# Mortality during and after opioid substitution treatment in Austria 2002 to 2016

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There are no conflicts of interests

High risk opioid use and opioid addicts in opioid substitution treatment in Austria

opioid addicts not in OST ▪ opioid addicts in OST

Source: Epidemiologiebericht Sucht 2018
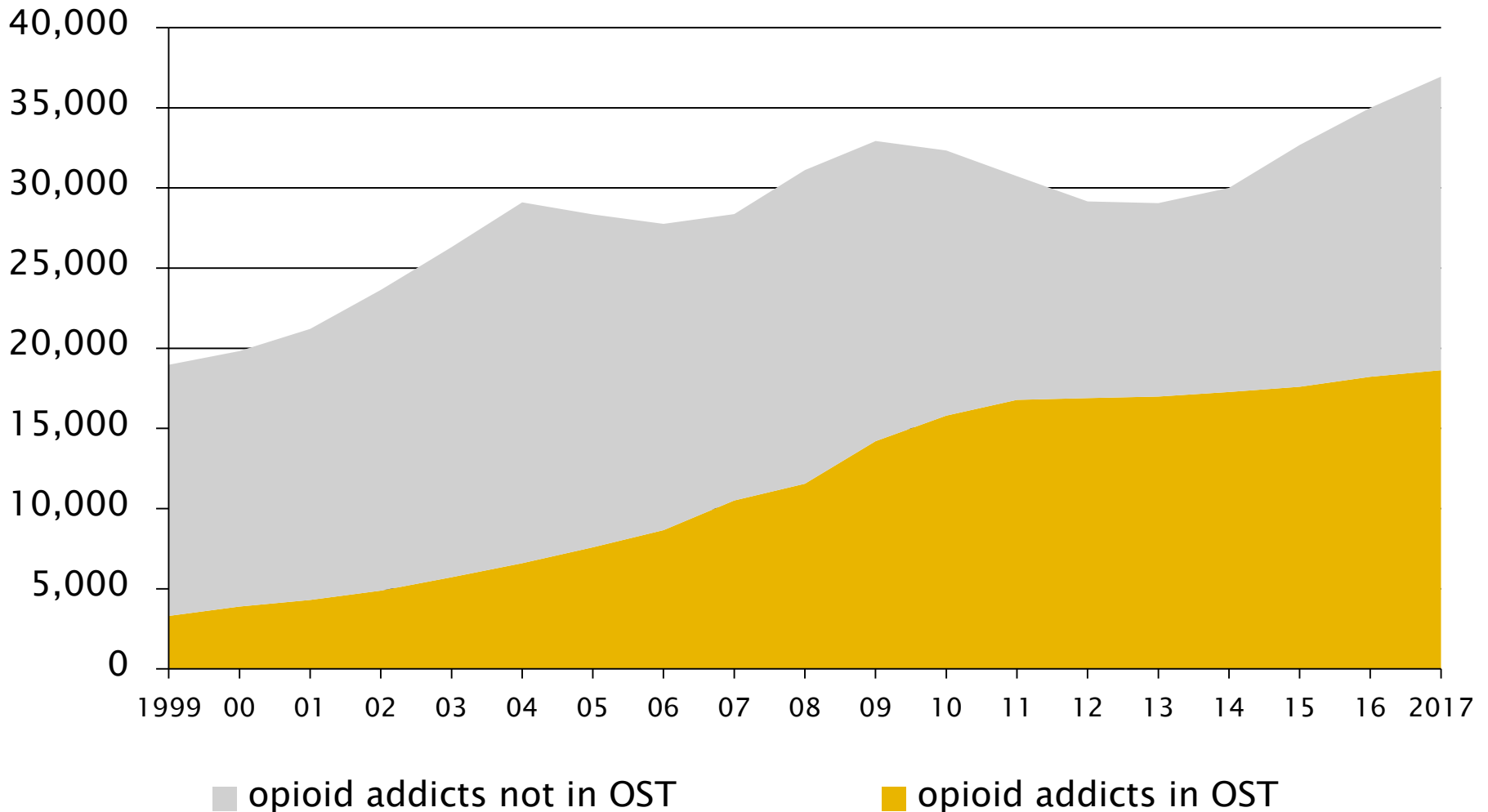
Preconditions and Preparatory Efforts

» 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 from 1987 onwards.

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

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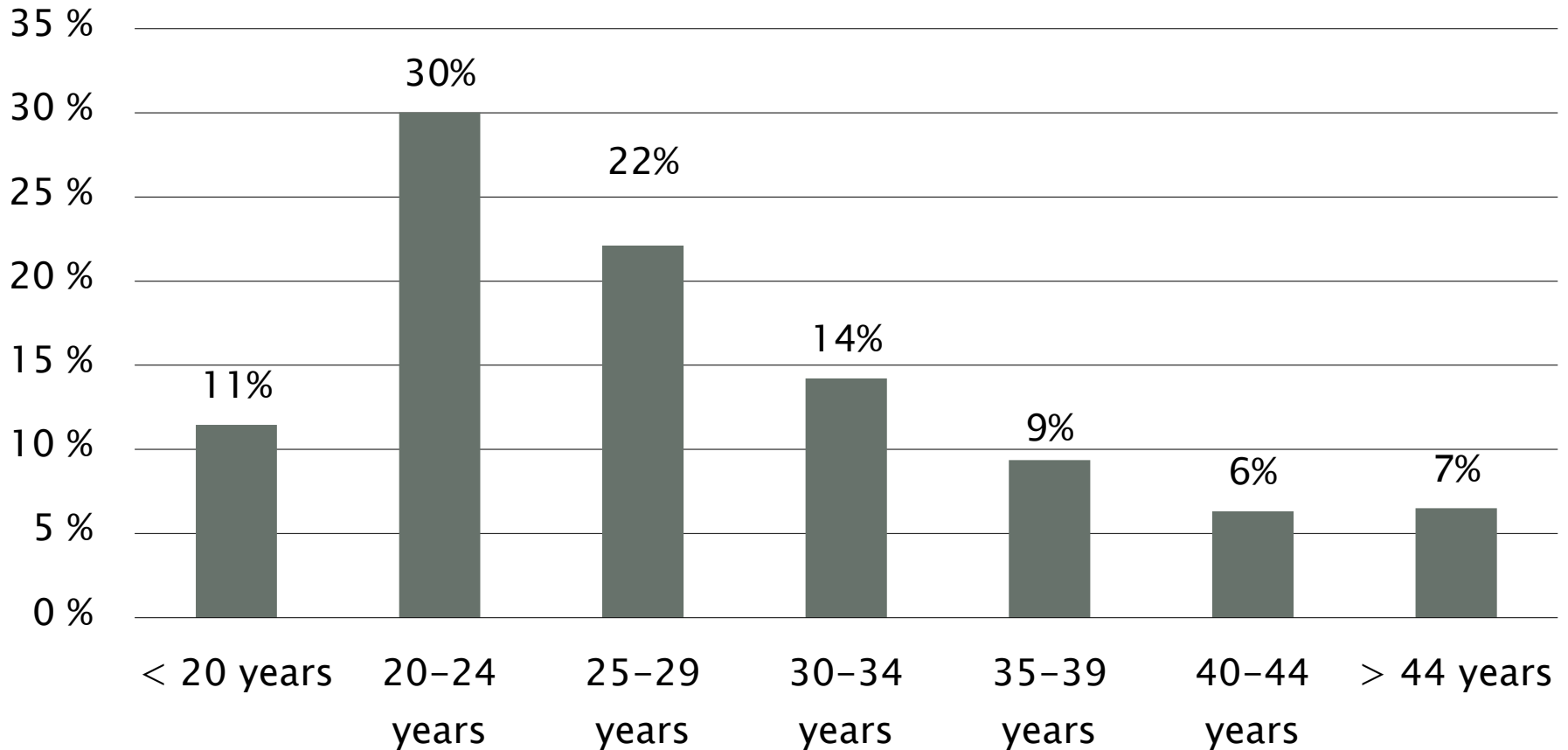
Preconditions and Preparatory Efforts

» 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

Austrian Mortality Cohort Study Opioid Substitution Treatment 2018 (OST–COHORT 2018)
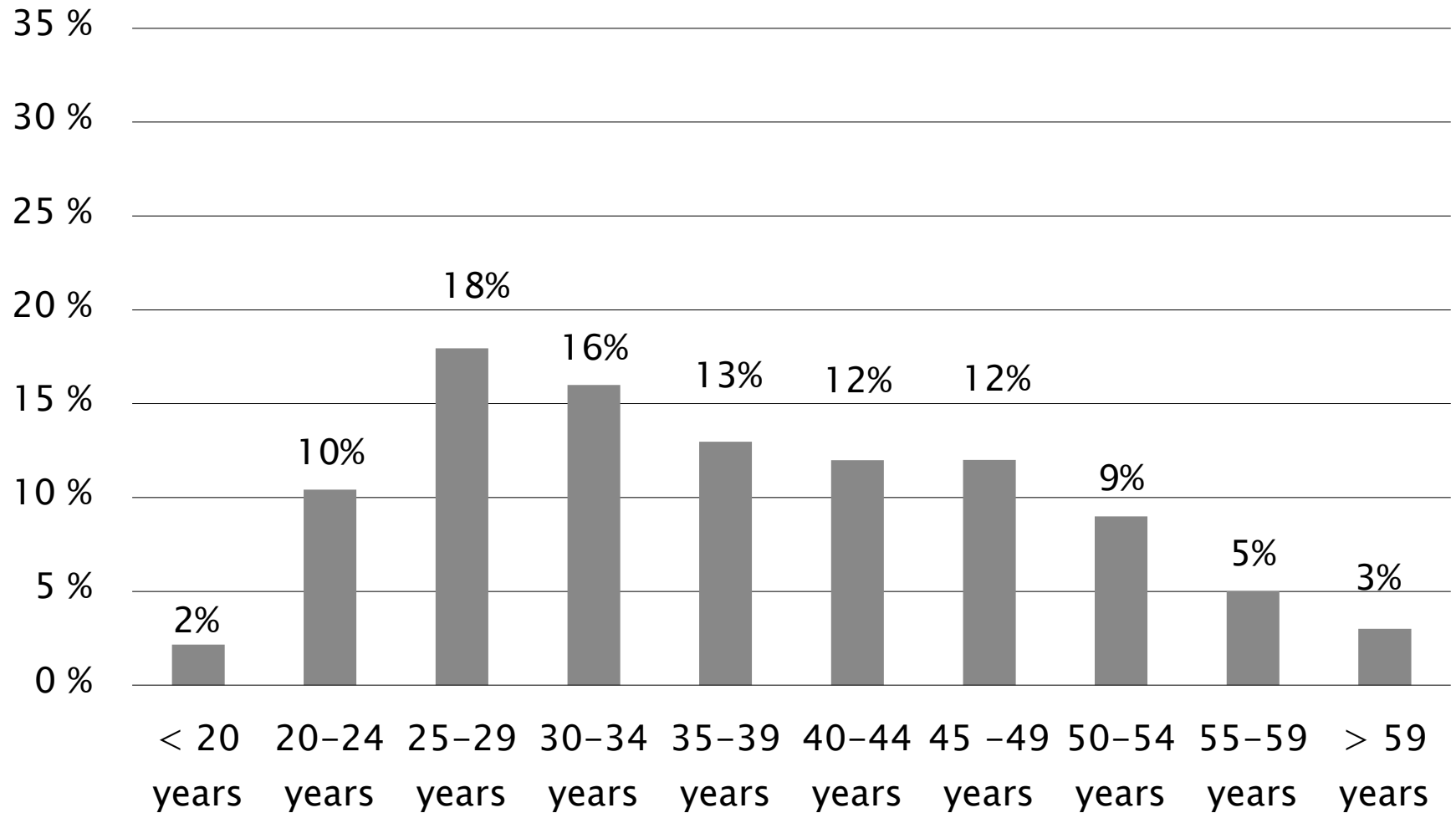
» Sample: all 24,892 persons who started opioid substitution treatment in Austria from 1.1.2002 to 31.12.2016.

» These persons supply a total of 197,739 person–years. 126,469 of these years (64%) they were in opioid substitution treatment.

» 1,526 of the 24,892 persons (6.1%) died during the observation period from 1.1.2002 to 31.12.2016.

Age at inclusion in the OST–COHORT 2018 (N=24,892)

= first start of OST in the study period

Chart: Age at inclusion bar chart

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

Source: Epidemiologiebericht Sucht 2018

Age at time of death (N=1,526)

Crude Mortality Rate per 1,000 Person Years and Standard Mortality Ratio

Sex	Crude Mortality Rate	Mortality Rate in the Austrian population (same gender and age distribution)	Standard Mortality Ratio
Men	8,4 (7,9–8,8)	2,0	4,2 (3,9–4,4)
Women	6,3 (5,7–7,0)	0,8	7,9 (7,1–8,8)
All	7,7 (7,3–8,0)	1,7	4,5 (4,3–4,7)

Source: Epidemiologiebericht Sucht 2018

# Comparison with other recent Cohort Studies in the EU

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

EMCDDA (2015): Mortality among drug users in Europe: new and old challenges for public health. European Monitoring Centre for Drugs and Drug Addiction, Luxembourg

Source: Epidemiologiebericht Sucht 2018

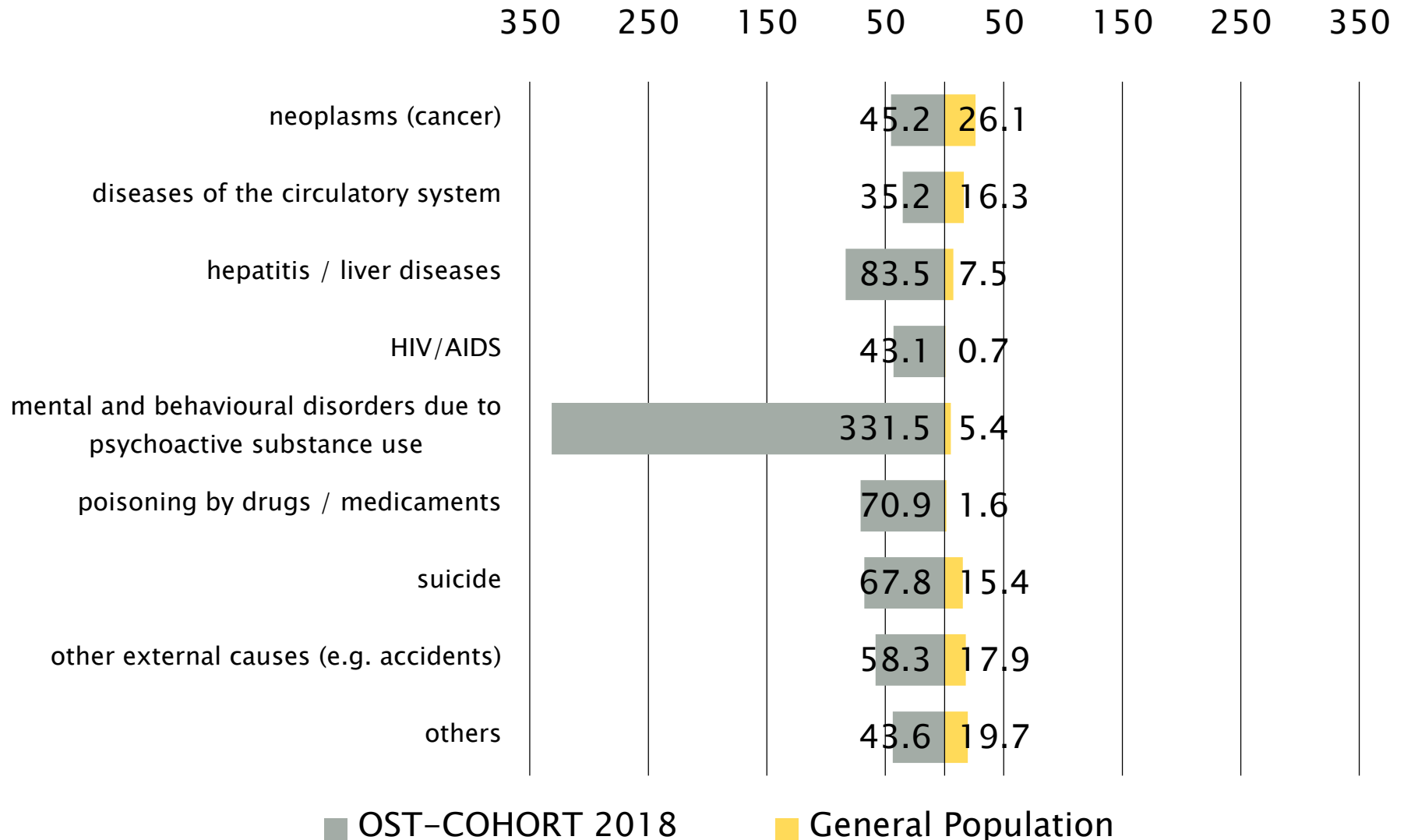# Analysis of causes of death according to ICD 10 (N=1,526)

- neoplasms (cancer)

- diseases of the circulatory system

- hepatitis / liver diseases

- HIV/AIDS

- mental and behavioural disorders due to psychoactive substance use

- poisoning by drugs / medicaments

- suicide

- other external causes (e.g. accidents)

- others
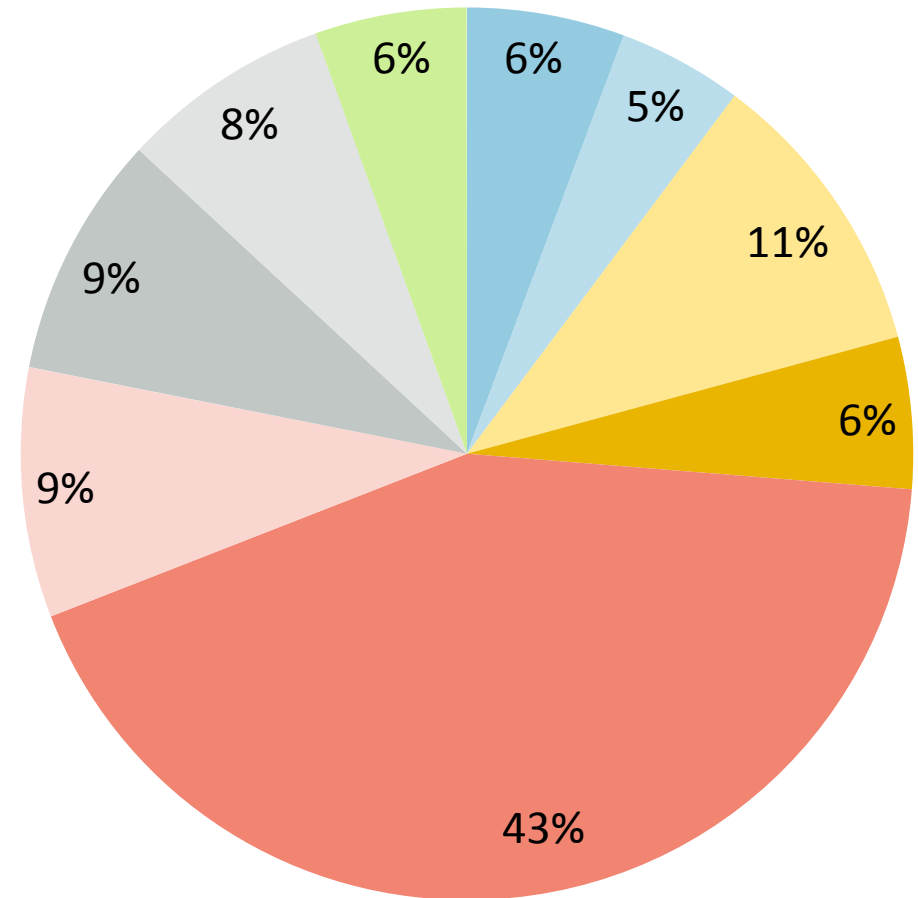
Source: Epidemiologiebericht Sucht 2019

Causes of death in substitution cohort and in the general population (same age and gender distribution)

Causes of death	Death cases/100.000 persons per year OST–COHORT 2018	Death cases/100.000 persons per year General Population	Ratio
neoplasms (cancer)	177,2	91,2	1,9
diseases of the circulatory system	101,9	58,1	1,8
hepatitis / liver diseases	284,0	27,7	10,2
HIV/AIDS	92,2	1,2	78,5
mental and behavioural disorders due to psychoactive substance use	441,7	3,3	133,5
poisoning by drugs / medicaments	101,9	1,4	74,7
suicide	68,0	22,6	3,0
other external causes (e.g. accidents)	84,9	23,6	3,6
others	114,1	53,7	2,1

Causes of death in substitution cohort and in the general population (same age and gender distribution)

	OST-COHORT 2018	General Population
neoplasms (cancer)	45.2	26.1
diseases of the circulatory system	35.2	16.3
hepatitis / liver diseases	83.5	7.5
HIV/AIDS	43.1	0.7
mental and behavioural disorders due to psychoactive substance use	331.5	5.4
poisoning by drugs / medicaments	70.9	1.6
suicide	67.8	15.4
other external causes (e.g. accidents)	58.3	17.9
others	43.6	19.7

Scale: 350 250 150 50 50 150 250 350

■ OST-COHORT 2018   ■ General Population

Gesundheit Österreich GmbH

Causes of death in substitution cohort and in the general population (same age and gender distribution)

» Mortality due to hepatitis/liver diseases in the OST-COHORT 2018 is (at minimum) 10 times higher than in the general population.

» Mortality due to suicide in the OST-COHORT 2018 is (at minimum) 3 times higher than in the general population.

» Mortality due to overdose in the OST-COHORT 2018 is (at minimum) 75 times higher than in the general population.

Conclusions

» The standard mortality ratio of 4.5 can be rated to be low in an international comparison, which suggests that OST in Austria is of high quality.

» The mortality rate could be further reduced by targeted measures such as peer naloxone programmes, early treatment of hepatitis as well as suicide prevention.

Limitations

» The quality of the study depends on the quality of the linkage between substitution registers and general statistics on causes of death.

» The underlying cause of death depends on the assessment of the examining doctor or on the fact whether an autopsy was performed.

» Cause of death "mental and behavioural disorders due to psychoactive substance use" is difficult to interpret.

Thank you very much for your attention!

Addiction Competence Centre
of the Austrian Public Health Institute

For futher reading:

Epidemiologiebericht Sucht 2018 unter: https://jasmin.goeg.at/id/eprint/457

Epidemiologiebericht Sucht 2019 (in Vorbereitung)