



PriSUD

Diagnosing and treating substance use in prison



UNIVERSITY  
OF OSLO

# Factors associated with mortality in The Norwegian Offender Mental Health and Addiction (NorMA)- cohort

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The Research Council  
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HELSE  SØR-ØST

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# Authors and disclosures



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Disclosures: No conflict of interest

# Background

- Accumulation of poor living conditions
  - Poorer physical and mental health, more substance abuse problems and poorer attachment to the labour market
- Prisons reproduce and reinforce social and health inequalities
- High mortality among people with prison experience
  - Overdose
  - Suicide, accidents and homicide
  - Also increased risk of internal (*disease-related*) cause of death

# Norwegian prisons

- Imprisonment rate of 58 per 100,000
- Women < 6 %
- About 3600 prison beds in 58 prison units
- Publicly funded
- Universal health care
- Rehabilitation-oriented, with the goal of eliminating recidivism

# Background and Aims

- Data from NorMA (the *Norwegian Offender Mental Health and Addiction study*)

BASELINE  
1495 persons  
in prison  
answering  
116-item  
survey in  
**2013/2014**

733 gives  
their PIN and  
consent to  
register-  
linkages

Linked to  
several  
national  
registers

# Combination of survey and register data

## Data

- **NorMa Survey:** Personal answers on health, history, drug use etc 2013/14
- **Prison Registry:** Duration and convictions of baseline imprisonment
- **Death Registry:** Time and cause of death

## Aims

1. To describe the deceased in the prison population (in terms of baseline answers)
2. Investigate if pre-baseline and baseline factors were associated with death in this cohort

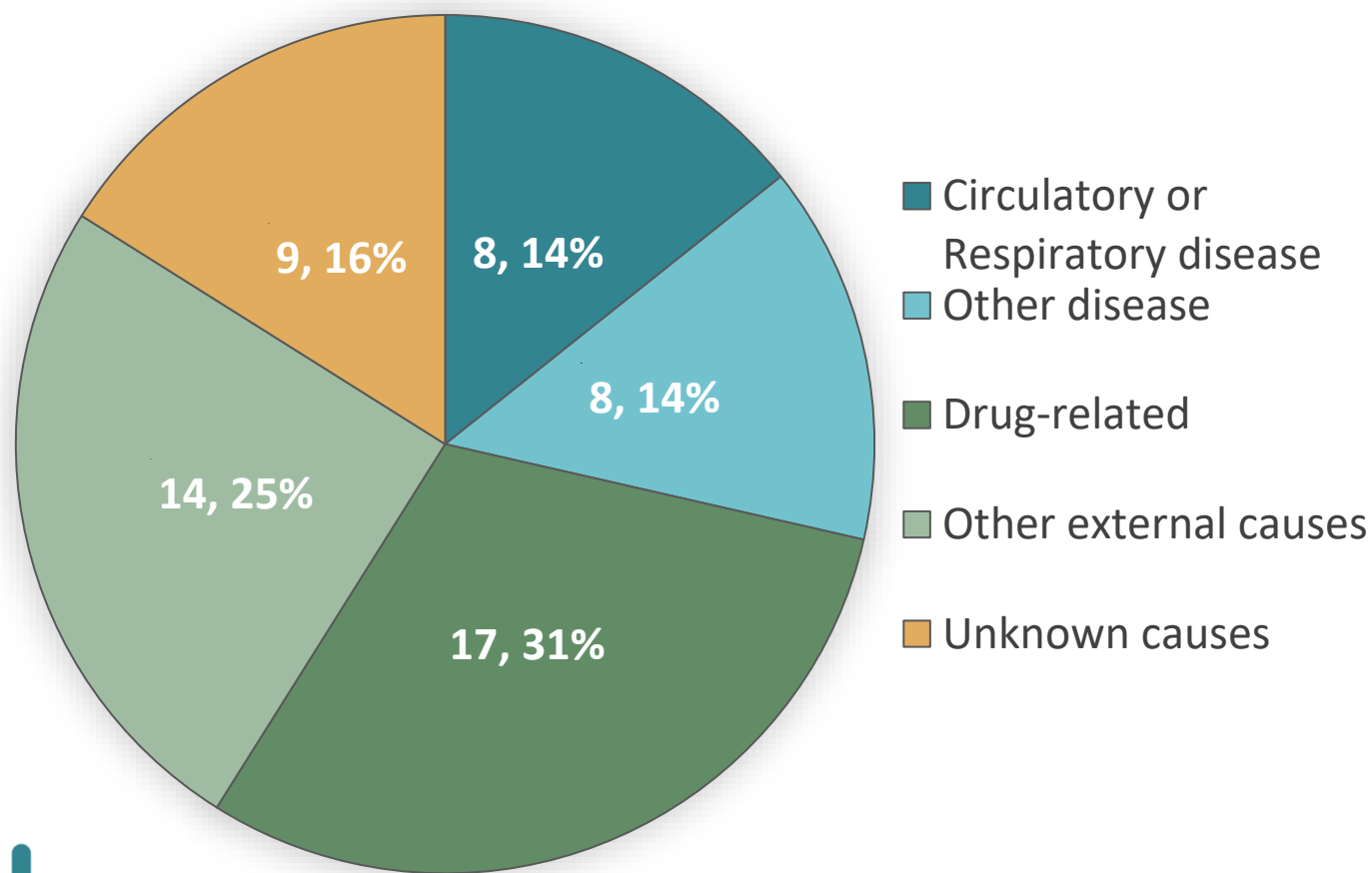
# At baseline

	Total (N=733)	Deceased (n=56)
Men	682 (93%)	54 (96%)
Norwegian born	602 (82%)	54 (96%)
Mean age at baseline	35.5 years	43.6 years
Lower secondary school	300 (41%)	24 (43%)
In job/education	314 (43%)	13 (23%)
Married/cohabitant	208 (28%)	11 (20%)
Used opioids ( <i>Lifetime</i> )	339 (46%)	34 (65%)
Deceased	56 (8%)	

Baseline imprisonment	Total (N=733)	Deceased (n=56)
<b>Duration</b> ( <i>months</i> ) median range	11.1 0.2 – 167.5	8.0 0.5 – 66.1
<b>Convictions*:</b>		
Theft/public order	216 (30%)	17 (30%)
Violence/sexual assault	334 (46%)	15 (27%)
Drug-related	174 (24%)	22 (39%)
<b>In high security units</b>	271 (37%)	26 (46%)

\*More than 1 conviction pr imprisonment is normal

# Causes of death



**Internal causes: 16 (29%)**

**External causes: 31 (55%)**

**Unknown: 9 (16%)**



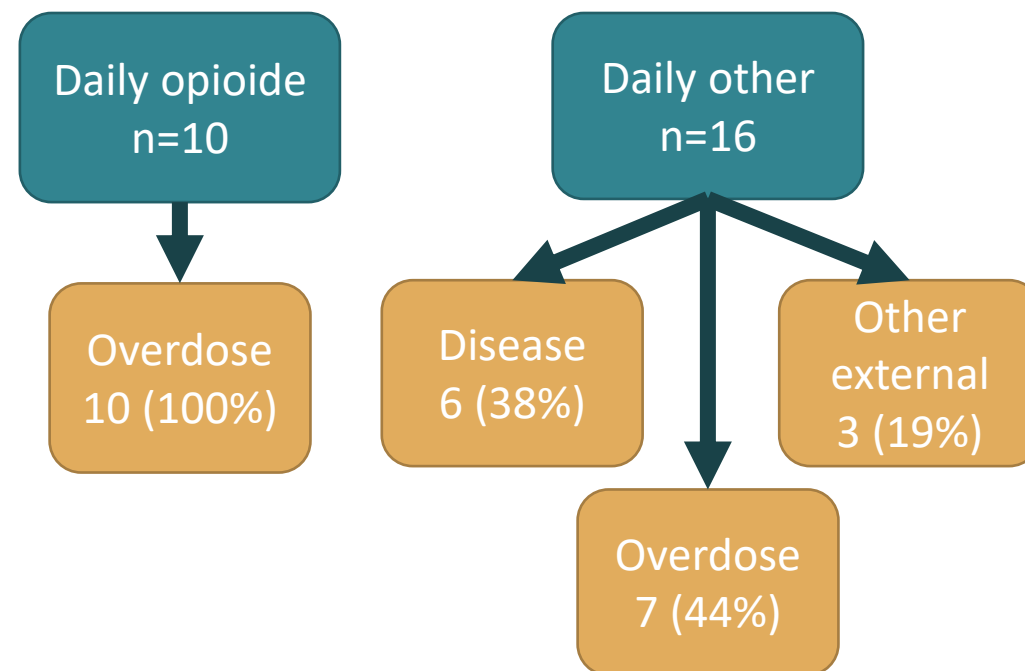
# History of alcohol and drug use, deceased

	Internal n=16	External n=31
Used alcohol	15 (94%)	30 (97%)
Used illigal drugs	8 (50%)	29 (94%)
In OAT at baseline	4 (25%)	8 (19%)
AUDIT > 19 points	3 (19%)	7 (23%)
DUDIT > 24 points	4 (25%)	23 (74%)

# History of alcohol and drug use, deceased

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<b>DUDIT &gt; 24 points</b>	<b>4 (25%)</b>	<b>23 (74%)</b>

Deceased stated daily drug use:



# Logistic regression – risk factors for mortality

## Models:

1. All-cause
2. Internal causes
3. External causes

## Covariates:

- Age at baseline (*continuous*)
- In job or education prior to baseline imprisonment
- AUDIT likely dependence (>19)
- DUDIT likely dependence (>24)
- Duration of baseline imprisonment (months, *continuous*)

# Logistic regression – All cause of death

	All-cause (n=56)			
	Crude OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Age (years) at baseline	1.06 (1.04-1.08)	<.001	<b>1.07 (1.04-1.09)</b>	<b>&lt;.001</b>
In job or education	0.51 (0.28-0.93)	0.027	<b>0.51 (0.28-0.95)</b>	<b>0.033</b>
Duration (months)	0.98 (0.97-1.00)	0.027	<b>0.98 (0.96-0.99)</b>	<b>0.008</b>

\*Adjusted for age and covariates significant in crude analysis

# Logistic regression – Internal cause of death<sup>a</sup>

	Internal (n=16)	
	Crude OR (95% CI)	p-value
Age (years) at baseline	<b>1.12 (1.07-1.16)</b>	<b>&lt;.001</b>

<sup>a</sup> Deaths from external causes are excluded in the model.

# Logistic regression – External cause of death<sup>b</sup>

	External (n=31) <sup>b</sup>			
	Crude OR (95% CI)	p-value	Adjusted OR* (95% CI)	p-value
Age (years) at baseline	1.02 (0.99-1.05)	0.327	1.03 (0.99-1.07)	0.115
In job or education	<b>0.31 (0.12-0.75)</b>	<b>0.010</b>	0.52 (0.20-1.35)	0.177
DUDIT likely dependence	<b>3.63 (1.60-8.24)</b>	<b>0.002</b>	<b>3.31 (1.34-8.16)</b>	<b>0.009</b>

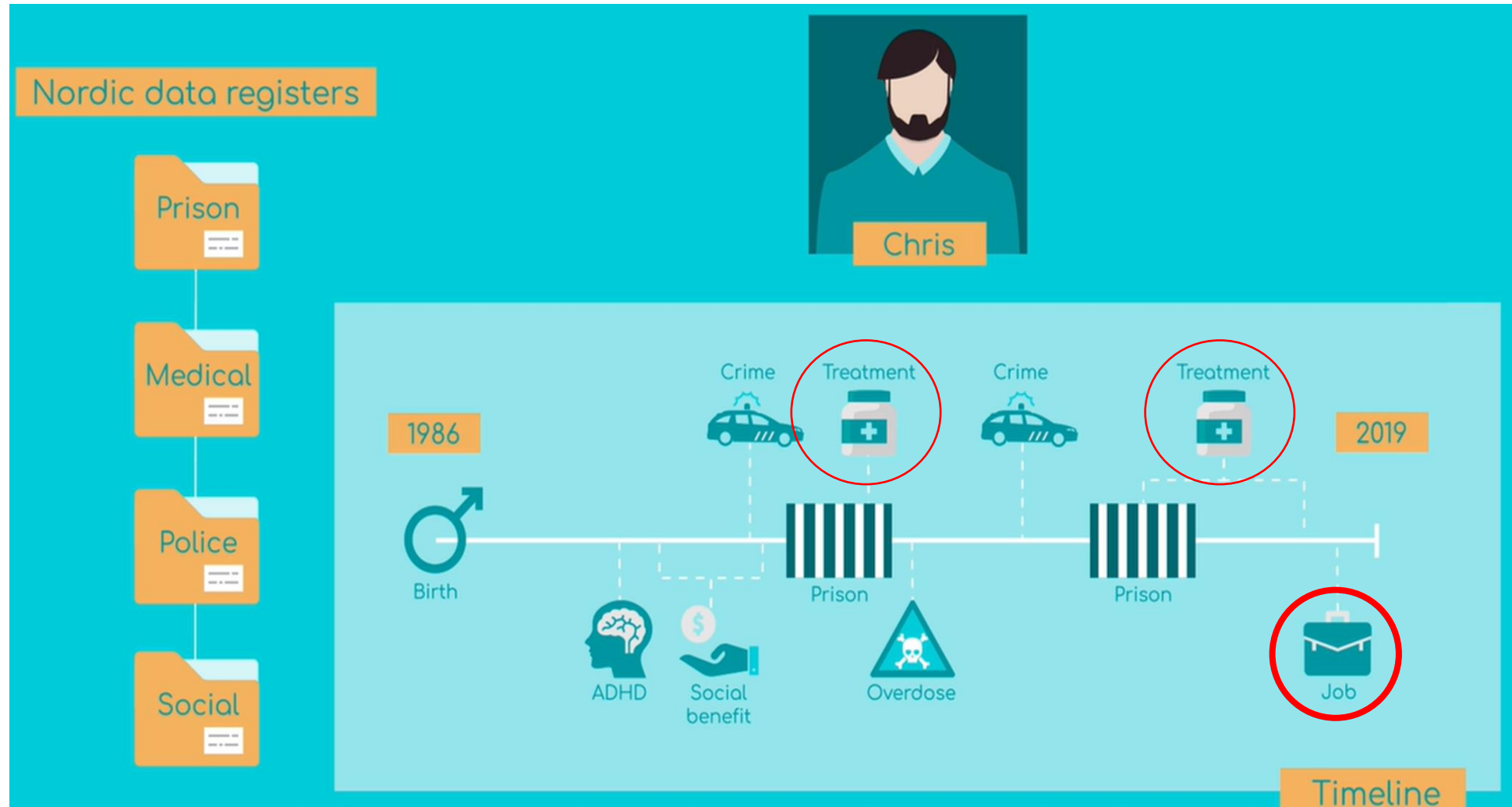
<sup>b</sup> Deaths from internal causes are excluded in the model.

\*Adjusted for age and covariates significant in crude analysis

# Conclusions and implications

- DUDIT likely dependence-score strongly associated with death from external causes
  - SUDs more prevalent among incarcerated people
  - Large individual and societal costs of harmful drug use
  - Imprisonment as a window of opportunity?
  - **Systematic screening = important first step in identifying treatment needs**
- Connection to the labour market had a protective effect on mortality

Next:







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on [www.prisud.no](http://www.prisud.no) and  
Instagram [prisud.no/](https://www.instagram.com/prisud.no/)

*PriSUD* has been developed at the Norwegian Center for Addiction Research (SEPAF) at the University of Oslo. The main goal of the *PriSUD* is to improve mental and physical health, and improve the quality of life for people with substance abuse problems in prison.

*PriSUD* develops knowledge on:

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[Mental Health](#)

[Illness and mortality](#)

[Young people and the elderly](#)

[Women in prison](#)

[Health and lifestyle](#)