801

Cost-effectiveness of Hepatitis C Virus Treatment During Pregnancy

Megan R. Curtis[1], Sarah Munroe[2], Margaret L. Lind[2], Dimitri Baptiste[2], Matthew Carroll[2], Jeannie Kelly[3], Laura Marks[1], L. Madeline McCrary[1], Andrea L. Ciaranello[4], Benjamin P. Linas, Rachel L. Epstein

[1]Division of Infectious Diseases, Washington University School of Medicine, St. Louis, MO, USA, [2]Boston Medical Center, Boston, MA, USA, [3]Department of Obstetrics and Gynecology, [1]Division of Infectious Diseases, Washington University School of Medicine, St. Louis, MO, USA, [4]Division of Infectious Diseases, Massachusetts General Hospital, Boston MA, USA, [5]Division of Infectious Diseases, Boston University Chobanian & Avedisian School of Medicine., Boston MA, USA

BACKGROUND

- **Hepatitis C virus (HCV)** is **increasing** among women of reproductive-age, fueled by injection drug use (IDU)
- **Direct-acting antivirals** are **effective**, and research in progress on treating HCV with glecaprevir/pibrentasvir antenatally and during lactation is reassuring, with no adverse events and zero perinatal HCV transmissions
- **Standard of care (SOC):** HCV treatment after lactation
- **Hypothesis:** Compared with postpartum treatment, antenatal HCV treatment will reduce maternal and pediatric HCV-related outcomes and increase quality-adjusted life years (QALYs)

METHODS

- **Cohort**: 29,000 pregnant women with HCV engaged in prenatal care simulated using a validated, calibrated model of pregnancy, IDU, and HCV (PreVEnT)
- **Strategies**: antenatal HCV treatment, at-delivery HCV treatment, and postpartum treatment (SOC)
- **Outcomes**: Maternal: QALYs, cures, costs, cirrhosis and liver-related deaths. Infant: HCV exposure and infections
- **Best-case LTFU scenario** assumed no postpartum loss to follow-up and evaluated net monetary benefit (NMB = [γ × QALYs] − cost) using γ = $100,000 per QALY

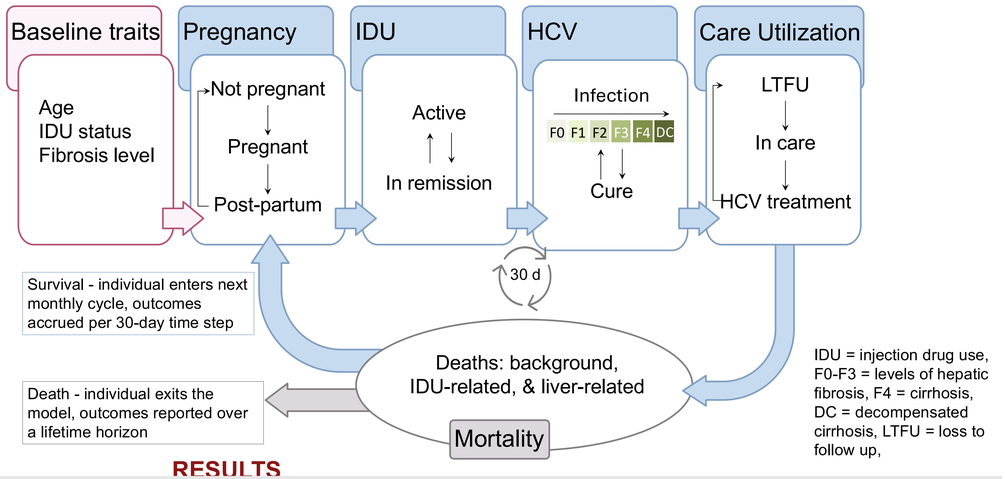
Table 1a. Cohort Characteristics

Model parameter	Estimate	Source
Mean age (years)	28	MA PHD[1]
Fibrosis stage F0-F1	93%	BMC RESPECT[2]
Fibrosis stage F2-F3	7%	BMC RESPECT[2]
Current IDU	7%	NSDUH, CDC
Former IDU	73%	NSDUH, CDC
Never IDU	20%	NSDUH, CDC
Perinatal transmission	6%	Prasad et al.
Table 1b. Key Model Inputs		
Cost HCV medications	$12,748	FSS
Efficacy HCV treatment	95-100%	Clinical trials
LTFU by strategy		
Postpartum HCV treatment	13%[3]	MA PHD[1]
HCV treatment at delivery	0%[4]	McCrary (OGO)
Antenatal HCV treatment	0%[4]	McCrary (INSHU)
Treatment initiation by strategy		
Postpartum HCV treatment	26%[3]	MA PHD[1]
HCV treatment at delivery	91%[5]	McCrary (OGO)
Antenatal HCV treatment	71%[5]	McCrary (INSHU)

1. Reproductive-age females in Massachusetts with HCV (MA Public Health Datawarehouse), **2.** Women with HCV at Boston Medical Center RESPECT clinic (2021-2024), **3.** Over 1st year postpartum, **4.** Before treatment first offered, **5.** Percent of those offered, Injection drug use = IDU, F0-F4 = levels of hepatic fibrosis, LTFU = loss to follow up, NSDUH = National Survey on Drug Use and Health, CDC = US Centers for Disease Control and Prevention, PY = person-years, FSS = Federal Supply Service

Antenatal HCV treatment saves lives and is highly cost-effective relative to postpartum treatment

Figure 1. Simplified Schematic of PreVEnT model



RESULTS

Table 3. Cost-effectiveness Outcomes

Strategy	LE (years)	QALYs[1]	Cost[1-2]	ICER ($/QALY)
Postpartum HCV treatment (SOC)	39	12.8	$346,193	Reference
HCV treatment at delivery	44	14.0	$359,230	Dominated
Antenatal HCV treatment	46	14.4	$362,149	11,720

1. Discounted at a rate of 3% annually. **2.** Reported as 2021 US dollars, LE = remaining life expectancy, SOC = standard of care, QALY = quality-adjusted life year, ICER = incremental cost-effectiveness ratio, Dominated ICER means this strategy has a higher cost per QALY than a more effective strategy

Figure 2. Clinical Outcomes

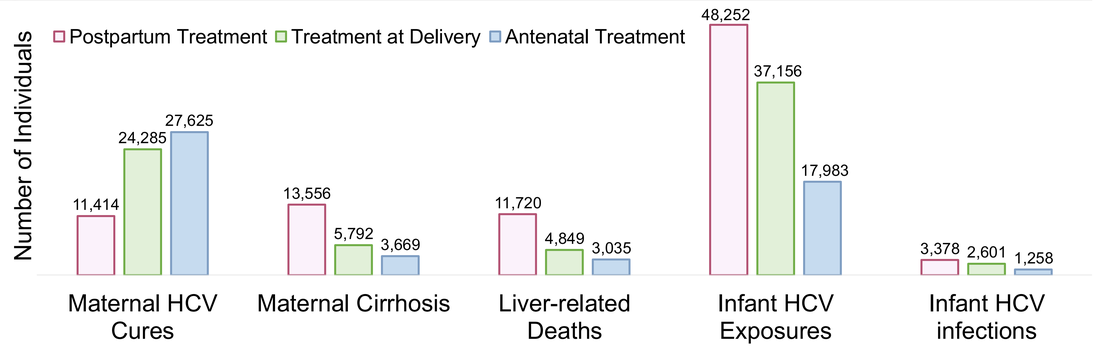
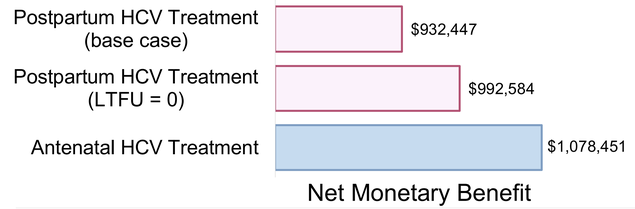


Figure 3. Best Case Postpartum LTFU



Net monetary benefit at γ = $100,000 per QALY. Higher net monetary benefit indicates greater value. LTFU = loss to follow up

CONCLUSIONS

- Antenatal HCV treatment improves life expectancy by 7 years and maternal HCV cure by 16,211 individuals with reductions in maternal cirrhosis (73%), liver-related deaths (74%), and infant HCV infections (63%), compared to postpartum treatment
- Antenatal HCV treatment is highly cost-effective compared to postpartum HCV treatment (ICER < $50,000/QALY)
- Providing HCV treatment just after delivery and prior to discharge is a promising approach with clinical maternal outcomes similar to antenatal HCV treatment, yet it does not prevent infant exposures or infections
- Under highly optimistic LTFU assumptions, antenatal treatment remains optimal, likely reflecting low real-world postpartum treatment uptake compared with intensive single-center programs that provide structured antenatal HCV treatment and bedside treatment at delivery
- This study supports reconsidering routine delay of HCV treatment until delivery and lactation, providing estimates of benefits that could be realized if antenatal HCV treatment were to be routinely offered

KEY INFORMATION

Funding: NIDA K12DA041449-08, K01DA052821; NIAID Loan Repayment Program (L30AI178761). We thank CROI for the New Investigator Award and Travel Stipend

References

Prasad M, Saade GR, Clifton RG, Sandoval et al. Risk factors for perinatal transmission of hepatitis C virus. Obstet Gynecol. 2023; PMID: 37590978

McCrary LM et al. HCV treatment during pregnancy using glecaprevir/pibrentasvir. Open Forum Infect Dis

McCrary LM et al. Association of postpartum inpatient consultation vs outpatient referral with hepatitis C treatment completion. O G Open. PMID: 41000407

McCrary LM, Curtis MR, Marks LR. Hepatitis C treatment in pregnancy: implementation of a shared decision-making care model. Presented: INHSU 2025; Cape Town, S Africa

Hepatitis C is a long-term infection that can be passed from a mom to her baby during pregnancy. If not treated, it can lead to scarring of the liver and even death. Early research suggests that treating hepatitis C during pregnancy may be safe and prevent infection in babies. Our study shows that treating hepatitis C during pregnancy would cure moms, prevent liver scarring, prevent infant infections, and save lives at a relatively low cost.