This enduring activity is supported by educational grants from AbbVie, Bristol-Myers Squibb, and Gilead Sciences, Inc.
Abstract GS01

Treatment of Hepatitis C Virus in Patients with Advanced Cirrhosis: Always Justified? Analysis of the HEPA-C Registry


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24. Digestive, Servidigest Centre, Barcelona, Spain
Background

• The past year has seen considerable debate on the risk/benefit of treating patients with advanced or decompensated liver disease.

• We aimed at finding factors to identify the candidates most likely to experience an improved natural course of their chronic liver disease without compromising safety.
Methods

- Hepa-C is a collaborative, monitored national registry of HCV patients directed by the Spanish Association for the Study of the Liver.

- A total of 564 patients, many of them included in the SOF compassionate use program, with cirrhosis on biopsy, FibroScan, and/or clinical symptoms, not transplanted during or within 12 weeks after treatment (study period), were registered.
Results

• The study included 393/564 (70%) patients with compensated cirrhosis (Child-Pugh A) and 171/564 (30%) patients with Child-Pugh (CPT) B/C.

• Treatment regimens (all +/- RBV):
  – SMV + SOF: 292/564 (52%)
  – SOF + DCV: 133/564 (24%)
  – SOF/LDV: 70/564 (12%)
  – OBV/PTV/r +/- DSV: 28/564 (5%)
  – SMV + DCV: 12/564 (2%)
  – SOF + RBV: 28/564 (5%)
Results

• Overall
  – SVR: 88%
  – Relapse: 10%
  – Grade 3/4 AEs: 27%

• Patients with baseline CPT B/C had lower SVRs, and more relapses and grade 3-4 AE than CPT A (81% vs. 95% ITT, p <0.001; 21% vs. 5%, p <0.001; 61% vs. 12%, p <0.001).

• More deaths occurred during the study period in patients with advanced baseline CPT (B/C vs. A: 12 vs. 6, p = 0.003).

Results

• Baseline MELD >17 independently identified a group of patients with 39% deaths vs. 1.5% (p <0.001) in this period.

• However, patients with CPT B/C patients had greater post-treatment improvement in liver function (MELD) compared with CPT A ones, even after excluding regimens with SMV from the analysis.

• Baseline FibroScan and MELD values were independently associated with this improvement, yet their influence was very small (OR:1.05, CI:1.01-1.1, p = 0.01; OR:0.72, CI:0.56-0.92, p <0.01).
Prediction Of Hepatocellular Carcinoma After Successful Eradication Of Hepatitis C By Simple and Readily Available Factors: Nationwide Multicenter Study By Japanese Red Cross Liver Study Group

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Background and Aims

• Most patients with hepatitis C (HCV) will achieve sustained virological response (SVR) by highly effective direct acting antivirals.

• However, the residual risk of developing hepatocellular carcinoma (HCC) is unclear.

• The aim of the present study was to examine predictors of HCC after SVR in a large scale nationwide hospital cohort.

Methods

- Japanese Red Cross Liver Study Group, involving 18 hospitals and medical centers nationwide, recruited 1025 chronic hepatitis C patients who had SVR by interferon based therapy.

- Median duration of follow up was 7 years.

- Data collected at baseline and at SVR were used to extract HCC predictors.
Results

• A total of 85 patients developed HCC. The cumulative incidence of HCC was 4.3% at 5 years, and 10.8% at 10 years.

• Multivariable Cox regression analysis revealed that age over 60 (HR 6.7), male (HR 5.4), advanced fibrosis (METAVIR F3-4) (HR 3.4), and serum alpha-fetoprotein (AFP) >6.0 ng/mL at SVR (HR 4.6) were independent risk factors for HCC.
Risk Score

• Based on the regression coefficients, a risk score was formulated as follows:
  – 4 (if age over 60) + 3 (if male) + 2 (if advanced fibrosis) + 3 (if AFP > 6.0 ng/mL at SVR).
Results

• The area under the ROC curve for the risk score to predict HCC development within 5 years was 81%.
• The optimal cut-off value of score 6 resulted in sensitivity 83% and specificity 79%.
• The annual risk of developing HCC was 0.4% and 3.2% for patients with score < 6 and ≥6, respectively.
• Further categorization into low score (<6), intermediate score (6–7), and high score (>7) resulted in an increasing cumulative incidence of HCC at 5 years after SVR: 2%, 12%, and 24%, respectively (p < 0.0001).

Abstract FRI-156

Statin Use Is Associated With A Lower Rate Of Liver Cancer In Patients With Chronic Hepatitis C

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4. Department of Medicine, Inova Fairfax Hospital, Falls Church, United States
Background and Aims

- Chronic Hepatitis C upregulates lipid biosynthesis leading to increased intracellular lipid accumulation.
- Statins inhibit 3-hydroxy-3-methylglutarylcoenzyme A which plays a central role in cholesterol synthesis.
- Statins have been associated with anticarcinogenic effects in vitro.
- Their use has also been associated with a decreased risk of hepatocellular carcinoma in patients with cardiovascular risk factors, diabetes and liver disease.
- However there is a paucity of data in patients with chronic hepatitis C.

Aim

- To assess the effect of statin use on the risk of developing liver cancer in our population of hepatitis C patients at Kaiser Permanente Southern California (KPSC) a community based health care system with approximately 3.5 million members during the study period.
Methods

• A retrospective cohort study of patients > 18 years with a HCV diagnosis by ICD -9 code or positive HCV RNA from 1 Jan 2008 – 31 Dec 2013.

• The KPSC National Cancer Institute Surveillance Epidemiology and End Results (KPSC-NCI SEER) affiliated cancer registry was used to identify cases with liver cancer.

• Treatment with a statin was defined as the presence of 2 or more statin prescriptions during the study period.

• Crude and adjusted odds ratios of liver cancer associated with statin use were assessed using logistic regression modeling.

Results

• N = 35712 patients, mean age 57 yrs, 59% males.
• 5699 (16%) were prescribed a statin during the study period.
• Liver cancer patients were older, had higher rates of cirrhosis and diabetes.
• They were also more frequent users of tobacco and had a higher rate of alcohol abuse.
• Cirrhosis and age were strongly associated with an increased risk of developing liver cancer and statin use was associated with a lower risk of liver cancer.
• Multivariable analysis.
• Demographics and Comorbidities

## Results

<table>
<thead>
<tr>
<th>C-Stat</th>
<th>Value (Lower, Upper)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirrhosis (Yes vs No)</td>
<td>8.755 (4.985, 9.153)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Statin Use (Yes vs No)</td>
<td>0.258 (0.169, 0.394)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Age</td>
<td>1.029 (1.017, 1.041)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>BMI</td>
<td>0.983 (0.964, 1.002)</td>
<td>0.0868</td>
</tr>
<tr>
<td>Charlson Comorbidity Index</td>
<td>1.061 (1.011, 1.113)</td>
<td>0.0160</td>
</tr>
<tr>
<td>Race Other vs White</td>
<td>0.309 (0.126, 0.759)</td>
<td>0.0045</td>
</tr>
<tr>
<td>Diabetes (Yes vs No)</td>
<td>1.310 (1.100, 0.716)</td>
<td>0.0497</td>
</tr>
</tbody>
</table>

Conclusions

• In our cohort of chronic hepatitis C patients, cirrhosis and age were correlated with development of liver cancer; statin use was associated with a lower rate of liver cancer.

• This supports previous reports of a decreased risk of developing liver cancer in patients with liver disease who are taking statins.
Abstract PS007

European RAVs Database: Frequency And Characteristics Of RAVs In Treatment-naïve And DAA-experienced Patients

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7. Practice of Gastroenterology, Düsseldorf
8. Institute for Interdisciplinary Medicine IFI, Hamburg
9. Practice of Hepatology, Göttingen
10. Practice of Hepatology, Herne
11. Practice of Gastroenterology, Mannheim
12. Infektiologikum, Frankfurt
13. Department of Gastroenterology and Rheumatology, University Hospital Leipzig, Leipzig, Germany
Background and Aims

• Interferon-free combination therapies are the new standard for treatment of chronic hepatitis C virus (HCV) infection.
• The frequency of HCV RAVs (resistance associated variants) to direct antiviral agents (DAAs) varies between HCV genotypes, but pre-existing RAVs are often associated with virologic treatment failure.
• In this study frequencies of NS3, NS5A and NS5B RAVs were investigated in treatment-naïve and -experienced patients and consequences for DAA treatment options were evaluated.

Methods

- Serum samples of 3305 European HCV infected patients were population-based sequenced for HCV NS3, NS5A and NS5B genes polymorphisms.

- RAVs were considered as relevant if they were associated with treatment failure or were shown to confer a >2-fold changed drug susceptibility in comparison to the reference strain.

- RAVs were analysed in NS3 (positions 36, 43, 54, 55, 56, 80, 122, 155, 156, 158, 168, 170, 175), NS5A (24, 28, 30, 31, 58, 92, 93) and NS5B (159, 282, 321, 316, 368, 411, 414, 448, 553, 554, 556, 558, 559, 561).
## Methods

<table>
<thead>
<tr>
<th>Treatment-naive</th>
<th>Tx status [n=]</th>
<th>Total RAVs detected [n=]</th>
<th>Special RAVs detected [n=]</th>
<th>(rs-) Tx w/o RAVs possible in</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>968</td>
<td>365 (38%)</td>
<td>365 (38%) NS5A (38%)</td>
<td>99%</td>
</tr>
<tr>
<td>Special RAVs detected (rs)</td>
<td>NS5B (5%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Pre-treatment

<table>
<thead>
<tr>
<th>TX</th>
<th>Tx status [n=]</th>
<th>Total RAVs detected [n=]</th>
<th>Special RAVs detected [n=]</th>
<th>(rs-) Tx w/o RAVs possible in</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVR</td>
<td>201</td>
<td>90 (45%)</td>
<td>72 (36%) NS3</td>
<td>96%</td>
</tr>
<tr>
<td>BOC</td>
<td>132</td>
<td>48 (36%)</td>
<td>34 (26%) NS3</td>
<td>95%</td>
</tr>
<tr>
<td>SOF/RBV</td>
<td>89</td>
<td>52 (58%)</td>
<td>0 (0%) NS5B</td>
<td>83%</td>
</tr>
<tr>
<td>SOF/PEG/RBV</td>
<td>39</td>
<td>18 (46%)</td>
<td>0 (0%) NS5B</td>
<td>90%</td>
</tr>
<tr>
<td>SOF/SMV</td>
<td>44</td>
<td>38 (86%)</td>
<td>28 (64%) NS3, NS5B</td>
<td>88%</td>
</tr>
<tr>
<td>SOF/DCV</td>
<td>43</td>
<td>38 (88%)</td>
<td>36 (84%) NS5A/B</td>
<td>49%</td>
</tr>
<tr>
<td>SOF/LDV</td>
<td>63</td>
<td>48 (76%)</td>
<td>38 (60%) NS5A/B</td>
<td>62%</td>
</tr>
<tr>
<td>PTV/OMB/DSV</td>
<td>18</td>
<td>18 (100%)</td>
<td>18 (100%) NS3, NS5A/B</td>
<td>28%</td>
</tr>
<tr>
<td>PEG/ RBV</td>
<td>797</td>
<td>275 (34%)</td>
<td>275 (34%) NS3, NS5A/B</td>
<td>98%</td>
</tr>
</tbody>
</table>

**Table 1:**

- Tx-treatment; RAVs-resistance associated variants; w/o-without; TVR – telaprevir; BOC-boceprevir; SOF-sofosbuvir; RBV-ribavirin; PEG-pegylated interferon-alfa; SMV-simeprevir; DCV-daclatasvir; LDV-ledispasvir; PTV-paritaprevir; OMB-ombitasvir; DSV-dasabuvir

Results

• Treatment-naïve and treatment-experienced patients infected with HCV genotype 1a (n = 1417), 1b (n = 1300), 1c-e (n = 5), 2 (n = 49), 3 (n = 389), 4 (n = 119), 5 (n = 7), 6 (n = 1), and 2k/1b (n = 18) were studied.

• Pre-existing RAVs could be observed in 38% of treatment-naïve patients.

• The proportion of selected RAVs in telaprevir, boceprevir and PEG/RBV pre-treated patients was 36%, 26%, and 34%, respectively.

Results

• After failure to SOF/RBV ± PEG no RAVs could be detected. In patients treated with SOF in combination with SMV, DCV, or LDV a much higher incidence of RAVs was observed (64%, 84%, and 60%) only exceeded by PTV/OMB/DSV failure patients who all selected RAVs (100%).

• Re-/treatment without RAVs with currently approved regimens would be possible in 99% of the naïve patients and in 96% (TVR), 95% (BOC), 83% (SOF/RBV), 90% (SOF/PEG/RBV), 88% (SOF/SMV) 49% (SOF/DCV), 62% (SOF/LDV), 28% (PTV/OMB/DSV), and 98% (PEG/RBV) of pre-treated patients.
Conclusions

• For treatment naïve patients RAVs against NS3, NS5A or NonNuc NS5B inhibitors are observed with moderate frequency (5–57%) and RAVs-free treatment options are available for almost all patients.

• However, in patients with failure to multiple DAA combination regimens, RAVs were found in 36–100% of patients which may impose restrictions on effective retreatment options with currently approved DAA regimens.

Abstract FRI-166

Long-term Follow-up Of Patients With Chronic HCV Infection Following Treatment With Direct Acting Antiviral Regimens: Maintenance Of SVR, Persistence Of Resistance Mutations and Clinical Outcomes

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7. Pharpoint Research, Inc., Durham, NC
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12. Auckland Clinical Studies, Auckland, New Zealand
Objectives and Methods

• To determine long-term virologic and clinical outcomes in HCV patients treated with DAA regimens using registry study data
• Patients with chronic HCV treated in a Gilead-sponsored study were eligible for 1 of 2 ongoing 3-year registry studies
  – SVR Registry: patients who achieved a sustained virologic response 12 weeks after treatment end (SVR12) in parent study
  – Sequence Registry: patients with virologic failure in parent study
• Deep sequencing with 1% cutoff used

Outcomes

• SVR maintained in 99.7% (5414/5433) patients
  – 6 patients (0.1%) virologic evidence of late relapse
  – 12 patients (0.2%) virologic evidence of reinfection

• HCC was reported in 0.3% (16/5433) and 0.9% (5/536) of patients in the SVR and Sequence registries through Week 96 respectively.
Total number of patients is the number with baseline sequencing data available. NS5B nucleos(t)ide inhibitor (NI) RAVs were analyzed for patients who received regimens containing SOF. No patient had >1 NS5B RAV.

Treatment-emergent NS5A RAVs at Baseline in Sequence Registry

- Additional patients with NS5A RAVs at parent study BL that were observed at registry study BL, n

*Numbers inside bars are numbers of patients in each category. Total number of patients in each bar is the number with baseline sequencing data available. Graph includes patients with BL NS5A RAVs who developed new RAVs. NS5A RAVs were analyzed for patients who received an NS5A inhibitor-containing regimen.

Outcomes

- Treatment-emergent RAVs in the parent study were present at baseline in the Sequence Registry
  - Fewer NS5A RAVs developed in patients who failed treatment with a SOF-containing regimen than one without SOF

Abstract PS102

Prevalence And Impact Of Baseline Resistance-associated Variants (RAVs) On The Efficacy Of Ledipasvir/Sofosbuvir Or Simeprevir/Sofosbuvir Against GT1 HCV Infection: HCV-TARGET Interim Analysis

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6. University of California, San Diego, San Diego
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10. Mountainview Medical Center, Hudson
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Background and Aims

- This study aimed to evaluate the prevalence and impact of baseline (BL) resistance-associated variants (RAVs) on ledipasvir/sofosbuvir (LDV/SOF) ± ribavirin (RBV) or simeprevir/sofosbuvir (SMV/SOF) ± RBV regimens in patients with genotype (GT) 1 HCV infection in HCV-TARGET, a multi-centre, prospective, observational cohort study.

Methods

• A subset of patients enrolled in HCV-TARGET were consented to serum collection prior to initiating HCV therapy administered according to local standard of care.

• HCV resistance testing was performed on samples collected before May 12, 2015 using Monogram Biosciences assays (population sequence derived from Illumina MiSeq data with a 10% variant reporting threshold).

• LDV, SOF and SMV susceptibility was interpreted using Monogram’s rule-based algorithm.

Results

• BL resistance testing was performed for 486 patients treated with LDV/SOF (n = 209), LDV/SOF + RBV (n = 31), SMV/SOF (n = 186) or SMV/SOF + RBV (n = 60). Demographics included 63% male, 13% Black, 76% GT1a, 52% cirrhosis, 18% with liver transplant, and 55% with prior HCV therapy.

• The overall prevalence of SMV, LDV and SOF RAVs was 41% (196/480), 24% (116/484) and 2.7% (13/480), respectively.

• The prevalence of SMV, LDV and SOF RAVs in treatment-naïve (TN) patients (221/486) was 39%, 23%, and 3.2%, respectively, compared to 42%, 25%, and 2.3% in treatment-experienced (TE) patients (265/486).

• The prevalence of SMV, LDV and SOF RAVs in non-cirrhotic patients (233/486) was 37%, 24% and 2.2%, respectively, compared to 44%, 24% and 3.2% in cirrhotic patients (253/486).
Results

• To date (403/486 with SVR12 data), 91.3% (368/403) of patients achieved SVR12, and 8.7% (35/403) developed relapse, had no response or had virologic breakthrough.

• In the LDV/SOF ± RBV cohort (n = 168), 85% (17/20) with LDV or SOF RAVs achieved SVR12, whereas 95% (141/148) without LDV and SOF RAVs achieved SVR12.

• For the SMV/SOF ± RBV cohort (n = 227), 88% (85/97) with SMV RAVs and 90% (135/150) without SMV RAVs achieved SVR12. Multivariate analysis incorporating RAVs associated with SVR12 for the 486 patient cohort will be presented.
### Results

<table>
<thead>
<tr>
<th>Compound</th>
<th>AA positions associated with resistance analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMV</td>
<td>NS3: 36, 80, 122, 155, 168, 170</td>
</tr>
<tr>
<td>LDV</td>
<td>NS5A: 24, 28, 30, 31, 54, 58, 92, 93</td>
</tr>
<tr>
<td>SOF</td>
<td>NS5B: 142, 159, 282, 316</td>
</tr>
</tbody>
</table>
Conclusions

• SMV, LDV and SOF RAVs at BL for GT1 patients treated with LDV/SOF ± RBV or SMV/SOF ± RBV suggests that the prevalence was generally comparable between TN and TE patients, and between cirrhotic and non-cirrhotic patients.
Abstract THU-224

Genotypic And Phenotypic Resistance In Clinical Samples Submitted For HCV NS5B Drug Resistance Testing In The US

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1. Monogram Biosciences Inc., South San Francisco, United States
Background and Aims

• Regimens containing the NS5B inhibitors dasabuvir (DSV) or sofosbuvir (SOF) are approved for the treatment of HCV infection.

• We characterized the prevalence of DSV and SOF resistance-associated variants (RAVs) in the first 500 clinical samples received for routine NS5B inhibitor resistance testing.

• Samples with RAVs were further characterized in a phenotypic assay to evaluate replication capacity (RC) and DSV and SOF susceptibility.

Methods

• The NS5B region was amplified from HCV genotype (GT) 1 samples submitted to Monogram Biosciences (South San Francisco, CA, USA) for resistance analysis. NS5B sequencing was performed using the Illumina MiSeq platform with a 10% variant reporting threshold.

• DSV and SOF RAVs were identified and an assessment of drug susceptibility (sensitive, resistant (R) or resistance possible (RP)) was derived from a rules-based algorithm.

• Replicons containing plasma-derived NS5B sequences with RAVs were evaluated for RC and susceptibility to DSV and SOF, relative to the reference GT1b Con1 replicon, using a luciferase-reporter assay.
Results

- We analyzed the first 500 samples received for routine NS5B resistance testing, of which 83% were GT1a and 17% were GT1b.

- From genotypic analysis, DSV and/or SOF RAVs were identified in 9.4% of samples overall.

- For DSV, 7.4% of samples were assessed as R or RP; 7% for GT1a and 9.3% for GT1b.

- For SOF, 2.2% of samples were assessed as R or RP; 2.4% for GT1a and 1.2% for GT1b.

- From phenotypic analysis, replicons containing NS5B regions from 42 samples with DSV and/or SOF RAVs had RCs ranging from 6-112% and 5–65%, respectively.
Results

- Susceptibility to DSV and SOF varied over a >2000- and 23-fold range, respectively.

- GT1a viruses exhibited larger reductions in DSV susceptibility compared to GT1b viruses, with the greatest reductions in susceptibility ($IC_{50FC} > 975$) seen for samples with C316Y variants.

- For SOF, the largest reductions in susceptibility ($IC_{50FC}$ of up to 12) were seen among GT1a viruses with S282T and L159F variants.
Conclusions

• From a survey of samples submitted for NS5B resistance testing, DSV RAVs were more prevalent compared to SOF RAVs.

• Overall, RAV prevalence was similar among GT1a and GT1b viruses.

• Susceptibility to DSV and SOF varied over an approximate 3 and 1 log range, respectively, with the largest reductions in inhibitor susceptibility seen among viruses with GT1a RAVs.

Abstract SAT-128

C-EDGE IBLD: Efficacy and Safety of Elbasvir/Grazoprevir (EBR/GZR) in Subjects with Chronic Hepatitis C Virus Infection and Inherited Blood Disorders

Christophe Hezode*, Massimo Colombo², Ulrich Spengler³, Ziv Ben-Ari⁴,⁵, Simone Strasser⁶, William M. Lee⁷, Leslie Morgan⁸, Jingjun Qiu⁸, Peggy Hwang⁸, Michael Robertson⁸, Bach-Yen Nguyen⁸, Eliav Barr⁸, Janice Wahl⁸, Barbara Haber⁸, Rohit Talwani⁸, Vito Di Marco⁹

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3. University of Bonn, Bonn, Germany
4. Sheba Medical Center, Ramat Gan
5. Sackler School of Medicine, Tel Aviv, Israel
6. AW Morrow Gastroenterology and Liver Centre, Sydney, Australia
7. UT Southwestern Medical Center, Dallas
8. Merck & Co., Inc., Kenilworth, United States
9. University of Palermo, Palermo, Italy
Key Inclusion/Exclusion Criteria

- HCV GT1, 4 & 6 infection
- Treatment-naïve and treatment-experienced patients
- Inherited blood disorder (IBLD)
  - Sickle cell anemia
  - β-thalassemia
  - Hemophilia A/B
  - Von Willebrand disease
- Patients with sickle cell anemia and β-thalassemia were required to have hemoglobin levels >7.0 g/dL
- Compensated cirrhosis allowed:
  - Liver staging was based on biopsy; Cirrhosis was defined as FibroScan > 12.5kPa within 12 months of enrollment; or a combination of Fibrotest score>0.75 and an AST:platelet ratio index of >2
  - Patients with a presence or history of ascites, gastric or variceal bleeding, hepatic encephalopathy, or other signs/symptoms of advanced liver disease were excluded
- Patients with HIV/HCV co-infection were enroled, provided they were receiving stable antiretroviral therapy using tenofovir or abacavir and either emtricitabine or lamivudine plus raltegravir, dolutegravir, or rilpivirine for ≥8 weeks prior to study entry, and had a CD4+ T-cell count >200 cells/mm3 and undetectable plasma HIV-1 RNA
Study Design

- Randomized, parallel-group, multi-site, placebo-controlled trial
- Stratification by cirrhosis (yes/no) and disease status (sickle cell anemia versus thalassemia versus hemophilia/von Willebrand disease)
- 159 patients randomized to immediate treatment with EBR/GZR or deferred treatment where patients received placebo for 12 weeks and then open-label EBR/GZR starting at FUW4

*Deferred open-label treatment (all randomized patients remained blinded to treatment until FW4)
GZR and EBR were administered as separate entities in the immediate arm, and as a fixed dose-combination in the deferred arm.
GT = genotype; R = randomized
SVR12: Primary Efficacy Analysis
Immediate Treatment Group, Full Analysis Set

<table>
<thead>
<tr>
<th>SVR12 (FAS)</th>
<th>All Patients</th>
<th>G1a</th>
<th>G1b</th>
<th>G4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>93.5%</td>
<td>91.5%</td>
<td>95.7%</td>
<td>91.7%</td>
</tr>
<tr>
<td></td>
<td>100/107</td>
<td>43/47</td>
<td>44/46</td>
<td>11/12</td>
</tr>
</tbody>
</table>

| Breakthrough | 0             | 0    | 0    | 0 |
| Relapse      | 6             | 4    | 1    | 1 |
| LTFU/Early DC| 1†            | 0    | 1    | 0 |

| SVR12 (mFAS) | 100/106 (94%) | 43/47 (91.5%) | 44/45 (97.8%) | 11/12 (91.7%) |

†Discontinued due to non-compliance and did not continue within the study
Full analysis set (FAS) includes all patients who received ≥1 dose of study medication.
Modified full analysis set (mFAS) excludes one patient who discontinued due to non-compliance
**NS5A Resistance Associated Variants In Patients With HCV G1A Infection**

*Prevalence of NS5A RAVs at Baseline*

- **No NS5A RAVs, 91.50%**
- **NS5A RAVs, 8.50%**
  - Patients with no baseline NS5A RAVs: 42/43
  - Patients with baseline NS5A RAVs: 1/4

*Resistance analysis population includes 47 patients with HCV GT1a infection, baseline sequencing available and a treatment outcome of either SVR12 or virologic failure.*

**Resistance assessed by population sequencing**

RAVs = any variant at amino acid positions 28, 30, 31, or 93
A pooled analysis of the phase 2/3 EBR/GZR clinical program demonstrated that 146/147 (99%) of TN GT1a subjects with baseline NS3 RAVs without baseline NS5A RAVs achieved a SVR while univariate logistic regression models of TE GT1a subjects failed to show an association between baseline NS3 RAVs and lower treatment response rates\(^1\)

\*Resistance analysis population includes 47 patients with GT1a infection, baseline sequencing available and a treatment outcome of either SVR12 or virologic failure.

Resistance assessed by population sequencing
RAVs = any variant at amino acid positions 36, 54, 55, 56, 80, 107, 122, 132, 155, 156, 158, 168, 170, 175

# Hematology

<table>
<thead>
<tr>
<th></th>
<th>GZR + EBR (Immediate)</th>
<th>Placebo (Deferred)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 weeks (n=107)</td>
<td>12 weeks (n=52)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hemoglobin (g/dL)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0-10.9</td>
<td>12 (11.2)</td>
<td>5 (9.6)</td>
</tr>
<tr>
<td>9.0-9.9</td>
<td>19 (17.8)</td>
<td>12 (23.1)</td>
</tr>
<tr>
<td>7.0-8.9</td>
<td>17 (15.9)</td>
<td>7 (13.5)</td>
</tr>
<tr>
<td>&lt;7.0</td>
<td>5 (4.7)</td>
<td>3 (5.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prothrombin</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1-1.5 x ULN</td>
<td>25 (23.4)</td>
<td>15 (28.8)</td>
</tr>
<tr>
<td>1.6-2.0 x ULN</td>
<td>4 (3.7)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>2.1-3.0 x ULN</td>
<td>1 (0.9)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>&gt;3.0 x ULN</td>
<td>0 (0)</td>
<td>1 (1.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platelets (x10^3/µL)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100-124.999</td>
<td>6 (5.7)</td>
<td>2 (3.9)</td>
</tr>
<tr>
<td>50-99.999</td>
<td>3 (2.8)</td>
<td>4 (7.8)</td>
</tr>
<tr>
<td>25-49.999</td>
<td>1 (0.9)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>&lt;25</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>
## Factor Replacement Therapy, Blood Transfusions, and Chelation Events

<table>
<thead>
<tr>
<th></th>
<th>GZR + EBR (Immediate) 12 weeks (n=107)</th>
<th>Placebo (Deferred) 12 weeks (n=52)</th>
<th>Difference estimate (95% CI)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjects requiring factor replacement therapy, n (%)</td>
<td>20 (18.7)</td>
<td>10 (19.2)</td>
<td>-0.5, (14.8, 11.6)</td>
</tr>
<tr>
<td>Subjects with Aes requiring factor replacement therapy, n (%)</td>
<td>5 (4.7)</td>
<td>5 (9.6)</td>
<td>-4.9 (-16.4, 3.0)</td>
</tr>
<tr>
<td>Subjects with sickle cell crises, n (%)</td>
<td>4 (3.7)</td>
<td>2 (3.8)</td>
<td>-0.1 (-9.6, 6.2)</td>
</tr>
<tr>
<td>Subjects requiring blood transfusions, n (%)</td>
<td>31/107 (29.0)</td>
<td>13/52 (25.0)</td>
<td>4.0 (-11.5, 17.7)</td>
</tr>
<tr>
<td>Sickle cell</td>
<td>3/19 (15.8)</td>
<td>2/10 (20.0)</td>
<td>-4.2 (-38.7, 23.6)</td>
</tr>
<tr>
<td>B-thalassemia</td>
<td>28/41 (68.3)</td>
<td>11/20 (55.0)</td>
<td>13.3 (-11.9, 38.4)</td>
</tr>
<tr>
<td>vWD/Hemophilia A/B</td>
<td>0/47 (0.0)</td>
<td>0/22 (0.0)</td>
<td>0.0 (-15.0, 7.7)</td>
</tr>
<tr>
<td>Subjects with chelation events, n (%)</td>
<td>42/107 (39.3)</td>
<td>19/52 (36.5)</td>
<td>2.7 (-13.6, 18.1)</td>
</tr>
<tr>
<td>Sickle cell</td>
<td>5/19 (26.3)</td>
<td>3/10 (30.0)</td>
<td>-3.7 (-39.5, 28.0)</td>
</tr>
<tr>
<td>B-thalassemia</td>
<td>37/41 (90.2)</td>
<td>16/20 (80.0)</td>
<td>10.2 (-7.5, 33.3)</td>
</tr>
<tr>
<td>vWD/Hemophilia A/B</td>
<td>0/47 (0.0)</td>
<td>0/22 (0.0)</td>
<td>0.0 (-15.1, 7.7)</td>
</tr>
</tbody>
</table>

*Based on Miettinen & Nurminen method
HCV Regimens in Late Development
Abstract GS11

High Efficacy of ABT-493 and ABT-530 in HCV GT1 Infected Patients Who Have Failed DAA Containing Regimens: the MAGELLAN-I Study

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4. Private practice, Bakersfield
5. Piedmont Healthcare/Carolina Center for Liver Disease, Statesville
6. University of Washington/Harborview Medical Center, Seattle
7. University of North Carolina at Chapel Hill, UNC Liver Center, Chapel Hill
8. North Shore University Hospital, Manhasset, United States
Next Generation Direct-acting Antivirals

**ABT-493**
Pangenotypic NS3/4A protease inhibitor

- High barrier to resistance
- Potent against common NS3 variants (eg., positions 80, 155, 168) and NS5A variants (eg., positions 28, 30, 31 and 93)
- Additive/synergistic antiviral activity
- Once-daily oral dosing
- Minimal metabolism and primary biliary excretion
- Negligible renal excretion (<1%)

**ABT-530**
Pangenotypic NS5A inhibitor

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ABT-493 identified by AbbVie and Enanta.
ABT-493 and ABT-530 Have Potent Activity Against HCV GT1

<table>
<thead>
<tr>
<th>NS3/4A Protease Inhibitor</th>
<th>GT1a nM</th>
<th>GT1b nM</th>
<th>NS5A Inhibitor</th>
<th>GT1a pM</th>
<th>GT1b pM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABT-493</strong></td>
<td>0.85</td>
<td>0.94</td>
<td><strong>ABT-530</strong></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Grazoprevir</td>
<td>0.4</td>
<td>0.5</td>
<td>Elbasvir</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>GS-9857</td>
<td>3.9</td>
<td>3.3</td>
<td>Velpatasvir</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Simeprevir</td>
<td>13</td>
<td>9.4</td>
<td>Ledipasvir</td>
<td>31</td>
<td>4</td>
</tr>
<tr>
<td>Paritaprevir</td>
<td>1.0</td>
<td>0.21</td>
<td>Ombitasvir</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Asunaprevir</td>
<td>4.0</td>
<td>1.2</td>
<td>Daclatasvir</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Odalasvir</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MK-8408</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

## ABT-530 Retains Antiviral Activity Against Common GT1a Single-Position NS5A Variants

<table>
<thead>
<tr>
<th>NS5A Inhibitor</th>
<th>Fold Change in EC&lt;sub&gt;50&lt;/sub&gt; for GT1a NS5A Variants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q30E</td>
</tr>
<tr>
<td>ABT-530</td>
<td>2.4</td>
</tr>
<tr>
<td>Ledipasvir&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>3279</td>
</tr>
<tr>
<td>Velpatasvir&lt;sup&gt;3,4&lt;/sup&gt;</td>
<td>37</td>
</tr>
<tr>
<td>Daclatasvir&lt;sup&gt;5&lt;/sup&gt;</td>
<td>25205</td>
</tr>
<tr>
<td>Elbasvir&lt;sup&gt;4,6&lt;/sup&gt;</td>
<td>50</td>
</tr>
<tr>
<td>Ombitasvir&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1326</td>
</tr>
<tr>
<td>Odalasvir&lt;sup&gt;1,4&lt;/sup&gt;</td>
<td>71</td>
</tr>
<tr>
<td>MK-8408</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA, not available

2. http://www.accessdata.fda.gov/drugsatfda_docs/nda/2014/205834Orig1s000MicroR.pdf
Background and Objective

• **Background:** 100% (46/46) SVR12 in GT1 non-cirrhotic DAA-naïve patients with baseline NS3 and/or NS5A RAVs treated with ABT-493 + ABT-5301

• **Objective of MAGELLAN-I Part 1:** Explore the efficacy and safety of ABT-493 + ABT-530 ± RBV in GT1 non-cirrhotic patients who failed an NS3 PI and/or NS5A inhibitor-containing regimen ± sofosbuvir

**Prior DAA Treatment Regimens Among Enrolled**

<table>
<thead>
<tr>
<th>Prior regimen</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDV/SOF</td>
<td>8</td>
</tr>
<tr>
<td>SMV + SOF ± RBV</td>
<td>8</td>
</tr>
<tr>
<td>OBV/PTV/r + DSV ± RBV</td>
<td>4</td>
</tr>
<tr>
<td>DBV + FDV + RDV ± RBV</td>
<td>4</td>
</tr>
<tr>
<td>SAM + SMV</td>
<td>2</td>
</tr>
<tr>
<td>TVR + PR</td>
<td>8</td>
</tr>
<tr>
<td>BOC + PR</td>
<td>10</td>
</tr>
<tr>
<td>DCV ± PR</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
</tr>
</tbody>
</table>

4 patients were treated more than once with DAA-containing regimens.

**Treatment Experience by DAA**

- **NS5A-exp PI-naïve**
- **PI-exp NS5A-naïve**
- **PI-exp**

25 (50%) NS5A-experienced
42 (84%) PI-experienced

---

SVR12 by ITT and mITT Analysis

1 LTFU after week 6 with HCV RNA undetectable

2 patients LTFU after completing treatment (1 death); both achieved SVR8

Conclusion

• High SVR12 rates with 2 virologic failures among 50 DAA-experienced GT1 patients without cirrhosis
  – Baseline NS3 and/or NS5A RAVs did not appear to impact SVR12
  – RBV did not appear to increase SVR12
Abstract PS098

High SVR Rates With ABT-493 + ABT-530 Co-administered For 8 Weeks In Non-cirrhotic Patients With HCV Genotype 3 Infection

Andrew J Muir¹, Simone Strasser², Stanley Wang³, Stephen Shafran⁴, Maurizio Bonacini⁵, Paul Y Kwo⁶, David L Wyles⁷, Edward Gane⁸, Sandra S Lovell³, Chih-Wei Lin³, Teresa I Ng³, Jens Kort³, Federico J Mensa³

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4. University of Alberta Hospital, Edmonton, AB, Canada
5. California Pacific Medical Center, San Francisco, CA, USA
6. Indiana University School of Medicine, Indianapolis, IN, USA
7. University of California San Diego, La Jolla, CA, USA
8. University of Auckland, Auckland, New Zealand
HCV Genotype 3 (GT3)

- Higher rates of liver steatosis and an increased risk for hepatocellular carcinoma and fibrosis progression than other HCV genotypes
- Approximately 30% of HCV infections worldwide
- Now the most difficult-to-cure genotype

<table>
<thead>
<tr>
<th>Current EASL recommendations for treatment-naïve GT3-infected patients without cirrhosis</th>
<th>SVR12</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOF + pegIFN/RBV for 12 weeks</td>
<td>96%</td>
</tr>
<tr>
<td>SOF + RBV for 24 weeks</td>
<td>90 – 95%</td>
</tr>
<tr>
<td>SOF + DCV for 12 weeks</td>
<td>97%</td>
</tr>
</tbody>
</table>

Next Generation Direct-acting Antivirals

**ABT-493**
Pangenotypic NS3/4A protease inhibitor

**ABT-530**
Pangenotypic NS5A inhibitor

**In vitro:**
- High barrier to resistance
- Potent against common NS3 variants (e.g., positions 80, 155, 168) and NS5A variants (e.g., positions 28, 30, 31 and 93)
- Additive/synergistic antiviral activity

**Clinical PK & metabolism:**
- Once-daily oral dosing
- Minimal metabolism and primary biliary excretion
- Negligible renal excretion (<1%)

### Baseline Variants in NS3 and NS5A

<table>
<thead>
<tr>
<th>Variants</th>
<th>ABT-493 + ABT-530 (N = 28*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any variants, n (%)</td>
<td>13 (46)</td>
</tr>
<tr>
<td>NS5A only, n</td>
<td>10</td>
</tr>
<tr>
<td>NS3 only, n</td>
<td>2</td>
</tr>
<tr>
<td>Both NS3 and NS5A variants, n</td>
<td>1</td>
</tr>
</tbody>
</table>

* Sequencing pending for 1 patient. Variants detected by population sequencing (detection threshold of 15%)

**NS3 variants:**
- A166S (n = 3)

**NS5A variants:**
- Y93H (n = 5)
- A30K/S/V (n = 5)
- P58A/T (n = 2)

Variants detected by population sequencing (detection threshold of 15%) at the following amino acid positions that confer resistance to at least 1 DAA in the inhibitor class were included in the analysis; they may not confer resistance to ABT-493 or ABT-530.

NS3: 36, 56, 80, 155, 156, 166, and 168
NS5A: 24, 28, 29, 30, 31, 32, 58, 92, and 93

SVR12: ABT-493/ABT-530 X 8 Weeks in GT3 Treatment-Naïve Non-Cirrhotics (SURVEYOR-II, Part 2)

- No virologic failures
- 1 patient withdrew consent after treatment week 6 due to intolerance of blood draws and had an undetectable HCV RNA at the time of discontinuation
- Safe and well tolerated

mITT SVR12 rate excludes non-virologic failures
Abstract LB01

100% SVR4 with ABT-493 and ABT-530 With or Without Ribavirin in Treatment-Naïve HCV Genotype 3-Infected Patients with Cirrhosis

Paul Y Kwo¹, David L Wyles², Stanley Wang³, Fred Poordad⁴, Edward Gane⁵, Benedict Maliakkal⁶, Mitchell L Shiffman⁷, Teresa I Ng³, Chih-Wei Lin³, Ran Liu³, Jens Kort³, Federico J Mensa³

1. Indiana University School of Medicine, Indianapolis, Indiana, USA
2. University of California San Diego, La Jolla, California, USA
3. AbbVie Inc., North Chicago, IL, USA
4. Texas Liver Institute, University of Texas Health Science Center, San Antonio, TX, USA
5. University of Auckland, Auckland, New Zealand
6. University of Rochester Medical Center, Rochester, New York, USA
7. Liver Institute of Virginia, Bon Secours Health System, Newport News and Richmond, VA, USA
HCV Genotype 3 (GT3)

- Higher rates of liver steatosis and an increased risk for hepatocellular carcinoma and fibrosis progression than other HCV genotypes
- Approximately 30% of HCV infections worldwide
- Now the most difficult-to-cure genotype, particularly in patients with cirrhosis

<table>
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<th>Current EASL recommendations for GT3-infected patients with cirrhosis</th>
<th>SVR12</th>
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<tbody>
<tr>
<td>SOF + RBV for 24 weeks</td>
<td>79%</td>
</tr>
<tr>
<td>SOF + pegIFN/RBV for 12 weeks</td>
<td>88%</td>
</tr>
<tr>
<td>SOF + DCV + RBV for 24 weeks</td>
<td>85%</td>
</tr>
</tbody>
</table>

Next Generation Direct-acting Antivirals

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Pangenotypic NS3/4A protease inhibitor

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Pangenotypic NS5A inhibitor

**In vitro:**
- High barrier to resistance
- Potent against common NS3 variants (e.g., positions 80, 155, 168) and NS5A variants (e.g., positions 28, 30, 31 and 93)
- Additive/synergistic antiviral activity

**Clinical PK & metabolism:**
- Once-daily oral dosing
- Minimal metabolism and primary biliary excretion
- Negligible renal excretion (<1%)

SURVEYOR-II Part 2 Study Design

- Partially randomised, open-label, multicentre phase 2 trial evaluating the dose combination of ABT-493 300 mg and ABT-530 120 mg identified in the dose-ranging part 1 of this study.

*RBV dosed once-daily.
Blue diamond denotes randomised arms.
## Baseline Variants in NS3 and NS5A

<table>
<thead>
<tr>
<th></th>
<th>ABT-493 + ABT-530 (N = 24)</th>
<th>ABT-493 + ABT-530 + RBV (N = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any NS3 or NS5A variants, n (%)</td>
<td>10 (42)</td>
<td>8 (33)</td>
</tr>
<tr>
<td>Both NS3 and NS5A variants, n</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NS3 only, n</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>NS5A only, n</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Sequencing pending for 1 patient. Variants detected by population sequencing (detection threshold sensitivity of 15%).

### NS3 variants:
- A166S/T (n = 9)
- Y56F (n = 1)
- Q80K (n = 1)
- Q168K (n = 1)

### NS5A variants:
- Y93H (n = 4)
- A30K/T (n = 5)
- P58S (n = 2)
- L31M (n = 1)

Variants detected by population sequencing (detection threshold sensitivity of 15%) at the following amino acid positions that confer resistance to at least 1 DAA in the inhibitor class were included in the analysis; they may not confer resistance to ABT-493 or ABT-530.

- NS3: 36, 56, 80, 155, 156, 166, and 168
- NS5A: 24, 28, 29, 30, 31, 32, 58, 92, and 93

100% SVR12 by ITT Analysis

ABT-493 + ABT-530

24/24

ABT-493 + ABT-530 + RBV

24/24

ABT-493 and ABT-530 Are Being Evaluated as a Pangenotypic RBV-free Regimen

**ENDURANCE Trials**
- GT1 non-cirrhotic including HIV co-infection, 8 vs 12 weeks
- GT2 placebo-controlled
- GT3 active-controlled
- GT4-6 non-cirrhotic

**MAGELLAN Trials**
- GT1, 4-6 prior DAA failures 12 vs 16 weeks

**EXPEDITION Trials**
- GT1, 2, 4-6 cirrhotic
- GT1-6 renal impairment stages 4-5

**SURVEYOR Trials**
- GT2, 4-6 non-cirrhotic, 8 weeks
- GT3 cirrhotic, 12 vs 16 weeks

A once-daily RBV-free regimen of ABT-493 and ABT-530 is being evaluated in over 2000 patients in registrational trials, including difficult-to-cure populations.

Abstract PS008

High Efficacy of Sofosbuvir/Velpatasvir plus GS-9857 for 12 Weeks in Treatment-Experienced Genotype 1-6 HCV-Infected Patients, Including Those Previously Treated with Direct-Acting Antivirals

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13. Gilead Sciences, Inc, Foster City
Background

• **Sofosbuvir (SOF)**\(^1,2\)
  - Potent antiviral activity against HCV GT 1–6

• **Velpatasvir (GS-5816; VEL)**\(^3-5\)
  - Picomolar potency against HCV GT 1–6
  - 2nd-generation NS5A inhibitor with improved resistance profile

• **GS-9857**\(^6,7\)
  - HCV NS3/4A protease inhibitor with potent antiviral activity against HCV GT 1–6
  - Improved resistance profile compared with other HCV protease inhibitors

• **SOF/VEL + GS-9857**
  - SOF/VEL FDC (400/100 mg) tablet plus GS-9857 100-mg tablet is taken orally, once daily

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FDC, fixed-dose combination
Study Design


- Two Phase 2, multicenter, open-label studies (US, New Zealand)
  - GS-US-367-1168: GT 1
  - GS-US-367-1169: GT 2, 3, 4, 5, 6
- Broad inclusion criteria
  - HCV treatment experienced, including DAA experienced
    - GT 1: NS5A inhibitor or ≥2 DAA classes
    - GT 2–6: Peg-IFN + RBV or any DAA
- 50% with compensated cirrhosis
## Results: Demographics and Baseline Characteristics

<table>
<thead>
<tr>
<th></th>
<th>SOF/VEL + GS-9857 12 weeks N=128</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, y (range)</td>
<td>58 (37–77)</td>
</tr>
<tr>
<td>Male, n (%)</td>
<td>96 (75)</td>
</tr>
<tr>
<td>White, n (%)</td>
<td>105 (82)</td>
</tr>
<tr>
<td>Mean BMI, kg/m² (range)</td>
<td>29 (18–53)</td>
</tr>
<tr>
<td>IL28B non-CC, n (%)</td>
<td>93 (73)</td>
</tr>
<tr>
<td>Cirrhosis, n (%)</td>
<td>61 (48)</td>
</tr>
<tr>
<td>Mean HCV RNA, log_{10} IU/mL (range)</td>
<td>6.3 (3.8–8.1)</td>
</tr>
<tr>
<td>HCV GT, n (%)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>63 (49)</td>
</tr>
<tr>
<td>2</td>
<td>21 (16)</td>
</tr>
<tr>
<td>3</td>
<td>35 (27)</td>
</tr>
<tr>
<td>4, 6</td>
<td>9 (7)</td>
</tr>
<tr>
<td>DAA experience, n (%)</td>
<td></td>
</tr>
<tr>
<td>None (GT 2-6 only)</td>
<td>27 (21)</td>
</tr>
<tr>
<td>1 DAA class</td>
<td>36 (28)</td>
</tr>
<tr>
<td>≥2 DAA classes</td>
<td>65 (51)</td>
</tr>
</tbody>
</table>
Results: Prior Treatment Experience (N=128)

60% had baseline RAVs detected via deep sequencing with 1% assay cutoff (77/128)

*GT 2-6 patients who failed prior Peg-IFN + RBV regimens.
• One patient relapsed at post-treatment week 8
• 58-year-old white female with GT 3a infection, HCV RNA 7.0 log10 IU/mL, and cirrhosis
This enduring activity is supported by educational grants from AbbVie, Bristol-Myers Squibb, and Gilead Sciences, Inc.