Polish Registry of Acute Coronary Syndromes

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PL-ACS

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PL-ACS

Lech Poloński, Mariusz Gąsior, Marek Gierlotka, Marian Zembala
In brief, the PL-ACS registry is an ongoing, nationwide, multicentre, prospective, observational study of consecutively hospitalized patients with the whole spectrum of ACS in Poland.

It is a joint initiative of the Silesian Centre for Heart Diseases and the Ministry of Health of Poland. Logistic support is obtained from the National Health Fund, which is a nationwide public health insurance institution in Poland and from which an insurance policy is required for all Polish citizens.

All admitted patients with suspected ACS are screened for eligibility to enter the registry, but they are not enrolled until acute coronary syndrome is confirmed.

All-cause follow-up mortality data with exact dates of deaths are obtained from official mortality records from the National Health Fund.
Frequency of ACS over years

Year

2004 2005 2006 2007 2008 2009 2010 2011

STEMI

NSTEMI

UA

Polish Registry of Acute Coronary Syndromes
Distribution of ACS by age

<table>
<thead>
<tr>
<th>Age</th>
<th>STEMI</th>
<th>NSTEMI</th>
<th>UA</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60-69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70-79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 80</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Polish Registry of Acute Coronary Syndromes
Hospitalization ward

Polish Registry of Acute Coronary Syndromes
Temporal trends in invasive treatment of myocardial infarction in Poland

Częstość leczenia inwazyjnego zawału serca w Polsce w latach 2005 - 2009
Temporal trends in 1-year mortality in myocardial infarction in Poland
Baseline characteristics over years

Females

Hypertension

Diabetes

Prior myocardial infarction
Baseline characteristics over years

Prior PCI

Prior CABG

Killip 3 or 4
Pharmacotherapy

PL-ACS

Beta-blocker

ACE-I

Statin

Nitrate
Thrombolysis in STEMI

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Invasive strategy in Poland

Coronary angiography

2003 2007 2011

UA
2003 2007 2011

NSTEMI
2003 2007 2011

STEMI
2003 2007 2011
Invasive strategy in Poland

PCI

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30-day mortality

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![Bar chart showing 30-day mortality rates for UA, NSTEMI, and STEMI from 2003 to 2010.](chart.png)
1-year mortality

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Hospitalization time (days)

Invasive

Non-invasive

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Trends in NSTEMI treatment

![Graph showing trends in NSTEMI treatment with lines for no revascularisation, invasive strategy, PCI, CABG planned after discharge, and CABG during hospitalisation over the years 2004 to 2010.](image)
Trends in outcomes in NSTEMI

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STEMI - Reperfusion treatment in Poland

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![Bar chart showing reperfusion treatment rates over time in Poland.](chart.png)

- **Coronary angiography**
  - 2003: 58%
  - 2011: 92%

- **PCI**
  - 2003: 55%
  - 2011: 86%

- **Thrombolysis**
  - 2003: 11%
  - 2011: 9%
Reperfusion by Primary Percutaneous Coronary Intervention in Patients With ST-Segment Elevation Myocardial Infarction Within 12 to 24 Hours of the Onset of Symptoms (from a Prospective National Observational Study [PL-ACS])

Marek Gierlotka, MD, PhD,*, Mariusz Gasior, MD, PhD, Krzysztof Wilczek, MD, PhD, Michal Hawranek, MD, PhD, Janusz Szkodzinski, MD, PhD, Piotr Paczek, MD, PhD, Andrzej Lekston, MD, PhD, Zbigniew Kalarus, MD, PhD, Marian Zembla, MD, PhD, and Lech Polonski, MD, PhD
Reperfusion by Primary Percutaneous Coronary Intervention in Patients With ST-Segment Elevation Myocardial Infarction Within 12 to 24 Hours of the Onset of Symptoms (from a Prospective National Observational Study [PL-ACS])

12-month mortality

<table>
<thead>
<tr>
<th></th>
<th>Conservative</th>
<th>Invasive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 65 years</td>
<td>16/217 (5.1%)</td>
<td>23/225 (7.1%)</td>
</tr>
<tr>
<td>Age 65-74 years</td>
<td>31/207 (15.0%)</td>
<td>29/206 (11.2%)</td>
</tr>
<tr>
<td>Age &gt;= 75 years</td>
<td>52/169 (30.8%)</td>
<td>27/162 (16.7%)</td>
</tr>
<tr>
<td>Females</td>
<td>44/252 (17.5%)</td>
<td>35/265 (13.2%)</td>
</tr>
<tr>
<td>Males</td>
<td>15/441 (12.5%)</td>
<td>30/420 (9.3%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>35/159 (22.0%)</td>
<td>22/164 (13.4%)</td>
</tr>
<tr>
<td>No diabetes</td>
<td>64/534 (12.0%)</td>
<td>51/529 (9.6%)</td>
</tr>
<tr>
<td>Prior myocardial infarction</td>
<td>18/82 (22.0%)</td>
<td>8/85 (9.4%)</td>
</tr>
<tr>
<td>No prior myocardial infarction</td>
<td>81/811 (13.3%)</td>
<td>65/608 (10.7%)</td>
</tr>
<tr>
<td>Anterior wall infarction</td>
<td>48/290 (16.6%)</td>
<td>30/269 (13.2%)</td>
</tr>
<tr>
<td>Inferior or other wall infarction</td>
<td>51/403 (12.7%)</td>
<td>35/404 (8.7%)</td>
</tr>
<tr>
<td>Killip class 1 on admission</td>
<td>76/601 (12.7%)</td>
<td>47/594 (7.9%)</td>
</tr>
<tr>
<td>Killip class 2 on admission</td>
<td>23/62 (25.0%)</td>
<td>26/69 (26.3%)</td>
</tr>
<tr>
<td>Symptom-onset-to-admission time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 12 hours and &lt;= 18 hours</td>
<td>65/447 (14.5%)</td>
<td>50/448 (11.2%)</td>
</tr>
<tr>
<td>&gt; 18 hours and &lt;= 24 hours</td>
<td>34/246 (13.8%)</td>
<td>23/245 (9.4%)</td>
</tr>
<tr>
<td>Multivariate adjustment</td>
<td>0.042</td>
<td>0.73 (0.54-0.90)</td>
</tr>
</tbody>
</table>
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STEMI - Clopidogrel

Invasive

Conservative

Polish Registry of Acute Coronary Syndromes
Mortality in STEMI

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Polish Registry of Acute Coronary Syndromes

Cardiogenic shock

Myocardial infarction
STEMI / NSTEMI
N = 205 019

Cardiogenic shock
N = 9 192 (4.5%)

NSTEMI - Invasive treatment

STEMI - Invasive treatment
12-month mortality in cardiogenic shock

**Invasive**

- 2004: 65.3%
- 2005: 66.3%
- 2006: 67.1%
- 2007: 66.3%
- 2008: 66.5%
- 2009: 65.6%

**Conservative**

- 2004: 49.8%
- 2005: 53.2%
- 2006: 54.9%
- 2007: 56.8%
- 2008: 59.1%
- 2009: 59.0%

PL-ACS

Polish Registry of Acute Coronary Syndromes
Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland
Analysis from the PL-ACS registry

<table>
<thead>
<tr>
<th>Year</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
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<th>2010</th>
<th>P value for trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of CS on admission, %</td>
<td>7.9</td>
<td>5.7</td>
<td>4.7</td>
<td>4.0</td>
<td>3.7</td>
<td>3.7</td>
<td>3.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>NSTEMI, %</td>
<td>26</td>
<td>28</td>
<td>29</td>
<td>31</td>
<td>31</td>
<td>29</td>
<td>32</td>
<td>0.011</td>
</tr>
<tr>
<td>STEMI, %</td>
<td>74</td>
<td>72</td>
<td>71</td>
<td>69</td>
<td>69</td>
<td>71</td>
<td>68</td>
<td>0.011</td>
</tr>
<tr>
<td>Mean age, years</td>
<td>67.7</td>
<td>68.9</td>
<td>69.4</td>
<td>69.1</td>
<td>69.7</td>
<td>69.1</td>
<td>70.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prior myocardial infarction, %</td>
<td>23.4</td>
<td>21.7</td>
<td>22.3</td>
<td>18.2</td>
<td>17.1</td>
<td>17.3</td>
<td>15.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prior revascularization, %</td>
<td>6.3</td>
<td>4.6</td>
<td>5.6</td>
<td>4.4</td>
<td>7.4</td>
<td>7.1</td>
<td>7.0</td>
<td>0.0097</td>
</tr>
<tr>
<td>Cardiac arrest before admission, %</td>
<td>16.6</td>
<td>22.0</td>
<td>27.0</td>
<td>23.6</td>
<td>21.9</td>
<td>20.4</td>
<td>16.6</td>
<td>0.048</td>
</tr>
</tbody>
</table>

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### Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland

**Analysis from the PL-ACS registry**

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<th>P value for trend</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IABP, %</strong></td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>12</td>
<td>12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>GP IIb/IIIa, %</strong></td>
<td>11.0</td>
<td>12.0</td>
<td>14.2</td>
<td>15.6</td>
<td>19.0</td>
<td>24.2</td>
<td>27.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Thrombolysis, %</strong></td>
<td>13.0</td>
<td>11.1</td>
<td>7.4</td>
<td>3.8</td>
<td>3.5</td>
<td>2.2</td>
<td>2.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Coronary angiography, %</strong></td>
<td>33.8</td>
<td>34.0</td>
<td>37.8</td>
<td>46.7</td>
<td>51.9</td>
<td>68.6</td>
<td>77.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Primary angioplasty (pPCI), %</strong></td>
<td>31.3</td>
<td>31.7</td>
<td>34.0</td>
<td>42.1</td>
<td>48.1</td>
<td>60.3</td>
<td>69.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Urgent bypass surgery (CABG), %</strong></td>
<td>0.4</td>
<td>0.8</td>
<td>0.4</td>
<td>0.2</td>
<td>0.5</td>
<td>0.2</td>
<td>0.1</td>
<td>0.015</td>
</tr>
<tr>
<td><strong>Total CABG (urgent and post-discharge), %</strong></td>
<td>10.7</td>
<td>7.3</td>
<td>6.3</td>
<td>6.6</td>
<td>6.2</td>
<td>5.3</td>
<td>5.1</td>
<td>0.0015</td>
</tr>
</tbody>
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<th>2009</th>
<th>2010</th>
<th>P value for trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-hospital major bleeding, %</td>
<td>2.1</td>
<td>2.1</td>
<td>1.9</td>
<td>3.6</td>
<td>5.7</td>
<td>3.5</td>
<td>4.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-hospital re-infarction, %</td>
<td>6.5</td>
<td>6.9</td>
<td>6.8</td>
<td>8.6</td>
<td>2.6</td>
<td>1.1</td>
<td>1.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>In-hospital mortality, %</td>
<td>51.0</td>
<td>53.6</td>
<td>54.4</td>
<td>49.9</td>
<td>50.0</td>
<td>46.5</td>
<td>43.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30-day mortality, %</td>
<td>59.5</td>
<td>59.9</td>
<td>61.8</td>
<td>60.5</td>
<td>61.7</td>
<td>59.0</td>
<td>57.4</td>
<td>0.38</td>
</tr>
<tr>
<td>- non-invasive treatment, %</td>
<td>68.4</td>
<td>68.3</td>
<td>69.5</td>
<td>71.4</td>
<td>73.8</td>
<td>77.6</td>
<td>73.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>- invasive treatment, %</td>
<td>42.1</td>
<td>43.6</td>
<td>49.1</td>
<td>48.0</td>
<td>50.5</td>
<td>50.5</td>
<td>52.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>12-month mortality, %</td>
<td>67.5</td>
<td>68.1</td>
<td>69.4</td>
<td>69.0</td>
<td>70.2</td>
<td>68.8</td>
<td>-</td>
<td>0.28</td>
</tr>
</tbody>
</table>

**Conclusions:**

- Together with the increase of urgent revascularization procedures in patients with cardiogenic shock:
  - the frequency of in-hospital major bleedings upraised
  - the frequency of in-hospital re-infarctions lowered
  - the in-hospital mortality decreased significantly

- However, despite more urgent revascularization procedures performed, the 12-month mortality of patients with cardiogenic shock on admission remains poor

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Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland

Analysis from the PL-ACS registry

Częstość wstrząsu kardiogennego przy przyjęciu w latach 2004 – 2010 w Polsce

![Graph showing temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland.](image)
Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland
Analysis from the PL-ACS registry

Leczenie wstrząsu kardiogennego w Polsce
Lata 2004 - 2010

Coronary angio  PCI  Thrombolysis

0%  20%  40%  60%  80%  100%

34%  34%  38%  47%  52%  69%  78%
31%  32%  34%  42%  48%  60%  69%
13%  11%  7%  4%  4%  2%  2%
Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland
Analysis from the PL-ACS registry

Rokowanie wewnątrzszpitalne we wstrząsie kardiogennym w Polsce
Lata 2004 - 2010
Temporal trends in treatment and outcomes of patients with acute myocardial infarction complicated by cardiogenic shock in Poland

Analysis from the PL-ACS registry