

### Healthcare Goal

Our goal is to reduce the number of people with chronic hepatitis C virus (HCV) infection who receive care in the Mount Sinai Health System by 90%.

### Background and Aim

Chronic HCV infection can lead to liver failure and liver cancer. Highly effective direct-acting antiviral (DAA) drugs are now available to cure HCV, but many HCV patients are not being treated. Innovations in case-finding and care coordination strategies are needed to identify patients and transition them into care. The Aims of this study are to develop a multidisciplinary strategy for identifying HCV-infected patients across a large urban health system and for linking them to HCV treatment.

### Methods

1. Electronic health records (EHR) of ~7.6 million people in the Mount Sinai Health System (2000–2017) were queried to identify patients with and International Classification of Diseases, 10th Edition (ICD-10) diagnosis code for HCV and/or a positive HCV antibody or HCV RNA test, which generated a list of 27,808 patients with possible HCV.
2. Custom software was written to identify patients with chronic infection and distinguish them from patients likely to have been cured of HCV. Chart review was used to validate the algorithm and determine a patient’s true status. The software used a previously validated algorithm developed by the NYC DOH1 that used reported lab results as a starting point.
3. A team of providers, care coordinators, and navigators, and others are contacting patients considered most likely to benefit from HCV treatment by phone, navigation into care and coordination when appropriate.
4. Results of HCV treatment are being monitored by a combination of artificial intelligence (AI) and traditional EHR review.

### Identification of 27,808 Patients with Possible HCV

The list contains all patients with an EHR HCV Diagnosis at a visit or recorded in their problem list OR HCV viral load (RNA) ≥ 15IU/mL OR HCV Antibody test Reactive at any time.

The report on the 27,808 patients provides information about HCV status.

### Algorithm: Artificial Intelligence (AI)-assisted Classification of HCV Status

From a list of 27,808 “HCV Possible” patients, the algorithm removed deceased patients and then selected patients who had an HCV RNA test. It divided them into those with/without a prescription for an HCV drug (see Table below).

<table>
<thead>
<tr>
<th>Status of HCV RNA Test</th>
<th>Positive RNA</th>
<th>Positive RNA</th>
<th>Positive RNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test result</td>
<td>Yes (n=2,157)</td>
<td>Yes (n=5,844)</td>
<td>Yes (n=3,460)</td>
</tr>
<tr>
<td>No HCV RNA test</td>
<td>No (n=12,527)</td>
<td>No (n=15,422)</td>
<td>No (n=15,116)</td>
</tr>
</tbody>
</table>

### Status of the 27,808 Patients at the Time of Review

- **Confirmed HCV RNA Positive (n=7,205)**
- **SVR Status Unknown (n=11,105)**
- **Confirmed HCV RNA Negative (n=100)**

### Progress on Outreach to 3,829 Potential Treatment Candidates

Patients with ≥ 15 IU/mL HCV RNA were entered into a database of candidates for outreach and transitioning into HCV care. By chart review and phoning, information was collected on basic demographics and HCV status of 1,018 patients. Thus, far 301 have been entered into HCV care as part of this study.

### Roadblocks and Corrective Strategies

#### Barriers to Engagement

1. High no response rate to outreach. After 3 no responses schedule a meeting with a care coordinator before another appointment is booked.
2. No HCV test results.

#### Mitigation Strategies to Improve Engagement

1. Customize outreach call scripts and messages to different oral groups.
2. Offer incentives for patients readiness to treatment.

### Provider engagement

- Work with patients to optimize patients readiness for treatment.

### Summary and Conclusions

- A newly-developed algorithm that integrates ICD-10 codes, clinical lab results, and pharmaceutical data was used to identify HCV candidates for HCV outreach and treatment, and B) patients who are deceased (about 4%) of the population.
- Chart review and phone calls were used to classify potential treatment candidates into several categories in: 1) not engaged in HCV treatment, 2) already engaged in care, and 3) lost to follow-up.
- Over 1,050 Mount Sinai patients could be engaged in HCV care with adequate support.
- Many patients in our urban healthcare system who had HCV data consistent with HCV infection remained chronically infected at the end of 2017 (28%). Our findings highlight the urgent need for large-scale HCV care finding and they demonstrate the benefits of care coordination.

### Acknowledgements & References

[1] Ponni V. Perumalswami, Brooke Wyatt, Anna Mageras, Mark Miller, Douglas Dieterich, Joel Dudley, Li Li, Maxence Vandromme, and Andrea D. Branch.

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