



INTERNATIONAL
SOCIETY
FOR STRATEGIC
STUDIES IN
RADIOLOGY

BREAKOUT SESSION

INTEGRATION OR SUPERSPECIALIZATION
NOVEMBER 11TH, ROTTERDAM, NL

Medical University of Vienna

Vienna General Hospital



INTEGRATION OR SUPERSPECIALIZATION

- THREE LIFE USE CASES
- DIFFERENT SCENARIOS
- INTERACTIVE
- YOUR EXPERTISE AND IDEAS?!



INTEGRATION OR SUPERSPECIALIZATION

1. NEUROINTERVENTIONS IN THE GREATER VIENNA AREA

2. IMAGING OF CANCER PATIENTS

3. LUNG CANCER SCREENING



INTEGRATION OR SUPERSPECIALIZATION

CASE 1 –HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

1. Challenges
2. Models
3. Solutions



INTEGRATION OR SUPERSPECIALIZATION

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

1. The background

Endovascular (mechanical) thrombectomy has become the treatment of choice for major stroke within a very short period of time

Summary

Background Results of initial randomised trials of endovascular treatment for ischaemic stroke, published in 2013, were neutral but limited by the selection criteria used, early-generation devices with modest efficacy, non-consecutive enrolment, and treatment delays.

Lancet Neurol 2015; 14: 846–54

The NEW ENGLAND JOURNAL of MEDICINE

2015

ORIGINAL ARTICLE

Endovascular Therapy for Ischemic Stroke with Perfusion-Imaging Selection

2015

B.C.V. Campbell, P.J. Mitchell,
B. Yan, R.J. Dowling,
M.A. Simpson, F. Miteff,
B.S. Steinfort, M. Prigling,
T. Wijeratne, T.G. Phan, W.
L. de Villiers, H. Ma,
for the

ORIGINAL ARTICLE

Randomized Assessment of Rapid Endovascular Treatment of Ischemic Stroke

M. Goyal, A.M. Demchuk,
T.G. Jovin, R.A. Willers,
W.J. Montanera, A.Y.
D. Williams, O.
C.A. Holmstedt, B.
S.-I. Sohn, R.H. S.
A. Weill, S. Sul,
T.T. Sajobi,

The **NEW ENGLAND**
JOURNAL of MEDICINE

ESTABLISHED IN 1812

JUNE 11, 2015

VOL. 372 NO. 24

Stent-Retriever Thrombectomy after Intravenous t-PA vs. t-PA Alone in Stroke

Jeffrey L. Saver, M.D., Mayank Goyal, M.D., Alain Bonafe, M.D., Hans-Christoph Diener, M.D., Ph.D., Elad I. Levy, M.D.,
Vitor M. Pereira, M.D., Gregory W. Albers, M.D., Christophe Cognard, M.D., David J. Cohen, M.D.,
Werner Hacke, M.D., Ph.D., Olav Jansen, M.D., Ph.D., Tudor G. Jovin, M.D., Heinrich P. Mattle, M.D.,
Raul G. Nogueira, M.D., Adnan H. Siddiqui, M.D., Ph.D., Dileep R. Yavagal, M.D., Blaise W. Baxter, M.D.,
Thomas G. Devlin, M.D., Ph.D., Demetrius K. Lopes, M.D., Vivek K. Reddy, M.D., Richard du Mesnil de Rochemont, M.D.,
Oliver C. Singer, M.D., and Reza Jahan, M.D., for the SWIFT PRIME Investigators*

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

The NEW ENGLAND JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

JANUARY 4, 2018

VOL. 378 NO. 1

Thrombectomy 6 to 24 Hours after Stroke with a Mismatch between Deficit and Infarct

R.G. Nogueira, A.P. Jadhav, D.C. Haussen, A. Bonafe, R.F. Budzik, P. Bhuva, D.R. Yavagal, M. Ribo, C. Cognard,

- Modification of time window has increased the number of patients eligible for endovascular treatment

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

1. The challenge

- Greater Vienna area: \approx 3. million inhabitants, \approx 7500 strokes / yr,
 \approx 250-300 cerebral aneurisms / yr
- Current inclusion guidelines: >700 thrombectomies / yr expected
180-200 aneurism coilings / yr
- Overwhelms current infrastructure and service models:
 - Three neurointerventionalists in neurosurgery (aneurisms only)
 - Eight interventional radiologists in different hospitals (strokes only)
- No comprehensive superspecialized neurointerventional service and training

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

2. Options / models in discussion to establish comprehensive endovascular interventional service within short period of time!
 - Continue service with gaps in acute endovascular 24/7 stroke and aneurism treatment & train superspecialized neurointerventionalists
 - Recruit well trained superspecialized neurointerventionalists
 - Integration model with “across the specialty border training” of experienced interventionalists and neurosurgeons to establish a comprehensive 24/7 service for endovascular stroke and aneurism treatment

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

2. Options / models: Continue service with gaps in acute endovascular 24/7 stroke and aneurism treatment & train superspecialized neurointerventionalists

Interventional training for diagnostic neuroradiologist: desirable model but will take 18-24 months for one trainee

BSNR training guidance for mechanical thrombectomy

Guidance for practitioners seeking training to participate in an acute ischaemic stroke thrombectomy service in the UK: a response to level-1 evidence of the benefit of mechanical thrombectomy for patients with acute ischaemic stroke and proven large vessel occlusion

Guidance produced by members of the UK Neurointerventional Group and British Society of Neuroradiologists on behalf of the Royal College of Radiology

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 – HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

2. Options / models: Recruit well trained superspecialized neurointerventionalists

- Gave up after several attempts



Market availability

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 –HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

2. Options / models: Integration model with “across the specialty border training” of experienced interventionalists and neurosurgeons to establish a comprehensive 24/7 service for endovascular stroke and aneurism treatment

- One neurointervention center for strokes and aneurisms
- Collaboration of neurosurgeons and radiologists
- Responsible for endovascular interventional care
- Responsible for endovascular interventional training
- Integration of physicians from other hospitals
- Disadvantage: temporary gaps in superspecialized service

INTEGRATION OR SUPERSPECIALIZATION

CASE 1 –HOW TO ENSURE NEUROINTERVENTIONAL SERVICE IN A GREATER CAPITAL CITY AREA

3. SOLUTION?



INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE: IMAGING IN SPECIALIZED CENTERS VERSUS INTEGRATED SERVICES INCLUDING EXTRAMURAL IMAGING CENTERS



INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

1. The challenge

- 85-95% of oncologic patients are diagnosed, imaged and treated outside of specialized oncologic centers
- Heterogeneous protocols, and imaging and reading standards
- Heterogeneous quality of imaging studies
- Specialized imaging services not widely available
- Results in problems / increased workload in tumorboards (quality, protocols, follow-up exams, need for re-imaging), administrative difficulties (reimbursement issues), and medico-legal questions

INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

2. Options

- a. Leave quality adjustments and homogenization of imaging approaches to the market
- b. Create more stringent and effective patient pathways (insurances, gatekeeper models)
- c. Create quality networks between specialized centers,³ community hospitals and private imaging centers

INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

2. Options – a) Leave quality adjustments and homogenization of imaging approaches to the market

- No systematic steering measures – model relies on individual or practice group initiatives (CME, training and service)
- Continuous but slow improvement of imaging services (gap will likely widen)
- Common quality standards will likely not be reached

INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

2. Options – b) Create more stringent and effective patient pathways (insurances, gatekeeper models)

- Requires transparent quality network and outcome parameters
- Individual patient choice vs pathway management
- Access to the best / most appropriate imaging method
- Reimbursement models and patient compliance

INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

2. Options – c) Create quality network between specialized centers, community hospitals and private imaging centers

- „Semivoluntary“ model
- Participants have to accept certain quality parameters (imaging equipment, protocols, assessment criteria, reporting, clinical trials)
- Benefits: Higher caseload, homogeneous standards in case conferences and tumor boards, volume based competency
- Regular audits to check / maintain / improve quality
- Challenge: Quality currently not linked to reimbursement

INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

3. Solution?



INTEGRATION OR SUPERSPECIALIZATION

CASE 2 – HOW TO PROVIDE OPTIMAL CANCER IMAGING SERVICE

3. Proposed solution: CCCV (work in progress)

- Comprehensive Cancer Center Vienna network
- Standardized imaging, diagnostic and treatment protocols
- Stratification of access to network knots
- Challenge: Reimbursement by social insurances does not yet compensate for elaborate imaging protocols
- Improved access to up-to-date treatment protocols yields substantially higher costs

INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO
SECURE QUALITY OF DIAGNOSTIC WORK-UP AND
THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

CHALLENGE INVOLVING RADIOLOGY,
PULMONOLOGY, AND THORACIC SURGERY



INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO SECURE QUALITY OF DIAGNOSTIC WORK-UP AND THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

1. The background: Mortality reduction (21-61%) in large international trials (NLST, NELSON, MILD) was achieved through rigorous quality criteria and through screening procedures performed only in specialized centers following well-defined protocols

Guidelines and Quality Criteria in NLST, NELSON and MILD

- Valid only for the risk and age groups screened at these trials
- For these groups, the benefits outweigh the risks of harm
- „Screening should only be carried out in centers of excellence with knowledgeable, experienced and well trained staff, such that the number of false positive screenings and resulting invasive diagnostic tests is kept to a minimum“

- Surgical mortality in NLST subjects undergoing thoracic surgery was 1% compared with the national average of 3-5%

Tanoue, Am J Resp Crit Care Med; 2015; 191: 19

Silvestri, Chest; 1998; 114: 675

- It is not certain that the NLST parcimony in invasive testing will be broadly generalizable (in other screening settings or in community based screening)

Tanoue, Am J Resp Crit Care Med; 2015; 191: 19

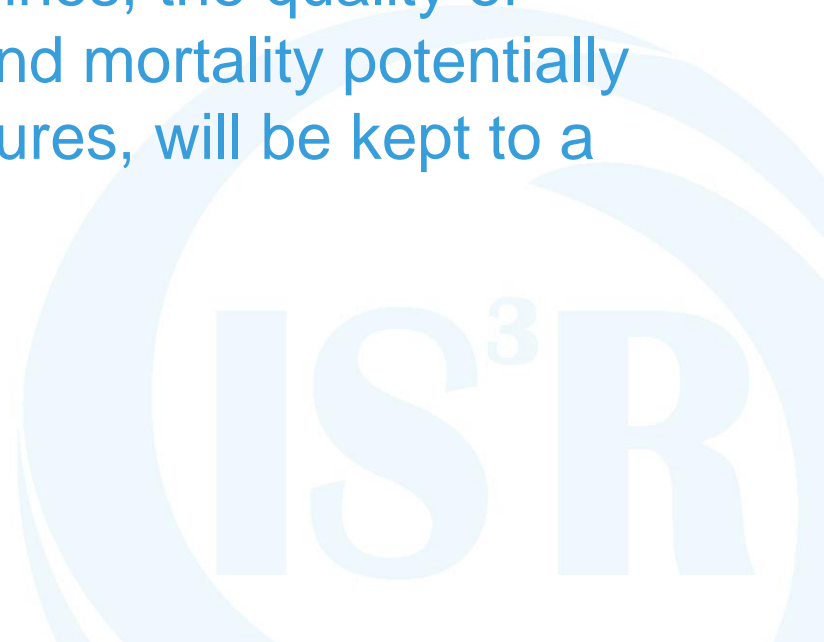
Potential Harms and Complications (NLST)

- **Major complications** occurred during diagnostic evaluation in **3.3%** of participants in the LDCT group, **almost exclusively after invasive procedures**
- **Death** (within two months) following a diagnostic evaluation of a detected finding occurred in **0.8%** of individuals
- But only in **0.02%**, when dx procedure was an imaging test
- **Noninvasive work-up of detected lesions**

INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO SECURE QUALITY OF DIAGNOSTIC WORK-UP AND THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

- The challenge: How to ensure that in roll out screening models, the adherence to guidelines, the quality of procedures, and the morbidity and mortality potentially associated with invasive procedures, will be kept to a minimum



INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO SECURE QUALITY OF DIAGNOSTIC WORK-UP AND THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

Options – a) Restrict screening and work-up to a few audited (super)specialized centers

- Will secure quality and adherence to guidelines
- Will require major regulatory efforts
- Model will (has already) come under fire from radiologists in private practice, and from thoracic surgeons

INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO SECURE QUALITY OF DIAGNOSTIC WORK-UP AND THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

Options – b) Open screening to all applicants fulfilling predefined criteria

- May not secure quality and adherence to guidelines
- Difficult to manage (number of participating institutions, entry criteria, audits, outcome, data)
- Work-up / assessment of positive findings
- Model did not work in breast cancer screening in Austria
- Happy radiologists and thoracic surgeons (private practice)

INTEGRATION OR SUPERSPECIALIZATION

CASE 3 – LUNG CANCER SCREENING– HOW TO SECURE QUALITY OF DIAGNOSTIC WORK-UP AND THUS, THE BENEFIT FOR SCREENED INDIVIDUALS

Solution?



THANK YOU!