

Vertical transmission of hepatitis C: towards universal antenatal screening in the era of new direct acting antivirals (DAAs)? Short review and analysis of the situation in Switzerland

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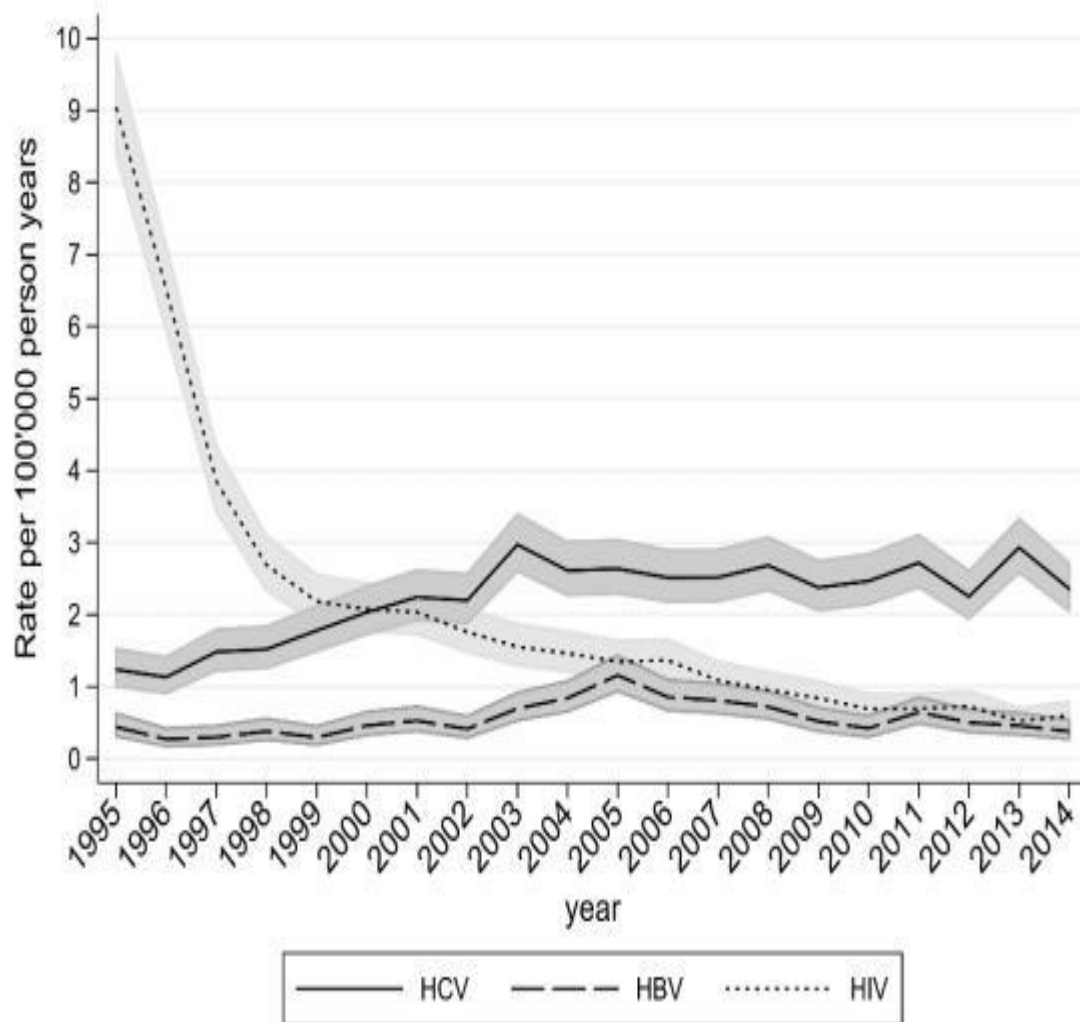
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Switzerland

Outline

- Swiss Hepatitis Strategy
- HCV in pregnant women in Switzerland
- Vertical transmission and missed opportunities
- Antenatal Screening? Future considerations

Viral Hepatitis and HIV- related mortality in Switzerland



HIV, HBV and HCV-related mortality rates (with 95% confidence intervals) from the data of the Swiss Federal Statistical Office.

The Swiss Hepatitis strategy

Network of 80 persons (NGO, medicals, patient initiatives, industry, politicians)

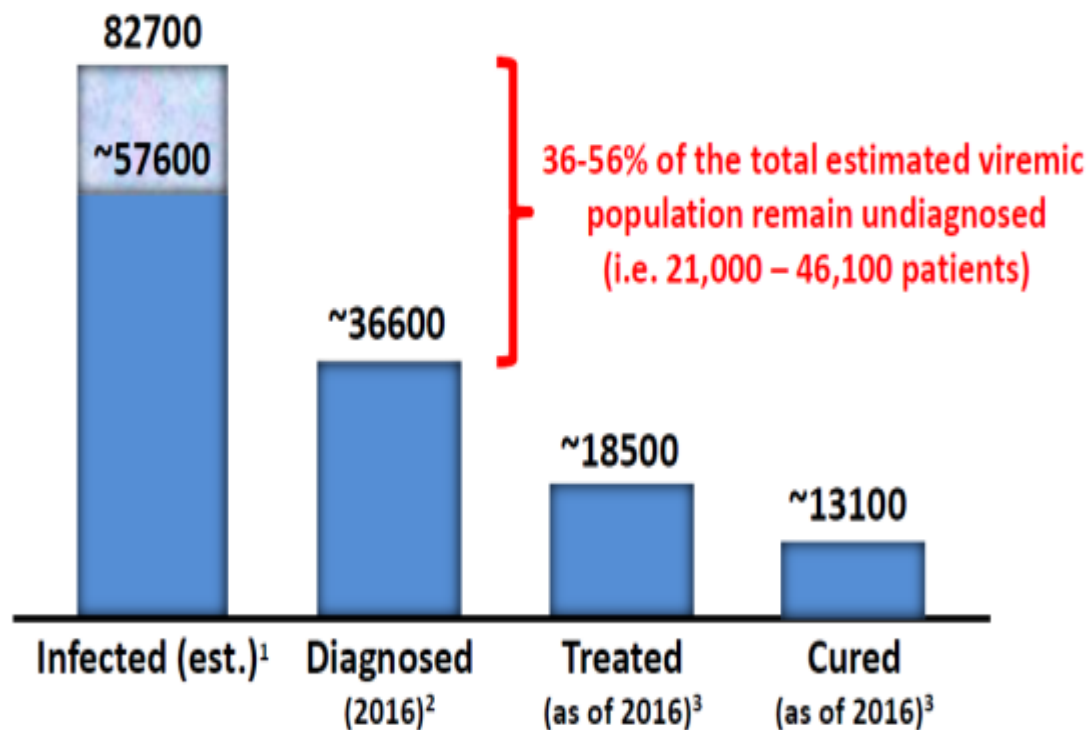
Elimination of viral hepatitis
in Switzerland until 2030



Aims:

- **reduction of chronic infections of 30 %** in 2020, of 90 % in 2030
- **reduction of new infections of 50 %** in 2020, of 100 % in 2030
- **no liver cancer and no transplantation** due to viral hepatitis in 2030

Hepatitis C: cascade of care Switzerland



HCV and pregnancy

- No therapeutic agents are available to reduce the risk of mother to child transmission (MTCT) of HVC, which remains 5.8% (95%CI 4.2%-7.8%)
- HCV infection in pregnancy carries risk for preterm birth, low birth weight, cholestasis during pregnancy
- HCV MTCT can be reduced by avoiding fetal scalp electrodes and birth trauma
- If not diagnosed, missed opportunity to refer women for HCV treatment after delivery and close follow up for neonates (HCV infection remains un-diagnosed)

Pregnancy: huge considerations for small numbers

*Should we test **during** pregnancy?*

Contra:

- no measures to avoid perinatal transmission
- upsetting pregnant women

Pro:

- follow up for the newborn
- counseling/therapy for the mother after delivery

*Should we test **before** pregnancy?*

Contra:

- When and who?
- Planning pregnancy= eligible for therapy?

Ethically fair/ correct?

Pro:

- HCV therapy before pregnancy, eliminating the risk of MTCT

HBV AND HCV TESTING RECOMMENDATIONS

Past or current use of intravenous or intranasal drugs

Patients infected with HIV

test during pregnancy if:

- Elevated liver enzymes
- Blood transfusion/organ donation <07/1992
- HIV or HBV infection
- Migrants from countries with high prevalence
- IVDU
- HCV in same household

Pregnant women

Birth cohort studies

People

People with sexual partners who are HBV-infected

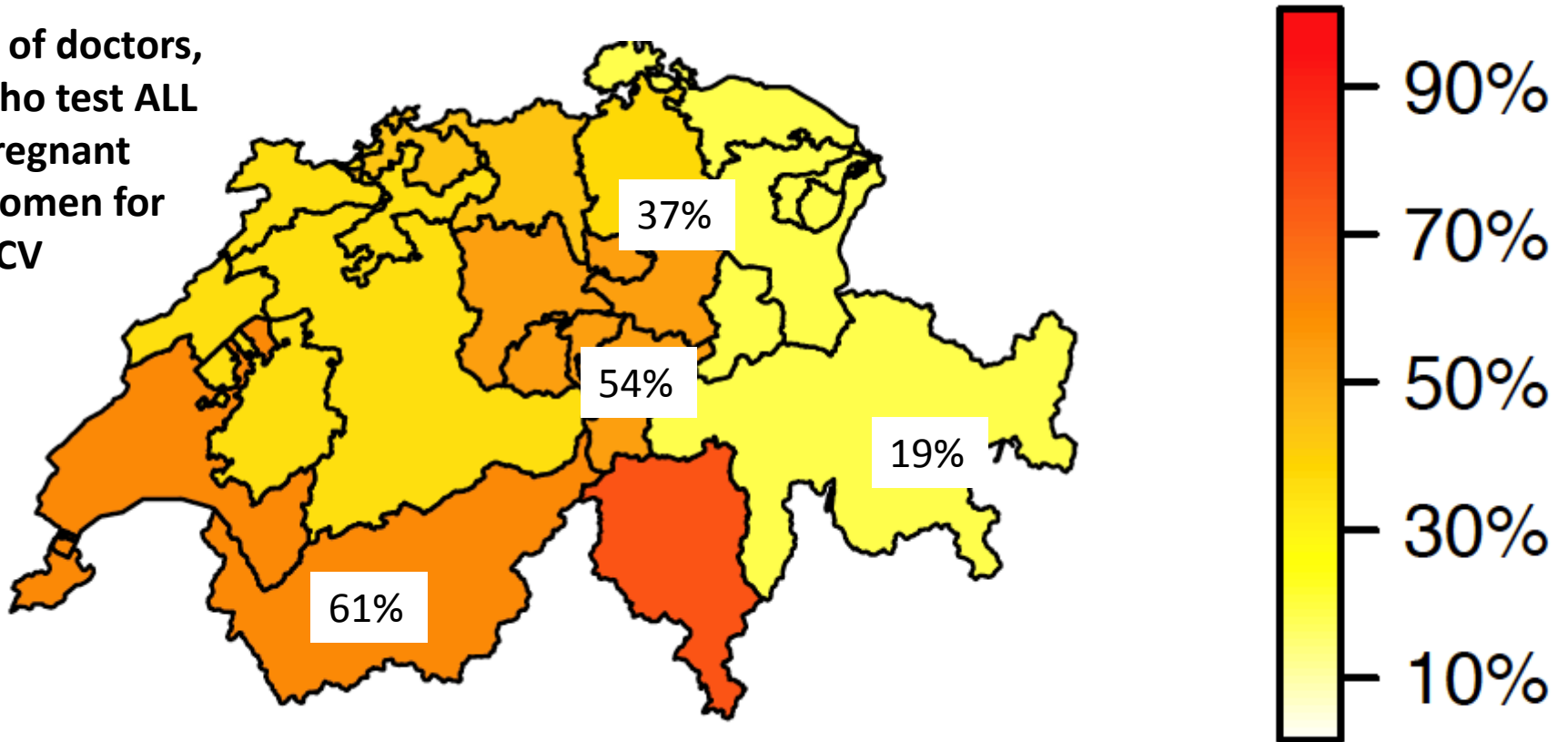
Migrant population from endemic areas and in refugees centers

Risk based screening seems inferior to universal screening during pregnancy

Study from Cleveland: **Prevalence in high risk: 0.95% in all women: 3.18%**
(Waruingi W et al. Journal of Neonatal Perinatal Medicine 2015)

Current situation- testing pregnant women for HCV in different Swiss regions 2016 (520 doctors)

% of doctors,
who test ALL
pregnant
women for
HCV



Aebi-Popp K et al. :Heterogeneity in testing practices for infections during pregnancy: national survey across Switzerland. Swiss Med Wkly. 2016 Jul 11;146:w14325. doi: 10.4414

Prevalence of anti-HCV in pregnant women

1.6% of the Swiss population HCV-antibody-positive about 17,939 women are chronically infected with HCV

0.71% of pregnant women HCV seropositive, 75% chronic infection

Subject characteristics	Number of women tested (column percent)	No. infected with HCV (percent positive)	Crude odds ratios	Adjusted* odds ratios and 95% CI (p-values from likelihood ratio test)
TOTAL	9,057 (100%)	64 (0.71%)		
Age				
≤24 years	2,035 (22%)	16 (0.79%)	0.87	0.89 (0.48–1.6)
25–29 years	3,665 (40%)	33 (0.90%)	1.0	1.0
30–34 years	2,367 (26%)	12 (0.51%)	0.56	0.57 (0.29–1.1)
35 years and over	990 (11%)	3 (0.30%)	0.33	0.29 (0.09–0.96)
				P = 0.069
Nationality				
Swiss	5,685 (63%)	43 (0.76%)	1.0	1.0
Non-Swiss	3,372 (37%)	21 (0.62%)	0.82	0.42 (0.24–0.75)

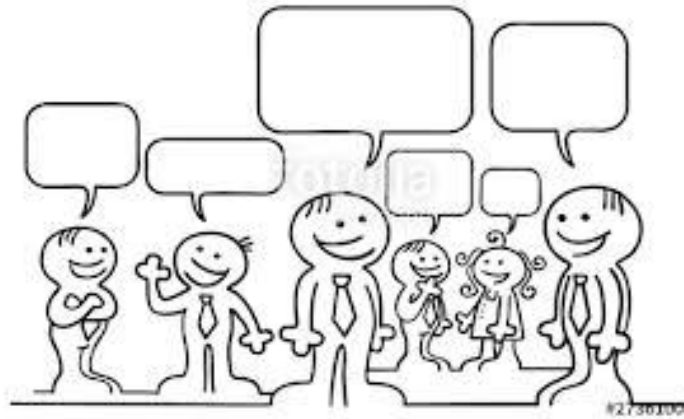
Current situation in Switzerland

- **80 000** deliveries/year, of those 568 (0.7%) HCV +
- **27** congenital infections expected (if MTCT 6%)
- Notifications Federal Office of Public Health 2005-2014 in children aged 0-14 years
 - Median 11/year

Item	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Median
HCV*	22	18	13	12	17	10	10	7	5	5	11
Geburten°	72'903	73'371	74'494	76'691	78'286	80'290	80'808	82'164	82'731	83'753	79'288
*	BAG Meldungen total, Alter 0-14J										
°	Quelle BFS										

- -> BUT: we expect 27 perinatally infected children/year
- **Reported are less than 50% of the expected number**

Who cares?



- It is very likely that **more than half of HCV-infected newborns are not diagnosed** as their mothers are not tested during pregnancy.
- Even if 10–20% of perinatally infected children will spontaneously clear HCV infection, a **larger number** of them will have progressive disease that **might not be diagnosed for many years**

Arguments to introduce an universal screening during pregnancy- would you tick the box ?

Cost effective?

London : **YES !!!** (Selvapatt et al J Heaptol.2015)

Amsterdam: **NO !!!** (A. T. Urbanus PLOS one 2013)

All depends on cost of DAAs and consideration of „indirect costs“

SUMMARY

- Prior to advent of DAAs HCV was not considered worthy of antenatal screening due to lack of intervention options
- Screening gives the opportunity to provide appropriate management to reduce perinatal infections as well as monitor the mother and the baby after diagnosis
- Swiss data shows about 50% undiagnosed children: Consider HCV universal screening in pregnant women
- Future research: any drugs available to reduce transmission rate during pregnancy, early treatment of children



Thanks for your attention

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