

*Predictors of poor health and heroin use
in methadone-treated injecting heroin users:
The importance of methadone dosage and crack cocaine use*

Felicia Heidebrecht, Jenny Corless, Mary Bell Macleod and Lynne Dawkins

Background

Higher doses of MTD → better outcomes (Heroin-only users)

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- IV use on OST → increased risk of OD and CVD
- Use of high risk IV sites and crack IV use → CVD

Gjersing & Bretteville-Jensen (2017)
Heidebrecht et al (2018)
Lions et al (2014)
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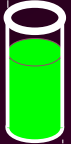
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Higher doses of MTD → better outcomes (heroin and crack users) ?

To explore the **physical health, hepatitis C** and **heroin use** of **IV drug users** in **methadone** treatment by comparing

high  (≥ 70 mg daily) vs.

low  (< 70 mg daily) dose

and **crack** use.

Sample: current/previous IV users of heroin in methadone treatment in two community drug services in London, UK

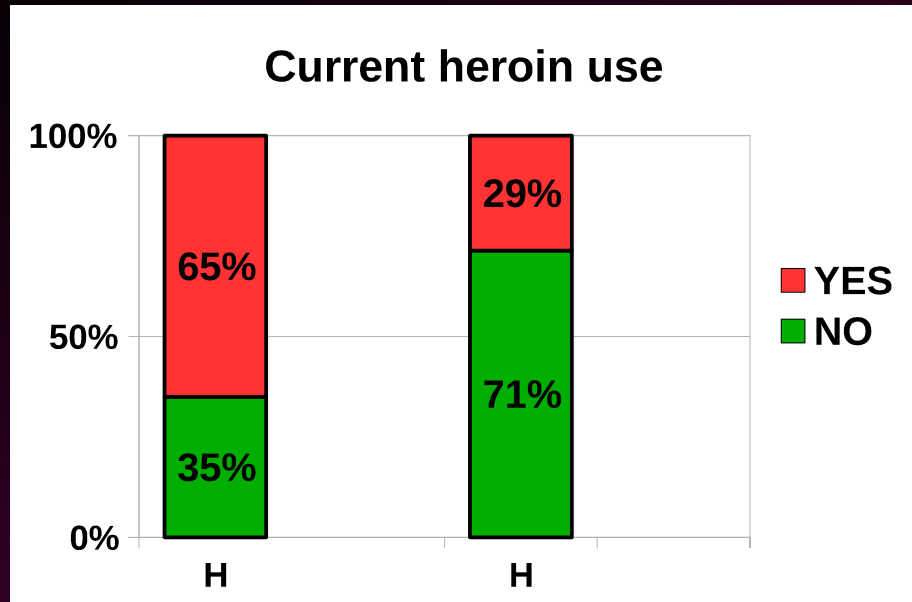
Data collection: Part 1: clinical records (H+C and H-only users), N=255
Part 2: in-depth interviews (H+C users), N=36

Outcomes: Heroin use
Hepatitis C infection
Poor health: medium to severe IV-related events such as septic arthritis, septicaemia, DVT, PE, endocarditis, stroke.

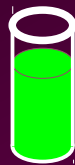
Clinical records (H+C and H-only users)

N=255

Results – Part 1, N=255

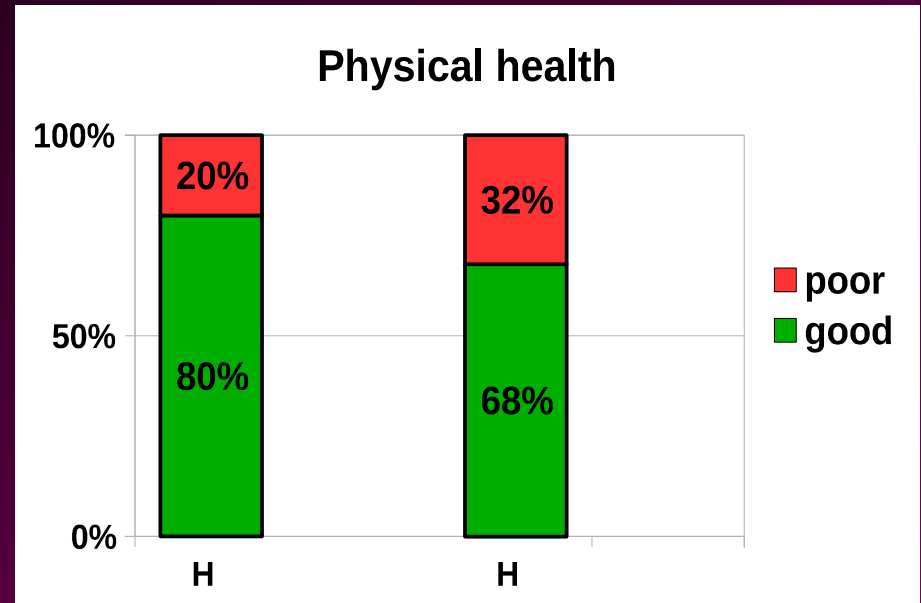
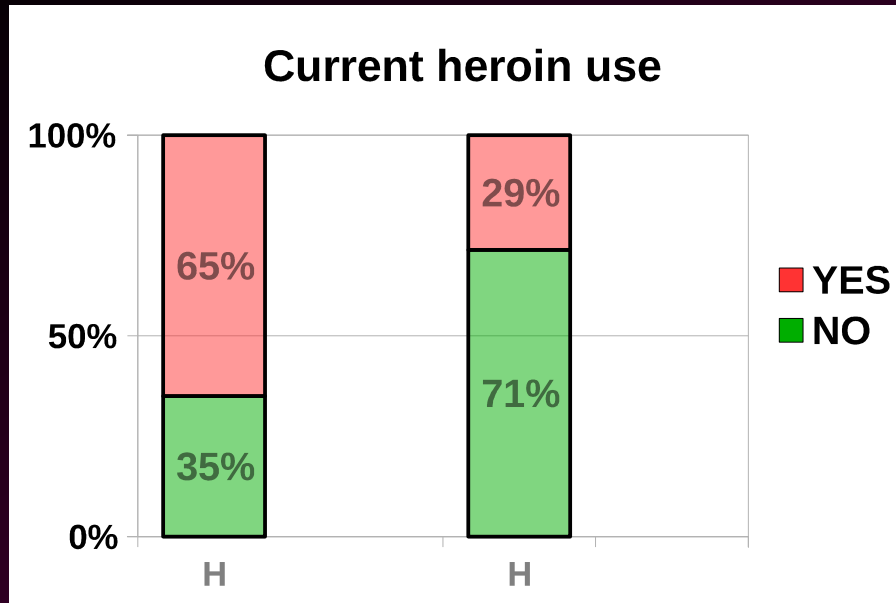


MTD

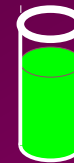
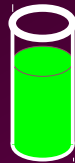


Heroin-only users: High MTD → fewer H users

Results – Part 1, N=255



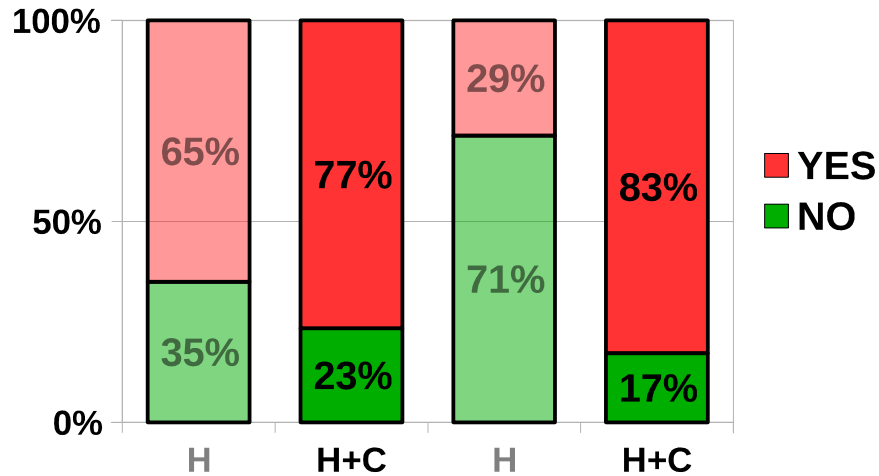
MTD



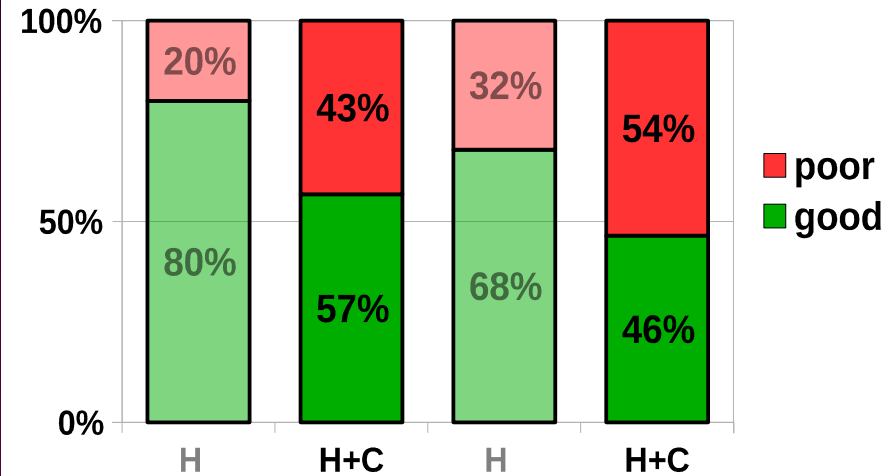
Heroin-only users: High dose of MTD → more people with poor health

Results – Part 1, N=255

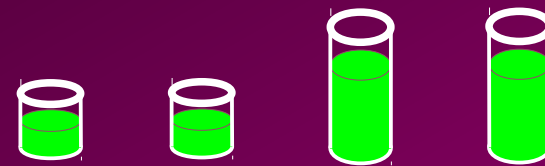
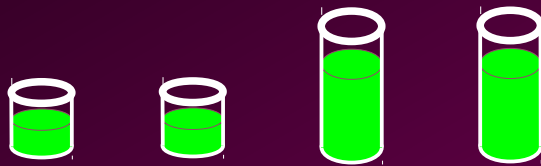
Current heroin use



Physical health



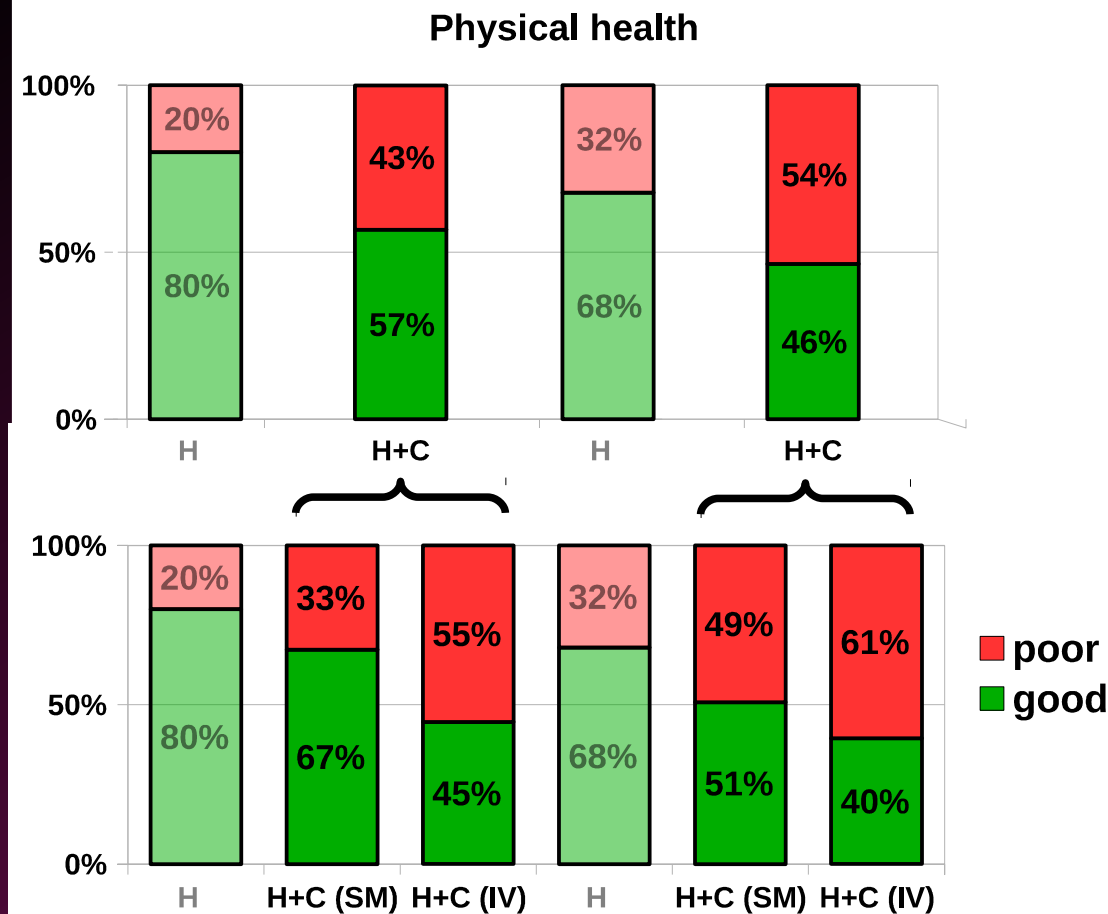
MTD



Dual users: more heroin users and less in good health regardless of dose; effects stronger at high dose

Results Part 1, N=255

Any crack use but particularly IV use correlates with poor health

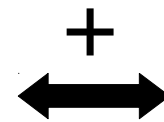


Results Part 1, N=255

Logistic regression model predicting physical health

	p	OR	95% CI for OR	
			Lower	Upper
Ever injected crack	0.00	3.29	1.85	5.86
Methadone dose	0.03	1.35	1.03	1.77
Alcohol use	0.04	1.38	1.01	1.90
duration of drug use and treatment	0.00	1.05	1.03	1.09
Constant	0.00	0.29		

- high MTD
- duration of use and treatment
- frequent drinking (≥ 14 days/month)
- IV crack



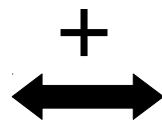
Poor Health

Results Part 1, N=255

Logistic regression model predicting current heroin use

	p	OR	95% CI for OR	
			Lower	Upper
Ever injected crack	0.03	2.31	1.10	4.86
Ever used crack	0.00	3.51	1.56	7.90
Methadone dose	0.71	0.87	0.40	1.87
Mental Health	0.33	0.70	0.34	1.43
Ever used crack x Methadone dose	0.00	11.72	2.52	54.58
Mental Health x Methadone dose	0.00	0.08	0.02	0.36
Constant	0.00	2.62		

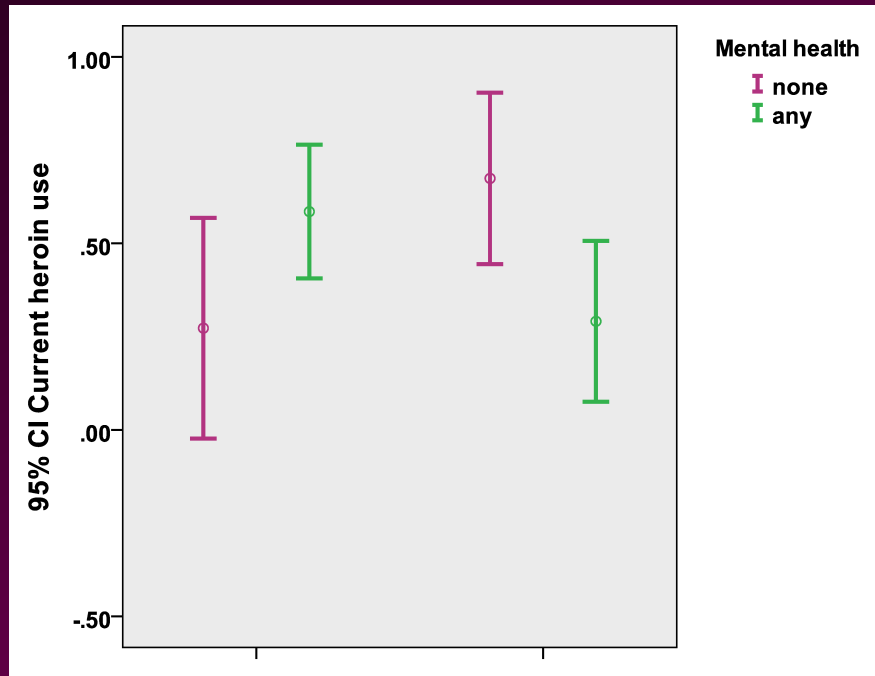
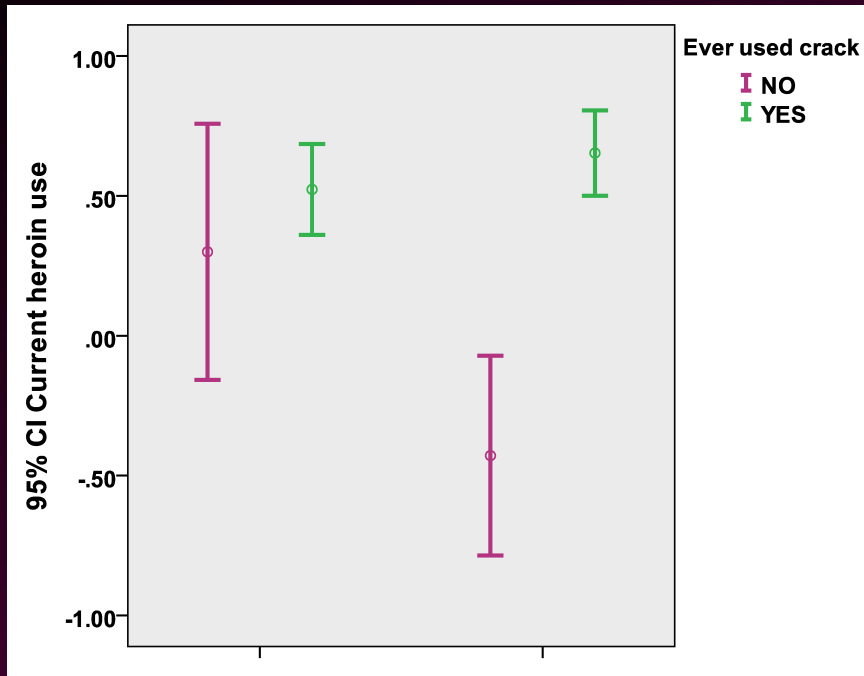
• IV crack



Current heroin use

Results Part 1, N=255

Logistic regression model predicting current heroin use - interactions



MTD



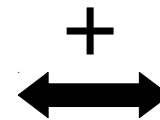
- High MTD predicted heroin abstinence only for those not using crack
- On high MTD participants with a mental health condition were less likely to use heroin; on low MTD the opposite was found

Results Part 1, N=255

Logistic regression model predicting Hep C infection

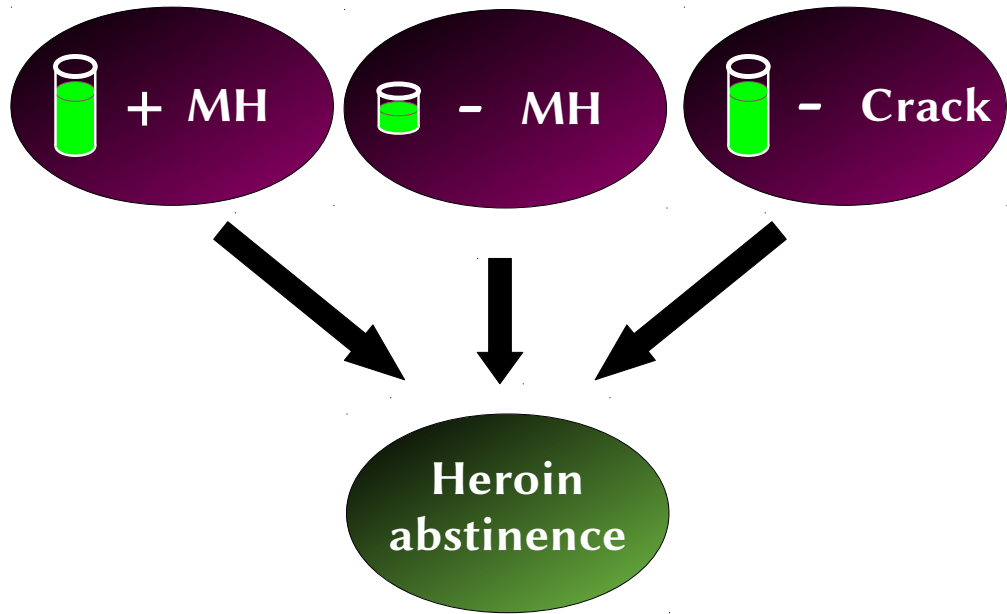
	p	OR	95% CI for OR	
			Lower	Upper
Ever injected crack	0.00	2.34	1.31	4.16
duration of drug use and treatment	0.00	1.06	1.03	1.09
Constant	0.01	0.39		

- IV crack
- duration of use and treatment

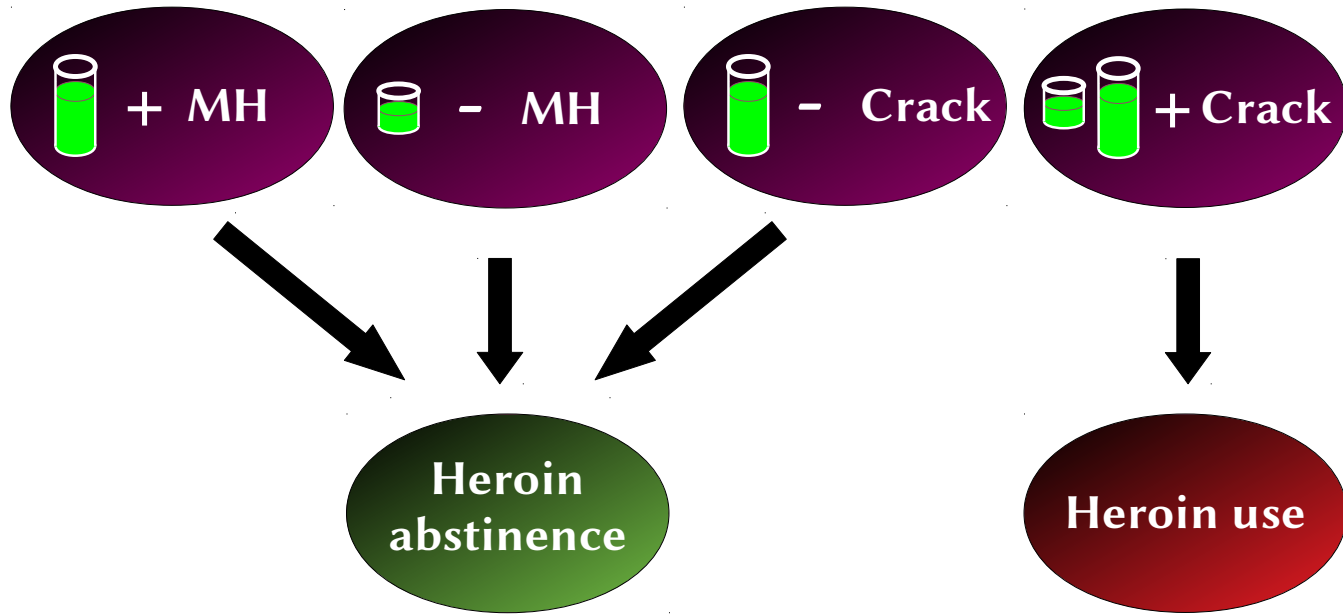


Hep C

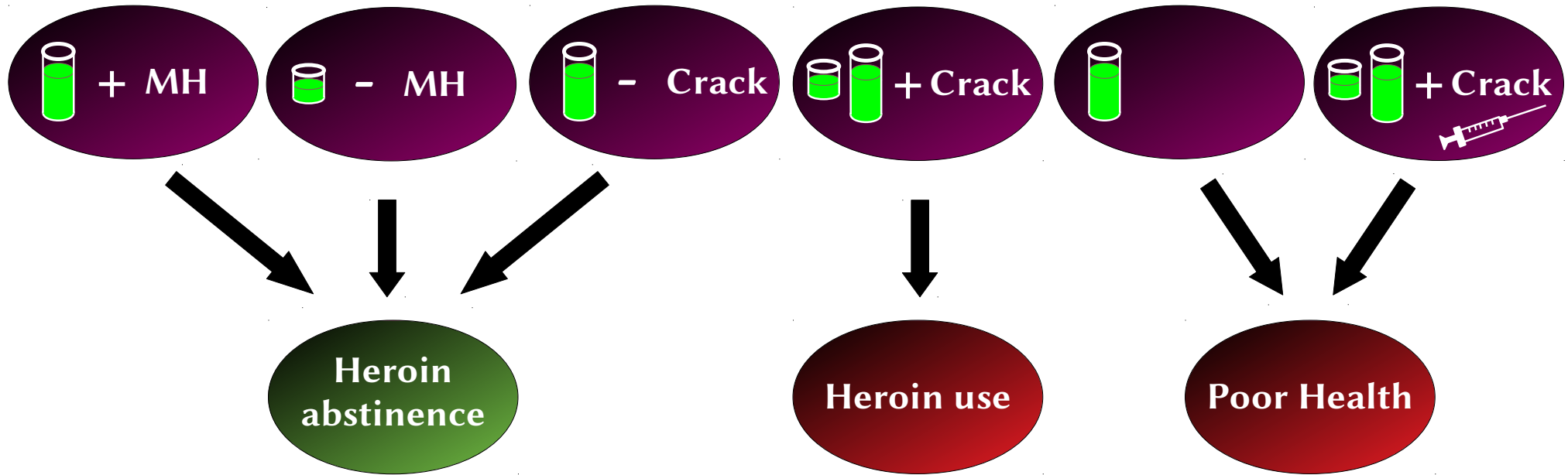
Summary



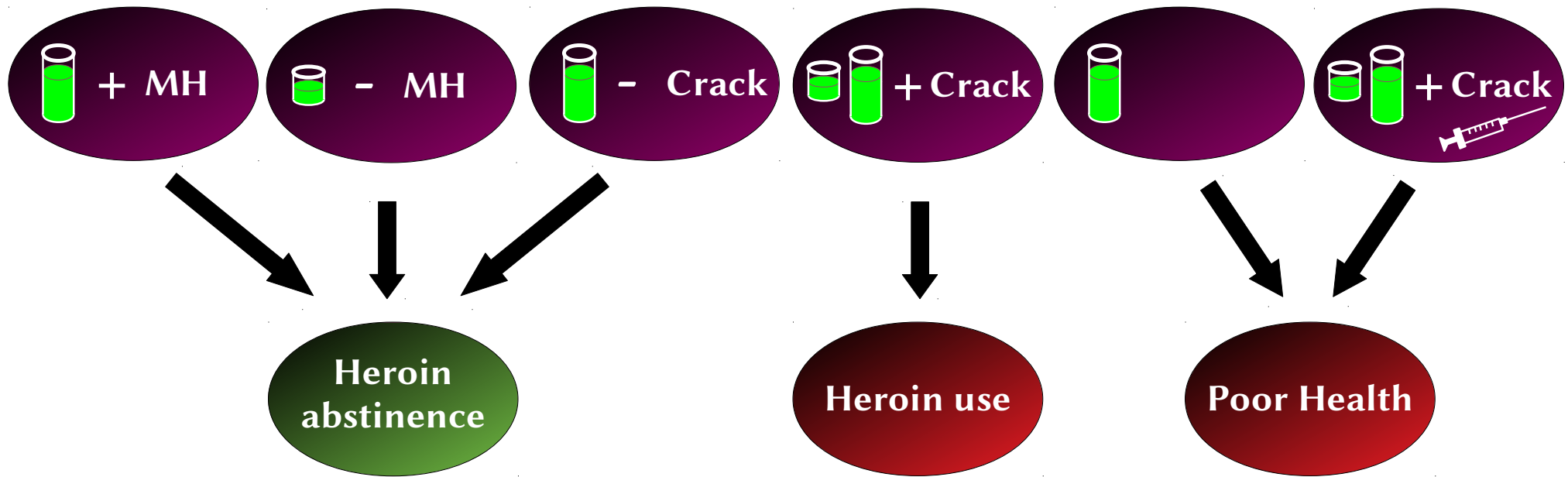
Summary



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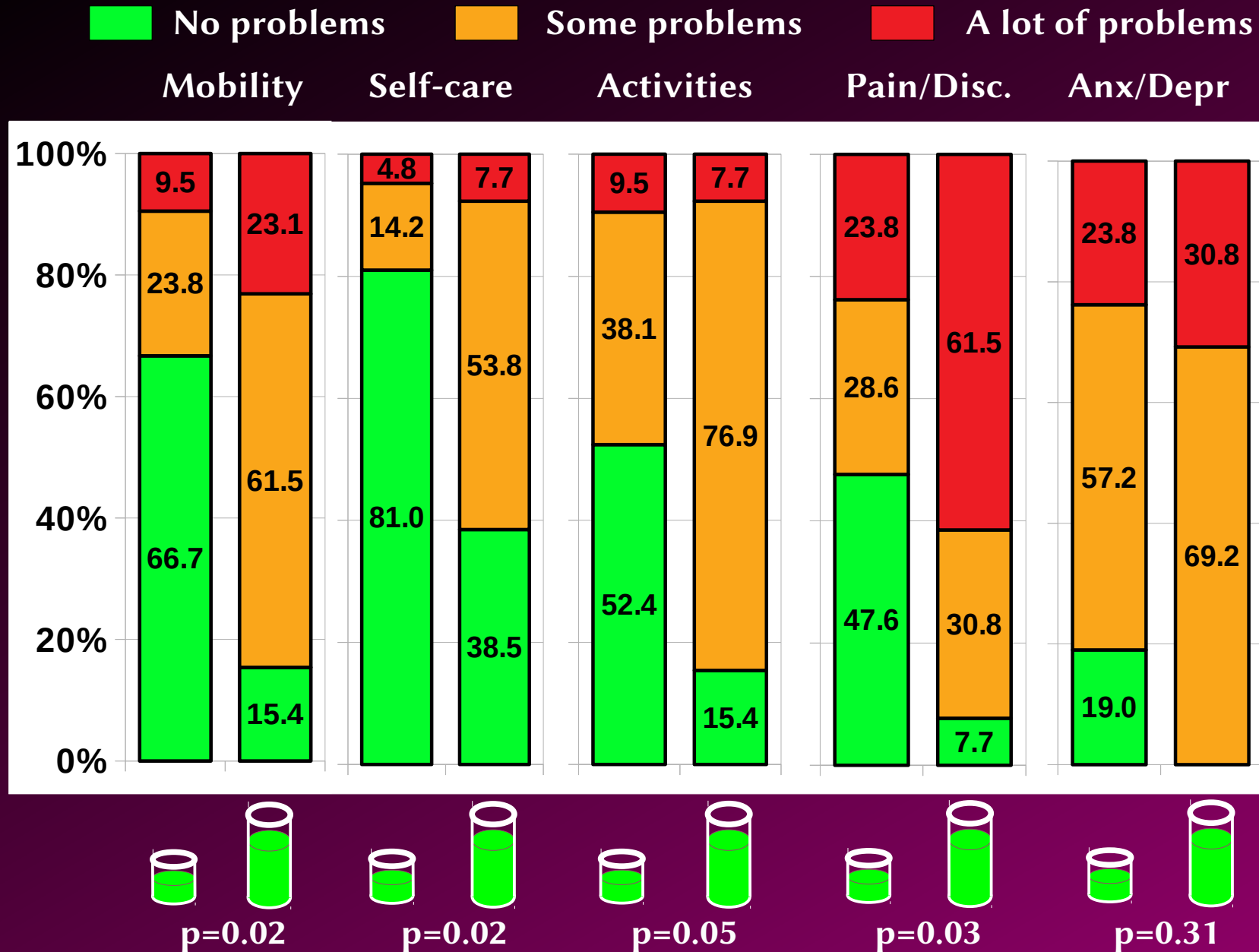


- Methadone dosage can affect outcomes in different ways
- When optimizing methadone dosage it may be important to consider individual differences such as crack use and injecting, and mental health

In-depth interviews (H+C users)

N=36

Results – Part 2, N=36 EQ-5D-3L


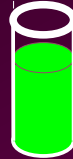


Results – Part 2, N=36

Bivariate associations with physical health

	p	OR	95% CI for OR	
			Lower	Upper
High methadone dose	0.05	4.37	1.03	18.63
Age	0.03	1.12	1.01	1.24
Duration of drug use and treatment	0.01	1.16	1.03	1.29
Duration of methadone treatment	0.01	1.16	1.04	1.29
Duration of crack use	0.49	1.02	0.96	1.10
Duration of heroin use	0.07	1.08	0.99	1.17
Duration of intravenous drug use	0.02	1.11	1.01	1.21
Duration of intravenous drug use on MTD	0.01	1.33	1.09	1.64
Duration of intravenous drug use off MTD	0.65	1.02	0.93	1.12
Use of high risk injecting sites	0.00	10.00	2.06	48.56
Age of first drug use	0.02	0.82	0.69	0.97
Injecting technique	0.86	1.12	0.30	4.24
Cardiovascular risk	0.26	2.50	0.51	12.14
Homelessness	0.22	0.40	0.09	1.76

Sample characteristics - Part 2, N=36

		
%	N=22	N=14
Frequent OD	27	43
High-risk injecting sites*	27	64

* groin, neck

Results – Part 2

High risk IV sites and health



Transition to regular use of high risk site (%)		
Never ¹	73	36
Before first treatment episode	5	0
After or during first maintenance episode	18	57
Could not remember when	4	7
Major health event (DVT/stroke) (%)		
Never	86	50
Before first treatment episode	5	0
After or during first maintenance episode	5	36
Could not remember when	4	14

Results – Part 2



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Never	86	50
Before first treatment episode	5	0
After or during first maintenance episode	5	36
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Transition to high risk sites and severe health complications took place mainly during or even after first MTD treatment episode

Results – Part 2, N=36

		
Reasons for stopping injecting (%)		
Wanted to improve my health	62	18
Can't find veins anymore on low risk site	31	18
Can't find veins anymore on high risk site	15	9
Other (specify)		
· Social (e.g. family events they wanted to be fully involved in, children, wanted a different life, relationship with non-IV user)	36	27
· Overdose event or major IV-related health problem	0	46
Switch to heroin smoking (%)		
Never	23	57
Transition from IV to SM	77	43
Avg years of MTD treatment:	10.7	15.6

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severe health complication ± no veins at a high-risk site



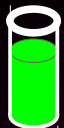
switch to smoking when no veins at lower-risk sites, high-risk sites = 'no go'

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Not MTD but choices motivated by personal circumstances and beliefs

Summary

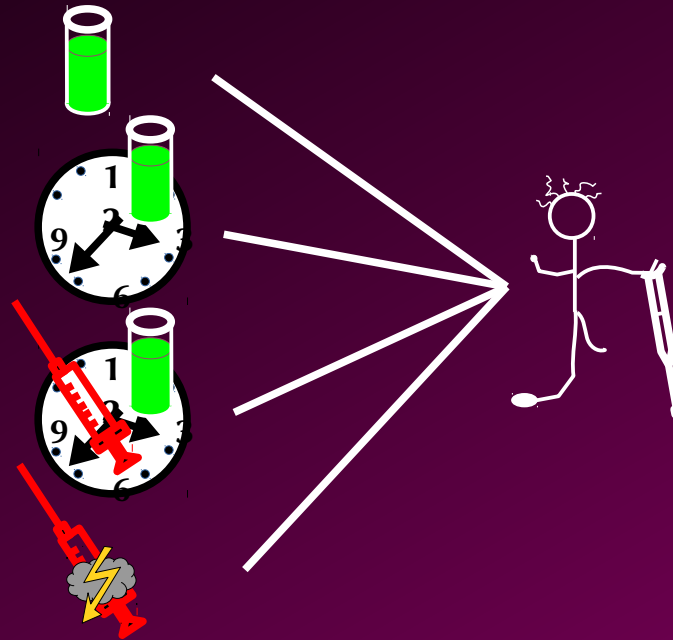
In a population of users of heroin and crack:

High MTD dose

Longer times on MTD

Longer IV use on MTD

High-risk IV sites



Transition to high risk IV sites and severe health complications mainly during or after first MTD maintenance treatment episode

Transition from IV to smoking mainly on low MTD dose

Summary

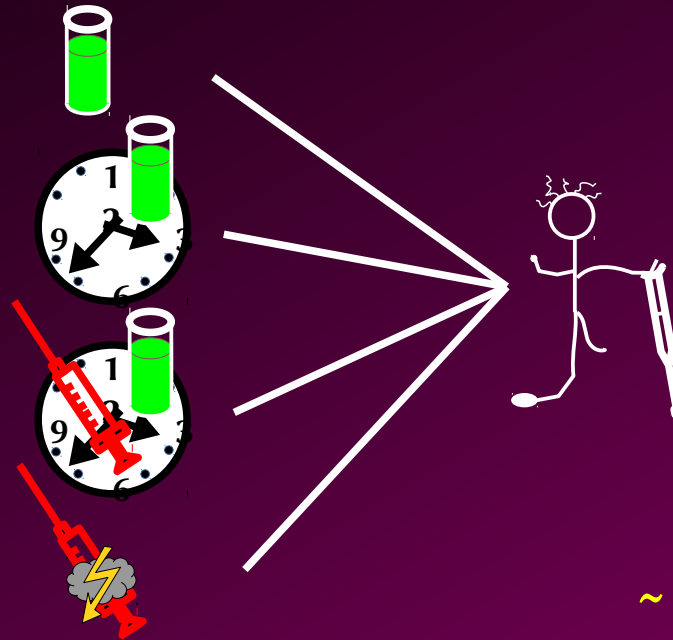
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High MTD dose

Longer times on MTD

Longer IV use on MTD

High-risk IV sites



36% were 50y+
~ 60% were 45y+

Transition to high risk IV sites and severe health complications mainly after or during first MTD maintenance treatment episode

Transition from IV to smoking mainly on low MTD dose

Possible scenario

MTD

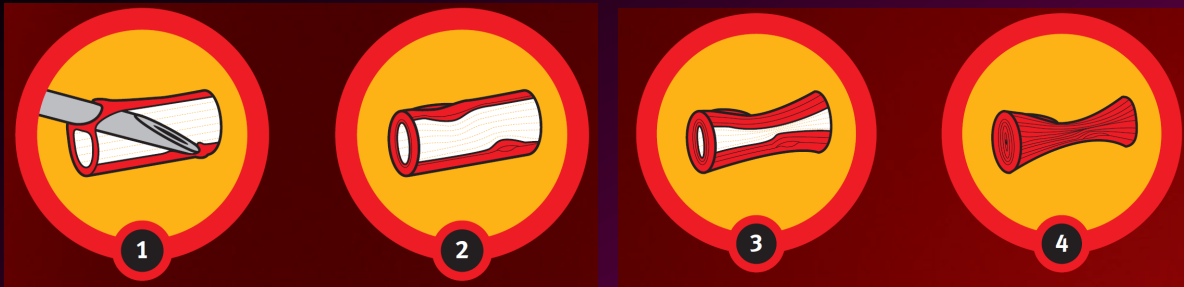
- Stability, better quality of life
- Better conditions for safer IV use
- IV use cessation/Less frequent IV use
- More health care access

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Vein damage can be a long-term process



How veins collapse
www.exchangesupplies.org

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MTD

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Vein damage can be a long-term process



How veins collapse
www.exchangesupplies.org

For people who continue injecting:

MTD minimizes acute IV complications



Doesn't stop chronic vein damage and associated CV events



Why the dose effect?

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MTD stops the withdrawals but does not give people the same 'high'

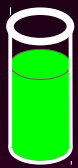
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MTD stops the withdrawals but does not give people the same 'high'

MTD does not address the cravings for crack or for a *combination* of heroin and crack

- 
- lower tolerance
 - easier to switch to smoking because smoking → 'high'

- 
- Higher tolerance
 - IV use → 'high'
→ physical health deterioration

Conclusions

→ individual differences might need to be taken into consideration when optimizing methadone dosage

→ for dual users, especially when on high dose of methadone, if there is little change in IV, or even progression to high-risk sites:

- **the risk of overdose needs to be reconsidered**
- **IV use and crack use need to be addressed to prevent further health deterioration.**

Final Thoughts

Recent studies that support our findings:

- IV use decrease when MTD + PSI (Wang et al 2014)
- IV on MTD → higher CVR; CVD monitoring (Thylstrup et al 2015)
- higher MTD dose ↔ increased DR deaths in older clients (Gao et al 2016)

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We need more data!

Could treatment monitoring agencies collect data on CVD, injecting sites and transitions, OST dosage → National/European correlates?

Acknowledgements

- Drs. Francesca and Paola Fanari
- Jean Pender and the Teams in the two London Drug Services
- *Lifeline Project* for partially funding this research
- *Indivior* for sponsoring FH to present this work at EUROPAD

More on my research:

Posters P-09 and P-10

www.lifeinmymind.net