Enhancing Electronic Health Systems to End Transmission of Chronic Hepatitis B During COVID-19: A Collaborative Approach

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UC Davis Medical Center

Funding Source: Office of Minority Health
In partnership with
**Health & Life Organization (HALO)**
Sacramento Community Clinics

- HALO (also known as “Sacramento Community Clinics”), is a Hmong-led minority-serving community-based Federally Qualified Health Center Look-Alike.

- HALO is the largest health care provider in Sacramento County serving Southeast Asians and others born in CDC-defined endemic regions for HBV and their US-born children.
“Ending the transmission of the HBV from the prenatal period throughout the lifespan”

**END B Overview: Services and Interventions**

**Reduce HBV disparities among HALO patients**
- In-service training of clinic staff on HBV (HALO MA Academy)
- HBV patient educational workshops at HALO sites
- In-language posters, infographics and factsheets

**Reduce deaths and improve the health of HALO patients living with HBV**
- Screening of at-risk adult HALO patients (Asians)
- Linkage to care
- Case navigation

**Ending the transmission of HBV to newborns, children and uninfected adults**
- Perinatal screening of pregnant women
- Vaccinations of HALO newborns
- Case navigation

**EHS Enhancements**
- Custom reports
- Bulk lab ordering
- At-Risk Registry

Vision: To create a model national demonstration program to end the transmission of Hepatitis B
Phase 1a: Screening of Pregnant Women

- Start with Patients in Obstetrics clinic
  - Provider enters any ICD-10 code for pregnancy

Phase 1b: Screening of Patients “High-Risk” for Hepatitis B

- Start with “High-Risk” Patients on Electronic Health Record (EHR) Registry
  - Case Navigator confirms patient is “High-Risk” based on ethnicity, race, primary language, and/or surname as recorded in the EHR
  - Hepatitis B (HBV) order set (HBsAg, HBCAb total, HBsAb) is triggered and orders are placed in electronic medical chart
  - Case Navigator follows up results. If HBsAg is positive, proceed to Phase 2

Phase 2: Linkage to Care and HBV Transmission Interruption

- Order hepatology referral, CMP, CBC, INR, HBeAg, HBeAb, HBV viral load (VL)
- Pregnant?
  - ✓
    - Treat with TDF 300 mg at 28 weeks if Mother’s VL is ≥200,000, stop TDF at time of breastfeeding, monitor Mother for HBV flare
    - Baby starts HBV vaccine series and HBV at birth
  - ×
    - HBsAg+ Mother enters standard HBV care immediately after delivery
    - Baby tested for HBsAg, HBCAb total, HBsAb at 1 year
- HBsAg+ patient receives CMP and HBV viral load every 6 months, Liver US as appropriate
# Ordering HBV Tests from HALO “At-Risk Registry”

<table>
<thead>
<tr>
<th>Office</th>
<th>Diagnostic/Lab</th>
<th>Provider</th>
<th>Patient</th>
<th>Ordered Fr.</th>
<th>Ordered To</th>
<th>Status</th>
<th>Diagnostic/Lab Test</th>
<th>Visit</th>
<th>Next Appt. Dt</th>
<th>Status</th>
<th>Lab</th>
<th>Providers</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>03/15/21</td>
<td>03/22/21</td>
<td></td>
<td>Hep B Surface Ag/W/Reflex Confirm, Hepatitis B Surface Ab, Qual (Qwest), Hepatitis B Core Ab Total (501)</td>
<td></td>
<td>03/23/21</td>
<td>To be ordered</td>
<td>Quest Diagnostics Incorporated</td>
<td>Johnson, Ian</td>
</tr>
<tr>
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<td></td>
<td></td>
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<td>03/18/21</td>
<td>03/16/21</td>
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<td>03/23/21</td>
<td>To be ordered</td>
<td>Quest Diagnostics Incorporated</td>
<td>Johnson, Ian</td>
</tr>
</tbody>
</table>
### Diagnostic/Lab Order Form

**Ordered Lab:**

- **Provider:** Johnson, Ian
- **Office:** AC
- **Patient:** [?]
- **Order For:** Lab order
- **Date:** 03/22/21, 02:36 PM
- **To Be Received:** 00/00/00
- **Lab:** Quest Diagnostics Incorpor
- **HL7:** [ ]
- **Bill Type:** Third Party

**Specimen**
- **Fasting:** No
- **Source:** [ ]
- **PSC Hold:** [ ]
- **Collected:** [ ]
- **Collection:** 03/22/21, 02:36 PM
- **Collected By:** [ ]
- **Status:** To be Ordered, If not done: Reason Code [?]

**Select Template:**

- **DO NOT USE THE "ALL" TEMPLATE**

**Selectable Tests:**

<table>
<thead>
<tr>
<th>Lab Test</th>
<th>SS</th>
<th>Note</th>
<th>Dx (1)</th>
<th>Dx (2)</th>
<th>Dx</th>
<th>Specimen</th>
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</thead>
<tbody>
<tr>
<td>HBsAb HBsAg HBcore Ab (Group)</td>
<td>Room Temp.</td>
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<tr>
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<td>Room Temp.</td>
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<tr>
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<td>Room Temp.</td>
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<tr>
<td>*Hemoglobinopathy Evaluation (quest)</td>
<td>Room Temp.</td>
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<tr>
<td>*Hiv 1/2 Ag/ab. 4th Generation W/lf</td>
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<td>*Chlamydia/n. Gonorrhoeae Rna, Temp</td>
<td>Room Temp.</td>
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</tr>
</tbody>
</table>

- **Covered Dx(s):**

**Order Questions**

**Specimen Details**

**ICD - 10 are Operative Codes and ICD - 9 are Non - Operative Codes**

**Select All**

**Deselect All**

**ICD**

**Add**

**Delete**

**Cancel**

**Save**

**Close**
## END B Data Collection Y1-Y2
(July 2019 to June 2021)

<table>
<thead>
<tr>
<th>Population</th>
<th>Year 1*</th>
<th>Year 2 Q1</th>
<th>Year 2 Q2†</th>
<th>Year 2 Q3</th>
<th>Year 2 Q4</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>OB HBsAg+</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
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<tr>
<td>OB Tested</td>
<td>188</td>
<td>55</td>
<td>49</td>
<td>53</td>
<td>97</td>
<td>442</td>
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<tr>
<td><strong>Prevalence</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>0.9%</strong></td>
</tr>
<tr>
<td>Asian HBsAg+</td>
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<td>1</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Asian Tested</td>
<td>65</td>
<td>36</td>
<td>78</td>
<td>87</td>
<td>192</td>
<td>458</td>
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<tr>
<td><strong>Prevalence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>7.4%</strong></td>
</tr>
</tbody>
</table>

*March 2020: Shelter in Place (COVID-19)
†At-Risk for HBV Electronic Registry

One Mom/baby lost to follow up:
3 of 3 completed HBV Vaccination
2 of 3 completed HBIG at birth
END B Care Cascade Y1-Y2

<table>
<thead>
<tr>
<th></th>
<th>HBsAg+</th>
<th>Linked to Care</th>
<th>Engaged in Care</th>
<th>Retained in Care</th>
<th>Anti-virals</th>
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</thead>
<tbody>
<tr>
<td>Pregnant</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Not Pregnant</td>
<td>34</td>
<td>22</td>
<td>20</td>
<td>12</td>
<td>4</td>
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</table>
Achieving Hepatitis B Elimination

- COVID-19
- Community
- Collaboration
- Creativity
- Continuity