The Evidence for Routine HCV Screening of Pregnant Women

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Disclosure

- Educational grant to attend EASL 2019 (Gilead Sciences)
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For HCV RNA-positive women who become pregnant, perinatal transmission occurs in about 5% of individuals (up to 15% in HIV-co-infected).

An estimated 224,000 children aged 0–2 years are infected with HCV globally; however, a successful intervention to prevent vertical transmission is currently unavailable.

An estimated 14,860,000 (95% uncertainty interval [UI] 9,667,000–18,282,000) women aged 15–49 years had HCV infection worldwide in 2019, corresponding to a viraemic prevalence of 0.78% (95% UI 0.62–0.86).

Globally, HCV prevalence increased with age, rising from 0.25% (95% UI 0.20–0.27) in women aged 15–19 years to 1.21% (0.97–1.34) in women aged 45–49 years.
China (16% of total infections) and Pakistan (15%) had the greatest numbers of viraemic infections, but viraemic prevalence was highest in Mongolia (5.14%, 95% CI 3.46–6.28) and Burundi (4.91%, 3.80–18.75).

Of the countries with 500 cases or more, viraemic prevalence was lowest in Chile (0.07%, 95% UI 0.04–0.12).

Among the GBD regions, Eastern Europe had the highest viraemic prevalence (3.39%, 95% UI 1.88–3.54).

By WHO region, the Eastern Mediterranean region had the highest viraemic prevalence (1.75%, 95% UI 1.26–1.90).
HCV Screening Recommendation Updates: CDC and ACOG

- April 10, 2020: CDC recommendations include\textsuperscript{[1]}:

  “Hepatitis C screening is recommended for all pregnant women during each pregnancy except in settings where the prevalence of HCV infection is < 0.1%.”

- May 2021 ACOG Practice Advisory\textsuperscript{[2]}:

  “Updated guidance from ACOG”

  - HCV screening during the first prenatal blood assessment obtained in every pregnancy is recommended to identify pregnant individuals with HCV infection and infants who should receive testing at a pediatric visit.

  - HCV screening during pregnancy should be an opportunity to promote a dialogue between pregnant individuals and their clinician about hepatitis C transmission and risk factors.

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This study assessed the proportion of pregnant women who were screened for HCV infection at delivery in a University Hospital in Egypt

- Prevalence and risk factors for HCV infection
- Associated adverse neonatal outcomes
- Real-life linkage to care of infected women
- Follow-up of their infants’ HCV status and timing of testing.

Data were collected from medical records of a retrospective cohort of all pregnant women admitted to Ain Shams university maternity hospital for delivery between January and June 2018 (n = 6734).

- HCV antibody- and RNA-positive women and their infants were prospectively followed-up (phone interviews) till September 2019.
≥ 30 years old (P = 0.009), history of abortion (P = 0.022) and blood transfusion (P < 0.001) were risk factors for HCV infection.

Adverse neonatal outcomes did not vary significantly among anti-HCV+ve and negative women.

All infants of 13 anti-HCV (RNA-positive) women who started DAA therapy tested HCV RNA-negative within their first year of life.

Extending screening services to all pregnant women and better linkage to care are essential for the national elimination of HCV infection.
Is Universal HCV Screening During Pregnancy Cost-Effective?

- Incremental cost-effectiveness ratio analysis comparing universal and risk-based screening
- Universal screening of ~ 5 million pregnant women in 2018 could result in detection and treatment of an additional 33,000 women and 300 children born with HCV
- HCV screening is cost-effective even in low prevalence areas and across all fibrosis stages

Impact of HCV Chronic Prevalence Among Pregnant Women on Cost-Effectiveness Ratio of Universal vs Risk-based Screening

Scenario: Treating F0 and above

50,000 USD
Why Consider Antiviral Therapy During Pregnancy?

- Potential to reduce risk of MTCT; similar to HBV (no treatment is available for children younger than 3 years)
- Women are likely to have routine antenatal care and can be integrated in existing maternal and child care facilities (also HIV facilities)
- Pregnancy is often a time when women might have health insurance; opportune time to treat HCV concurrent with pregnancy care
- Would possibly decrease the risk of ICP
- Provides opportunity to cure HCV in women with high-risk behaviors to prevent transmission to others, including injecting partners
- Opportunity for family screening and case detection
Acceptability of HCV screening and DAAs in pregnancy: Survey of pregnant women and women who had recently delivered in Egypt, Pakistan and Ukraine


• Cross-sectional survey of n=630 women
  n=210 in each country: Egypt, Pakistan, Ukraine (including from an HIV clinic)

Inclusion criteria:
  aged ≥18 years; pregnant or have delivered with the last 6 months
  informed consent

• Survey questions

  Section 1: Sociodemographics, pregnancy and HCV history and knowledge.
  Women given factsheet about HCV and pregnancy

  Section 2: Questions about acceptability of HCV screening and treatment in pregnancy: and motivation for use of DAAs in pregnancy (for vertical transmission/ reduce adverse pregnancy/infant outcomes or for maternal HCV cure)

• Statistical analysis

  Description of characteristics and acceptability by country
Acceptability of HCV screening and DAAs in pregnancy: Survey of pregnant women and women who had recently delivered in Egypt, Pakistan and Ukraine

“Do you think all women should be offered free testing for hepatitis C in pregnancy?”

Acceptability of screening

Acceptability of DAAs

“If shown to be safe, would you take DAAs during pregnancy?”

- No, would wait
- Yes, only to stop vertical transmission & infant benefit
- Yes, to cure myself

Overall acceptability for all countries combined = 88%
Conclusions

- Very high acceptability of HCV screening (93%) and DAA use in pregnancy (88%) overall
  - Similarly high acceptability across participant characteristics
  - 60% acceptability reported among non-pregnant women with chronic HCV in USA by Kushner et al\(^1\)
- Main motivation for taking DAAs was prevention of adverse pregnancy outcomes rather than maternal cure
- **Study strengths:**
  - Large sample size and the first to focus on pregnant women in high HCV burden countries.
  - Included women from range of socioeconomic groups and both HCV+ and HCV-
- **Study limitations:**
  - Measured acceptability under a “scenario” that they were approved for use
  - Findings support the need for phase II/III clinical trials assessing safety of DAAs in pregnancy to provide an evidence base to inform clinical care and treatment guidelines

Counsel about benefit of antiviral treatment before pregnancy

If a woman becomes pregnant while receiving HCV DAA therapy, providers should discuss the risks vs benefits of continuing treatment

Ribavirin is contraindicated in pregnancy due to teratogenicity (wait at least 6 mos after completion of ribavirin therapy to get pregnant)
Outcome in women with chronic HCV who had negative pregnancy test prior to DAAs and had unintended pregnancy while on treatment was assessed

100 patients (mean age of 30±6.7 years) were included and advised to withhold DAAs and continue follow-up in viral hepatitis and obstetrics centers till delivery

All received 12-weeks regimen of DAAs (SOF/DCV) n=95, SOF/DCV plus ribavirin: n=3, and paritaprevir/ritonavir/ombitasvir plus ribavirin: n=2

Only 9 patients completed DAA therapy against medical advice, and 91 stopped between weeks 4 and 8

88 patients delivered full-term babies, 8 had preterm babies, and 2 had abortions

Out of the 9 patients who completed the full course of DAAs, 7 (77.8%) delivered normal babies, attended their post-treatment week 12 visit, and all (100%) achieved SVR

No major antiviral-related adverse events were reported
Care Pathway for HCV Elimination in pregnant women and WCBA including universal screening

- Anti-HCV testing with reflex to HCV-RNA in pregnant women/ideally universal screening
- HCV-RNA detected
- Assessment of health care provider with plan for treatment
- DAA therapy post-partum if pregnant with plans to monitor newborn OR immediate treatment
THANK YOU