Austrian Mortality Cohort Study 2018

Addiction Competence Center
REITOX–Focal Point Austria
Martin Busch, Judith Anzenberger & Alfred Uhl

EMCDDA–Meeting on Drug Related Deaths
Lisbon 8–9 November 2018
Preconditions and Preparatory Efforts

» Everyone undergoing opioid substitution therapy (OST) in Austria has to be notified by the medical officer supervising OST to the OST-registry.

» The notification is possible by unique identification of the patient in the population registry only.

» In Austria there is a system of bPKs which are unique identifiers for persons in different area e.g. bPK health, bPK statistics…

» The OST-data are pseudononymised (encryption of the bPK-health) and stored in the OST-Statistic Register without other personal data than sex and year of birth.

» Data on OST in Austria are available in this form for the years 1987 to 2018.

» In Austria there exists a General Mortality Register (GMR) with full personal information of all death cases.

Since some years there was the idea to link the GMR to the OST-Statistic Register to calculate mortality rates!

preliminary results – not for publication
Preconditions and Preparatory Efforts

» In **2016 the legal framework** for this linkage was included in a change of the narcotic substance law.

» In a first step all death cases from 2002 to 2016 stored in the **General Mortality Register (GMR)** were identified in the **Population Registry**.

» In a second step a list of all bPKs–health of the death cases from 2002 to 2016 were sent to the Ministry of Health. The list included the **bPK–health** and a **second code (run number)**.

» At the Ministry of Health the list of bPKs–health were **encrypted the same way as the OST–Statistic Register** and linked to the **OST–Statistic Register**.

» A list of all **second codes and encrypted bPKs–health of persons found in the OST Statistic Register** was sent back to the GMR.

» Based on the second code **date and cause of death** were integrated in this list and the list was sent back to the Ministry of Health again.

» The Ministry of Health sent the list to the Addiction Competence Center where the **list of dates an causes of death was linked to the OST–Statistic Register**

preliminary results – not for publication
Data Quality

» There are **27,858 OST–patients** who have been in OST on 1.1.2002 or started OST from 1.1.2002 to 31.12.2016.

» There are **1,904 death cases** of these **27,858 OST–patients** between 1.1.2002 and 31.12.2016.

» Problem: In **459 (24 %)** of these 1,904 death cases the date of death was before the end of treatment *(ghost cases!)*. ☹️☹️☹️☹️

» But in most cases the date of death was in the same month as the end of the treatment and in just 4 cases the date of death was more than one year before the date of death – *(4 real ghost cases among 27,858 patients!)* ☺️☺️

» Correction: If the date of death was before end of treatment the date of **end of treatment was changed to date of death.**
Two Possible Cohorts

» All 27,858 OST-patients who have been in OST on 1.1.2002 or started OST from 1.1.2002 to 31.12.2016 (1,904 death cases)

» All 24,892 OST-patients starting OST between 1.1.2002 and 31.12.2016 (1,526 death cases).

preliminary results – not for publication
» 24,892 persons have been followed 197,739 person years between 1.1.2002 and 31.12.2016.

» 126,469 (64%) of these person years they have been in OST.

![Pie chart showing years in and out of OST](chart.png)
Age at Enrolment in the Cohort (N = 24,892, 25% Females)

- 30% < 20 years
- 22% 20-24 years
- 11% 25-29 years
- 14% 30-34 years
- 9% 35-39 years
- 6% 40-44 years
- 7% > 44 years

Preliminary results – not for publication
Age at Death (N = 1,526)

- < 20 years: 2%
- 20–24 years: 10%
- 25–29 years: 18%
- 30–34 years: 16%
- 35–39 years: 13%
- 40–44 years: 12%
- > 44 years: 29%

Preliminary results – not for publication
Survival Curve – Kaplan Meier (N=24,892)

Observation period (years)

preliminary results – not for publication
Crude Mortality Rate per 1,000 Person Years and Standard Mortality Ratio

<table>
<thead>
<tr>
<th>Sex</th>
<th>Crude Mortality Rate</th>
<th>Mortality Rate in the Austrian population (same gender and age distribution)</th>
<th>Standard Mortality Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>8,4 (7,9–8,8)</td>
<td>2,0</td>
<td>4,2 (3,9–4,4)</td>
</tr>
<tr>
<td>Women</td>
<td>6,3 (5,7–7,0)</td>
<td>0,8</td>
<td>7,9 (7,1–8,8)</td>
</tr>
<tr>
<td>All</td>
<td>7,7 (7,3–8,0)</td>
<td>1,7</td>
<td>4,5 (4,3–4,7)</td>
</tr>
</tbody>
</table>
Comparison with other recent Cohort Studies in the EU

<table>
<thead>
<tr>
<th>Country/city</th>
<th>Enrolment</th>
<th>End of observation period</th>
<th>Persons</th>
<th>Mean age at enrolment</th>
<th>Person years</th>
<th>Death cases</th>
<th>Crude mortality rate (/1000)</th>
<th>Standard mortality ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zagreb</td>
<td>01.2000-12.2006</td>
<td>12.2010</td>
<td>3.056</td>
<td>27,04</td>
<td>24.508</td>
<td>230</td>
<td>9,4 (8,3-10,7)</td>
<td>8,5 (7,4-9,6)</td>
</tr>
<tr>
<td>Latvia</td>
<td>01.2000-12.2011</td>
<td>12.2011</td>
<td>3.599</td>
<td>24,36</td>
<td>25.774</td>
<td>417</td>
<td>16,2 (14,7-17,8)</td>
<td>18,0 (16,4-19,8)</td>
</tr>
<tr>
<td>Malta</td>
<td>01.1994-06.2008</td>
<td>12.2008</td>
<td>1.659</td>
<td>23,35</td>
<td>13.548</td>
<td>47</td>
<td>3,5 (2,6-4,6)</td>
<td>3,5 (2,6-4,6)</td>
</tr>
<tr>
<td>Amsterdam</td>
<td>01.1996-12.2002</td>
<td>03.2009</td>
<td>2.566</td>
<td>38,14</td>
<td>21.694</td>
<td>348</td>
<td>16,0 (14,4-17,8)</td>
<td>5,1 (4,6-5,7)</td>
</tr>
<tr>
<td>Norway</td>
<td>01.1997-12.2003</td>
<td>12.2003</td>
<td>3.787</td>
<td>36,11</td>
<td>10.922</td>
<td>210</td>
<td>19,2 (16,8-22,0)</td>
<td>10,8 (9,4-12,4)</td>
</tr>
<tr>
<td>Bukarest</td>
<td>01.2001-11.2008</td>
<td>09.2010</td>
<td>2.584</td>
<td>23,34</td>
<td>19.428</td>
<td>110</td>
<td>5,7 (4,7-6,8)</td>
<td>6,9 (5,7-8,3)</td>
</tr>
<tr>
<td>Slovenia</td>
<td>01.2004-07.2007</td>
<td>12.2010</td>
<td>3.189</td>
<td>27,13</td>
<td>19.476</td>
<td>132</td>
<td>6,8 (5,7-8,0)</td>
<td>6,5 (5,5-7,7)</td>
</tr>
<tr>
<td>Poland</td>
<td>01.2000-12.2004</td>
<td>12.2006</td>
<td>4.728</td>
<td>26,01</td>
<td>21.782</td>
<td>495</td>
<td>22,7 (20,8-24,8)</td>
<td>21,5 (19,7-23,5)</td>
</tr>
<tr>
<td>Barcelona</td>
<td>01.1997-12.2007</td>
<td>12.2008</td>
<td>6.050</td>
<td>32,43</td>
<td>45.814</td>
<td>897</td>
<td>19,6 (18,3-20,9)</td>
<td>11,6 (10,9-12,4)</td>
</tr>
<tr>
<td>Austria</td>
<td>01.2002-12.2016</td>
<td>12.2016</td>
<td>24.892</td>
<td>28,87</td>
<td>197.739</td>
<td>1.526</td>
<td>7,7 (7,3-8,0)</td>
<td>4,5 (4,3-4,7)</td>
</tr>
</tbody>
</table>

Possible Next Steps (Question of Resources!)

» Analysis of cause of death registered in the General Mortality Register (GMR).

» Case coverage analysis GMR versus Special Register (SR) (first preliminary result: 36% of death cases are registered as direct drug related deaths in the SR – Question: which code do they have in the GMR?

» Are there „suspicious“ codes for other death cases which could be direct drug related death cases missing in the SR.

» Mortality rates and OST–medication.

» Pooled analysis of data with other countries – direct comparison of standard mortality ratios.

» Implementation of a mortality cohort on routine base.
Thank you for your attention