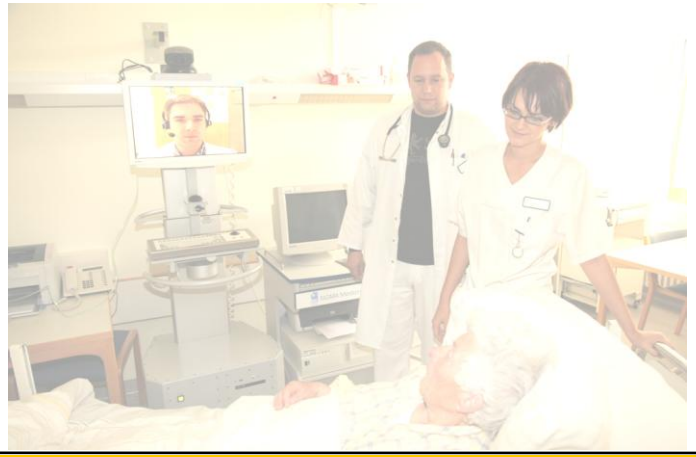


Long-term effects on medical outcome in telemedicine use

Telemedic Project for integrative Stroke Care (TEMPiS)

Dr. Gordian Hubert

TEMPiS
Telemedizinisches Projekt zur integrierten Schlaganfallversorgung in der Region Süd-Ost-Bayern

> Klinikum Harlaching

städtisches Klinikum München

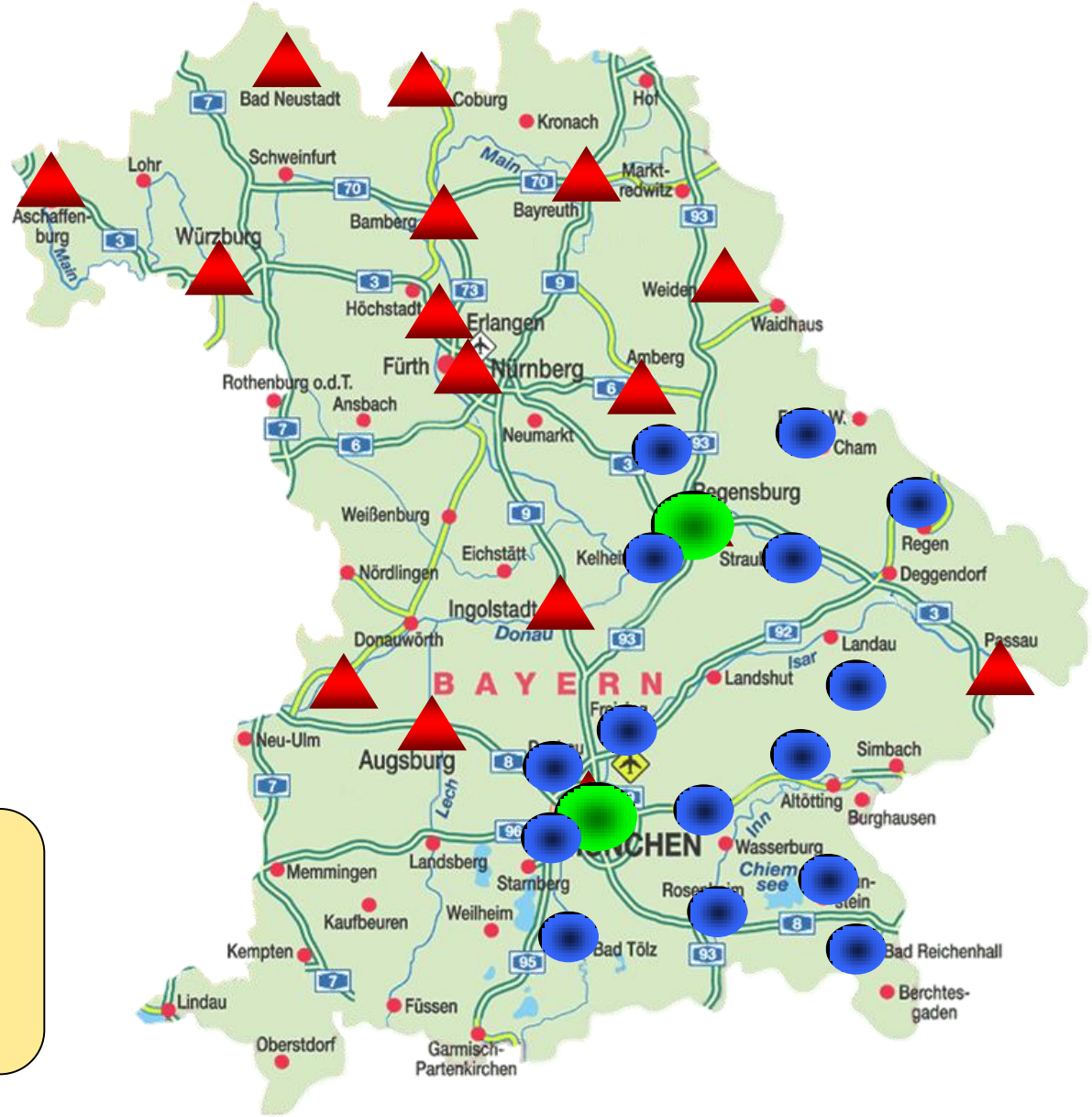
TEMPiS

> Klinikum Harlaching

networks

- teleconsultation only
- telethrombolysis network
- integrative stroke network

Stroke Units in Bavaria in 2002



Stroke Unit

Stroke Center

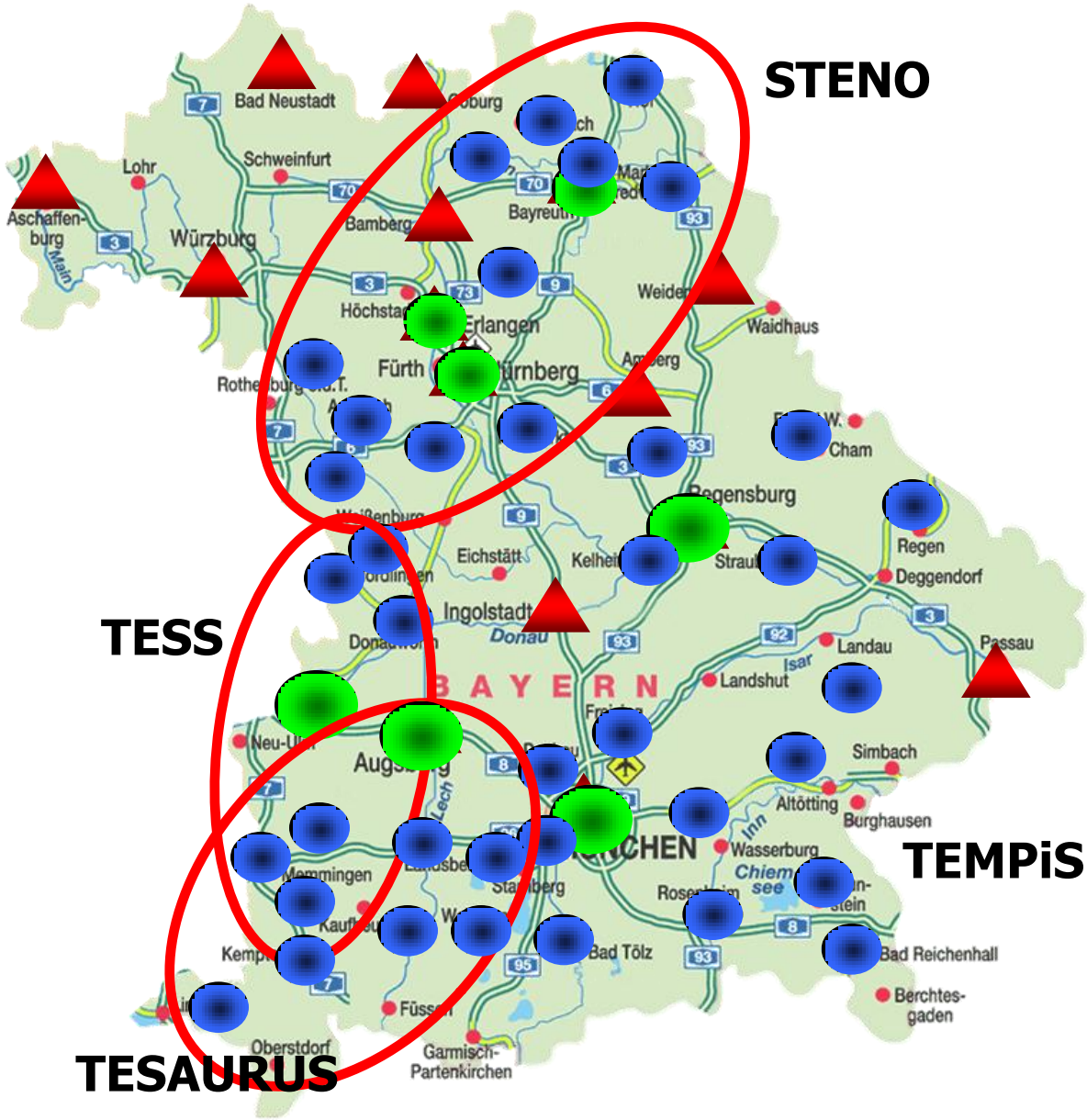
Network-Hospital

Stroke-Networks in Bavaria

Stroke Unit

Stroke Center

Network-Hospital

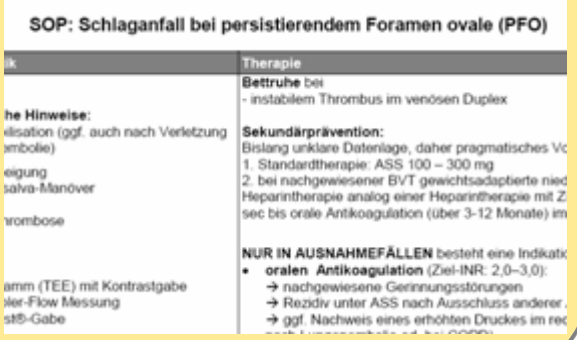


Key features of the TEMPiS-Network

Implementation of Stroke wards in each hospital

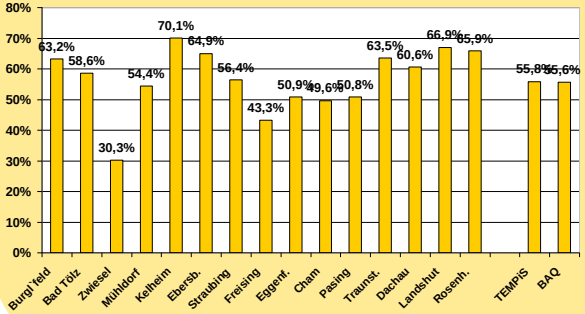
Training – center-based and onsite

Standard treatment protocols



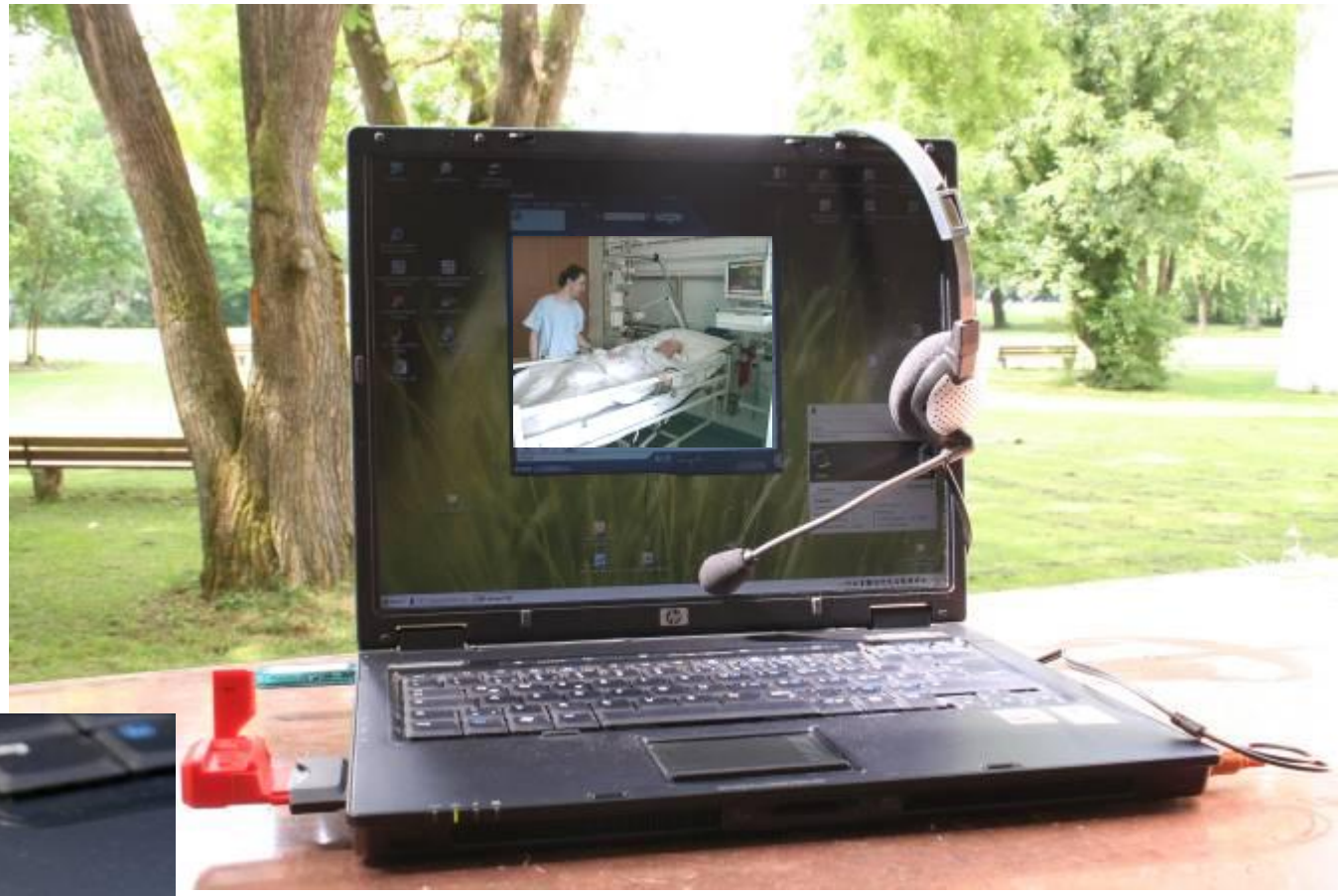
Exchange of Experience

Quality Management



Teleconsultations

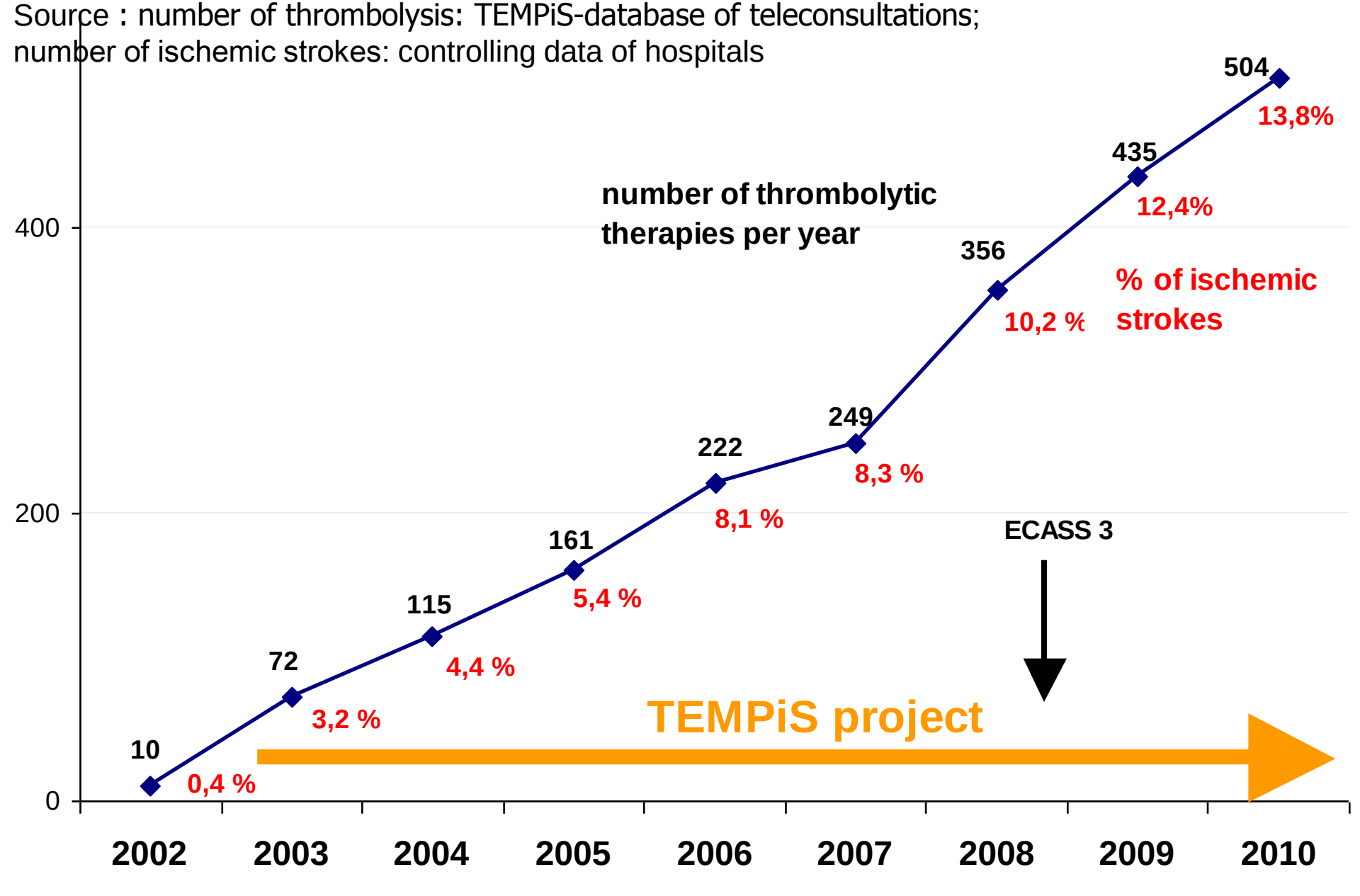
6. Teleconsultation – **mobile solution**



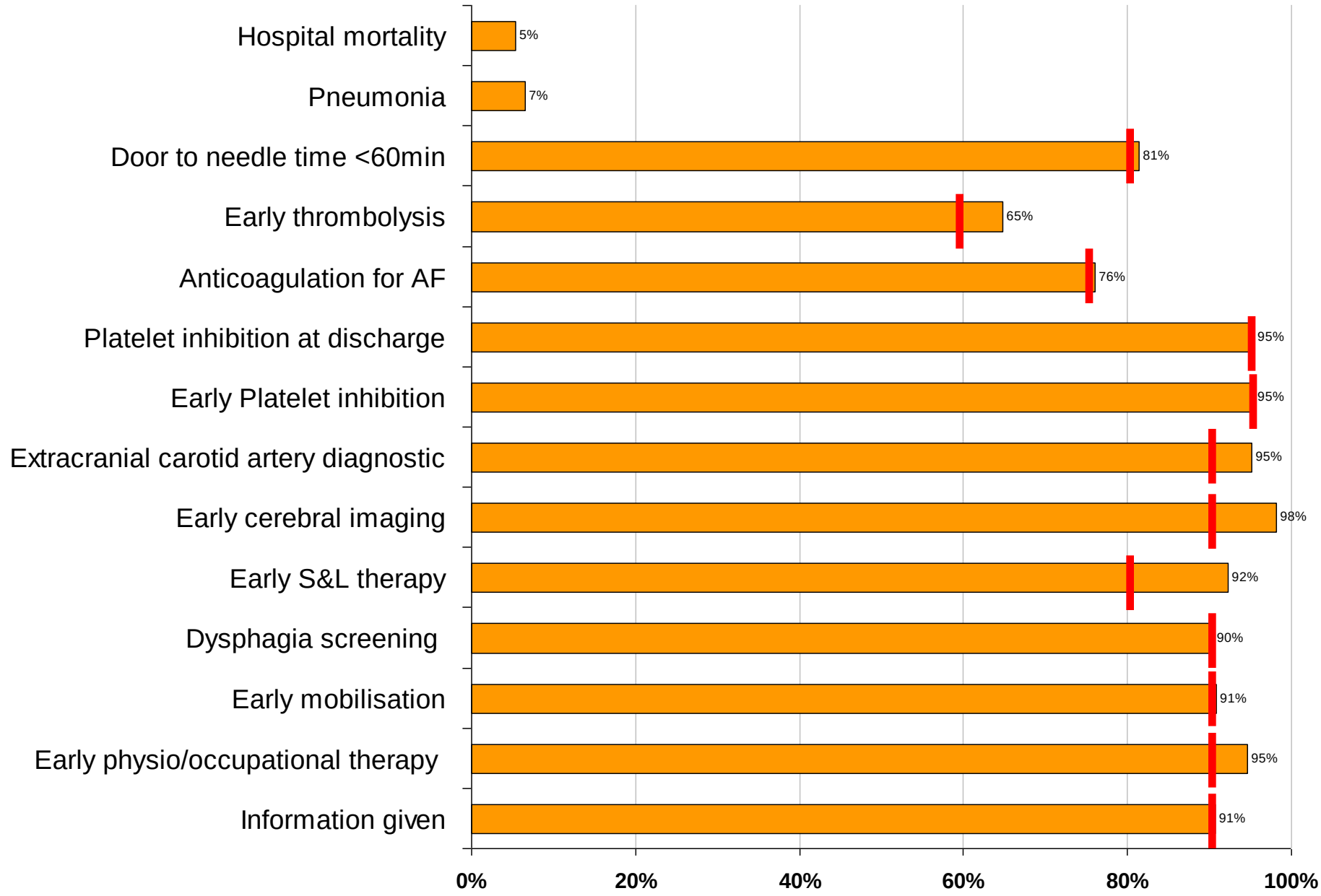
works with fast UMTS
= HSDPA (High Speed Downlink Packet Access)

rate of i.v.-thrombolysis with r-tPA

Source : number of thrombolysis: TEMPiS-database of teleconsultations;
number of ischemic strokes: controlling data of hospitals

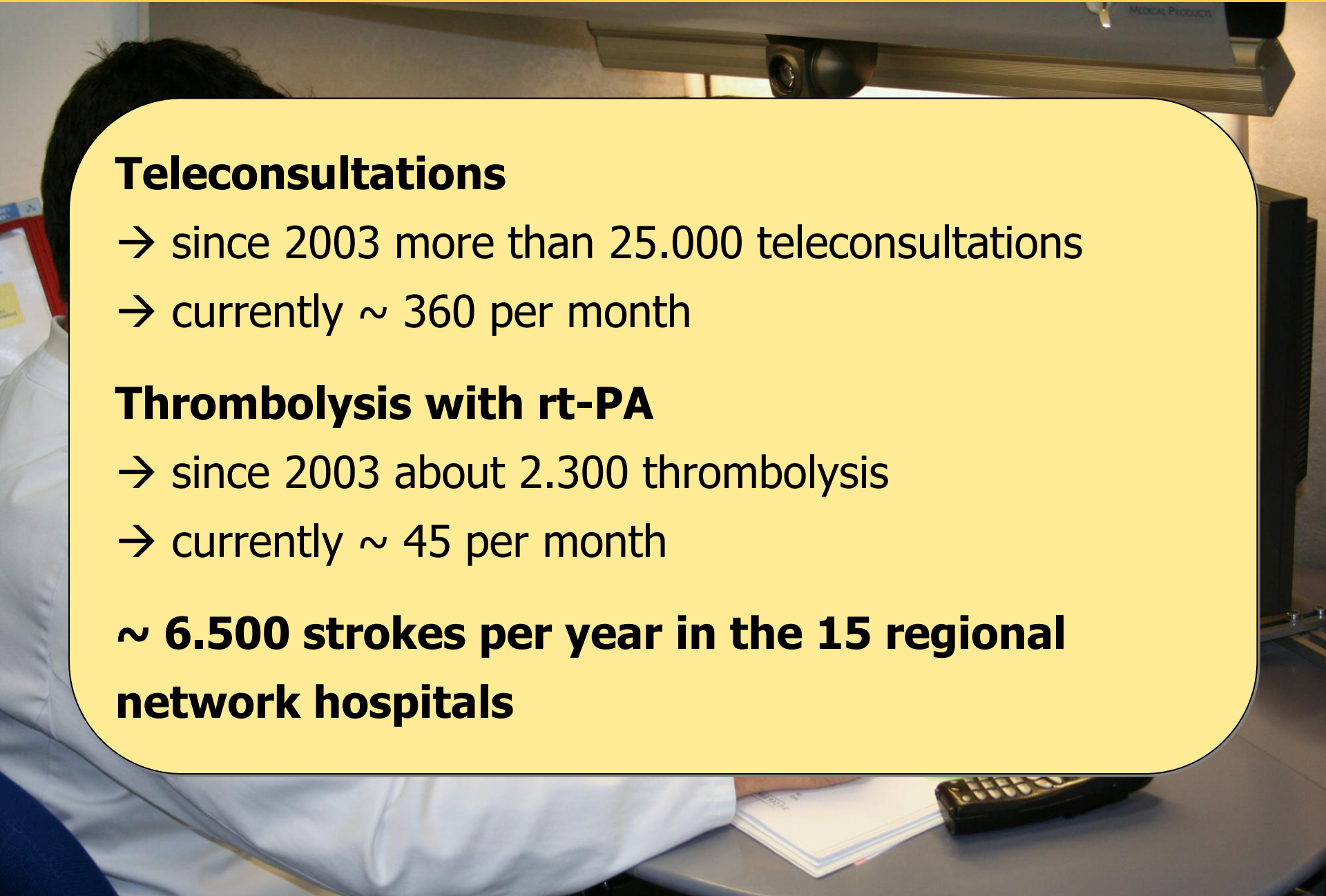


5. Quality Management



Source: BAQ; analysis for 2010

TEMPiS



Teleconsultations

→ since 2003 more than 25.000 teleconsultations

→ currently ~ 360 per month

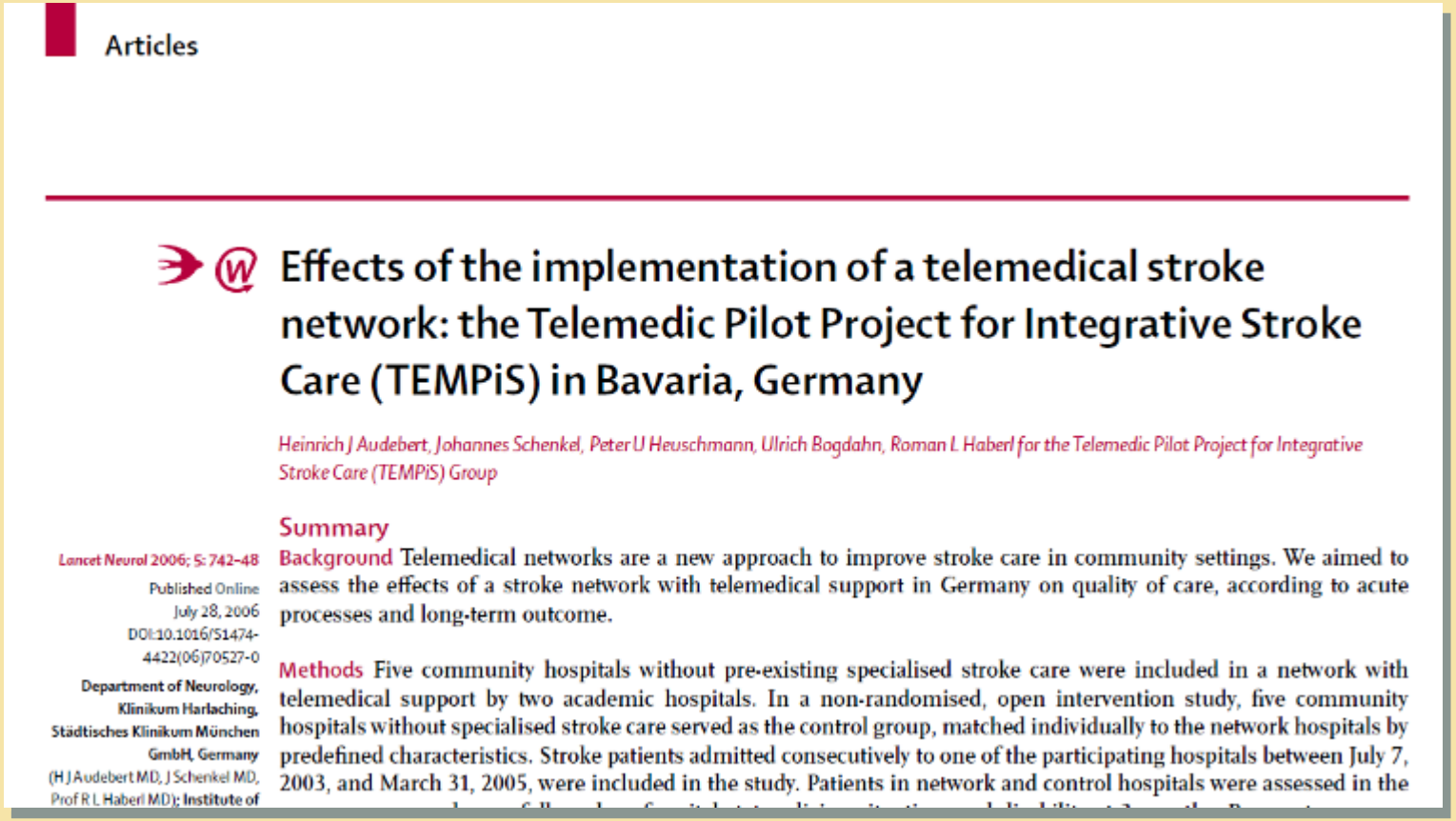
Thrombolysis with rt-PA

→ since 2003 about 2.300 thrombolysis

→ currently ~ 45 per month

~ 6.500 strokes per year in the 15 regional network hospitals

Does Telemedical Network offer benefits?



Articles

Effects of the implementation of a telemedical stroke network: the Telemedic Pilot Project for Integrative Stroke Care (TEMPiS) in Bavaria, Germany

Heinrich J Audebert, Johannes Schenkel, Peter U Heuschmann, Ulrich Bogdahn, Roman L Haberl for the Telemedic Pilot Project for Integrative Stroke Care (TEMPiS) Group

Lancet Neurol 2006; 5: 742–48
Published Online July 28, 2006
DOI:10.1016/S1474-4422(06)70527-0

Department of Neurology, Klinikum Harlaching, Städtisches Klinikum München GmbH, Germany (H J Audebert MD, J Schenkel MD, Prof R L Haberl MD); Institute of

Summary

Background Telemedical networks are a new approach to improve stroke care in community settings. We aimed to assess the effects of a stroke network with telemedical support in Germany on quality of care, according to acute processes and long-term outcome.

Methods Five community hospitals without pre-existing specialised stroke care were included in a network with telemedical support by two academic hospitals. In a non-randomised, open intervention study, five community hospitals without specialised stroke care served as the control group, matched individually to the network hospitals by predefined characteristics. Stroke patients admitted consecutively to one of the participating hospitals between July 7, 2003, and March 31, 2005, were included in the study. Patients in network and control hospitals were assessed in the

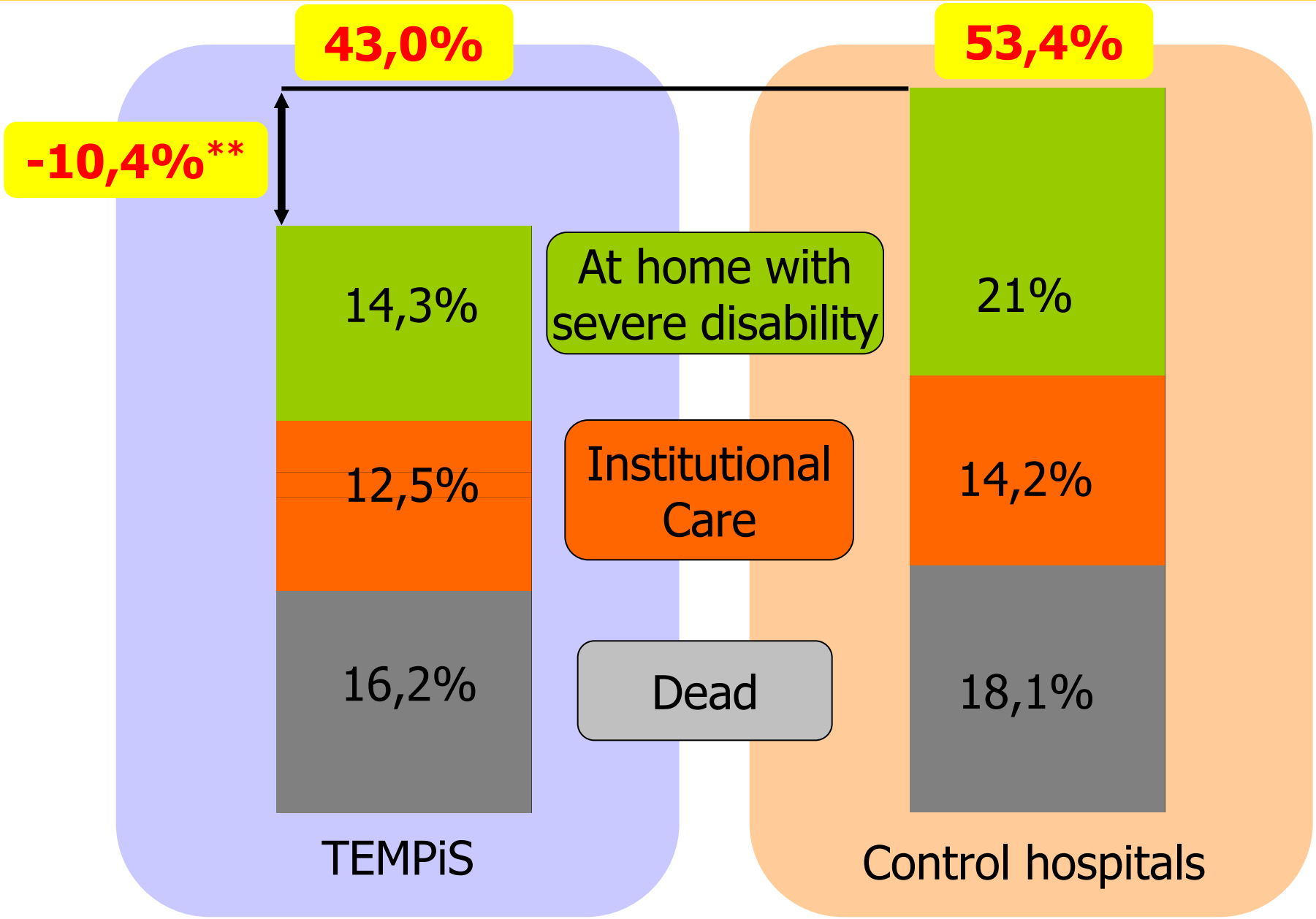
Lancet Neurology 2006

TEMPiS outcome trial

- Prospectively obtained data of 3122 stroke patients
- **Comparing**
  Outcome of patients treated in network hospitals
  to
  Outcome of patients treated in control hospitals
- **poor Outcome**
  dead *or*
  institutional care *or*
  at home with severe disability

Lancet Neurol 2006; 5: 742–48

Poor Outcome after 3 Months



Lancet Neurol 2006; 5: 742–48

Does the Network offer long-term benefits?

Long-Term Effects of Specialized Stroke Care With Telemedicine Support in Community Hospitals on Behalf of the Telemedical Project for Integrative Stroke Care (TEMPiS)

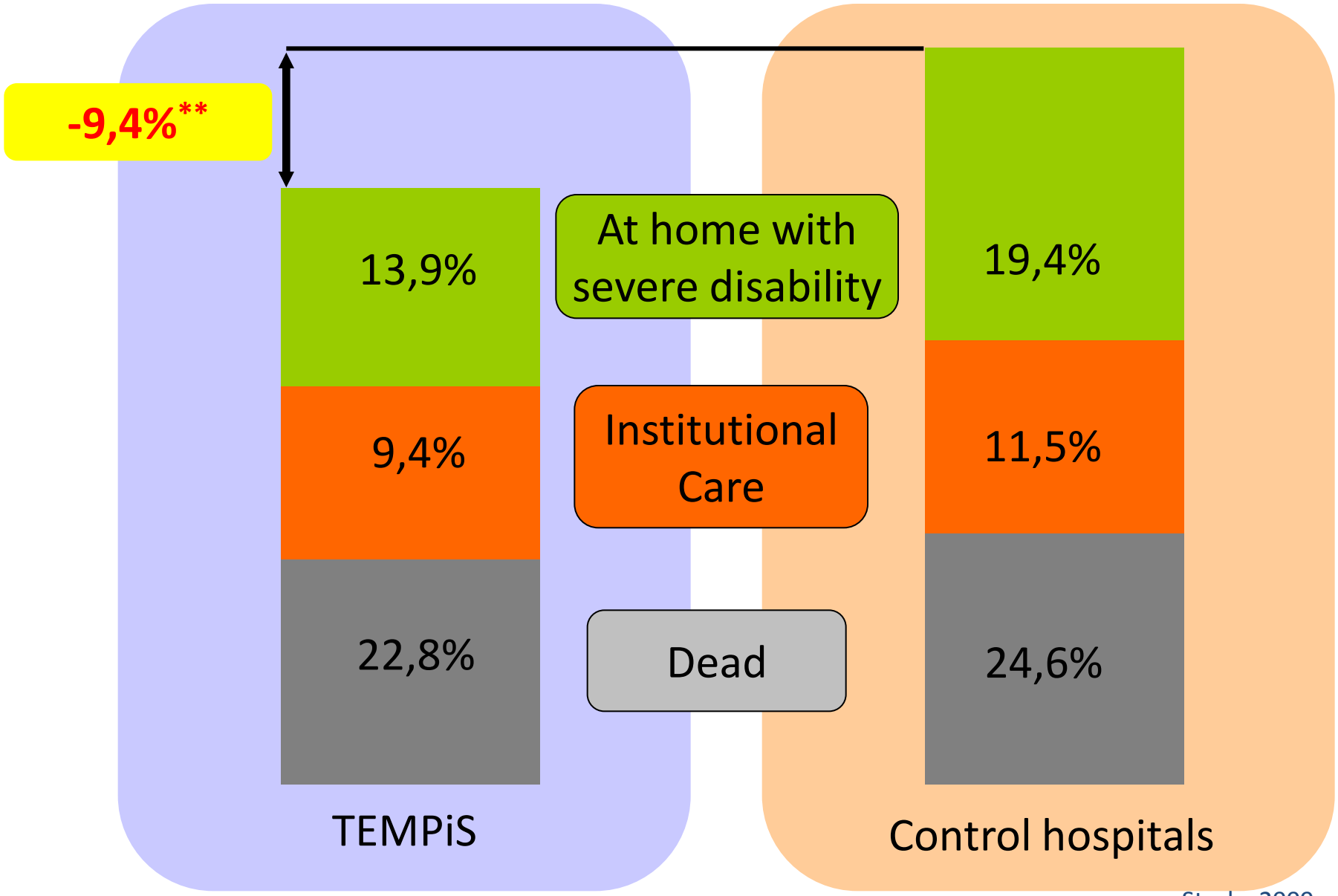
Heinrich J. Audebert, MD; Kathrin Schultes, MD; Viola Tietz, MD; Peter U. Heuschmann, MD, MPH; Ulrich Bogdahn, MD; Roman L. Haberl, MD; Johannes Schenkel, MD, MPH; Writing Committee for the Telemedical Project for Integrative Stroke Care (TEMPiS)

Background and Purpose—Stroke unit treatment is effective in reducing death and dependency after stroke but is not available in many, particularly rural, areas. The implementation of a stroke network with telemedicine support was associated with improved outcome at 3 months. We report follow-up results at 12 and 30 months after acute stroke.

Methods—Telemedical Project for Integrative Stroke Care (TEMPiS) consists of the set-up of specialized local stroke wards, continuous medical education, and telemedical consultation for patients with acute stroke by 2 stroke centers. In a prospective, nonrandomized, intervention study, 5 community hospitals participating in the network were compared with 5 matched control hospitals without specialized stroke facilities or telemedical support. All patients with consecutive ischemic or hemorrhagic stroke admitted between July 2003 and March 2005 were evaluated. Outcome "death and dependency" was defined by death, institutional care, or disability (Barthel index <60 or Rankin scale >3).

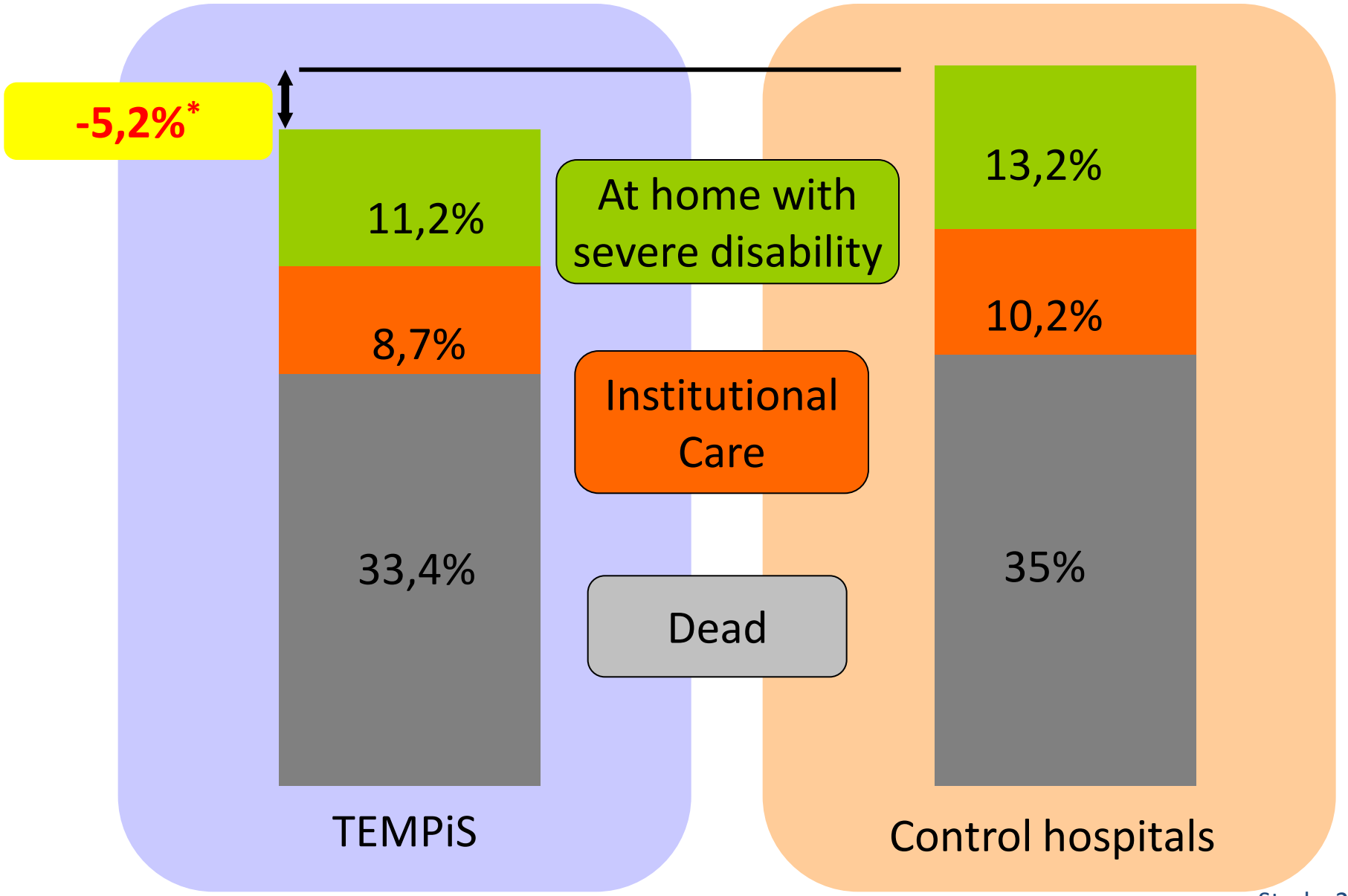
Stroke 2009

Poor Outcome after 12 Months



Stroke 2009

Poor Outcome after 30 Months



Stroke 2009

Summary – **Outcome analysis**

- The concept of this telemedical network reduces the probability of poor outcome after 3 months, 12 months and 30 months
- But: The influence of the videoconferencing has not been proven in this network

TEMPiS

- **Thank you for your attention!**