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Community viral load and newly reported HIV infections in Switzerland

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Introduction

Individual level

➤ Strong dose-response relation between viral load (VL) and HIV transmission in heterosexual discordant couples in Rakai, Uganda.¹

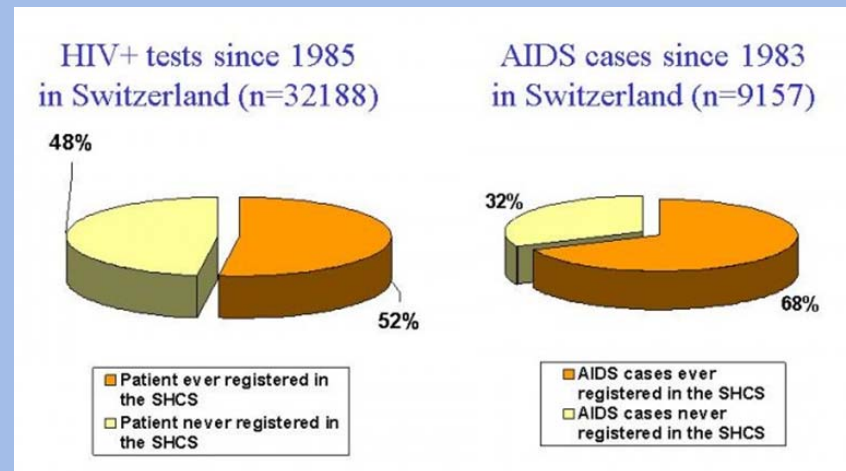
Population level

➤ Median VL associated with HIV incidence in injecting drug users (IDU) in Vancouver, Canada.²

➤ Total community VL (CVL), based on most recent value, associated with new HIV-infections in San Francisco, USA.³

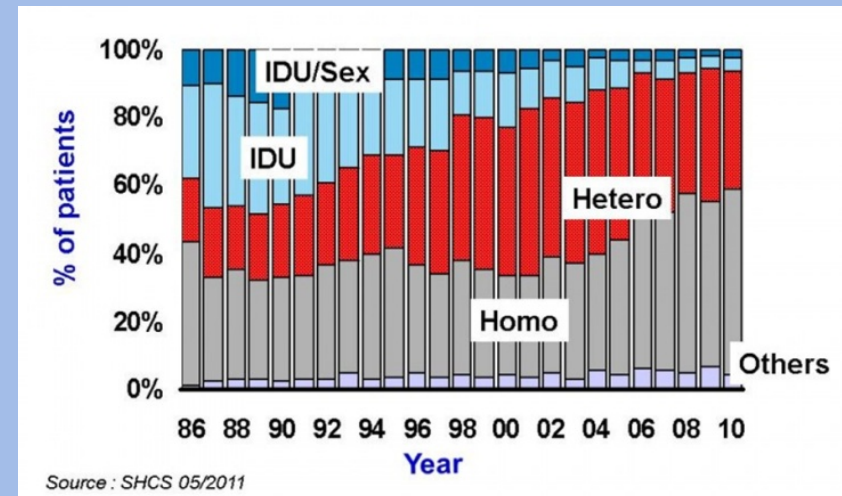
Swiss HIV Cohort Study

- > Nation-wide study of HIV-infected adults
- > >17,000 patients enrolled since 1988, 30% women
- > ~70% of all patients with advanced diseases enrolled, ~50% of all HIV-infected patients enrolled



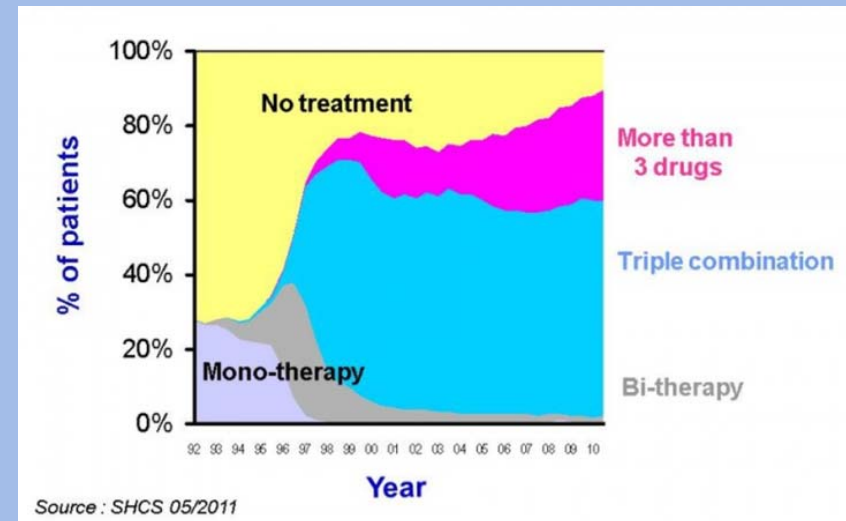
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- > Main transmission groups represented
- > 85% on treatment in 2010



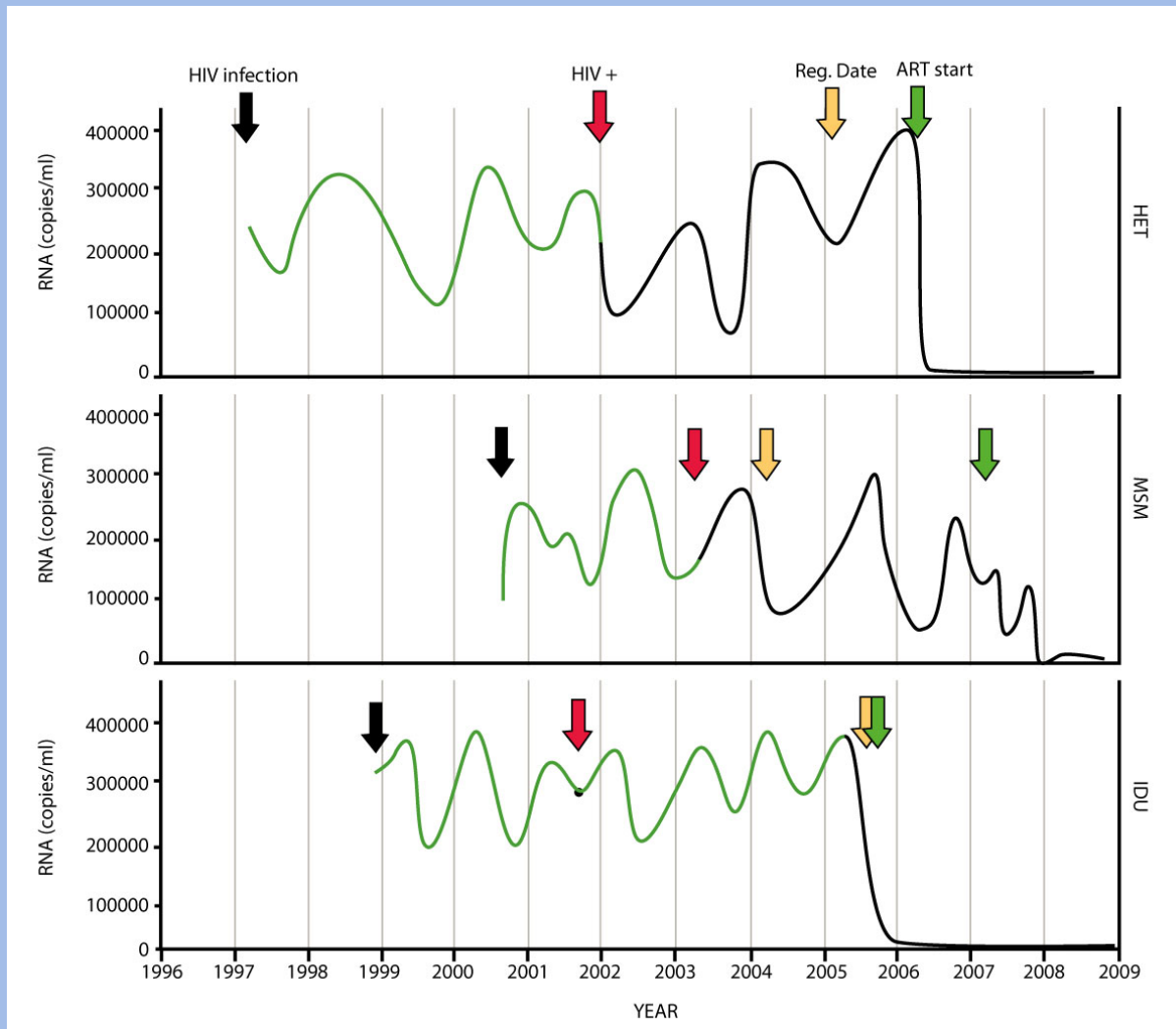
Methods

1. HIV transmission potential in SHCS calculated using three approaches:

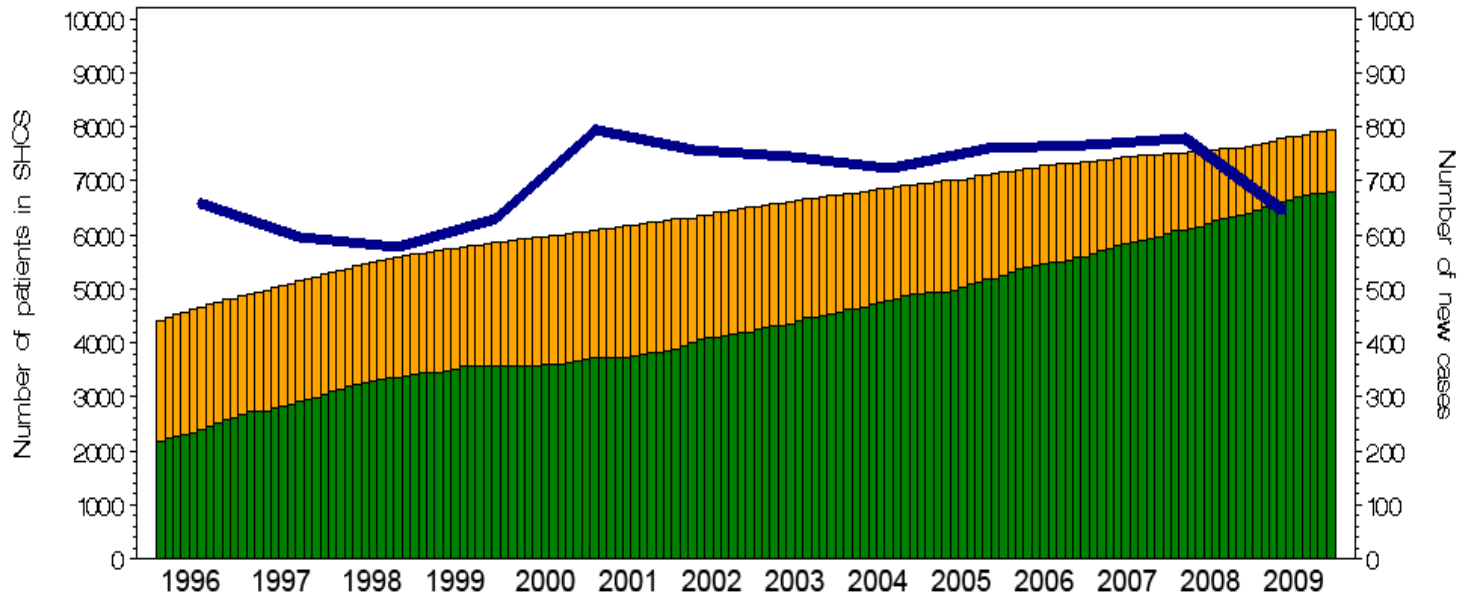
- Total community VL based on all VL values
- Infectivity based on a saturation curve.¹
- Linear association between VL and infectivity.²

2. Poisson model for association between number of new HIV diagnoses (national surveillance data from Swiss Federal Office of Public Health, SFOPH) and CVL in the year before

Imputation of VL

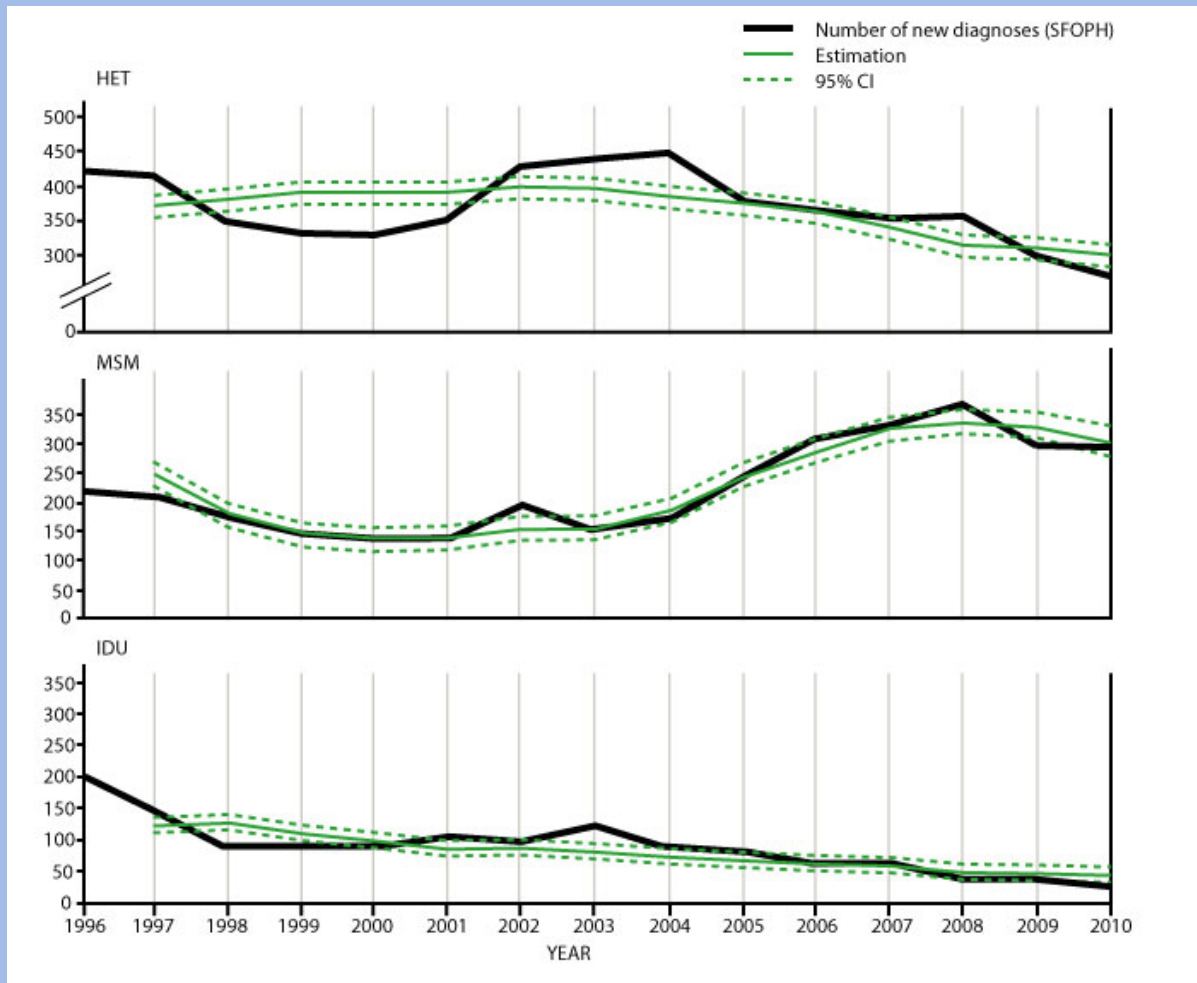


Viral load in the SHCS



HIV-RNA ■ <500 copies ■ ≥500 copies
New HIV infections (FOPH) ■

Predictions from Poisson model by transmission group (CVL)



Strengths and limitations

Strengths

- Inclusion of annual VL back to time of HIV infection
- Examination of CVL and HIV diagnoses in different risk groups
- Comparison of different measures of HIV transmission potential

Limitations

- SHCS includes only ~50% of HIV+ persons
- Increased transmission potential at very high VL in acute HIV infection ignored
- Transmission between risk groups ignored

Conclusions

- First national level study to show association between CVL and new HIV diagnoses
- CVL in the SHCS is a simple measure to estimate the transmission potential and predict new diagnoses, particularly in MSM and IDU
- In Switzerland people infected through HET are a more heterogeneous group than MSM and IDUs, which may explain the less accurate predictions in these groups
- Further research, including pilot studies, are needed to better understand the feasibility and likely population effects of TasP in Switzerland

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