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Chronic Viral hepatitis and liver disease in Luxembourg

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Agenda

1) Fibrosis at first diagnosis

2) Estimates of mortality rate

3) Modelisation of HCV Burden

HCV Prevalence, Viremic rate

Model Outputs

- Base scenario
- Increase SVR (JVH)
- Increase SVR and treatment (JVH)
- WHO Recommendations

PWID Transmission

CDA
Center for Disease Analysis

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HCV disease burden

- ✓ Liver related deaths : 14 per year
- ✓ HCC: 16 per year
- ✓ Decompensated cirrhosis: 26 per year

✓ PWIDS HCV-UD since 2015

Fibroscan: 338 results

- 68% F0-1
- 15% F2
- 10% F3
- 7% F4

✓ Database of CHL since 2013

Fibroscan: 426 results

- 76% F0-1
- 16% F2
- 3% F3
- 5% F4

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Estimates of mortality rate

- ✓ Mortality rate estimated using LNS data only:
  - 526 deaths for 26849 person years of observation
  - ~2% per year among HCV positive cases
  - 40% higher death rate among men than women ($p<0.001$)
  - Mortality hazard increases substantially with age

Mortality rate similar to IVDU populations in Europe

- 2.3% (Mathers et al., WHO Bulletin, 2012)

- ✓ Mortality rate at the CHL since 1996 (2439 patients, 68% male, 32 % female, 6% co-infected with HIV)
  - 14% in men
  - 12% in women

- ✓ Mortality in 2015 linked to liver cancer and cirrhosis: 53 / 3939 deaths (1.3%)

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HCV Prevalence

HCV prevalence was first estimated through an analysis of screening data, merged registries and expert communication in 2013

- A viremic rate of 92.9% (CHL registry) was used when adjusting registry cases, and a viremic rate of 77% was further used for other model parameters (Deltenre 2010)

2013	Viremic Prevalence	Viremic Cases
GDL	1.0% (0.9%-1.3%)	5,470 (4,620 – 6,320)

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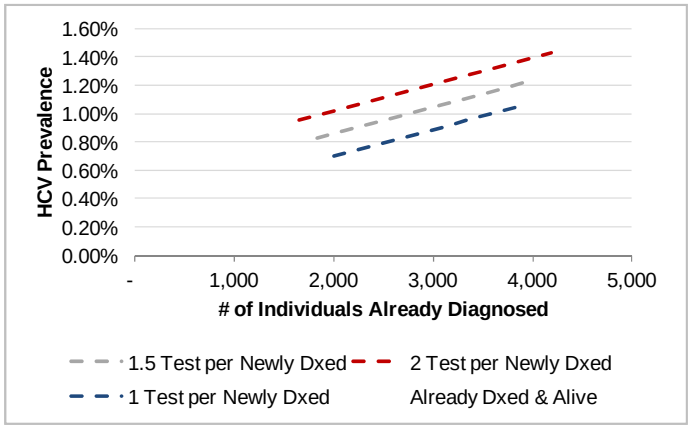
Continuous prevalence and diagnosis curves

Screening Data	2013
Anti- HCV tests reimbursed	31,168
Tests offered per person	1-2
Newly diagnosed anti-HCV cases	130



Screening 31,168 persons at an average rate of 1.5 tests per person identified ~130 new anti-HCV (100 viremic, 77% viremic rate) cases in GDL in 2013

Prevalence and diagnosis rates were calculated continuously, using the available data

Source: Social Security Inspection.

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Previously diagnosed patients in GDL

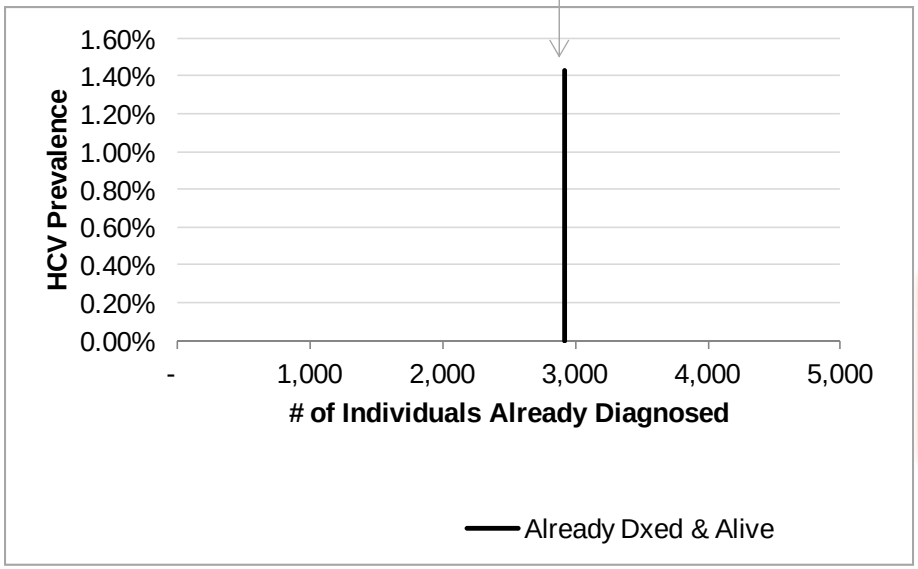
CHL
2,556 pts

LNS
2,205 pts

LR
1,038 pts

Unique
3,898 pts

Alive, Viremic
2,922 pts



Source: CDA model was used to account for annual mortality and cure;
CHL database suggested a 92.85% historical viremic rate among diagnosed cases

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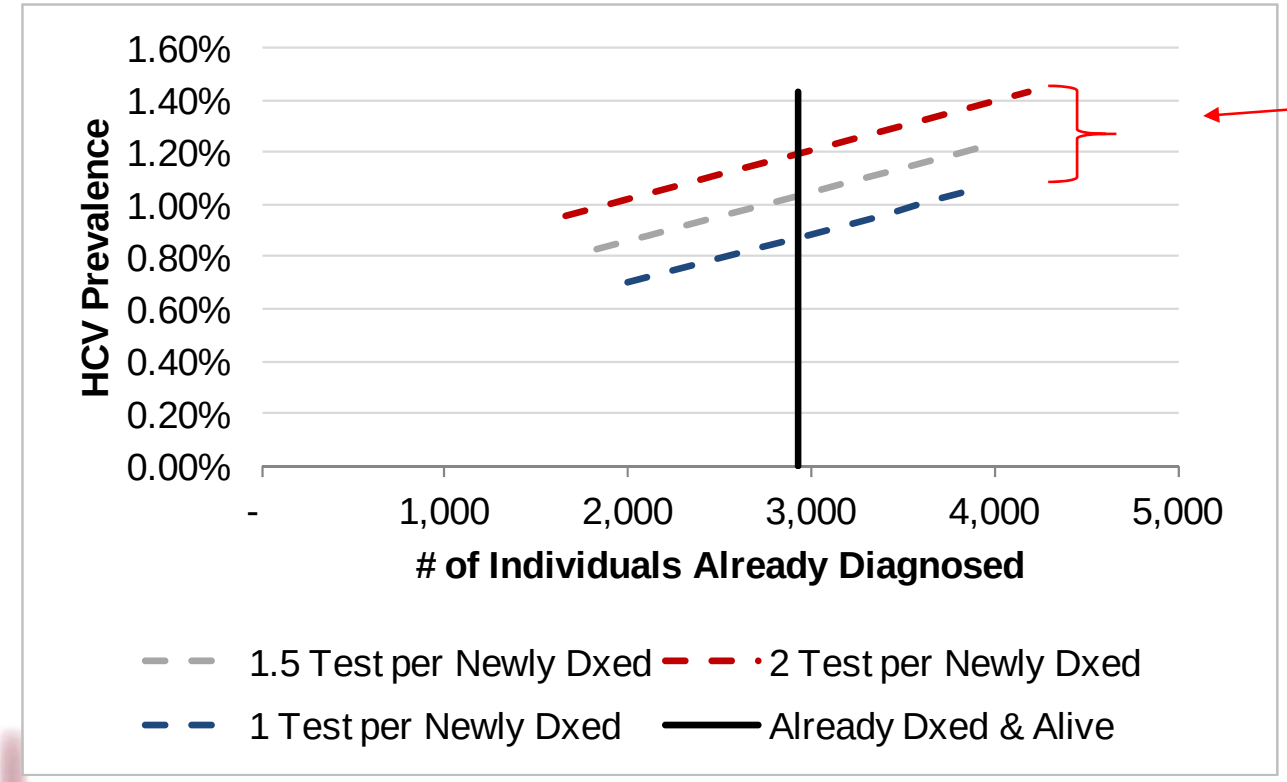
Estimated HCV prevalence



Estimated prevalence in this population = 1.03% (0.87%-1.19%)

: http://polarisobservatory.com/polaris/hepC.htm

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Base scenario

100 patients per year continue to be treated with Peg IFN/RBV and/or triple therapy

Treatment is restricted to ≥F2 patients between the ages of 15 and 69 years

Diagnosis remains constant

	2013	2014	2015	2016	2018	2025
Treated	100	100	100	100	100	100
Newly Diagnosed	100	100	100	100	100	100
Fibrosis Stage	≥F2	≥F2	≥F2	≥F2	≥F2	≥F2
Treated Age	15-69	15-69	15-69	15-69	15-69	15-69
SVR	72%	72%	72%	72%	72%	72%

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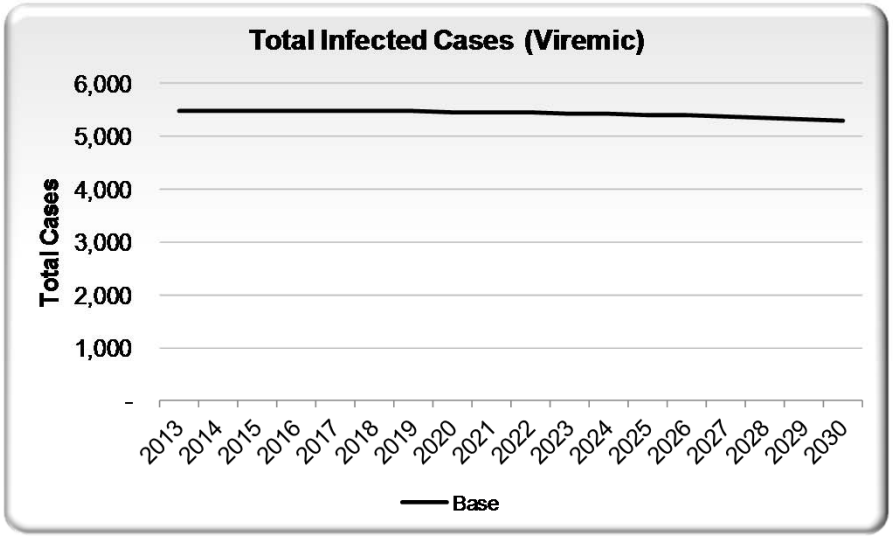
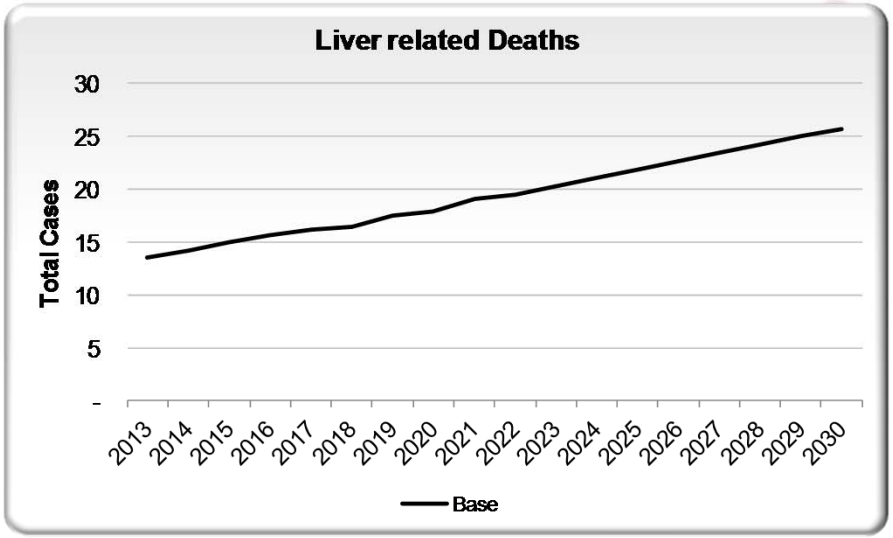
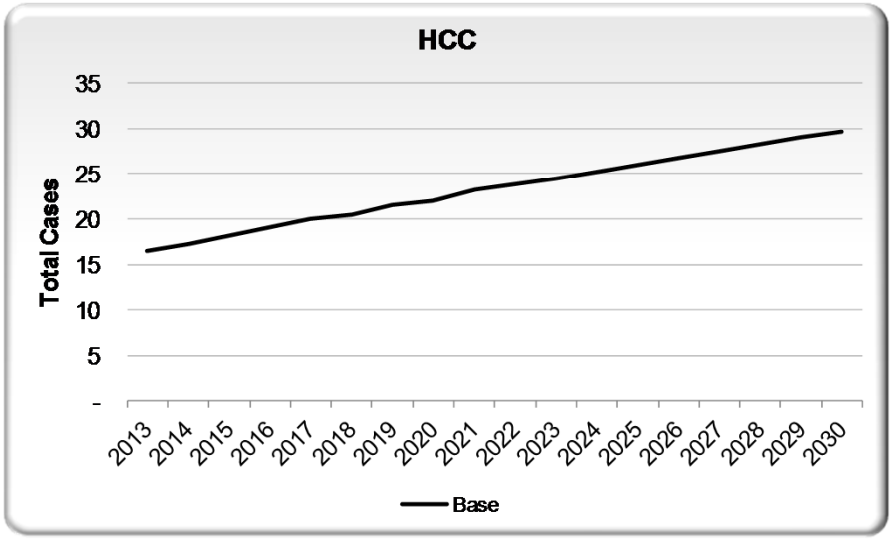
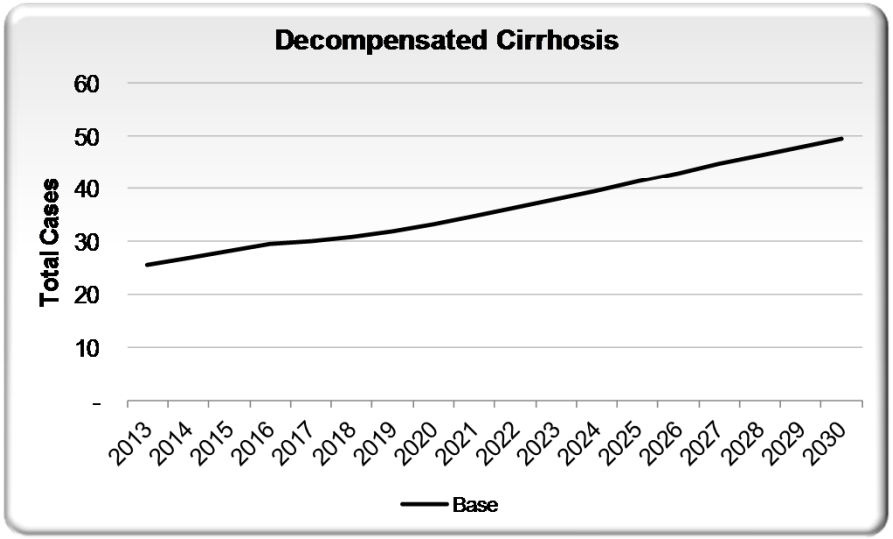
Although total HCV infections will decrease 5% by 2030, HCC, LRD, decomp cirrhosis will increase 55%-90% as the population ages









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Increase SVR and treatment

Beginning in 2015, the number of treated patients was modeled to double and then remain constant at 240 patients treated annually

No change in diagnosis was necessary under this scenario

	2013	2014	2015	2016	2018	2025
Treated	100	120	240	240	240	240
Newly Diagnosed	100	100	100	100	100	100
Fibrosis Stage	≥F2	≥F2	≥F1	≥F0	≥F0	≥F0
Treated Age	15-69	15-69	15-69	15-69	15-69	15-69
SVR	72%	81%	93%	94%	94%	94%

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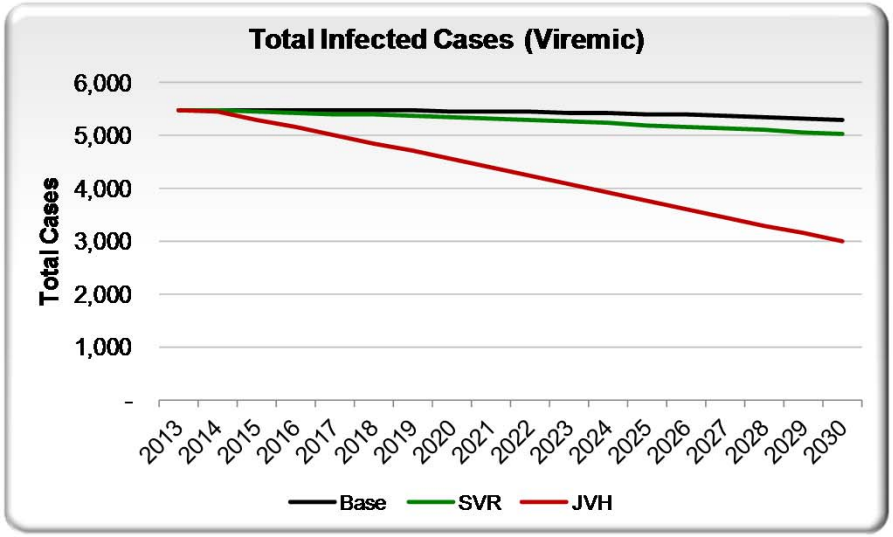
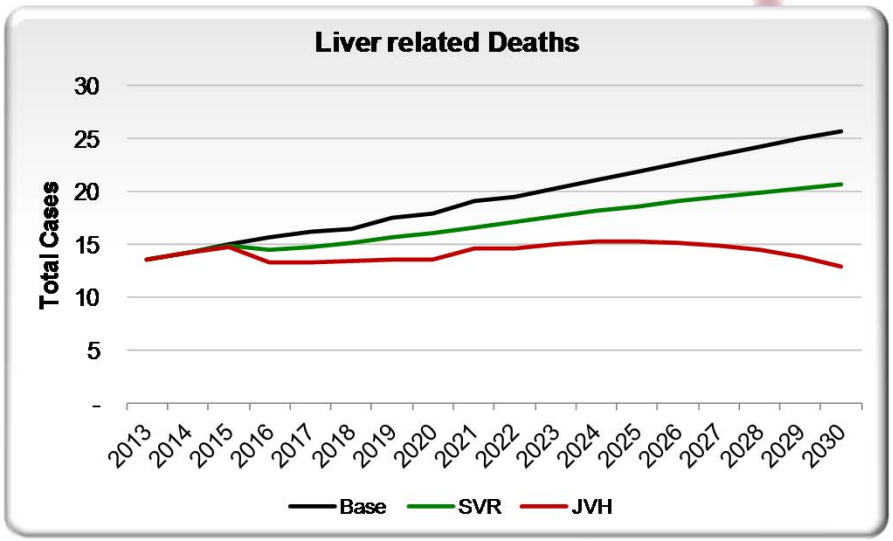
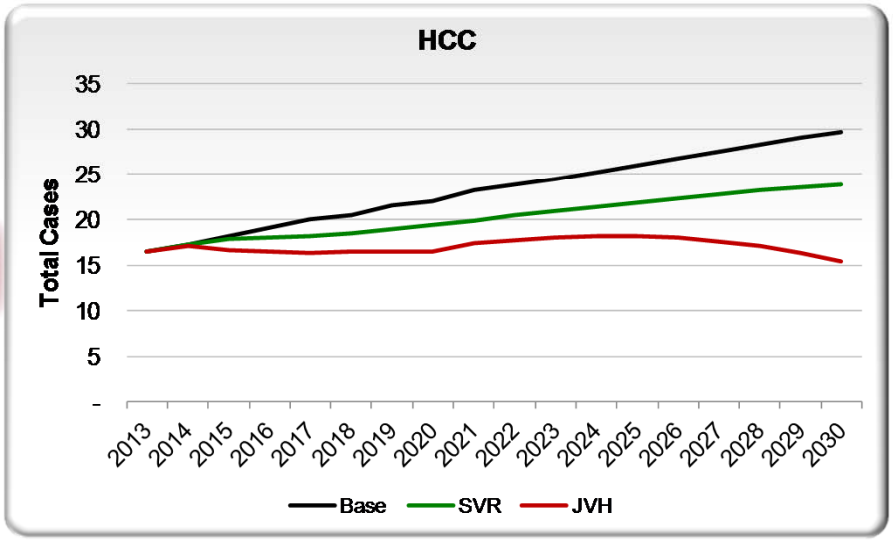
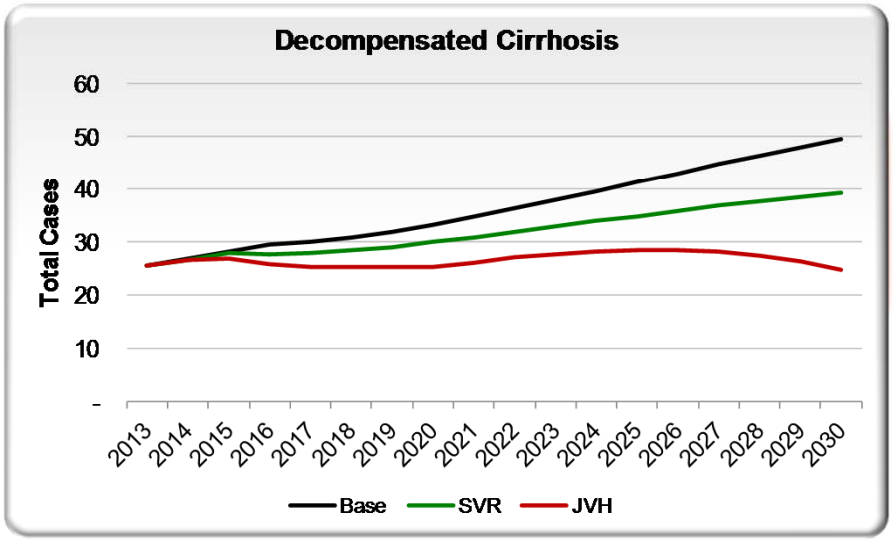
Total viremic infections were reduced by 45%, while HCC, liver related deaths and decompensated cirrhosis were reduced by 50% by 2030









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WHO Recommendations

WHO recommendations include a 90% reduction in new infections, 90% diagnosis rate by 2030 and a 65% reduction in mortality

In order to achieve this goal, treated patients ramp up beginning in 2016

Annual number of newly diagnosed patients increases gradually beginning in 2016 to accommodate treatment

	2013	2014	2015	2016	2018	2025
Treated	100	120	150	300	380	380
Newly Diagnosed	100	100	100	120	230	270
Fibrosis Stage	≥F2	≥F2	≥F1	≥F0	≥F0	≥F0
Treated Age	15-69	15-69	15-69	15-69	15-69	15-69
SVR	72%	81%	93%	94%	94%	94%
New Infections	150	150	150	130	100	60

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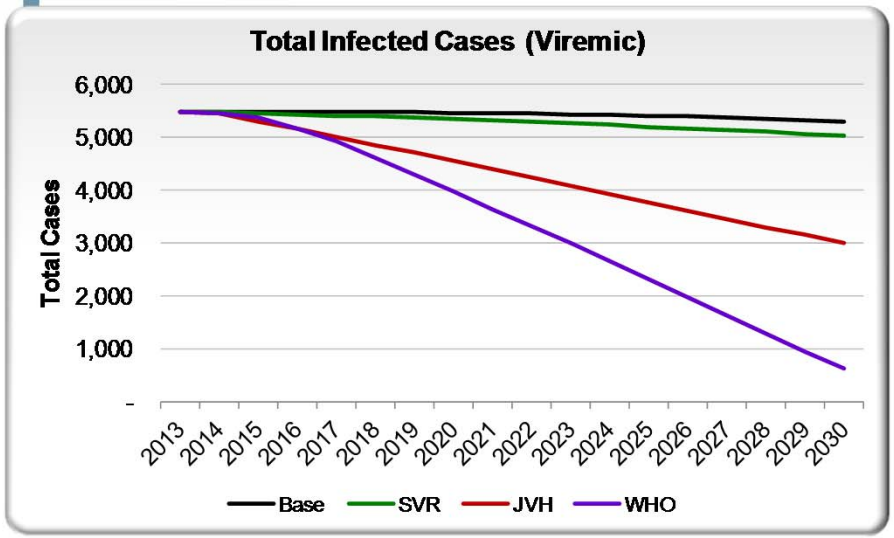
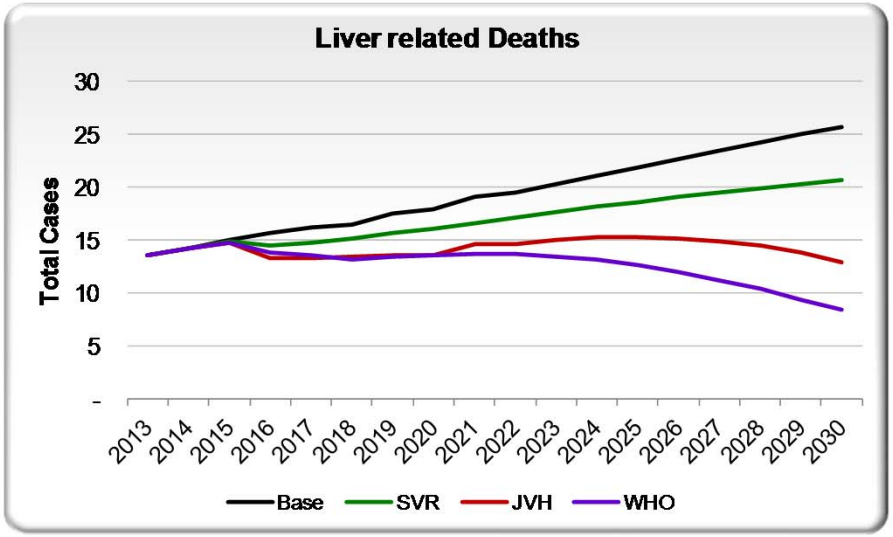
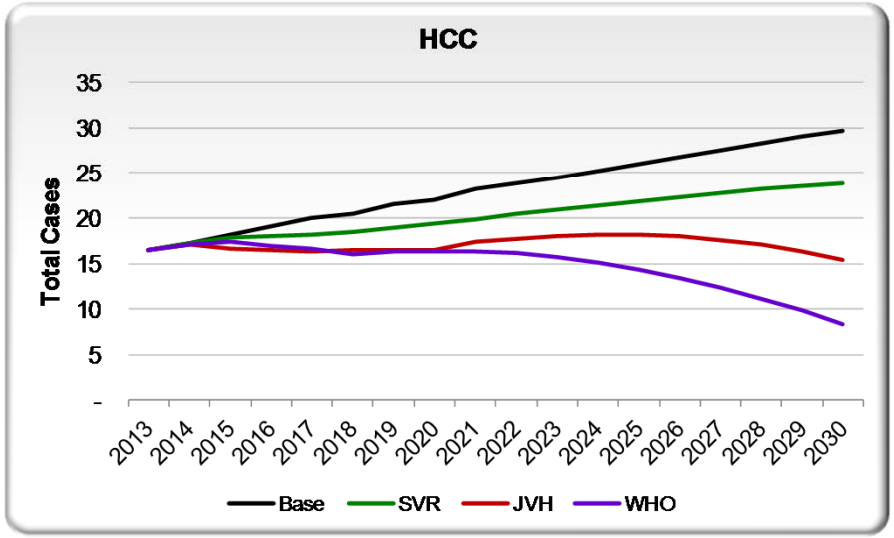
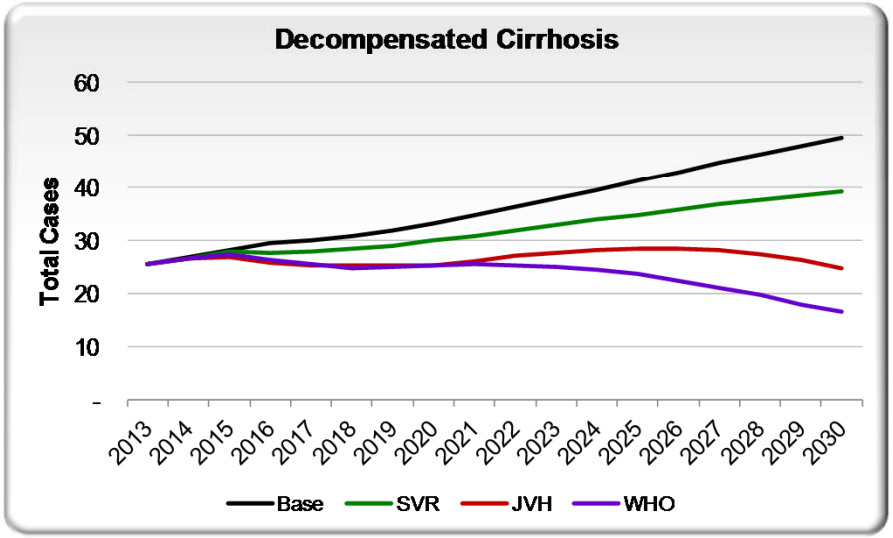
In addition to a >65% reduction in LRD, and >90% reduction in new infections, total viremic infections were reduced 88% by 2030









Consideration of high risk populations is key for preventing new infections

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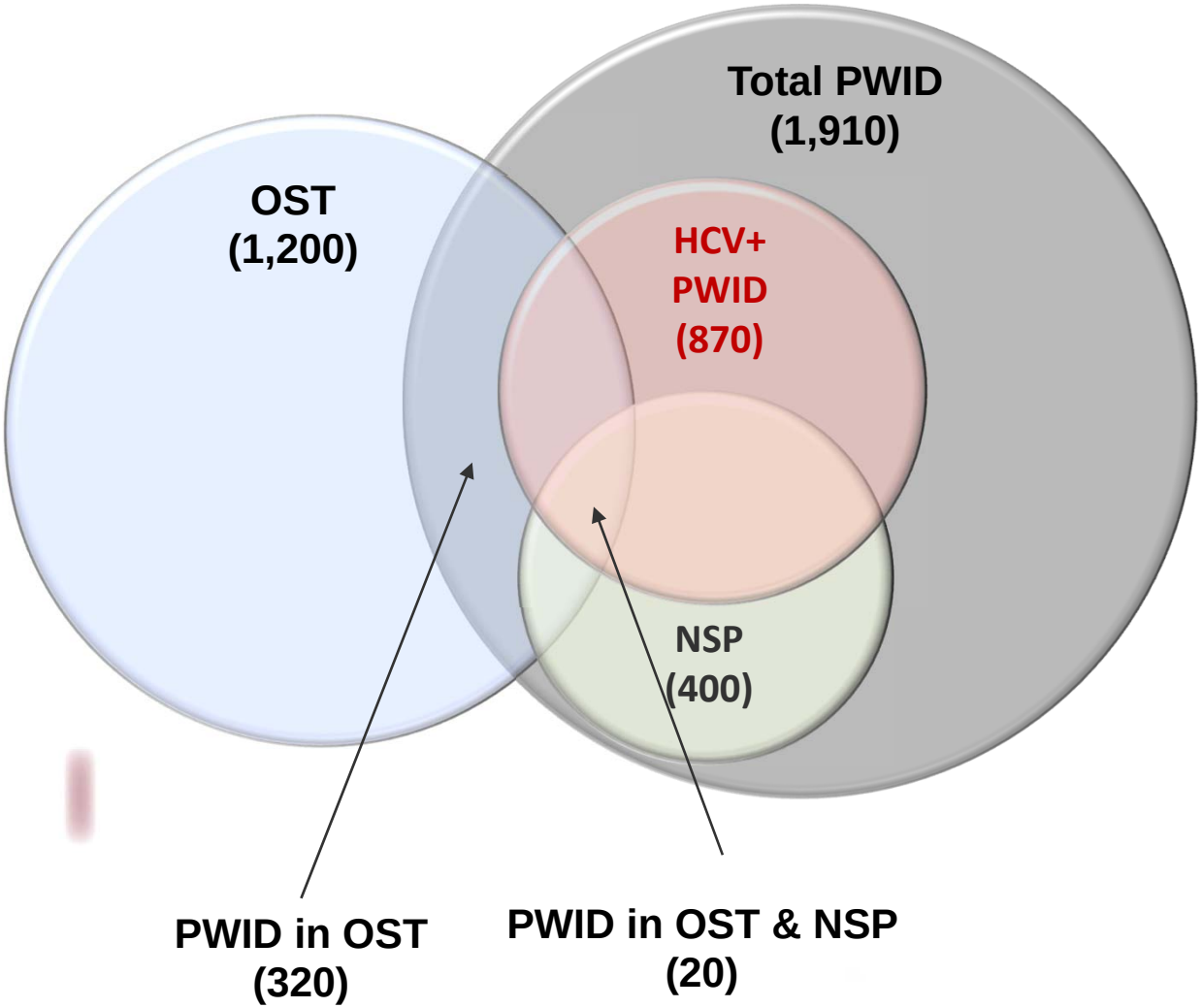
PWID account for 16% of the HCV infected population in GDL



All PWID

- % PWID in harm-reduction: **37%**
- % of OST who are PWID: **27%**

HCV Infected PWID

- HCV-RNA Infected PWID (870): **46%** of total

HCV+ in Total Population

- 5,480 individuals are HCV+ in GDL, **16%** are HCV+ PWID

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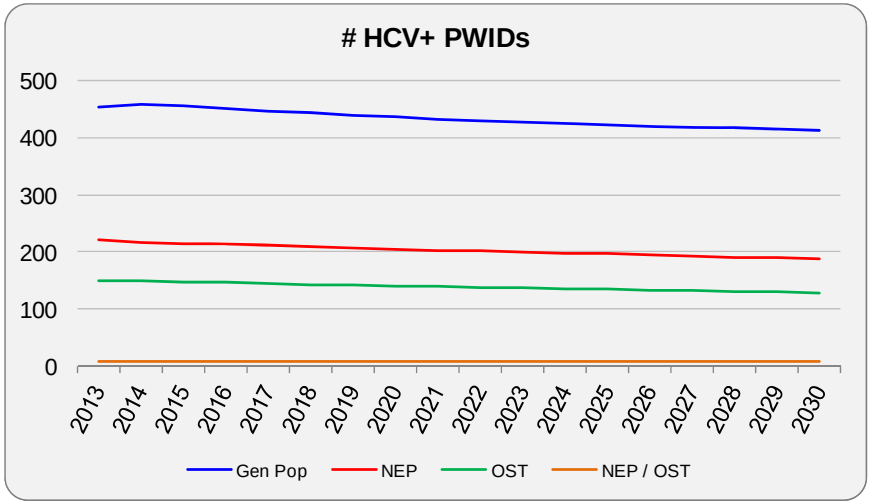
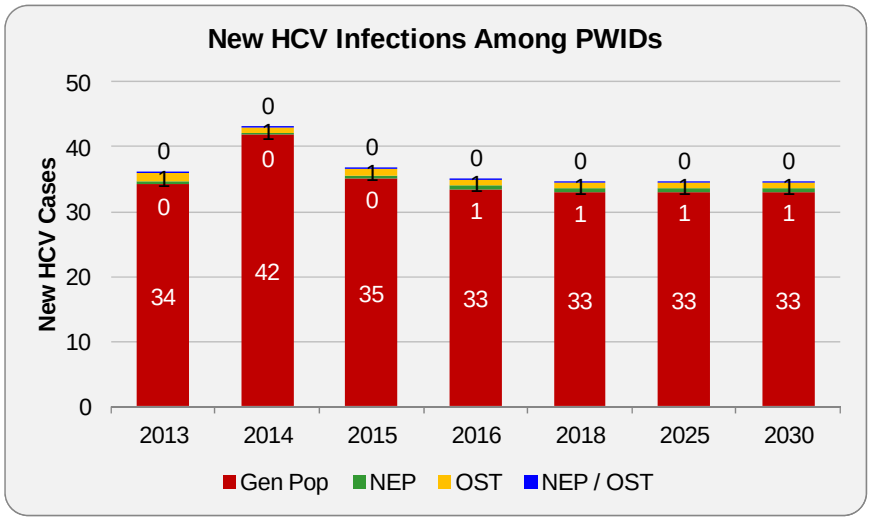
Modeling HCV+ PWID population in GDL





- The majority of HCV positive PWID are not involved in a harm-reduction program (top graph)
- The highest annual number of new infections occurs in the general population (bottom graph)
- The number of new infections among harm-reduction participants is low (bottom graph)

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How to reduce HCV transmission in PWID ?

- High level of treatment to reduce viral load from the community and further re-infection rates (public health perspective)

- Screening and treatment strategy combined with harm reduction programs (NSP to improve, change of drug consumption)

- Retained in care, high risk behaviour due to changes in drug consumption

- Cost-effectiveness and prioritization of measures for the individual level (Dr Vic Arendt)

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CHL
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ABRIGADO

HIV Berodung

croix-rouge luxembourgeoise
Mënschen hëllefen

jugend- an drogenhëllef
Fondation