HCV Care - Engaging the Infectious Diseases Community

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University of Ottawa
The Ottawa Hospital Viral Hepatitis Program
Disclosures

• Industry
  – Investigator: Merck, GS, ABV
  – Consultant/Advisor: Merck, GS, ABV
  – Speaker: Merck, ABV, GS

• Government
  – OHTN
  – CIHR
  – Health Canada
  – Ontario MOH
  – Ministerial Council
Objectives

• Epidemiology of HCV in Canada
• HCV Treatment Options
• Pediatrics
• Role of Infectious Diseases
Epidemiology
Cases of HCV in Canada

Total: 268,732

Source: Public Health Agency of Canada (for details see full publication)
HCV Prevalence in Canada According to Exposure

*Other modes of transmission include sexual, occupational, nosocomial and vertical transmission. IDU: injection drug use.

Impact of the top 20 pathogens in health-adjusted life years in Ontario

Source: Kwong et al. Ontario Burden of Infectious Disease Study 2010
http://www.ices.on.ca/file/ONBOIDS_FullReport_intra.pdf
HCV Burden of Disease in Canada:

*Significant Increase in Medical Burden Due to Continued Progression of Liver Deterioration*

- **Cirrhosis (+89%)**
- **Hepatocellular carcinoma (+160%)**
- **Decompensated Liver Disease (+80%)**
- **Liver transplantation (+205%)**

New therapies can allow us to control the disease burden of HCV

Assumed higher treatment and cure rate (85-90%).
Eliminate HCV infections in Canada by 2025

Historical trend
Future trend with new therapies
HCV Treatment Options
Reimbursement Criteria

• For treatment naïve or experienced adult patients with CHC infection who meet the following:
  
  – Tx prescribed by a Hepatologist, GI, or ID Specialist (or other physician experienced in treating patients with CHC)
  – Laboratory confirmed HCV Genotype
  – Two lab confirmed quantitative HCV RNA values taken at least 6 months while the first level may be at the time of the initial dx
  – F2 or greater (METAVIR scale or equivalent) OR <F2 with special criteria
Criteria

- <F2 and at least one of the following:
  - HIV or HBV co-infection
  - Co-existent liver disease with diagnostic evidence of FLD
  - Post organ transplant (liver or other)
  - Extrahepatic manifestations
  - CKD Stage 3,4,5 as defined by NKFKD outcomes Quality Initiative
  - Diabetes on tx
  - WOCB age planning pregnancy with the next 12 months
Key Direct Acting Antivirals
**Sofosbuvir/Velpatasvir**

- **Sofosbuvir (SOF)**\(^1,2\)
  - Potent antiviral activity against HCV GT 1–6
  - Once-daily, oral, 400-mg tablet

- **Velpatasvir (VEL; GS-5816)**\(^3-5\)
  - Picomolar EC\(_{50}\) against GT 1–6
  - 2\(^{nd}\)-generation NS5A inhibitor with improved resistance profile
  - Long half-life of ~13-23 h supports once-daily dosing
  - No food effect

- **SOF/VEL Single Tablet Regimen (STR)**
  - Once daily, oral, STR (400/100 mg)

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MAA, marketing authorization application
### Efficacy Summary (ITT Analysis)

#### ASTRAL Phase 3 Program (ASTRAL-1, ASTRAL-2, ASTRAL-3, ASTRAL-4, ASTRAL-5)

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>GT 1</th>
<th>GT 2</th>
<th>GT 4</th>
<th>GT 5</th>
<th>GT 6</th>
<th>12 Weeks</th>
<th>24 Weeks</th>
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<tbody>
<tr>
<td><strong>ASTRAL-1</strong></td>
<td></td>
<td></td>
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<tr>
<td>GT 1, 2, 4–6</td>
<td>618/624</td>
<td>323/328</td>
<td>104/104</td>
<td>116/116</td>
<td>34/35</td>
<td>41/41</td>
<td>133/134</td>
<td>124/132</td>
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<td><strong>ASTRAL-2</strong></td>
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<tr>
<td>GT 2</td>
<td>99</td>
<td>98</td>
<td>100</td>
<td>100</td>
<td>97</td>
<td>100</td>
<td>99</td>
<td>94</td>
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<tr>
<td><strong>ASTRAL-3</strong></td>
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<tr>
<td>GT 3</td>
<td>100</td>
<td>100</td>
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<td></td>
<td></td>
<td></td>
<td>100</td>
<td>95</td>
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<tr>
<td><strong>ASTRAL-4</strong></td>
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<tr>
<td>GT 1–6 CTP-B</td>
<td>618/624</td>
<td>323/328</td>
<td>104/104</td>
<td>116/116</td>
<td>34/35</td>
<td>41/41</td>
<td>133/134</td>
<td>124/132</td>
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<tr>
<td><strong>ASTRAL-5</strong></td>
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<td></td>
</tr>
<tr>
<td>GT 1-6 HIV/HCV Coinfection</td>
<td>75/90</td>
<td>82/87</td>
<td>77/90</td>
<td>99/104</td>
<td></td>
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</tr>
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</table>

*P-value for superiority of SOF/VEL compared with SOF+RBV.

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‡
SVR12 by Cirrhosis Status or Treatment History

Error bars represent 95% confidence intervals.
SVR12 by Cirrhosis Status and Treatment History

ASTRAL-3: SOF/VEL STR for 12 Weeks in GT 3 HCV-Infected Patients

- **SOF/VEL**
  - Non-Cirrhotic: 98% (160/163)
  - Cirrhotic: 93% (40/43)
  - Treatment Naïve: 94% (31/33)

- **SOF + RBV**
  - Non-Cirrhotic: 89% (141/156)
  - Cirrhotic: 71% (22/31)
  - Treatment Experienced: 58% (33/58)

*One treatment experienced subject without cirrhosis treated with SOF/VEL had GT1a HCV infection at failure indicating HCV re-infection and is therefore excluded from this analysis.*

SVR12

SOF/VEL + RBV resulted in highest SVR12 in patients with decompensated liver disease

*Patient with nondetectable drug levels at time of virologic failure.
Charlton M, et al., AASLD, 2015, #LB-13
- HCV NS3/4A inhibitor
  - 100 mg once-daily, oral

- HCV NS5A inhibitor
  - 50 mg, once-daily, oral

- Fixed-dose combination tablet
- Broad activity against most HCV genotypes *in vitro*¹-³
- Efficacious in treatment-naive & treatment-experienced cirrhotic and non-cirrhotic patients with HCV, and in HIV/HCV co-infected patients (C-WORTHy)⁴,⁵

**EBR/GZR Treatment Algorithm**

- Indicated for the treatment of chronic hepatitis C (CHC) genotypes 1, 3, or 4 infection in adults

<table>
<thead>
<tr>
<th></th>
<th>G1a</th>
<th>G1b</th>
<th>G3</th>
<th>G4</th>
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<tbody>
<tr>
<td>8W</td>
<td>TN and (PI)PR</td>
<td>TN F0-F2*</td>
<td>TN and (PI)PR</td>
<td>TN and TE R</td>
</tr>
<tr>
<td></td>
<td>TE R</td>
<td></td>
<td>TE</td>
<td></td>
</tr>
<tr>
<td>12W</td>
<td>TN and (PI)PR</td>
<td>TN and (PI)PR</td>
<td>TN (+SOF)</td>
<td>TN and TE R</td>
</tr>
<tr>
<td></td>
<td>(+RBV)</td>
<td>(+RBV)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16W</td>
<td>(PI)PR OTF</td>
<td>(PI)PR OTF</td>
<td>PR OTF (+RBV)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(+RBV)</td>
<td>(+RBV)</td>
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</table>

* 8 weeks may be considered

<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Definition</th>
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<tr>
<td>TN</td>
<td>Treatment Naive</td>
</tr>
<tr>
<td>TE</td>
<td>Treatment Experienced</td>
</tr>
<tr>
<td>R</td>
<td>Relapser</td>
</tr>
<tr>
<td>OTF</td>
<td>On-treatment virologic failure</td>
</tr>
<tr>
<td>PI</td>
<td>1st generation PI (BOC, TVR, SMV)</td>
</tr>
<tr>
<td>PR</td>
<td>PegIFN-RBV</td>
</tr>
<tr>
<td>RBV</td>
<td>Ribavirin</td>
</tr>
<tr>
<td>SOF</td>
<td>Sofosbuvir</td>
</tr>
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</table>

with or without compensated cirrhosis
## MK2 Phase 2b and 3 Program

<table>
<thead>
<tr>
<th>Study</th>
<th>GT</th>
<th>Sample Size</th>
<th>Cirrhosis</th>
<th>Tx History</th>
<th>Co-Morbidity</th>
<th>Regimen (Weeks)</th>
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<tbody>
<tr>
<td>C-EDGE TN</td>
<td>1, 4, 6</td>
<td>421</td>
<td>± Cirrhosis</td>
<td>TN</td>
<td></td>
<td>12, no RBV</td>
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<tr>
<td>C-EDGE TE</td>
<td>1, 4, 6</td>
<td>420</td>
<td>± Cirrhosis</td>
<td>PR-PTF</td>
<td>±HIV</td>
<td>12 or 16, ±RBV</td>
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<td>C-Salvage</td>
<td>1</td>
<td>79</td>
<td>± Cirrhosis</td>
<td>PI/PR-PTF</td>
<td>±HIV</td>
<td>12, + RBV</td>
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<tr>
<td>C-SURFER</td>
<td>1</td>
<td>237</td>
<td>± Cirrhosis</td>
<td>TN/PR-PTF</td>
<td>CKD 4-5</td>
<td>12, no RBV</td>
</tr>
<tr>
<td>C-WORTHY G1</td>
<td>1b</td>
<td>61</td>
<td>No Cirrhosis</td>
<td>TN</td>
<td></td>
<td>8 ±RBV</td>
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<tr>
<td>C-EDGE CO-INFXN</td>
<td>1, 4, 6</td>
<td>218</td>
<td>± Cirrhosis</td>
<td>TN</td>
<td>HIV</td>
<td>12, no RBV</td>
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<tr>
<td>C-SWIFT</td>
<td>3</td>
<td>41</td>
<td>± Cirrhosis</td>
<td>TN</td>
<td></td>
<td>8 or 12 + SOF</td>
</tr>
<tr>
<td>C-WORTHY G3</td>
<td>3</td>
<td>41</td>
<td>No Cirrhosis</td>
<td>TN</td>
<td></td>
<td>12 or 18 + RBV</td>
</tr>
<tr>
<td>C-EDGE CO-STAR</td>
<td>1, 4, 6</td>
<td>300</td>
<td>± Cirrhosis</td>
<td>TN</td>
<td>OST, ±HIV</td>
<td>12, no RBV</td>
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<tr>
<td>C-EDGE H2H</td>
<td>1</td>
<td>250</td>
<td>± Cirrhosis</td>
<td>TN/PR-PTF</td>
<td>±HIV</td>
<td>12, no RBV</td>
</tr>
<tr>
<td>C-EDGE InhBD</td>
<td>1, 4, 6</td>
<td>300</td>
<td>± Cirrhosis</td>
<td>TN/PR-PTF</td>
<td>InhBD</td>
<td>12, no RBV</td>
</tr>
</tbody>
</table>

TN: Treatment Naïve  
PR-PTF: Failed Prior Peg-IFN/RBV  
InhBD = Inherited Blood Disorders  
CKD 4-5: Chronic Kidney Disease Grades 4-5 (incl. Hemodialysis)  
OST = Opiate Substitution Therapy
Elbasvir–Grazoprevir to Treat Hepatitis C Virus Infection in Persons Receiving Opioid Agonist Therapy: A Randomized Trial

Gregory J. Dore, MD; Frederick Altice, MD; Alain H. Litwin, MD; Olav Dalgaard, MD; Edward J. Gane, MD; Oren Shibolet, MD; Anne Luetkemeyer, MD; Ronald Nahass, MD; Cheng-Yuan Peng, MD; Brian Conway, MD; Jason Grobelsky, PhD; Anita Y.M. Howe, PhD; Itaias N. Gendrano, MPH; Eriuo Chen, MPH; Hsueh-Cheng Huang, PhD; Frank J. Dutko, PhD; David C. Nickle, PhD; Bach-Yen Nguyen, MD; Janice Wahl, MD; Ellai Barr, MD; Michael N. Robertson, MD; and Heather L. Platt, MD; on behalf of the C-EDGE CO-STAR Study Group*

Background: Hepatitis C virus (HCV) infection is common in persons who inject drugs (PWID).

Objective: To evaluate elbasvir–grazoprevir in treating HCV infection in PWID.

Design: Randomized, placebo-controlled, double-blind trial. (ClinicalTrials.gov: NCT02105688)

Setting: Australia, Canada, France, Germany, Israel, the Netherlands, New Zealand, Norway, Spain, Taiwan, the United Kingdom, and the United States.

Patients: 301 treatment-naive patients with chronic HCV genotype 1, 4, or 6 infection who were at least 80% adherent to visits for opioid-agonist therapy (OAT).

Intervention: The immediate-treatment group (ITG) received elbasvir–grazoprevir for 12 weeks; the deferred-treatment group (DTG) received placebo for 12 weeks, no treatment for 4 weeks, then open-label elbasvir–grazoprevir for 12 weeks.

Measurements: The primary outcome was sustained virologic response at 12 weeks (SVR12), evaluated separately in the ITG and DTG. Other outcomes included SVR24, viral recurrence or reinfection, and adverse events.

Results: The SVR12 was 91.5% (95% CI, 86.8 to 95.0) in the ITG and 89.5% (95% CI, 81.5 to 94.8) in the active phase of the DTG. Drug use at baseline and during treatment did not affect SVR12 or adherence to HCV therapy. Among 18 patients with posttreatment viral recurrence through 24-week follow-up, 6 had probable reinfection. If the probable reinfections were assumed to be responses, SVR12 was 94.0% (CI, 89.8 to 96.9) in the ITG. One patient in the ITG (1 of 210) and 1 in the placebo-phase DTG (1 of 100) discontinued treatment because of an adverse event.

Limitation: These findings may not be generalizable to PWID who are not receiving OAT, nor do they apply to persons with genotype 3 infection, a common strain in PWID.

Conclusion: Patients with HCV infection who were receiving OAT and treated with elbasvir–grazoprevir had high rates of SVR12, regardless of ongoing drug use. These results support the removal of drug use as a barrier to interferon-free HCV treatment for patients receiving OAT.

Primary Funding Source: Merck & Co., Inc., Kenilworth, New Jersey, USA.


For author affiliations, see end of text.

This article was published at www.annals.org on 9 August 2016.

* For members of the C-EDGE CO-STAR (A Phase III Randomized Clinical Trial to Study the Efficacy and Safety of the Combination Regimen of MK-5172/MK-8742 in Treatment-Naive Subjects With Chronic HCV GT1, GT4, and GT6 Infection Who Are on Opioid Substitution Therapy) Study Group, see the Appendix (available at www.annals.org).
EFFICACY: SUSTAINED VIROLOGIC RESPONSE
MODIFIED FULL ANALYSIS SET (mFAS)

<table>
<thead>
<tr>
<th></th>
<th>Immediate Treatment Group</th>
<th>Deferred Treatment Group</th>
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<tbody>
<tr>
<td>SVR12</td>
<td>95.5 (%95CI 189/198)</td>
<td>96.6 (%95CI 85/88)</td>
</tr>
<tr>
<td>SVR24</td>
<td>94.1 (%95CI 175/186)</td>
<td>96.5 (%95CI 82/85)</td>
</tr>
</tbody>
</table>

**Reinfection – counted as success**
- 5

**Failures**
- **Relapse**: 7 (5) 9 (1)
- **Breakthrough**: 0 (0) 0 (0)
- **Discontinuation**: 2 (2) 2 (2)

CI, confidence interval.

- In the mFAS, SVR was >94% at FW12 and 24 in both ITG and DTG
- In the FAS (where discontinuations were counted as failures), SVR12 was 91.5% in the ITG and 85.6% in the DTG, SVR24 was 89.5% in the ITG and 85.3% in the DTG.

KAPLAN-MEIER CURVE OF TIME TO HCV REINFECTION

- Mean duration of follow-up: 290.5 days (range 16 to 502 days)
- 8 patients with reinfection:
  - Day 57, Day 63 (n=3), Day 70, Day 164, Day 221, Day 362
- 5 patients had persistent reinfection
  - Day 63, Day 70, Day 164, Day 221, Day 362

<table>
<thead>
<tr>
<th>Visit</th>
<th>EOT</th>
<th>FW12</th>
<th>FW24</th>
<th>6 month follow-up</th>
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<tbody>
<tr>
<td>Number of subjects at risk</td>
<td>296</td>
<td>292</td>
<td>244</td>
<td>193</td>
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</table>
ELBASVIR/GRAZOPREVIR PLUS SOFOSBUVIR ± RIBAVIRIN IN TREATMENT-NAIVE AND TREATMENT-EXPERIENCED PATIENTS WITH HEPATITIS C VIRUS GENOTYPE 3 INFECTION AND COMPENSATED CIRRHOSIS: THE C-ISLE STUDY


*Queen Mary University, London, United Kingdom
<table>
<thead>
<tr>
<th></th>
<th>Cirrhotic GT3-Infected Patients (n = 100)</th>
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<tbody>
<tr>
<td>Male, n (%)</td>
<td>68 (68)</td>
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<tr>
<td>Race, n (%)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>29 (29)</td>
</tr>
<tr>
<td>White</td>
<td>69 (69)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>53.4 (8.7)</td>
</tr>
<tr>
<td>BMI ≥30 kg/m², n (%)</td>
<td>28 (28)</td>
</tr>
<tr>
<td>Cirrhosis diagnosis method</td>
<td></td>
</tr>
<tr>
<td>Liver biopsy, n (%)</td>
<td>16 (16)</td>
</tr>
<tr>
<td>FibroScan®, n (%)</td>
<td>84 (84)</td>
</tr>
<tr>
<td>Mean FibroScan® score, kPa (SD)</td>
<td>25.4 (12.1)</td>
</tr>
<tr>
<td>Prior treatment history, n (%)</td>
<td></td>
</tr>
<tr>
<td>Naive</td>
<td>47 (47)</td>
</tr>
<tr>
<td>PR-Experienced</td>
<td>53 (53)</td>
</tr>
<tr>
<td>HCV RNA log₁₀ IU/mL mean (SD)</td>
<td>6.2 (0.7)</td>
</tr>
<tr>
<td>IL28B CC, n (%)</td>
<td>50 (50)</td>
</tr>
<tr>
<td>Albumin, g/dL, mean (SD)</td>
<td>3.6 (1.2)</td>
</tr>
<tr>
<td>Total bilirubin, mg/dL, mean (SD)</td>
<td>0.7 (0.4)</td>
</tr>
<tr>
<td>Platelets × 10³ cells/μL, mean (range)</td>
<td>148 (46-396)</td>
</tr>
<tr>
<td>Platelet count &lt;100 × 10³ cells/μL, n (%)</td>
<td>24 (24)</td>
</tr>
</tbody>
</table>

BMI, body mass index; SD, standard deviation.
SVR12 (mFAS)

<table>
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<tr>
<th>Treatment</th>
<th>SVR, %</th>
<th>Relapse</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBR/GZR + SOF + RBV (8 weeks)</td>
<td>91/23</td>
<td>2</td>
</tr>
<tr>
<td>EBR/GZR + SOF (12 weeks)</td>
<td>100/22</td>
<td>0</td>
</tr>
<tr>
<td>EBR/GZR + SOF (12 weeks)</td>
<td>100/17</td>
<td>0</td>
</tr>
<tr>
<td>EBR/GZR + SOF + RBV (12 weeks)</td>
<td>100/17</td>
<td>0</td>
</tr>
<tr>
<td>EBR/GZR + SOF (16 weeks)</td>
<td>100/17</td>
<td>0</td>
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</tbody>
</table>

mFAS excluded patients who discontinued treatment for reasons unrelated to study medication.
ENDURANCE-1, 2, 4: GLECAPREVIR / PIBRENTASVIR for Tx GT1, 2, 4, 5, 6

**ENDURANCE-1: randomized, open-label phase III trial**

Noncirrhotic pts with GT1 HCV with or without IFN experience or HIV coinfection (N = 703)

- **GLE/PIB** (n = 351)
- **GLE/PIB** (n = 352)

**ENDURANCE-2: randomized, double-blind, placebo-controlled phase III trial**

Noncirrhotic pts with GT2 HCV with or without IFN experience (N = 302)

- **GLE/PIB** (n = 202)
- **Placebo** (n = 100)

**ENDURANCE-4: open-label, single-arm phase III trial**

Noncirrhotic pts with GT4-6 HCV with or without IFN experience (N = 121)

- **GLE/PIB** (n = 121)

*Dosing: GLE/PIB given as 3 coformulated 100/40 mg tablets QD for a total dose of 300/120 mg.

References in slidenotes.
ENDURANCE Studies: Key Baseline Demographics

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<tbody>
<tr>
<td></td>
<td>GLE/PIB 8 Wks (n = 351)</td>
<td>GLE/PIB 12 Wks (n = 352)</td>
<td>GLE/PIB 12 Wks (N = 121)</td>
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<tr>
<td>Fibrosis stage</td>
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<tr>
<td>F0-F1</td>
<td>85</td>
<td>85</td>
<td>76</td>
</tr>
<tr>
<td>F2</td>
<td>6</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>F3</td>
<td>9</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>Treatment experienced*</td>
<td>38</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td>HIV coinfected</td>
<td>4</td>
<td>5</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Pts could have treatment experience with IFN or pegIFN ± RBV or SOF + RBV ± pegIFN.


Slide credit: clinicaloptions.com
ENDURANCE Studies: Efficacy of GLE/PIB for Treating GT1, 2, 4, 5, 6 HCV

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<tbody>
<tr>
<td></td>
<td>GLE/PIB 8 Wks</td>
<td>GLE/PIB 12 Wks</td>
<td>GLE/PIB 12 Wks</td>
</tr>
<tr>
<td>SVR12, % (n/N)</td>
<td>99.1* (332/335)</td>
<td>99.7* (331/332)</td>
<td>99† (195/196)</td>
</tr>
<tr>
<td>Relapse/on-treatment failure, n</td>
<td>1§</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

[^1]: ITT-PS analysis: included all pts receiving ≥ 1 dose of study drug; excluded pts with HIV coinfection or SOF experience.
[^2]: ITT analysis: excluded pts with SOF experience.
[^3]: ITT analysis.
[^4]: On-treatment virologic failure at Day 29 in pt with GT1a HCV.

SURVEYOR-II, Part 3: GLE/PIB for Pts With GT3 HCV ± Cirrhosis

- Partially randomized, open-label phase II trial (N = 131)

Prior treatment experience consisted of IFN or pegIFN ± RBV or SOF + RBV ± pegIFN

*Dosing: GLE/PIB given as 3 coformulated 100/40 mg tablets QD for a total dose of 300/120 mg.

SURVEYOR-II, Part 3: SVR12 Rates With GLE/PIB for Pts With GT3 HCV ± Cirrhosis

<table>
<thead>
<tr>
<th>Tx Wks</th>
<th>Cirrhosis</th>
<th>Tx Experienced</th>
<th>Breakthrough</th>
<th>Relapse</th>
<th>LTFU</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>-</td>
<td>+</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>-</td>
<td>+</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>12</td>
<td>+</td>
<td>-</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>+</td>
<td>+</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

SVR12 (%)

- Tx Wks: 12 weeks
- Cirrhosis: Present (-) / Absent (+)
- Tx Experienced: Yes (+) / No (-)
- Breakthrough
- Relapse
- LTFU

HCV Resistance Testing

- **Drug**
  - DAA Class
  - Co-Administered DAAs

- **Virus**
  - Specific Mutation
  - Genotype
  - Resistance Assay Utilized

- **Host**
  - Concurrent Negative Predictors of DAA Success

- **Complexity versus Capacity**
Pediatric HCV
Pediatric HCV

• NHANES3
  – 6-11 yo: 0.17% sero+
  – 12-19 yo: 0.39% sero+
  – 6600 CDN children
• Vertical transmission
  primary mode of infection
  – 5-7% / pregnancy
• Breast feeding does not promote transmission

• Diagnosis
  – HCV antibodies <18/12
• Spontaneous Resolution- 25-40%
  (usually by M24)
• Manifestations
• Work-Up
• Treatment
  – FDA: SOF, Harvoni age 12-17

JPGN NASPGHAN Practice Guidelines 2012.
Role of Infectious Diseases
HCV Cascade of Care in BC, 2012

- Estimated Prevalence: 73,203 (100%)
  - Undiagnosed: 18,301
  - Antibody Diagnosed: 54,902 (75%)
  - HCV RNA Tested: 40,656 (56%)
    - Cleared: 9,842
  - Genotyped: 26,300 (36%)
  - Treatment Initiated: 8,532 (12%)
  - Cured: 5,197 (7%)

Janjua NZ et al EBioMedicine DOI: (10.1016/j.ebiom.2016.08.035)
Infectious Disease Expertise

- Virology
- Immunology
- Multisystem Disease
- Polypharmacy
- Side Effect Profile
- DDI
Population

• Concentration of Barriers to Engagement and Treatment Success
  – Diverse populations within the HCV community
  – Socioeconomic
  – Mental Health
  – Substance Abuse
  – Poverty
  – Remoteness
  – Stigma
Discussion and Acknowledgements