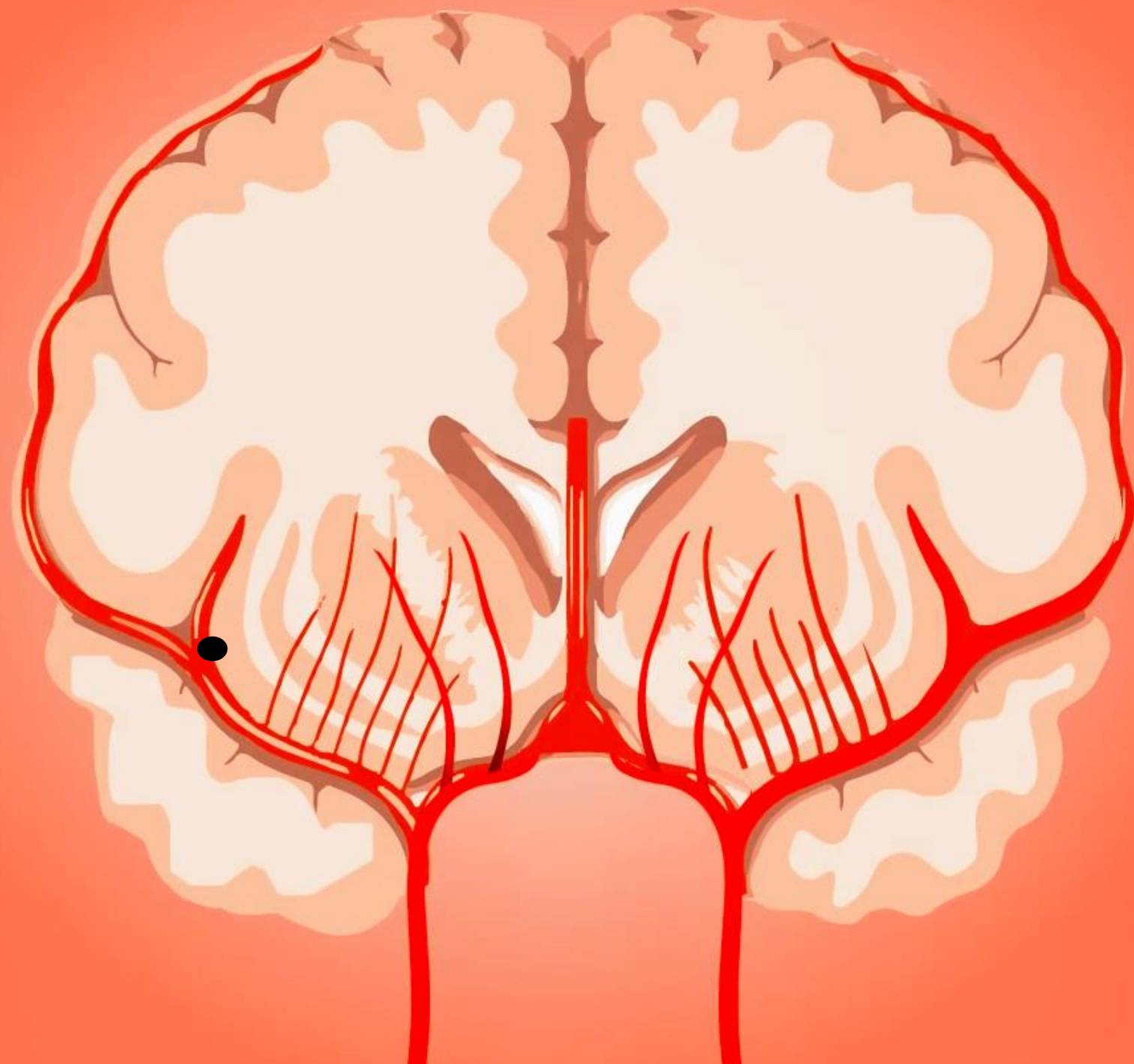
Aase Ejnar Danielsens Foundation (ID:10–002120)



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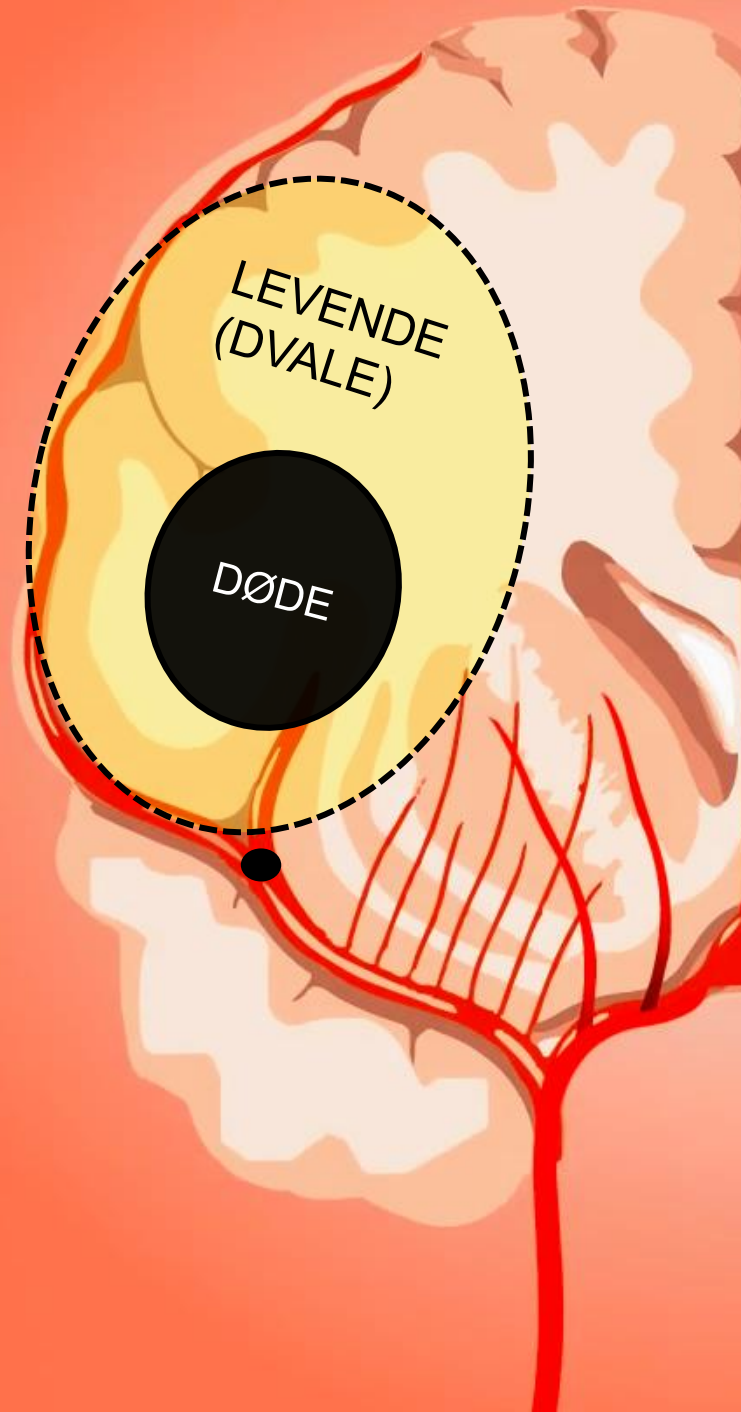
Stroke

- Blodprop i hjernen (85%)
- Blødning i hjernen (15%)
- Ca. **12.000** rammes årligt
- Over 100.000 lever med
følgevirkninger
- Hyppig årsag til **død og
alvorligt handicap**



MEGET lav
blodforsyning =
Hjerner celler
dør efter 4-8 min

Moderat lav
blodforsyning =
Hjerner cellerne dør
IKKE med det
samme (dvale) og
kan **REDDER**



2 MILLIONER
HJERNECELLER DØR
HVERT MINUT

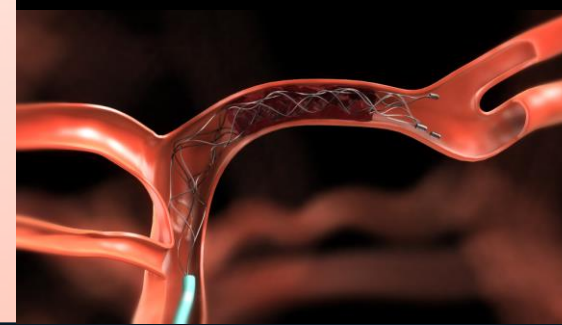
TROMBOLYSE

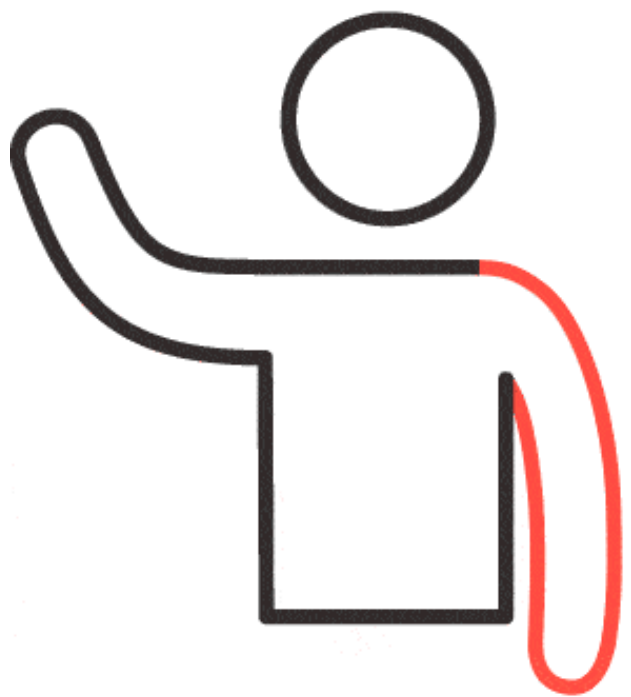


< 4,5 time fra
symptomerne
opstod

Gives det hurtigt
= bedre effekt

TROMBEKTOMI

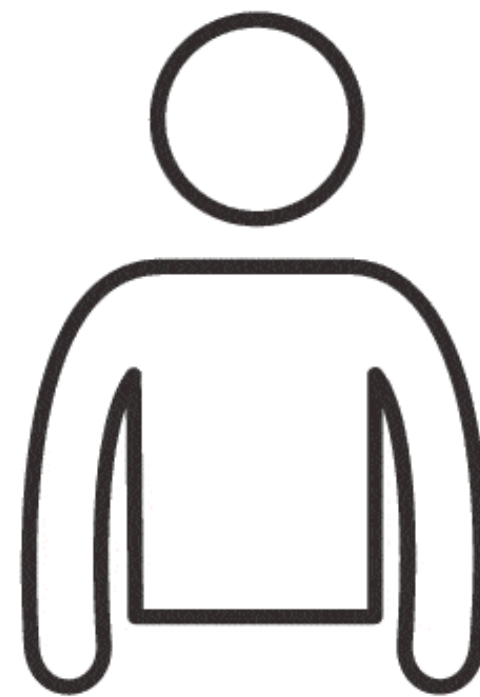




Stræk



Snak



Smil

- Telefon konference mellem neurolog og ambulance reddere. Vurdering udfra sygehistorie og neurologiske fund i ambulance
- **25-100 opkald** hver dag omkring stroke mistanke – **finde 5-10 patienter**, der har ét stroke
- **40%** der indlægges på mistanke om stroke **fejler noget andet**



Diagnoser for patienter indlagt på mistanke om stroke

I63 Ischemic Stroke	G43 Migraine	R25 Abnormal involuntary movements
I61 Intracerebrala Hemorrhage	G44 Other headache syndromes	R26 Abnormalities of gait and mobility
G459 Transient Ischemic Attack	G47 Sleep disorders	R27 Other lack of coordination
A09 Other gastroenteritis and colitis of infectious and unspecified origin	G51 Facial nerve disorders	R29 Other symptoms and signs involving the nervous and musculoskeletal systems
A41 Other sepsis	G54 Nerve root and plexus disorders	R31 Unspecified haematuria
A69 Other spirochaetal infections	G56 Mononeuropathies of upper limb	R33 Retention of urine
B99 Other and unspecified infectious diseases	G63 Polyneuropathy in diseases classified elsewhere	R41 Other symptoms and signs involving cognitive functions and awareness
C71 Malignant neoplasm of brain	G70 Myasthenia gravis and other myoneural disorders	R42 Dizziness and giddiness
C79 Secondary malignant neoplasm of other and unspecified sites	G81 Hemiplegia	R45 Symptoms and signs involving emotional state
D32 Benign neoplasm of meninges	G83 Other paralytic syndromes	R47 Speech disturbances, not elsewhere classified
D43 Neoplasm of the brain and central nervous system (unspecified)	G91 Hydrocephalus	R48 Dyslexia and other symbolic dysfunctions, not elsewhere classified
E86 Volume depletion	H53 Visual disturbances	R50 Fever of other and unknown origin
E87 Other disorders of fluid, electrolyte and acid-base balance	H81 Disorders of vestibular function	R51 Headache
F03 Unspecified dementia	I10 Essential (primary) hypertension	R52 Pain, not elsewhere classified
F05 Delirium, not induced by alcohol and other psychoactive substances	I43 Cardiomyopathy in diseases classified elsewhere	R53 Malaise and fatigue
F10 Mental and behavioural disorders due to use of alcohol	I60 Subarachnoid haemorrhage	R55 Syncope and collapse
F41 Other anxiety disorders	S065 Subdural hematoma	R56 Convulsions, not elsewhere classified
F43 Reaction to severe stress, and adjustment disorders	I62 Other nontraumatic intracranial haemorrhage	R68 Other general symptoms and signs
F44 Dissociative [conversion] disorders	I68 Cerebrovascular disorders in diseases classified elsewhere	R78 Findings of drugs and other substances, not normally found in blood
F45 Somatoform disorders	I69 Sequelae of cerebrovascular disease	S06 Intracranial injury
F48 Other neurotic disorders	I71 Aortic aneurysm and dissection	S12 Fracture of neck
F80 Specific developmental disorders of speech and language	I77 Other disorders of arteries and arterioles	S42 Fracture of shoulder and upper arm
G04 Encephalitis, myelitis and encephalomyelitis	J15 Bacterial pneumonia, not elsewhere classified	S44 Injury of nerves at shoulder and upper arm level
G25 Other extrapyramidal and movement disorders	J69 Pneumonitis due to solids and liquids	S62 Fracture at wrist and hand level
G37 Other demyelinating diseases of central nervous system	M35 Other systemic involvement of connective tissue	S84 Injury of nerves at lower leg level
G41 Status epilepticus	M54 Dorsalgia	T42 Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs
M62 Other disorders of muscle	N39 Other disorders of urinary system	T51 Toxic effect of alcohol
M87 Osteonecrosis	R00 Abnormalities of heart beat	T85 Complications of other internal prosthetic devices, implants and grafts
N30 Cystitis	R11 Nausea and vomiting	Z03 Medical observation and evaluation for suspected diseases and conditions
R20 Disturbances of skin sensation		

Akut behandling?

Andel af pt med iskæmisk stroke, der modtager akut behandling (trombolyse og/eller trombektomi)

2019

DK 24 %

RM 26 %

2020

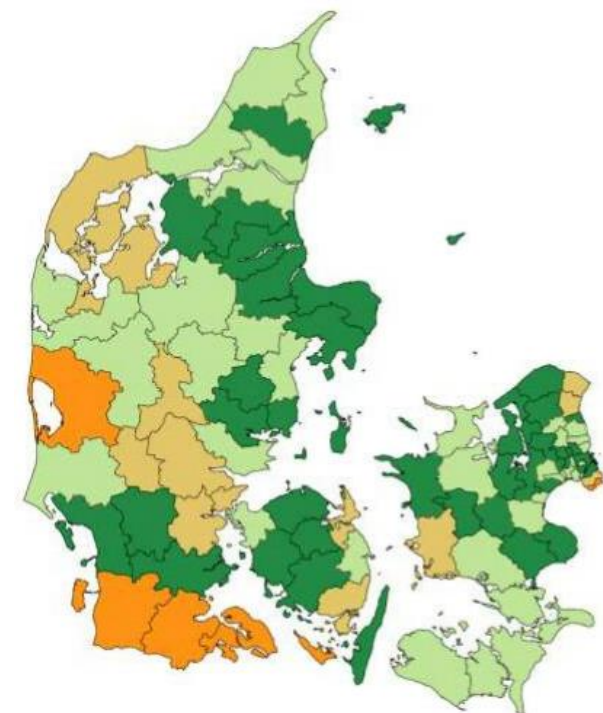
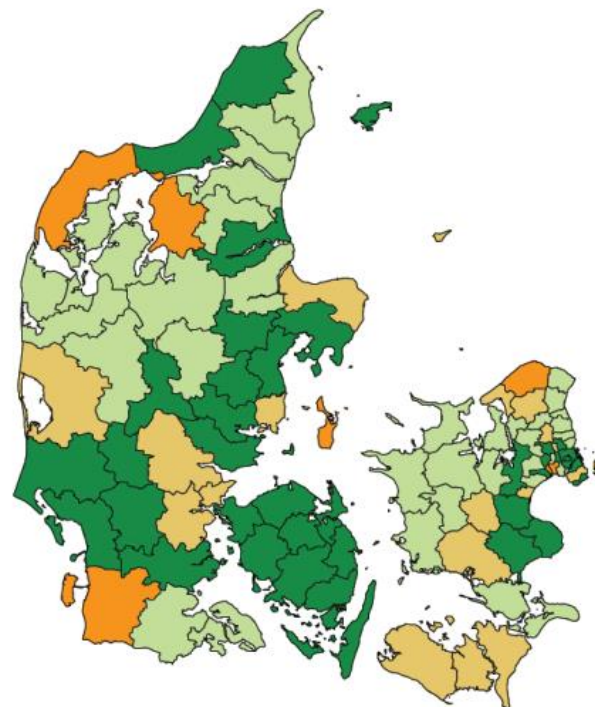
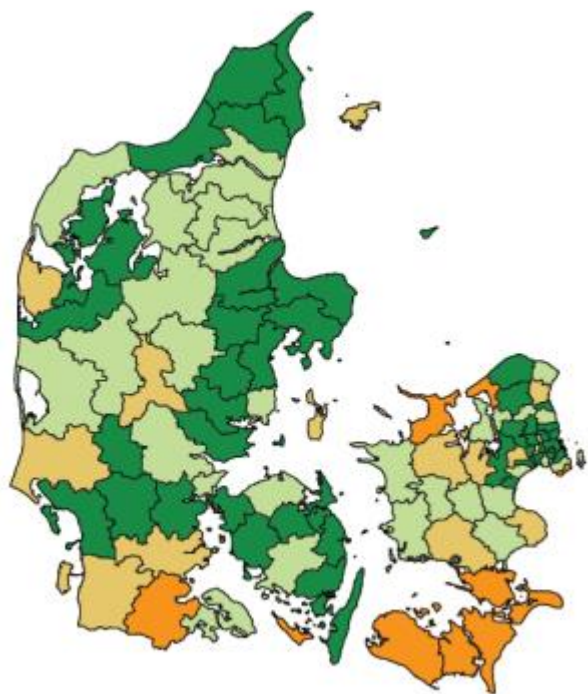
DK 24 %

RM 24 %

2021

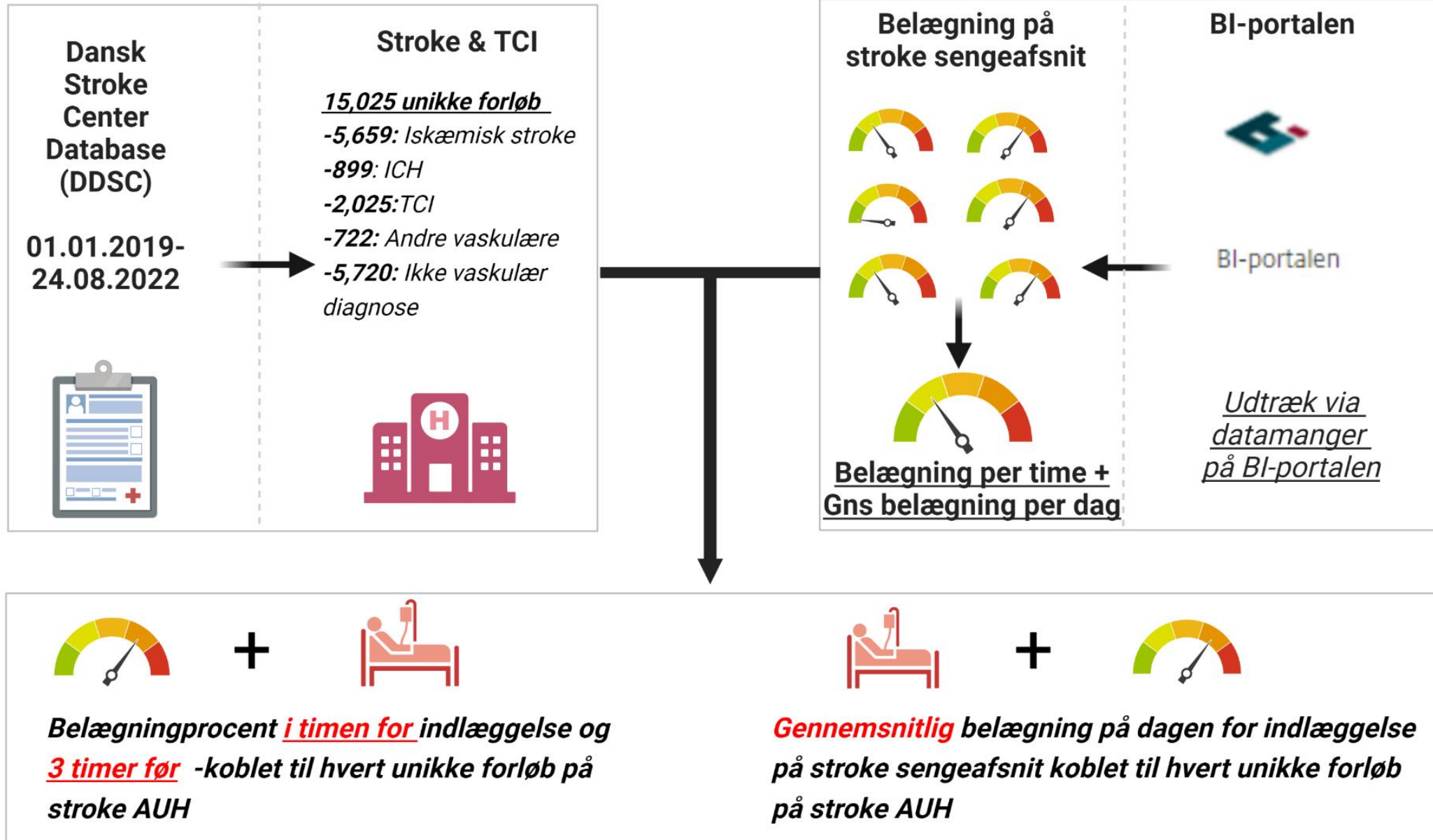
DK 23 %

RM 22 %

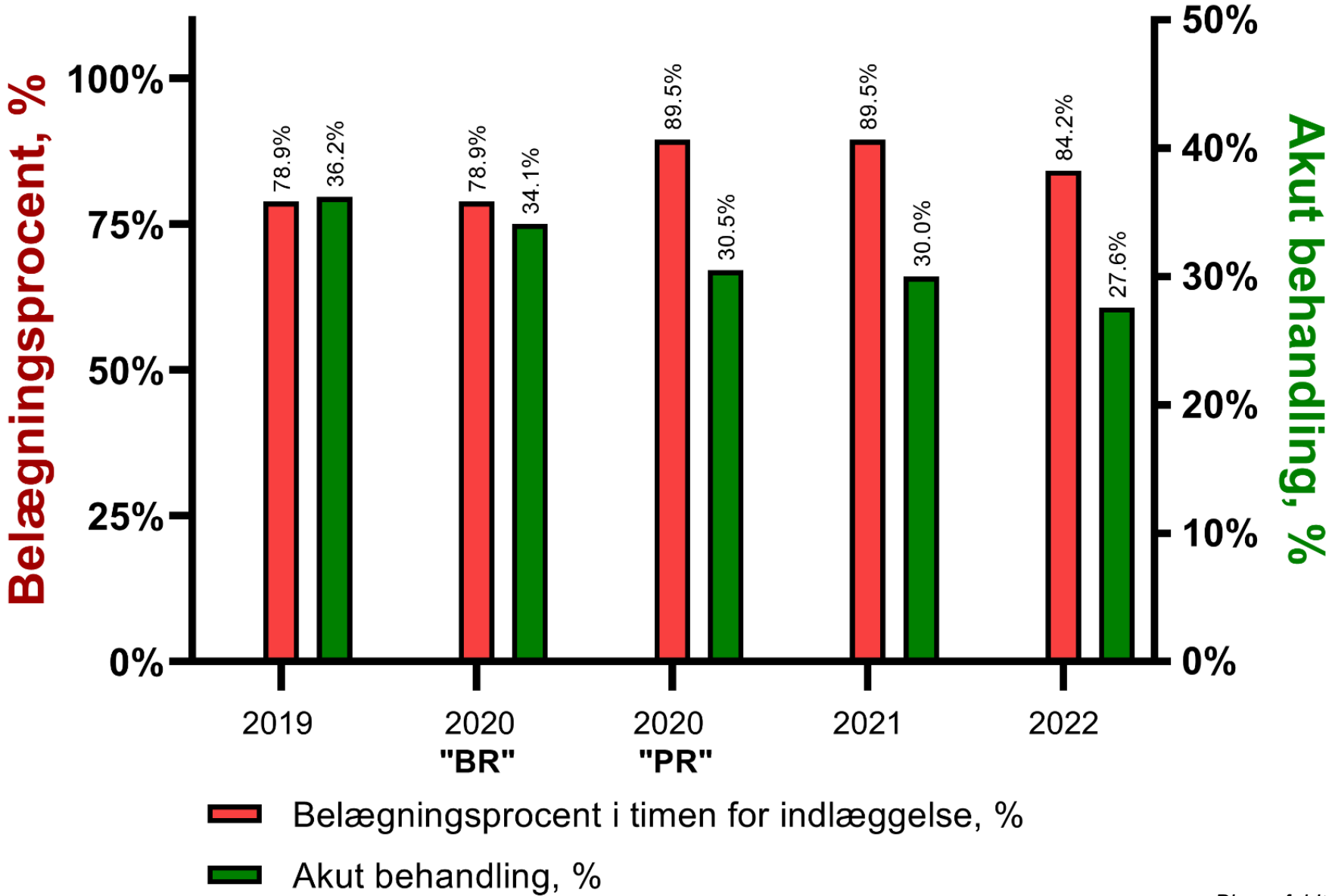


Andel 25%+ [20%;25%) [15%;20%) [0%;15%)

Metode



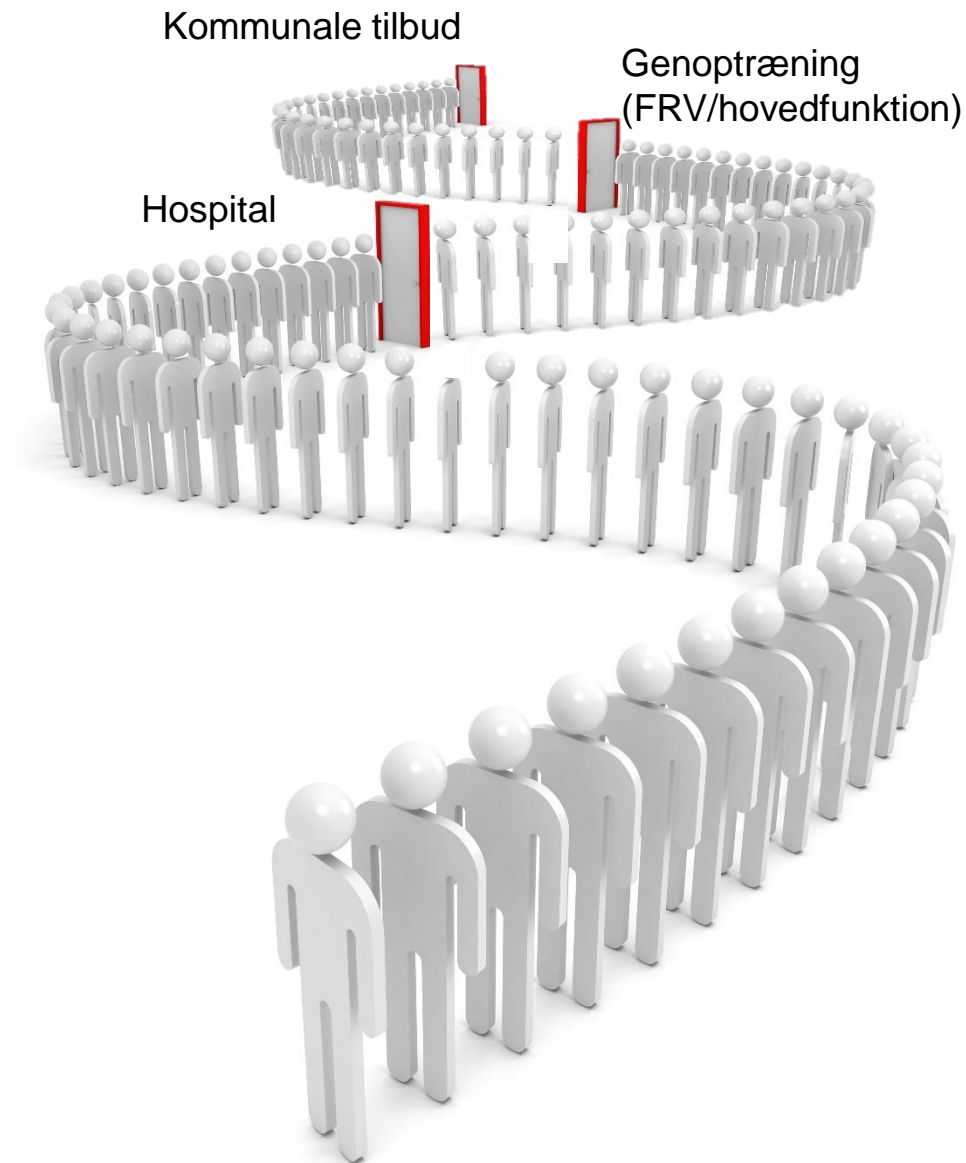
Resultater



Resultater

- Chansen for at blive indlagt på Stroke afsnit indenfor 3 timer fra symptomdebut er reduceret med 20 %, hvis belægningen er ≥85 % i timen, hvor pt bliver indlagt ($p < 0.001$)
- Chansen for at modtage trombolyse og/eller trombetomi er reduceret med 17 %, hvis belægningen er ≥85 % i timen for indlæggelse ($p = 0.007$)
- Chansen for at modtage trombolyse og/eller EVT bliver signifikant reduceret for hver procentpoint belægningen stiger ($p = 0.001$)

Kø-teori og kognitiv bias



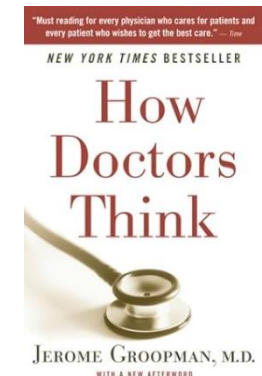
Associationer, ikke kausalitet – men et bud på en sammenhæng:

1. Atypiske symptomer, konkurrerende akutte medicinske tilstande
- +
2. Ingen ledige senge. Flere timers forestående arbejde med at finde “senge ude i huset”
- +
3. Stress, højt arbejdspress, kognitive udmattelse + ubevidste kognitive biases hos læger → **informationer ved visitation vægtes ubevidst anderledes.**

Civilian triage in the intensive care unit: The ritual of the last bed. Teres D. Critical Care Med. 1993

Fargen, K. M., Leslie-Mazwi, T. M., Chen, M. & Hirsch, J. A. Physician, know thyself: implicit and explicit decision-making for mechanical thrombectomy in stroke. J NeuroIntervent Surg 12, 952–956 (2020).

Croskerry, P. The Importance of Cognitive Errors in Diagnosis and Strategies to Minimize Them. Acad. Med. 78, (2003).



Kø-teori og kognitiv bias

Dansk matematiker, **Agner Krarup Erlang** beskrev kø teori.
"The Theory of Probabilities and Telephone Conversations" 1909



Et tæt på 100% udnyttet system er ikke effektivt

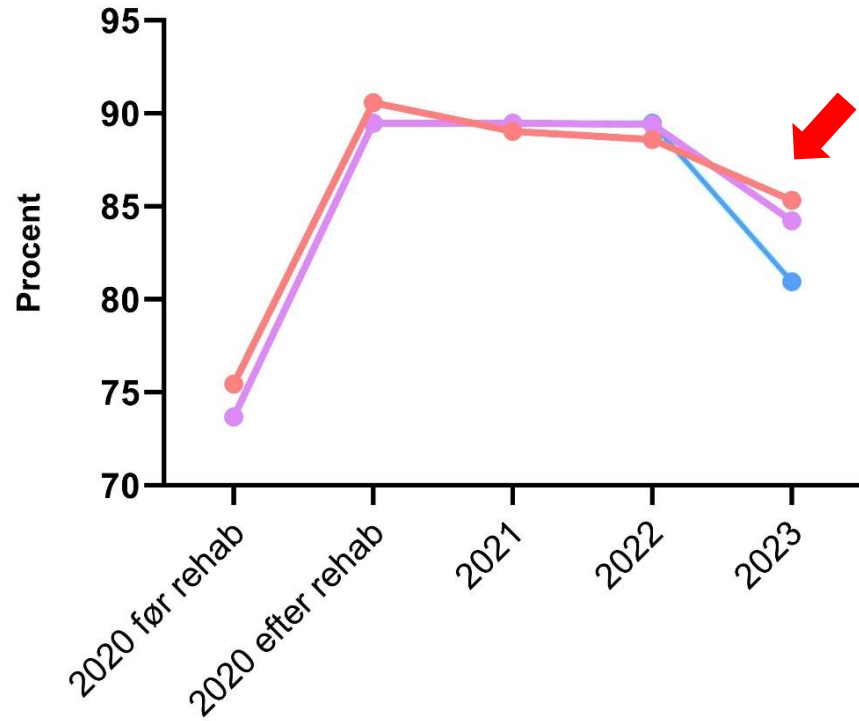
- Ventetider og “*crowding*” opstår → sengene udnyttes mindre effektivt.
- Patienter i “lånesenge” har længere indlæggelsestid, dårligere kvalitet, mindre patient tilfredshed, og højere mortalitet.
- Der er brug for “*Slack*”/overkapacitet for at være effektiv

→ **Lokal løsning:** Indtil videre 2 ekstra senge på stroke afsnittet fra Jan 2023

*Schneider et al. 2018
Bernstein et al. 2009
Zhou et al. 2012
McMurdo and Witham 2013
Conway et al. 2014*

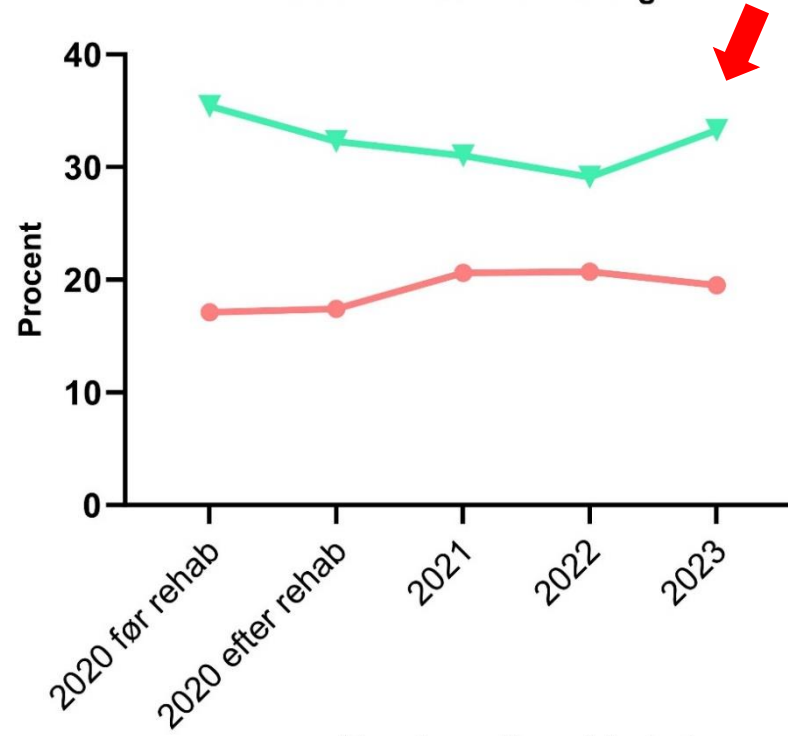
Virker det?

Belægningsprocent



- Belægningsprocent (dagsgns), %
- Belægningsprocent i timen for indlæggelse, %
- Belægningsprocent 2 timer før indlæggelse, %
- Belægningsprocent 3 timer før indlæggelse, %

Stroke - AUH - behandling



- Først modtaget i akut afdelingen, %
- Akut behandling, %

Take home

1. Brug data! – sammen med klinikerne – de kender patienterne, systemet indefra og ved hvor skoen trykker
2. Et højt udnyttet system er ikke effektivt

SHOCKWAVE TRAFFIC JAMS
RECREATED FOR FIRST TIME

Footage courtesy of
University of Nagoya,
Nagoya, Japan

Tak for opmærksomheden

Tak til samarbejdspartnere

Dorte Damgaard

Anette Rantala

Claus Ziegler Simonsen

Magnus Tambjerg Carstens

Anne Traberg-Tolboe

Bodil Holch Poulsen

Trine Tandrup