Models of care and outcomes in PWID in Iceland. Results from Treatment as Prevention for Hepatitis C (TraP HepC) nationwide Program

Magnús Gottfredsson[1,2,3]

[1]Division of Infectious Diseases, Landspitali University Hospital;
[2]Faculty of Medicine, School of Health Sciences, University of Iceland;
[3]Department of Science, Landspitali University Hospital;

Viral Hepatitis Prevention Board
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Disclosures

Gilead provides DAAs in support of the TraP HepC research project

MG: Speaker (Gilead)

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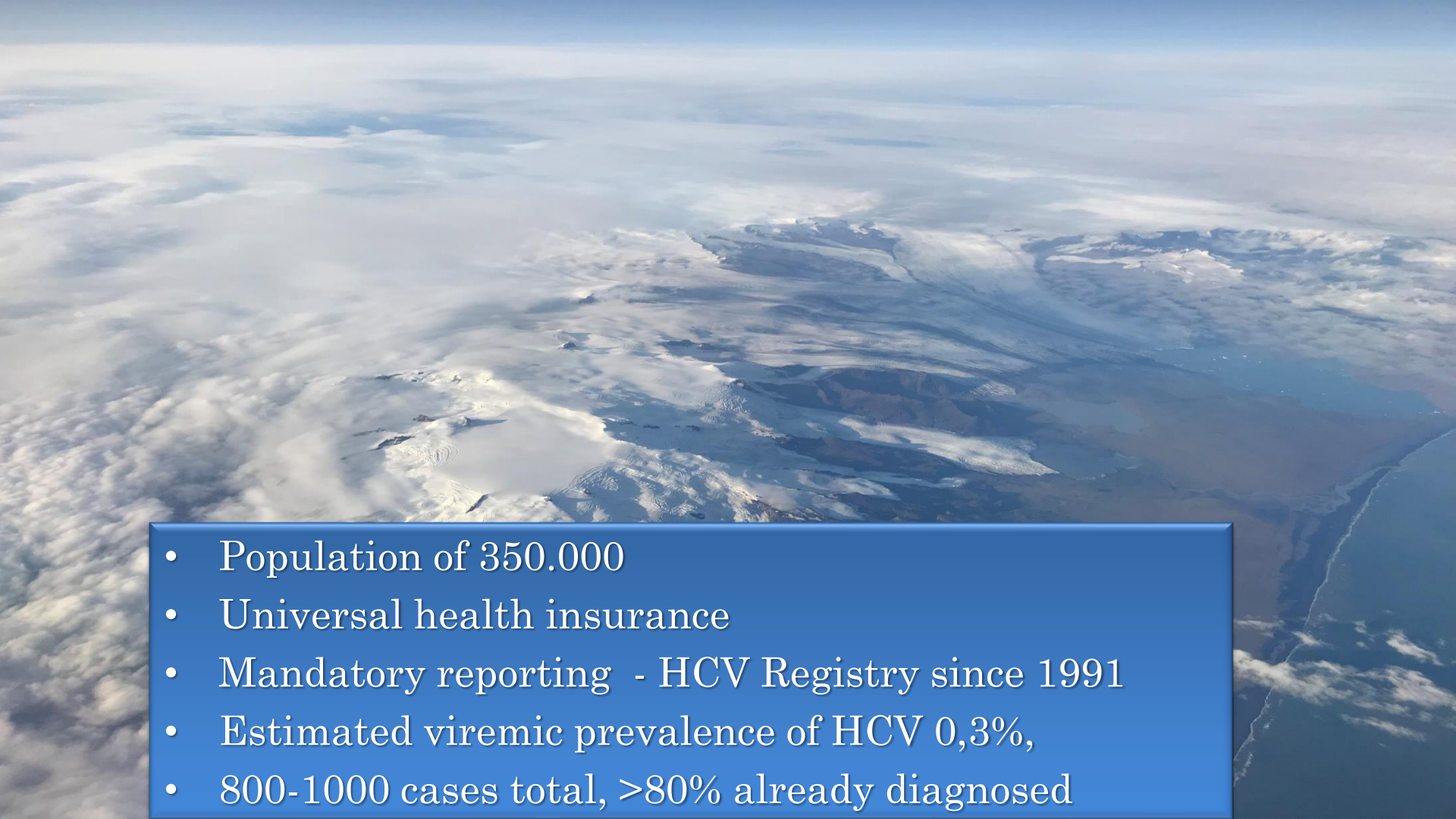
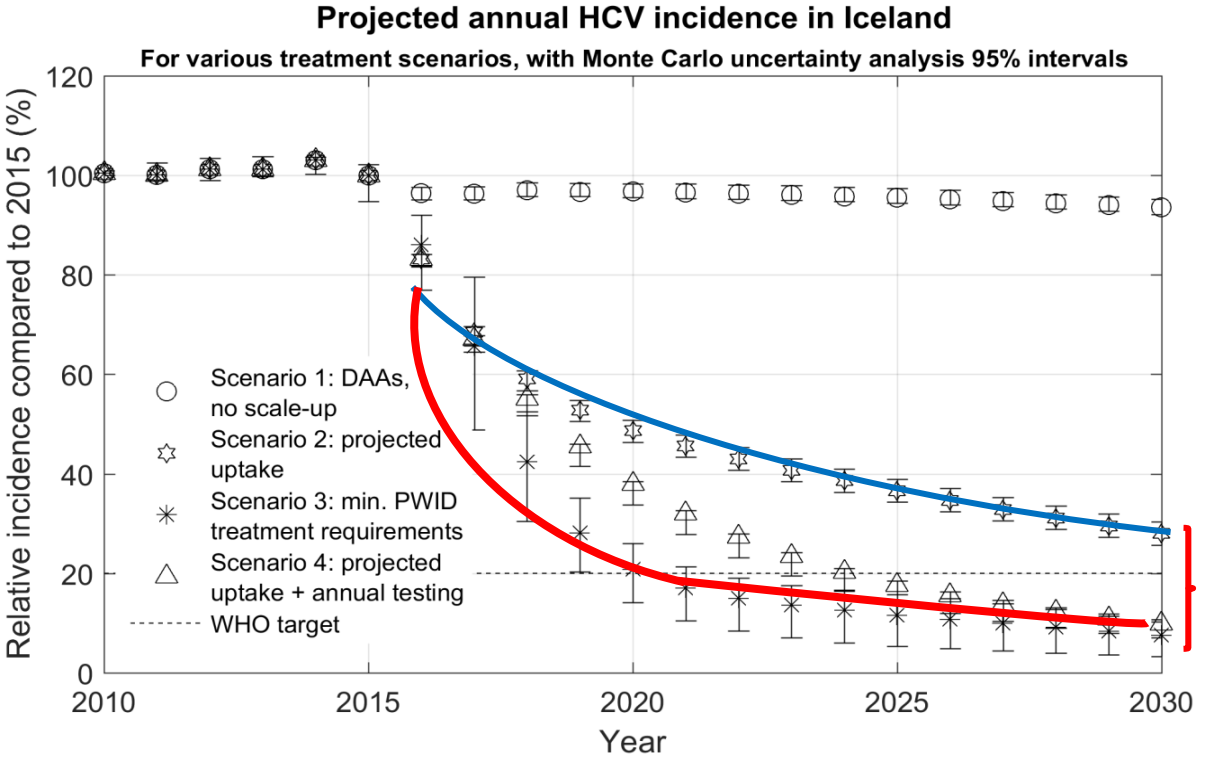


- Population of 350.000
- Universal health insurance
- Mandatory reporting - HCV Registry since 1991
- Estimated viremic prevalence of HCV 0,3%,
- 800-1000 cases total, >80% already diagnosed

Modelling elimination of hepatitis C in Iceland: *a goal attainable by 2020?*



Scott et al. J Hepatol 2018. May;68(5):932-939.

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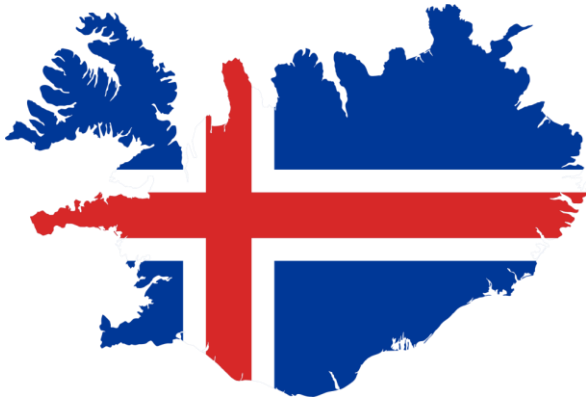
TraP HepC: for whom – when – where - which ?

- **All** HCV PCR positive individuals living in Iceland
  - Actively injecting drugs
  - Incarcerated
  - Advanced liver fibrosis/cirrhosis
- DAAs offered from Jan 2016
- Collaboration:
  - Infectious disease
  - Hepatology
  - Addiction medicine
- Treatment regimen:
  - Jan-Oct 2016: ledipasvir/sofosbuvir +/- ribavirin
  - Nov 2016- : sofosbuvir/velpatasvir



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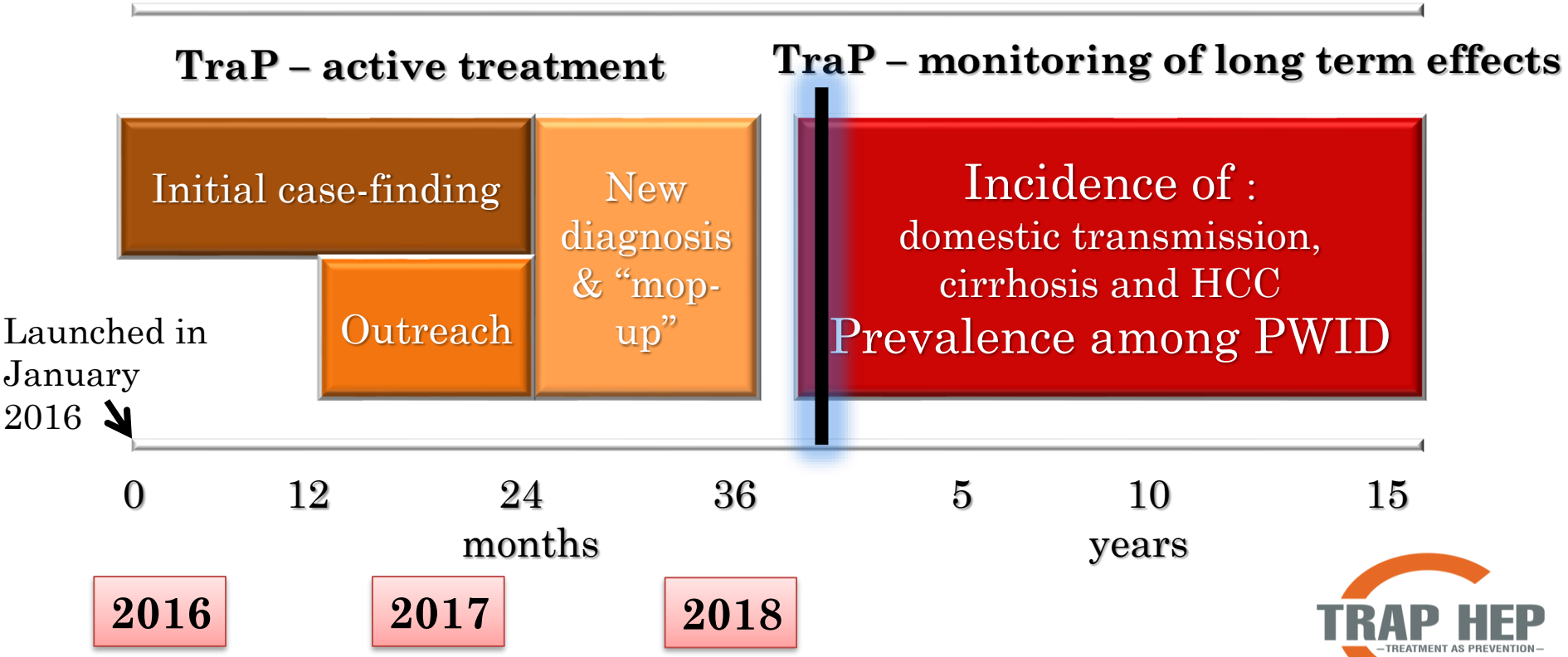
Overall organization of TraP HepC



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Results so far…

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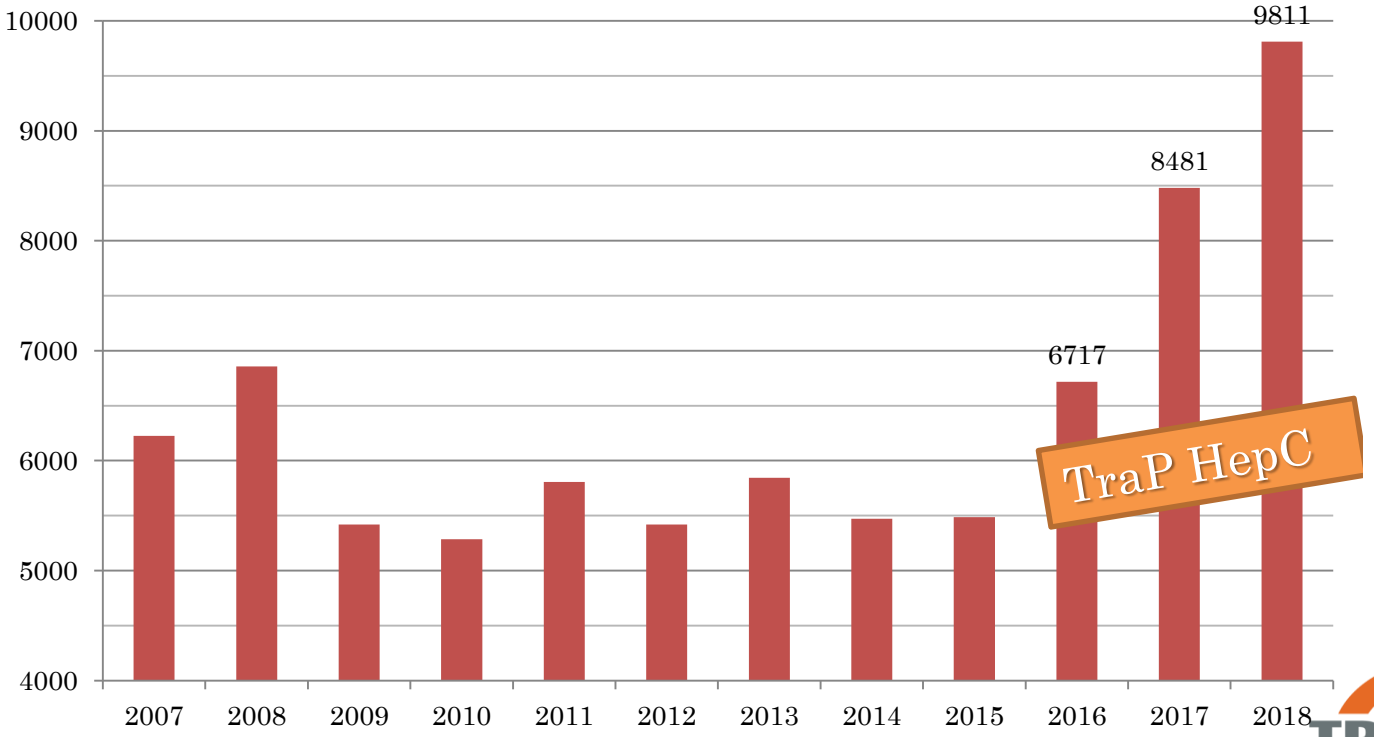
Increased intensity of testing, Iceland 2007-2018



Dept. Virology, Univ. Hospital, 2018

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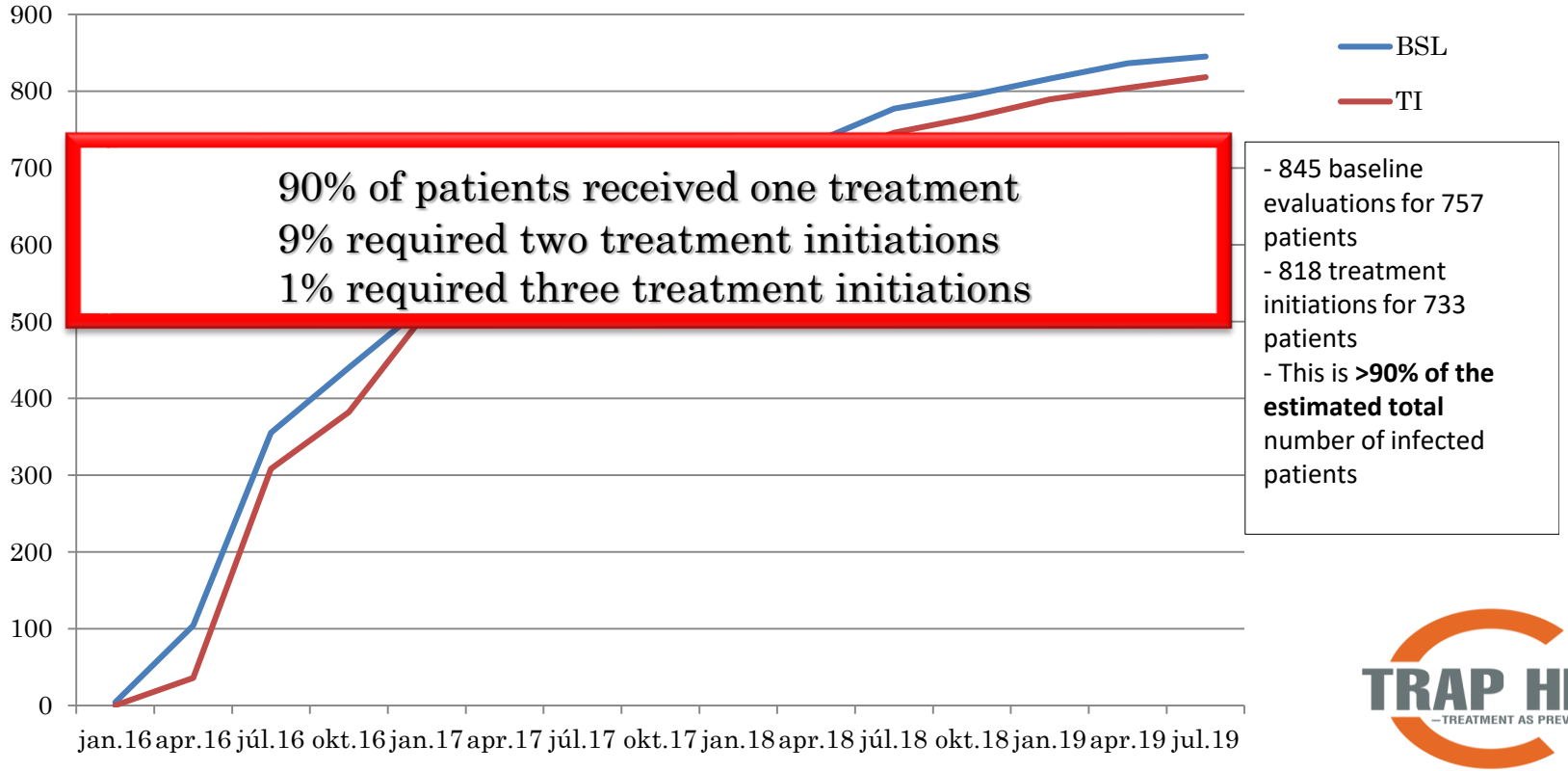
Recruitment and treatment initiations, Jan 2016 – July 2019



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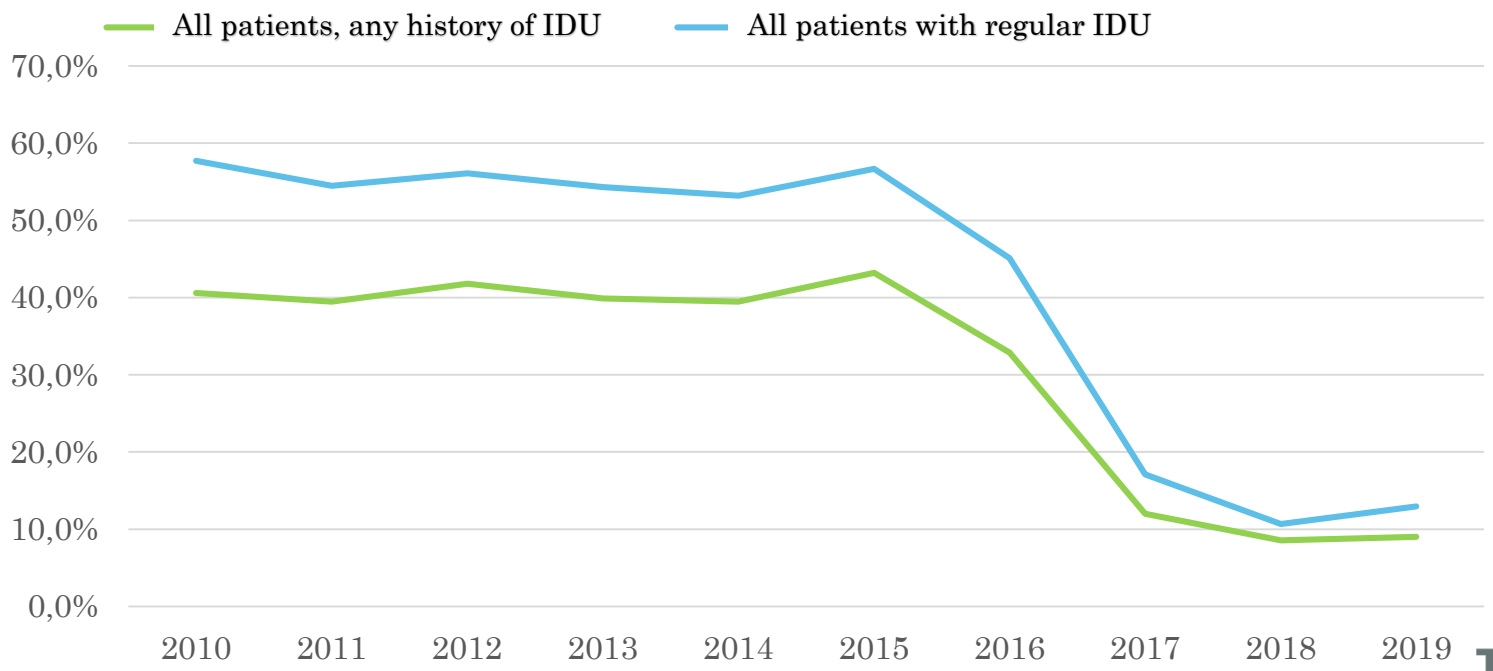
Prevalence of HCV viremia among PWID at Vogur Addiction Hospital 2010 – 2019 (sentinel site)



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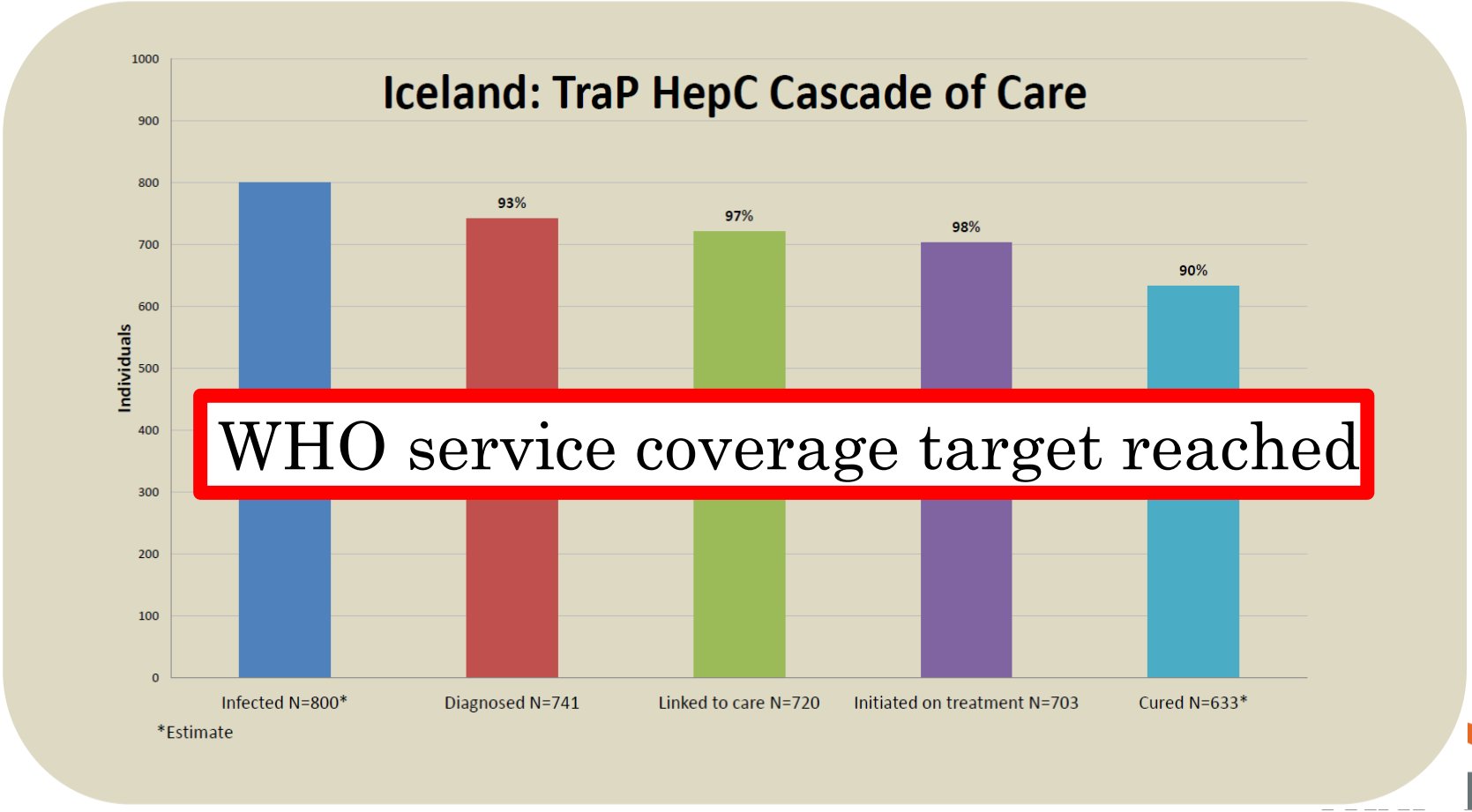

Olafsson et al. EASL, Vienna, 2019

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Study cohort (first Rx, 24 months of enrollment)

N=631

	No IDU within 6 months		IDU within 6 months		
	n	Prop. or Mean - IQR	n	Prop. or Mean - IQR	
Age	421	46,1	210	37,4	
Female	143	34,0%	62	29,5%	0,2798
Living situation					
Own property/rental/relatives	379	90,0%	106	50,5%	**<0.0001**
Halfway house	17	4,0%	41	19,5%	**<0.0001**
Penitentiary	12	2,9%	21	10,0%	**0,0004**
Homeless/streets	4	1,0%	36	17,1%	**<0.0001**
Other/Unknown	9	2,1%	6	2,9%	0,5864
Encounter site					
University Hospital	333	79,1%	94	44,8%	**<0.0001**
Addiction treatment center	80	19,0%	92	43,8%	**<0.0001**
Penitentiary	8	1,9%	21	10,0%	**<0.0001**
Other	0	0,0%	3	1,4%	0,0365
IV drug use					
Ever	334	79,3%	210	100,0%	**<0.0001**
Within 6 months	0	0,0%	210	100,0%	NA
Wihin 30 days	0	0,0%	116	55,2%	**<0.0001**
Within 7 days	0	0,0%	67	31,9%	**<0.0001**
Current OST	27	6,4%	33	15,7%	**0,0071**
Preferred IV drug					
Stimulants	286	61,4%	180	85,7%	**<0.0001**
Opiates	38	11,4%	29	13,8%	0,0748

Comparison of outcomes by IDU status

N=631	No IDU within 6 months		IDU within 6 months		
	n	Prop. or Mean - IQR	n	Prop. or Mean - IQR	
Outcomes - intention to treat					
Overall cure rate	389	92,4%	174	82,9%	**0,0006**
Confirmed PCR positive	18	4,3%	28	13,3%	**<0.0001**
Missing SVR12+ PCR	14	3,3%	8	3,8%	0,8187
Outcomes - completer analysis					
Did not start treatment	1	0,2%	2	1,0%	0,2582
Discontinued treatment	19	4,5%	32	15,2%	**<0.0001**
Completer cure rate (n=580)	383	95,3%	160	89,9%	**0,0254**

Cure rates lower among IDU on first attempt
…but excellent none the less!

Comparison of outcomes among recently injecting

n=210	Cured		Missing		Viremic		Relative risk of failing to achieve cure			
	n	%	n	%	n	%	RR	95% CI		p
Overall cure rate	174	83%	8	4%	28	13%	NA	NA	NA	NA
Female	48	77%	2	3%	12	19%	1,519	0,83	2,77	0,2277
Diagnosed with cirrhosis	5	71%	0	0%	2	29%	1,714	0,51	5,76	0,3418
Living situation										
Halfway house	38	93%	1	2%	2	5%	0,375	0,12	1,16	0,0676
Homeless/streets	24	67%	0	0%	12	33%	**2,417**	1,34	4,37	**0,0077**
Other	4	67%	0	0%	2	33%	2	0,62	6,46	0,2739
Own property/rental/relatives	91	86%	6	6%	9	8%	0,701	0,38	1,28	0,2752
Penetentiary	17	81%	1	5%	3	14%	1,125	0,44	2,87	0,7641
IDU										
IVD use in last 7 days before baseline visit	51	76%	3	4%	13	19%	1,707	0,95	3,08	0,0811
IVD use in last 30 days before baseline visit	91	78%	5	4%	20	17%	1,842	0,96	3,55	0,0672
Using opiate substitution treatment (OST)	24	73%	1	3%	8	24%	1,778	0,92	3,43	0,1287
Preferred IV drug type										
Opiates	20	69%	1	3%	8	28%	2,08	1,09	3,96	0,0585
Stimulants	153	85%	7	4%	20	11%	0,5	0,26	0,96	0,0636
Virology										
HIV positive	15	83%	0	0%	3	17%	0,995	0,34	2,93	1,0000
Genotype 1a	54	86%	2	3%	7	11%	0,778	0,39	1,56	0,5523
Genotype 3a	120	82%	6	4%	21	14%	1,286	0,64	2,57	0,5523

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Comparison of outcomes among recently injecting (2)

n=210

Use of non-IV drugs at baseline	Cured		Missing		Viremic		Relative risk of failing to achieve cure		
	n	%	n	%	n	%	RR	95% CI	p
Alcohol within 7 days	41	84	0	0	8	16	0,94	0,46-1,92	1,000
Non-IV drugs	67	78	3	3	16	19	1,59	0,88-2,87	0,1394
Cannabis within 7 days	48	80	3	5	9	15	1,25	0,67-2,34	0,5331
Opiates within 7 days	20	77	1	4	5	19	1,42	0,65-3,07	0,4066
Stimulants within 7 days	38	79	2	4	8	17	1,3	0,67-2,50	0,5130
Sedatives within 7 days	23	72	1	3	8	25	1,85	0,96-3,57	0,0799

Multivariate model:
Only homelessness is significant

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Challenges…

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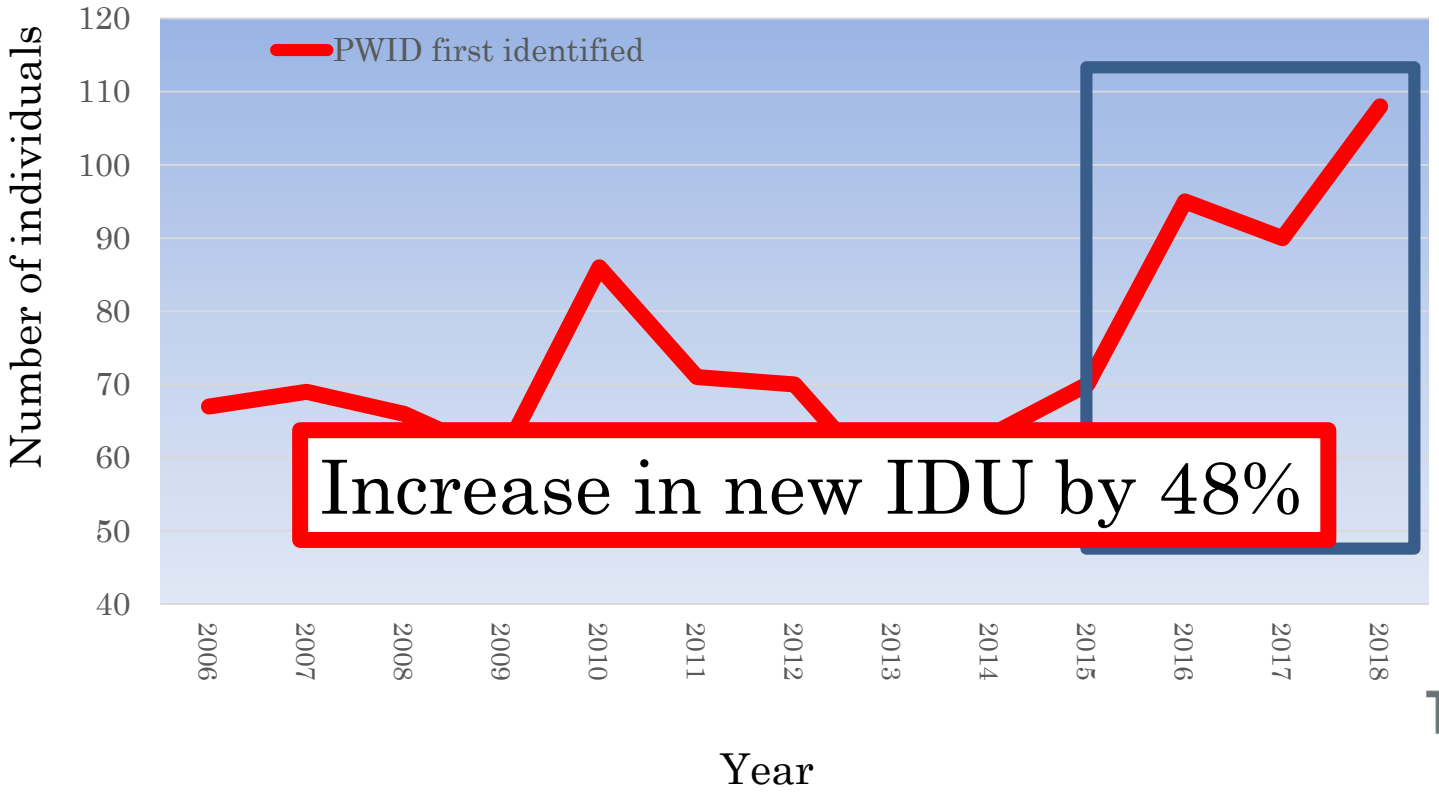
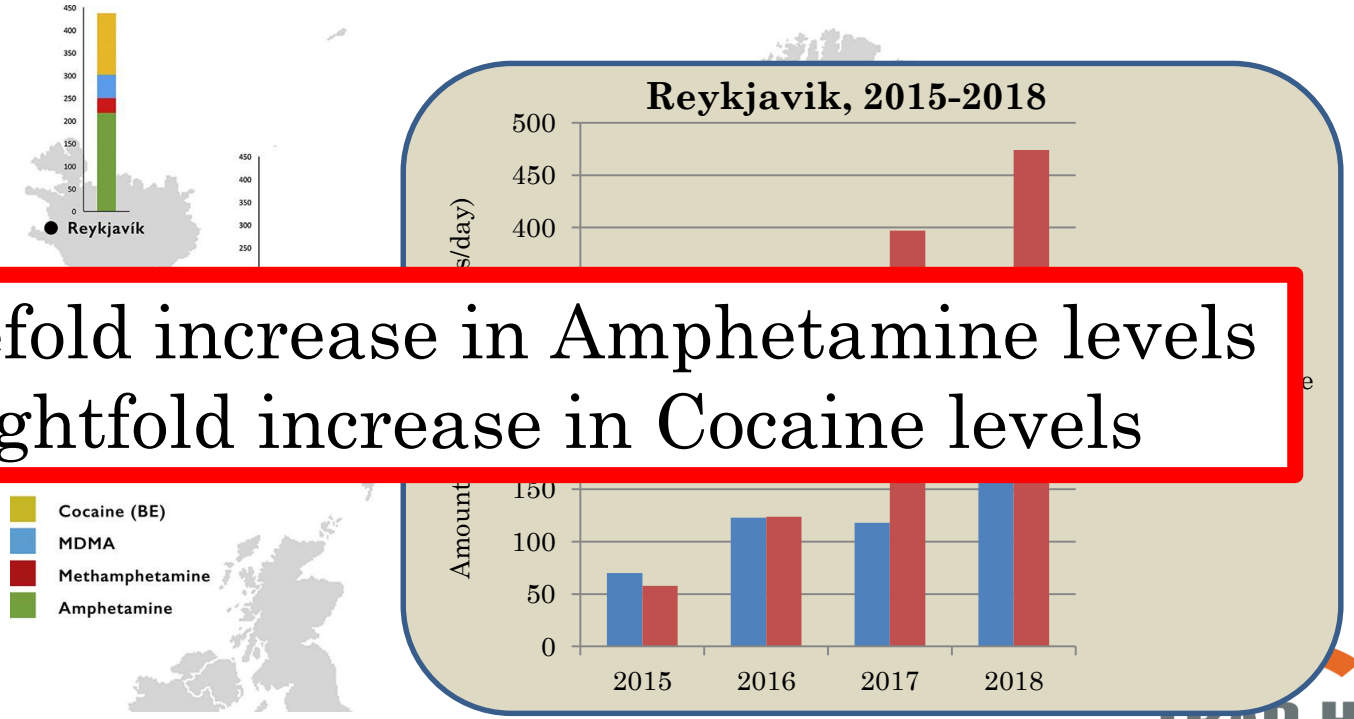
Increasing number of PWID identified first time at Vogur Addiction Hospital 2006 - June 2018



Analysis of stimulant drug use by wastewater measurements in five Nordic capitals



Threefold increase in Amphetamine levels
Eightfold increase in Cocaine levels

Löve A. et al. Sci Total Environ. 2018;627:1039
http://www.emcdda.europa.eu/topics/pods/waste-water-analysis#panel2

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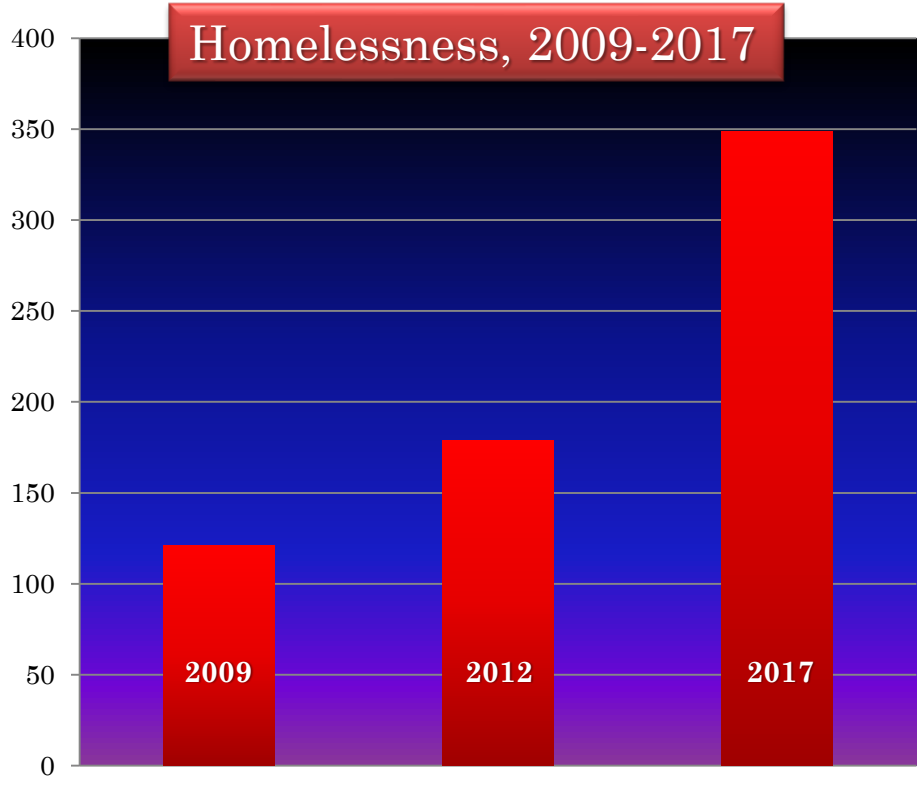
Homelessness in Reykjavik, Iceland



Main reasons for homelessness

1, Use of drugs (excl.alcohol)	67%
2. Alcoholism	57%
3. Psychological problems	39%
4. Cannot live with family/rel.	20%

Source: Reykjavik municipality, 2017,
Photo credit: Cherwell

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Summary: Comparison of active IDU vs others

- Analysis of *first treatment attempt* in the TraP HepC program
- Active IDU group significantly more likely to be in shelters, in penetentiary or homeless
- Significantly higher proportion of non-completers (drop-outs) among active IDUs and cure rates lower
- Nevertheless, treatment completion and cure rates are high in both groups (90-95%)!
- Homelessness associated with lower SVR12 in multivariate model

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Conclusions & Challenges

- TraP HepC: Elimination efforts in Iceland going well, even among active IDUs and WHO service coverage targets reached!
- Indicators of protective effects: Halfway housing, early initiation of treatment during detox/treatment for addiction
- Immediate retreatment of reinfections in active users
- Potential independent role of drug choices/usage patterns – associations with needle sharing, compliance and drop-outs?
- Population challenges: Increasing drug use, increasing homelessness
- Strengthen harm reduction, “Keep calm and carry on”!

AAs