AMIS Plus Registry
Acute Myocardial Infarction in Switzerland

Status of the project

Dragana Radovanovic
March 5, 2009
Status of the project - March 2009

- Some more AMIS Plus figures
- How are the data collected?
- What do hospitals gain?
- Database status
- Achievements

D. Radovanovic, Berne, 5 March 2009
Since 1997….

- 76 Swiss hospitals have taken part
- More than 600 doctors have entered data
- Data Center moved twice
Since 1997....

- 12 employees
- AMIS Plus questionnaire revised 12 times
- Number of variables were extended from 115 to > 180
- 4 IT data entry system changes
Since 1997....

• 5 reports
• 28 newsletters
• Hundreds of data analyses
• Collaborated with
  – Quality Assessment Organisations
  – Swiss Heart Foundation
  – Federal Office of Public Health
  – Federal Office of Statistics
Since 1997….

- Meetings
  - Steering Committee 23x
  - Participants’ and Sponsors’ 4x
AMIS Plus Project

• Where are we today?

5th March 2009

D. Radovanovic, Berne, 5 March 2009
Acute Myocardial Infarction in Switzerland

D. Radovanovic, Berne, 5 March 2009
AMIS Plus Questionnaire

### AMIS-Dataentry-identification
- Hospital: [ ]
- Patient-ID-number: [ ]
- Physician-ID: [ ]
- Date-of-dataentry: Day [ ] Month [ ] Year [ ]

## PATIENT-AT-ADMISSION

### Date of Birth
- Day [ ] Month [ ] Year [ ]

### Gender
- Male [ ]
- Female [ ]

### Weight (kg)
- Weight (kg): 68.6 kg is rounded up to [ ] [ ] [ ] kg

### Height (cm)
- Height [ ] cm

### Admission Date
- Day [ ] Month [ ] Year [ ]

### Admission Time
- Time [ ]

### Basic Insurance Coverage
- Yes [ ]
- No [ ]

### Transfer (Was the patient transferred from another hospital?)
- Yes [ ]
- No [ ]

### Condition
- Symptoms of admission
  - Pain: Yes [ ] No [ ] Unknown [ ]
  - Dysepsia: Yes [ ] No [ ] Unknown [ ]

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D. Radovanovic, Berne, 5 March 2009
AMIS Plus Questionnaire

• Over 180 variables that include:
  - Demographics
  - Risk factors, symptoms
  - Immediate therapy
  - Laboratory parameters
  - Hospitalisation course and discharge treatment

• Since March 2005 long-term follow-up
  – 3-months
  – 12-months
Entry in SPSS Masterfile on AMIS Server

Upload on SPSS Webhosting Server

www.amis-plus.ch

D. Radovanovic, Berne 5 March 2009
Hospital

Entry in SPSS Masterfile on AMIS server

twice a week

Upload onto SPSS Webhosting server

www.amis-plus.ch

3-Month Follow-up

12-Month Follow-up

D. Radovanovic, Berne 5 March 2009
### Data Center

<table>
<thead>
<tr>
<th>Name/Function</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dragana Radoanovic, MD, MSc.</td>
<td>044 634 48 34</td>
<td><a href="mailto:dragana@fspm.uzh.ch">dragana@fspm.uzh.ch</a></td>
</tr>
<tr>
<td>Head of Data Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicole Duvvuri, dipl. bail</td>
<td>044 634 48 33</td>
<td><a href="mailto:nicole@fspm.uzh.ch">nicole@fspm.uzh.ch</a></td>
</tr>
<tr>
<td>Scientific Assistant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caroline Bahler - Baumgartner, dipl</td>
<td>044 634 48 32</td>
<td><a href="mailto:caroline.bahler@fspm.uzh.ch">caroline.bahler@fspm.uzh.ch</a></td>
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<tr>
<td>Sports Teacher II</td>
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<tr>
<td>Jenny Pilet</td>
<td>044 634 48 31</td>
<td><a href="mailto:joliet@fspm.uzh.ch">joliet@fspm.uzh.ch</a></td>
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<tr>
<td>Publications Assistant</td>
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<tr>
<td>Evelina Doukas - Hollinger, MA</td>
<td>044 634 48 30</td>
<td><a href="mailto:evelina.doukas@fspm.uzh.ch">evelina.doukas@fspm.uzh.ch</a></td>
</tr>
<tr>
<td>Office Manager</td>
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**Address:**
AMIS Plus Data Center  
Hirschengraben 84  
CH-8001 Zurich  
Tel. +41 (0)44 634 48 30
The AMIS Plus national registry collects and analyzes data on patients with acute coronary syndrome in Switzerland in the pre-admission and hospital phases. Emphasis is placed on the evaluation of risk factors, diagnostics, urgent therapy strategies, and treatment of acute coronary syndrome (acute myocardial infarction, unstable angina and minimal necrosis). The AMIS Plus data gathered are important for assessing guidelines, improving compliance with guidelines in clinical practice, investigating patient groups not extensively studied in large randomized trials, quality assurance as well as the continuous improvement of therapeutic strategies based on a large data base.
We have now passed the magical 30,000 cases mark in the AMIS Plus Database!

Many thanks to all participants for their invaluable contribution!

Sponsors' and Participants' Meeting

The AMIS Plus project is now in its twelfth year and we have reached a new milestone: the 30,000th case in the AMIS Plus database!

This is the perfect opportunity to invite all our sponsors, participants, colleagues and all people interested to the next AMIS Plus meeting.
The AMIS Plus national registry collects and analyzes data on patients with acute coronary syndrome in Switzerland in the pre-admission and hospital phases. Emphasis is placed on the evaluation of risk factors, diagnostics, urgent therapy strategies, and treatment of acute coronary syndrome (acute myocardial infarction, unstable angina, and minimal necrosis). The AMIS Plus data gathered are important for assessing guidelines, improving compliance with guidelines in clinical practice, investigating patient groups not extensively studied in large randomized trials, quality assurance as well as the continuous improvement of therapeutic strategies based on a large data base.
Data Entry

- AMIS Online Questionnaire
  - Guide to Online Data Entry of the "AMIS Plus Questionnaire" (english) [PDF]
  - Merkblatt für die AMIS Plus Online-Datenangabe (deutsch) [PDF]
  - Fiche d'instructions de saisie des données AMIS sur internet (français) [PDF]

- AMIS & Verein Outcome Online Erhebungsbo gen

If you would like to test our online data entry, just click on http://test.amis-plus.ch/SurveyManager

and enter test for both User ID and Password.
Follow up Online

Survey Manager

D. Radovanovic, Berne 5 March 2009
Follow up Questionnaire

Acute Myocardial Infarction in Switzerland

D. Radovanovic, Berne 5 March 2009
What’s in it for the hospitals?
ACUTE MYOCARDIAL INFARCTION IN SWITZERLAND

D. Radovanovic, Berne 5 March 2009

University of Zurich
Institute of Social and Preventive Medicine

Welcome

AMIS Plus - National Registry of Acute Myocardial Infarction in Switzerland

The AMIS Plus national registry collects and analyzes data on patients with acute coronary syndrome in Switzerland in the pre-admission and hospital phases. Emphasis is placed on the evaluation of risk factors, diagnostics, urgent therapy strategies, and treatment of acute coronary syndrome (acute myocardial infarction, unstable angina and minimal necrosis). The AMIS Plus data gathered are important for assessing guidelines, improving compliance with guidelines in clinical practice, investigating patient groups not extensively studied in large randomized trials, quality assurance as well as the continuous improvement of therapeutic strategies based on a large data base.
Acute Myocardial Infarction in Switzerland

Created by SPSS (Schweiz) AG on 2005.08.24 10:31:04 PM
### Acute Myocardial Infarction in Switzerland

D. Radovanovic, Berne 5 March 2009

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**Online Analysis**

**02. Age statistics grouped by gender and diagnosis**

Created by SPSS (Schweiz) AG on 2005.06.24 10:31:04 PM

#### Type of hospital: All hospitals

#### Case filter: All Cases

#### Age (in years)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Diagnosis for all patients</th>
<th>Total</th>
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#### Variables: Age of patients (in years)

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<thead>
<tr>
<th>Hospital ID</th>
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<th>DEMO</th>
<th>Other hospitals</th>
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<td></td>
<td>5600</td>
<td>4025</td>
<td>1575</td>
</tr>
<tr>
<td></td>
<td>1900</td>
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<tr>
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<td>65.48</td>
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<td>65.17</td>
<td>62.91</td>
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<td>2002</td>
<td>65.45</td>
<td>63.43</td>
<td>70.65</td>
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<tbody>
<tr>
<td>2000</td>
<td>22</td>
<td>25</td>
<td>22</td>
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<tr>
<td>2001</td>
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<td>26</td>
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<td>2002</td>
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<td>22</td>
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<th>Year</th>
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<tbody>
<tr>
<td>N</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Mean</td>
<td>22</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>13.093</td>
<td>12.872</td>
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<th>Year</th>
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<tbody>
<tr>
<td>Median</td>
<td>66.00</td>
<td>64.00</td>
<td>73.00</td>
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<tr>
<td>Mean</td>
<td>66.00</td>
<td>63.00</td>
<td>73.00</td>
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<tr>
<td>Std. Deviation</td>
<td>13.300</td>
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<td>12.023</td>
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<tbody>
<tr>
<td>Median</td>
<td>66.00</td>
<td>64.00</td>
<td>73.00</td>
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AMIS Plus Registry

January 1997 to March 2009

• 30,234 patients with acute coronary syndrome

STEMI 58.3%
NSTEMI/UA 41.7%

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AMIS Plus Registry

- **30,234 ACS patients**
- **Gender:**
  - female 28%
  - male 72%
- **Age:** 65.6 y (13.1 y)
  - Female 71.2 y (12.9 y)
  - Male 63.4 y (12.3 y)
AMIS Plus Registry

30,234 ACS patients

- Crude in-hospital mortality 6.8%

- STEMI
  - 1997 - 12.2%  2008 – 6.1%

- NSTEMI
  - 1997 - 8.2%  2008 – 3.6%

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Status of Follow up

• Started in June 2005
• The starting time of FU was different for various hospitals
  – due to different approval dates from the Cantonal Ethic Commission and/or
  – internal organisational difficulties
• 44 hospitals have participated in follow-up
• One hospital performs own follow-up
Status of Follow-up

- 3-month follow-up
  - Total available 4278 / 4456 (96%)

- 12-month follow-up
  - Total available 3314 / 3423 (97%)

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AMIS Plus Registry

> 30,000 patients enrolled

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Resulting in….

- 57 presentations at congresses and meetings
- 55 abstracts
  - Best Abstract Award for Excellence in Scientific Research

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Resulting in....

- 1 diploma
- 4 dissertations
- 2 press releases
AMIS Plus Publishing Activities

• Manuscripts
  – published 21
  • peer-reviewed 13
  – in press 1
  – submitted 5
Acute Coronary Syndromes

Gender differences in management and outcomes in patients with acute coronary syndromes: results on 20,290 patients from the AMIS Plus Registry
Dragana Radovanovic, Paul Eme, Pauline Urban, Osman Berti, Hans Riddi, Jean-Michel Gaspard, on behalf of the AMIS Plus Investigators
Heart 2007; 90:10-15. DOI: 10.1111/j.1365-2902.2007.04613.x

OCCURRENCE OF IN-HOSPITAL MORTALITY FOR ACUTE MYOCARDIAL INFARCTION WITH ADMISSION DURING ROUTINE HOSPITAL HOURS, VERSUS OUT OF HOURS: INSIGHT INTO THE AMIS PLUS REGISTRY
MDR, Jean-Christophe Stauffer, Osmund Berti
Heart published online 9 Dec 2008:

Admission glycaemia and outcome in patients with acute coronary syndrome
DAMIR MIŠKAVČIĆ, DRAGANA RADOVANOVIC, EDUARDO CAMINÓ, MANFRED BISSIG, OSMUND BERTI, PAUL EME, FRANZ ROBERT EBERL, FERD GUTZWILLER ON BEHALF OF THE AMIS PLUS INVESTIGATORS
Heart 2009; 105:121-126. DOI: 10.1111/j.1365-2902.2008.04839.x

Clinical Research Study

Impact of Changing Definitions for Myocardial Infarction: A Report from the AMIS Registry
Philip Eme, MD,1,2 Dragan Radovanovic, MD,3 Paul Eme, MD,4 Jean-Christophe Stauffer, MD,5 Giovanni Pedazzini, MD,5 Stephan Windberger, MD,1,2,4 Osmund Berti, MD,2 For the AMIS Plus Investigators
*Cardiovascular Department, La Tour Hospital, Geneva, Switzerland; 2AMIS Plus Data Center, Institute of Social and Preventive Medicine, University of Zurich, Zurich, Switzerland; 3Cardiovascular Department, Canton Hospital, Lucerne, Switzerland; 4Cardiology Centre, Centrum Hospital, Findelau, Switzerland; 5Cardiocentro, Lugano, Switzerland. DOI: 10.1111/j.1365-2902.2008.04839.x

Cardiovascular Medicine

Trends in reperfusion therapy of ST segment myocardial infarction in Switzerland: Nationwide registry
A-A Fassol, P Urban, D Radovanovic, N Durvinsk, J-M Gaspard, Plus Investigators

Clinical Trial

Early Drug Therapy and in-Hospital Mortality Following Acute Myocardial Infarction
Paul Eme,5 Dragan Radovanovic,6 Philip Urban,5 Jean-Christophe Stauffer,5 Osmund Berti,5 Felix Gutzwiller5 For the AMIS Plus Investigators
*Division of Cardiology, Kantonsspital, Luzern, Switzerland; **AMIS Plus Data Center, Institute of Social and Preventive Medicine, University of Zurich, Zurich, Switzerland; †Division of Cardiology, Kantonsspital, Thun, Switzerland; ‡Division of Cardiology, Kantonsspital, Regensberg, Switzerland; §Department of Cardiology, Kantonsspital, Luzern, Switzerland; ¶Division of Cardiology, Cantonal Hospital, Fribourg, Switzerland. DOI: 10.1111/j.1365-2902.2008.04840.x

Determinants of Costs of Coronary Syndromes: More Than 10,000 P
Matthias Briel,5,6,7,8,9 Dragan Radovanovic,5 Paul Eme,5 Thomas D. Sipus,5
Heart 2009; 105:134-140. DOI: 10.1111/j.1365-2902.2008.04842.x
AMIS Plus Publishing Activities

• Ongoing works:
  – Manuscripts 8
  – Dissertation 1
  – Master Thesis 1
Future

Thanks to your support and our efforts

- Keep working on this unique registry
- Better representation by including all hospitals in Switzerland treating AMI patients
- Expand follow-ups
- Hub for new topics and studies
- Perform further analyses from existing data pool
- Enhance publishing activity

D. Radovanovic, Berne 5 March 2009
AMIS Plus Project

Thank you!