Development of Czech National Stroke Guidelines


European JBI symposium of Evidence-Based Healthcare in Clinical Practice Guidelines, Decision making process and Evidence synthesis in the Czech Republic, Brno, 12th – 14th December 2018
Disclosure

– I have no conflicts of interest
Development of Czech National Stroke Guidelines

WHY WE DID WHAT WE DID?
YLLs = years of life lost

<table>
<thead>
<tr>
<th>Leading causes 1990</th>
<th>Leading causes 2005</th>
<th>Leading causes 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Lower respiratory infections</td>
<td>1 Ischaemic heart disease</td>
<td>1 Ischaemic heart disease</td>
</tr>
<tr>
<td>2 Neonatal preterm birth complications</td>
<td>2 Lower respiratory infections</td>
<td>2 Cerebrovascular disease</td>
</tr>
<tr>
<td>3 Diarrhoeal diseases</td>
<td>3 Cerebrovascular disease</td>
<td>3 Lower respiratory infections</td>
</tr>
<tr>
<td>4 Ischaemic heart disease</td>
<td>4 HIV/AIDS</td>
<td>4 Neonatal preterm birth complications</td>
</tr>
<tr>
<td>5 Cerebrovascular disease</td>
<td>5 Neonatal preterm birth complications</td>
<td>5 Diarrhoeal diseases</td>
</tr>
<tr>
<td>6 Neonatal encephalopathy</td>
<td>6 Diarrhoeal diseases</td>
<td>6 Neonatal encephalopathy</td>
</tr>
<tr>
<td>7 Malaria</td>
<td>7 Malaria</td>
<td>7 HIV/AIDS</td>
</tr>
<tr>
<td>8 Measles</td>
<td>8 Neonatal encephalopathy</td>
<td>8 Road injuries</td>
</tr>
<tr>
<td>9 Congenital anomalies</td>
<td>9 Road injuries</td>
<td>9 Malaria</td>
</tr>
<tr>
<td>10 Road injuries</td>
<td>10 COPD</td>
<td>10 COPD</td>
</tr>
</tbody>
</table>

1990

Communicable, maternal, neonatal, nutritional

Non-communicable disease

Injuries

Masaryk University
GRADE Centre
### Leading causes 1990

- 1. Lower respiratory infections
- 2. Neonatal preterm birth complications
- 3. Diarrhoeal diseases
- 4. Ischaemic heart disease
- 5. Cerebrovascular disease
- 6. HIV/AIDS
- 7. Malaria
- 8. Measles
- 9. Neonatal encephalopathy
- 10. Congenital anomalies
- 11. Road injuries

### Leading causes 2005

- 1. Ischaemic heart disease
- 2. Lower respiratory infections
- 3. Cerebrovascular disease
- 4. HIV/AIDS
- 5. Neonatal preterm birth complications
- 6. Diarrhoeal diseases
- 7. Malaria
- 8. Neonatal encephalopathy
- 9. Road injuries
- 10. COPD

### Leading causes 2015

- 1. Ischaemic heart disease
- 2. Cerebrovascular disease
- 3. Lower respiratory infections
- 4. Neonatal preterm birth complications
- 5. Diarrhoeal diseases
- 6. Neonatal encephalopathy
- 7. HIV/AIDS
- 8. Road injuries
- 9. Malaria
- 10. COPD

### % change

<table>
<thead>
<tr>
<th>Year</th>
<th>Lower respiratory infections</th>
<th>Neonatal preterm birth complications</th>
<th>Diarrhoeal diseases</th>
<th>Ischaemic heart disease</th>
<th>Cerebrovascular disease</th>
<th>HIV/AIDS</th>
<th>Ne...</th>
<th>COPD</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td>-25</td>
<td>-37</td>
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<td>-37</td>
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<td>-4</td>
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</tbody>
</table>

### Median all-age years lost

<table>
<thead>
<tr>
<th>Year</th>
<th>Lower respiratory infections</th>
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<td>-15</td>
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<td>-40</td>
<td>-7</td>
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</table>

### Age-standardized % change

<table>
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<tr>
<th>Year</th>
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<th>Neonatal preterm birth complications</th>
<th>Diarrhoeal diseases</th>
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<td>458.7</td>
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</table>

**YLLs = years of life lost**

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**Masaryk University GRADE Centre**

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**2017**

- **Non-communicable disease**
- **Communicable, maternal, neonatal, nutritional**
- **Injuries**

---

**MUNI MED**
### Leading ten causes of YLLs

<table>
<thead>
<tr>
<th>Region</th>
<th>Leading Cause</th>
<th>YLL Rate</th>
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<tr>
<td>Global</td>
<td>IHD</td>
<td>0.98</td>
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<tr>
<td></td>
<td>Stroke</td>
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<tr>
<td></td>
<td>LRI</td>
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<tr>
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<td>NN preterm</td>
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<tr>
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<tr>
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<td>HIV</td>
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<tr>
<td>High SDI</td>
<td>IHD</td>
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<tr>
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<td></td>
<td>Lung C</td>
<td>1.08</td>
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<tr>
<td></td>
<td>Self-harm</td>
<td>0.94</td>
</tr>
<tr>
<td></td>
<td>Alzheimer's</td>
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<tr>
<td></td>
<td>LRI</td>
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<tr>
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<td>Colorect C</td>
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<td>High-middle SDI</td>
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<td>Stroke</td>
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<td>Road injuries</td>
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<td>Road injuries</td>
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<td>COPD</td>
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<td>NN preterm</td>
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<td></td>
<td>Malaria</td>
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<td>Stroke</td>
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<td>Alzheimer's</td>
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<td>Self-harm</td>
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<tr>
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<td>1.46</td>
</tr>
<tr>
<td></td>
<td>LRI</td>
<td>0.75</td>
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</table>
Big black or big white hole
LEFT or RIGHT

BLACK or WHITE
TYPES OF STOKES

- Ischaemic stroke: 88%
- Cryptogenic: 30%
- Cardiac embolism: 20%
- Atherosclerotic cerebrovascular disease: 20%
- Small vessel disease “lacunes”: 25%
- Haemorrhagic: 12%
- Other: 5%
MANAGEMENT OF ISCHAEMIC STROKE OR TIA
RECANALISATION
NEUROPROTECTION
SECONDARY PREVENTION
MANAGEMENT OF COMPLICATIONS
NEUROREPAIR
PRIMARY PREVENTION
SECONDARY PREVENTION
is
RECANALISATION
NEUROPROTECTION
SECONDARY PREVENTION
MANAGEMENT OF COMPLICATIONS
NEUROREPAIR
PRIMARY PREVENTION
TYPES AND CAUSES OF STOKES

- Ischaemic stroke: 88%
- Cardiac embolism: 20%
- Small vessel disease: 20%
- "Lacunes": 25%
- Atherosclerotic cerebrovascular disease: 20%
- Haemorrhagic: 12%
- Cryptogenic: 30%
- Other: 5%
Atrial Fibrillation Is the Most Common Cause of Cardioembolic Ischemic Stroke

Cardiac Diseases Leading to Cardioembolic Events

- Atrial fibrillation: 50%
- Ventricular thrombus: 15%
- Valvular heart disease: 15%
- Structural heart defects or tumors: 20%
Atrial fibrillation → cause of cardioembolic ischaemic stroke
Adjusted mortality in patients post-ischemic stroke

- AFib (n=6842)
- No AFib (n=20,118)

<table>
<thead>
<tr>
<th>Time</th>
<th>AFib Proportion (%)</th>
<th>No AFib Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 day</td>
<td>14.1</td>
<td>10.9</td>
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<tr>
<td>90 day</td>
<td>20.9</td>
<td>14.7</td>
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<tr>
<td>1 year</td>
<td>26.7</td>
<td>23.1</td>
</tr>
</tbody>
</table>

Annual mortality rate post-ischemic stroke

- AFib (n=869)
- No AFib (n=2661)

Atrial fibrillation → cause of cardioembolic ischaemic stroke
1. Direct oral anticoagulants
2. VITAMIN K ANTAGONISTS

Since 1948
2. Vitamin k antagonists
WHY WE DID WHAT WE DID?
HIGH PREVALENCE SEVERE CONSEQUENCES
• STROKE

ISCHAEMIC STROKE
• CARDIOEMBOLIC ATRIAL FIBRILLATION

PRIMARY & SECONDARY PREVENTION
• ANTICOAGULANTS
Clinical practice guidelines development

YESTERDAY ... TODAY ... TOMORROW

... from 1990’s

> 2000 CPG’s

> 300 CPG’s

... to the 21st century
More systematic approach was needed.
Six topics for pilot guidelines development

- Cardiovascular
  - ACS
- Neurology
  - Stroke
- Diabetes Mellitus
- Oncology
  - Colorectal CA
- Haematology
  - CLL
- One Day Surgery
Process of guideline development

1. Planning and preparation
2. Development
3. Dissemination – publication
4. Evaluation and update
### Planning and preparation phase – guideline development group

**Guarantor**

Prof J Bednarik, *President of the Czech Neurological Society*

**Authors**

- Dr A Tomek
- Prof M Bar
- Prof D Sanak
- Dr J Neumann

**Stroke neurologists**

- Dr A Tomek
- Prof M Bar
- Prof D Sanak
- Dr J Neumann

**Methodologists**

- Dr R Licenik
- Dr T Necas
- Dr P Burilova
### Planning and preparation phase – multidisciplinary panel

<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiologist</td>
<td>Prof M Taborsky</td>
</tr>
<tr>
<td>President of the Czech Society of Cardiology</td>
<td></td>
</tr>
<tr>
<td>Clinical pharmacologist</td>
<td>Dr J Stojil</td>
</tr>
<tr>
<td>GP, general internal and emergency medicine</td>
<td>Dr D Stoszek</td>
</tr>
<tr>
<td>Non-health care professional; researcher, immunologist</td>
<td>Prof V Horejsi</td>
</tr>
</tbody>
</table>
Development phase
– health question determination 1

P: Adult patients with cardiembolic stroke

I: Anticoagulation

C: No treatment

O: Mortality, hospitalization, stroke recurrence, haemorrhagic complications
<table>
<thead>
<tr>
<th>P</th>
<th>Adult patients with cardiembolic stroke and non-valvular atrial fibrillation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Direct oral anticoagulants</td>
</tr>
<tr>
<td>C</td>
<td>Warfarin</td>
</tr>
<tr>
<td>O</td>
<td>Ischaemic stroke, systemic embolisation, major haemorrhage</td>
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Development phase
– health question determination 3

<table>
<thead>
<tr>
<th>P</th>
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<tr>
<td>I</td>
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<tr>
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<tr>
<td>O</td>
<td>Ischaemic stroke, systemic embolisation, intracranial and major extracranial haemorrhage</td>
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</tbody>
</table>
Development phase – search guidelines

- PubMed
- National Guidelines Clearinghouse
- G-I-N
- NICE
- SIGN
- WSO, ESO, ASF
1. Are there any relevant guidelines already developed? 

- YES
- NO

Full process development

2. Are they up-to-date and developed using GRADE?

- AGREE II

High quality

Adoption

Adaptation

Low quality CPG’s
Are there any relevant guidelines already developed?

- **YES**
- **NO**

Development phase – screening & quality assessment

Clinical Guidelines for Stroke Management 2017

Chapter 4 of 8: Secondary prevention
What is the methodological quality of the guideline?

Development phase – screening & quality assessment

NO  YES  AGREE II
Development phase – screening & quality assessment

- high quality by 5 assessors … AGREE II
- up-to-date … developed in 2017
- content … clinically highly relevant
- scientifically valid
- acceptable and usable recommendations
Is the guideline suitable for adoption or adaptation?

- **NO**
- **YES**
  - **AGREE II** High quality
  - **Adoption**
  - **Adaptation**

Development phase – decision to adopt or adapt
Development phase – decision to adopt or adapt

ADOPTION vs. ADAPTATION

- Similar population & health conditions
- Same interventions & comparison

- More specific recommendations needed based on authors' consensus
- Different implementation strategies needed
Development phase – decision to adopt or adapt

Is the guideline suitable for adoption or adaptation?

- NO
- YES
  - AGREE II
  - High quality
  - Adaptation
Development phase – decision to adopt or adapt

ADAPTATION
Clinical Guidelines for Stroke Management 2017

Chapter 4 of 8: Secondary prevention

Ischemická cévní mozková příhoda nebo tranzitorní ischemická ataka kardoembolické etiologie a jejich sekundární prevence. Adaptovaný klinický doporučený postup

Doporučený postup pro péči o pacienty s cévní mozkovou příhodou 2017
Australian Stroke Foundation
Kapitola 4 Sekundární prevence; Antikoagulační léčba

Autor(í): prof. MUDr. Josef Bednář, CSc., FCMA (garant)
prim. MUDr. Aleš Tomek, Ph.D., FESO, doc. MUDr. Michal Bar, Ph.D., FESO, prim. MUDr. Jiří Neumann, doc. MUDr. Daniel Šařák, Ph.D., FESO (autoři)
MUDr. Mgr. Radim Ličenka, Ph.D. (hlavní metodik)
MUDr. Tomáš Nečas, PhDr. Petra Běšillová (metodici)

Verze: 1.0
Datum: 30. 11. 2018
- For ischaemic stroke or TIA patients with atrial fibrillation (both paroxysmal and permanent), oral anticoagulation is recommended for long-term secondary prevention. (Saxena et al 2004 [103]; Saxena 2004 [104]; Ruff et al 2014 [88])

**Strong for recommendation ⭐⭐⭐⭐⭐**

- Direct oral anticoagulants (DOACs) should be initiated in preference to warfarin for patients with non-valvular atrial fibrillation and adequate renal function. (Ruff et al 2014 [88])

**Strong for recommendation ⭐⭐⭐⭐⭐**

- For patients with valvular atrial fibrillation or inadequate renal function, warfarin (target INR 2.5, range 2.0-3.0) should be used. Patients with mechanical heart valves or other indications for anticoagulation should be prescribed warfarin. (Tawfik et al 2016) [117])

**Strong for recommendation ⭐⭐⭐⭐⭐**
WHAT ARE WE GOING TO DO NEXT?
RECANALISATION

NEUROREPAIR

MANAGEMENT OF COMPLICATIONS

SECONDARY PREVENTION

PRIMARY PREVENTION

NEUROPROTECTION
RECANALISATION

NEUROPROTECTION

SECONDARY PREVENTION

MANAGEMENT OF COMPLICATIONS

PRIMARY PREVENTION

NEUROREPAIR

SECONDARY PREVENTION
THANK YOU 😊

radim.licenik@gmail.com
radim.licenik@nhs.net
Complications During Hospital Stay for Acute Ischemic Stroke

Proportion of Patients (%)

- Mechanical vent/ICU/coma (p<0.0001)
  - AFib (n=6842): 11.6%
  - No AFib (n=20,118): 5.9%

- Pneumonia (p<0.0001)
  - AFib: 14.6%
  - No AFib: 8.4%

- Urinary incontinence (p<0.0001)
  - AFib: 10.5%
  - No AFib: 7.5%

- Urinary tract infection (p<0.0001)
  - AFib: 14.7%
  - No AFib: 11.4%

- Any complication (p<0.0001)
  - AFib: 43.1%
  - No AFib: 30.8%