

# **Gastroenterology: Hepatitis C - Ledipasvir/Sofosbuvir Order Set**

## **Order Set: Conceptual Structure**

**Contract: VA118-16-D-1008, Task Order (TO): VA-118-16-F-1008-0007, CLIN0004AF**

**Department of Veterans Affairs (VA)**



**Knowledge Based Systems (KBS)  
Office of Informatics and Information Governance (OIIG)  
Clinical Decision Support (CDS)**

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by Knowledge Based Systems (KBS), Office of Informatics and Information Governance (OIIG), and Clinical Decision Support (CDS)

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# Preface

**Table 1. Revision History**

Date	Life Cycle Event
June 14, 2018	Published
May 29, 2018	Published
May 29, 2018	Reviewed
August 29, 2017	Pre-published
August 10, 2017	Created

**Table 2. Clinical White Paper Contributors**

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**Table 3. Artifact Identifier**

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:r1	51c64787-fe39-5740-b7d4-7713567d4a0e	B29

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# Artifact Applicability

**Table 4. Applicability Foci, Description and Codes**

Focus	Description	Code System	Code	Value Set	Value Set Version
TargetUser	Primary Care physicians	SNOMED CT	453231000124104  Primary care provider (occupation)	N/A	N/A
TargetUser	Gastroenterologists			N/A	N/A
PatientAgeGroup	Adult patients	SNOMED CT	133936004  Adult (person)	N/A	N/A
ClinicalFocus	Adult outpatients with chronic Hepatitis C infection			N/A	N/A
WorkflowSetting	Routine primary care and gastroenterology			N/A	N/A
ClinicalVenue	Outpatient	SNOMED CT	33022008  Hospital-based outpatient department (environment)	N/A	N/A

---

# Models

**Table 5. Model References**

Referenced Model	Description
urn:solor.io:anf-model:1.0	VA Analysis Normal Form Model

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# Chapter 1. External Data Definitions

No externalData expression definitions and no trigger definitions are present.



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## Chapter 2. Expression Definitions

**Table 2.1. Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 1 refill (routine)**

Expression: type=elm:Instance Annotation: Codes: elm:value[elm:Code]: [385644000  Requested (qualifier value)]elm:value[elm:Code]: [[416118004  Administration (procedure)] ->(260686004  Method (attribute))->[129445006  Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))- >[Rx;1591943 ledipasvir 90 MG / sofosbuvir 400 MG Oral Tablet] ->(410675002  Route of administration (attribute))->[260548002  Oral (qualifier value)]]elm:value[elm:Code]: [421026006  Conventional release oral tablet (dose form)]elm:value[elm:Code]: [50811001  Routine (qualifier value)]elm:value[elm:Code]: [258703001  day (qualifier value)]elm:value[elm:Code]: [258703001   day (qualifier value)]
--

**Table 2.2. Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)**

Expression: type=elm:Instance Annotation: Codes: elm:value[elm:Code]: [385644000  Requested (qualifier value)]elm:value[elm:Code]: [[416118004  Administration (procedure)] ->(260686004  Method (attribute))->[129445006  Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))- >[Rx;1591943 ledipasvir 90 MG / sofosbuvir 400 MG Oral Tablet] ->(410675002  Route of administration (attribute))->[260548002  Oral (qualifier value)]]elm:value[elm:Code]: [421026006  Conventional release oral tablet (dose form)]elm:value[elm:Code]: [50811001  Routine (qualifier value)]elm:value[elm:Code]: [258703001  day (qualifier value)]elm:value[elm:Code]: [258703001   day (qualifier value)]
--

**Table 2.3. Ribavirin 200 mg capsule oral, take 2 capsules every morning**

Expression: type=elm:Instance Annotation: Codes: elm:value[elm:Code]: [385644000  Requested (qualifier value)]elm:value[elm:Code]: [[416118004  Administration (procedure)] ->(260686004  Method (attribute))->[129445006   Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))->[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002  Route of administration (attribute))->[260548002   Oral (qualifier value)]]elm:value[elm:Code]: [420692007  Conventional release oral capsule (dose form)]elm:value[elm:Code]: [50811001  Routine (qualifier value)]elm:value[elm:Code]: [73775008   Morning (qualifier value)]
---

**Table 2.4. Ribavirin 200 mg capsule oral, take 3 capsules every evening**

Expression: type=elm:Instance Annotation: Codes: elm:value[elm:Code]: [385644000  Requested (qualifier value)]elm:value[elm:Code]: [[416118004  Administration (procedure)] ->(260686004  Method (attribute))->[129445006   Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))->[Rx;312817
--

Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 | Oral (qualifier value)]|elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose form)]|elm:value[elm:Code]: [50811001 |Routine (qualifier value)]|elm:value[elm:Code]: [3157002 | Evening (qualifier value)]

**Table 2.5. Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)**

Expression: type=elm:Instance  
 Annotation:  
 Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]|elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 | Oral (qualifier value)]|elm:value[elm:Code]: [258703001 |day (qualifier value)]

**Table 2.6. Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)**

Expression: type=elm:Instance  
 Annotation:  
 Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]|elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 | Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]|elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose form)]|elm:value[elm:Code]: [50811001 |Routine (qualifier value)]|elm:value[elm:Code]: [258703001 |day (qualifier value)]|elm:value[elm:Code]: [73775008 |Morning (qualifier value)]|elm:value[elm:Code]: [3157002 |Evening (qualifier value)]

**Table 2.7. Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 5 refills (routine)**

Expression: type=elm:Instance  
 Annotation:  
 Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]|elm:value[elm:Code]: [[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1591943 ledipasvir 90 MG / sofosbuvir 400 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]|elm:value[elm:Code]: [421026006 |Conventional release oral tablet (dose form)]|elm:value[elm:Code]: [50811001 |Routine (qualifier value)]|elm:value[elm:Code]: [258703001 |day (qualifier value)]|elm:value[elm:Code]: [258703001 | day (qualifier value)]

**Table 2.8. Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)**

Expression: type=elm:Instance  
 Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]

**Table 2.9. Ribavirin 200 mg capsule oral, take 1 capsules every morning**

Expression: type=elm:Instance  
Annotation:  
Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose  
form)]elm:value[elm:Code]: [50811001 |Routine (qualifier value)]elm:value[elm:Code]: [73775008 |  
Morning (qualifier value)]

**Table 2.10. Ribavirin 200 mg capsule oral, take 2 capsules every evening**

Expression: type=elm:Instance  
Annotation:  
Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose  
form)]elm:value[elm:Code]: [50811001 |Routine (qualifier value)]elm:value[elm:Code]: [3157002 |  
Evening (qualifier value)]

**Table 2.11. Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)**

Expression: type=elm:Instance  
Annotation:  
Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]

**Table 2.12. Ribavirin 200 mg capsule oral, take 1 capsule every other day, alternating with 2 capsules on alternate days; on 2-capsule days, take 1 capsule in the morning and one capsule in the evening; take with food 42 capsules 2 refills (routine)**

Expression: type=elm:Instance  
Annotation:

Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]

**Table 2.13. Ribavirin 200 mg capsule oral, take 1 capsule every other day ( routine)**

Expression: type=elm:Instance  
Annotation:  
Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose  
form)]elm:value[elm:Code]: [50811001 |Routine (qualifier value)]elm:value[elm:Code]: [258703001  
|day (qualifier value)]

**Table 2.14. Ribavirin 200 mg capsule oral on alternate days, take 1 capsule in the morning and one capsule in the evening ( routine)**

Expression: type=elm:Instance  
Annotation:  
Codes: elm:value[elm:Code]: [385644000 |Requested (qualifier value)]elm:value[elm:Code]:  
[[416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |  
Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;312817  
Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))->[260548002 |  
Oral (qualifier value)]]elm:value[elm:Code]: [420692007 |Conventional release oral capsule (dose  
form)]elm:value[elm:Code]: [50811001 |Routine (qualifier value)]elm:value[elm:Code]: [73775008 |  
Morning (qualifier value)]

# Chapter 3. Medications

Ledipasvir/sofosbuvir should not be used in patients with severe renal impairment (eGFR<30mL/min/1.73 m<sup>2</sup>), with end-stage-renal disease, or on hemodialysis. Ledipasvir/sofosbuvir should not be used in combination with amiodarone, carbamazepine, oxcarbazepine, phenobarbital, phenytoin, rifabutin, rifampin, rifapentine, rosuvastatin, St. John's wort, elvitegravir/cobicistat/emtricitabine/tenofovir, tipranavir/ritonavir, or simeprevir. Ledipasvir/sofosbuvir should not be used in patients who require twice-daily proton pump inhibitor therapy for esophageal disease. Providers should check <http://www.hep-druginteractions.org>, <https://www.hepatitis.va.gov/provider/guidelines/hcv-treatment-considerations.asp>, and/or a pharmacist for additional drug interactions or contraindications before starting ledipasvir/sofosbuvir.

Hep Drug Interactions link [[https://www.hep-druginteractions.org/.](https://www.hep-druginteractions.org/)]

([VA 2017i]) Chronic Hepatitis C Virus (HCV) Infection: Treatment Considerations from the Department of Veterans Affairs National Hepatitis C Resource Center Program and the HIV, Hepatitis, and Related Conditions Program in the Office of Specialty Care Services link [<https://www.hepatitis.va.gov/provider/guidelines/hcv-treatment-considerations.asp>]

Non-African-Americans with Genotype 1, Treatment-Naïve, without Cirrhosis, HCV RNA < 6 Million IU/mL
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 1 refill (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 1 refill (routine)
African-Americans with Genotype 1, Treatment-Naïve, without Cirrhosis, HCV RNA < 6 Million IU/mL
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
Genotype 1, Treatment-Naïve, without Cirrhosis, HCV RNA >= 6 Million IU/mL.
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
Genotype 1, Treatment-Naïve, without Cirrhosis, with HIV Coinfection.
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
Genotype 1, Treatment-Naïve, with Compensated Cirrhosis.
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

Genotype 1, Treatment-Experienced (PEG-RBV with or without Protease Inhibitor), without Cirrhosis
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
Genotype 1, Treatment-Experienced (PEG-RBV with or without Protease Inhibitor), with Compensated Cirrhosis (CTP A).
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
# Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)
# Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)
Genotype 1, Treatment-Experienced (PEG-RBV with or without Protease Inhibitor), Ribavirin Intolerant, with Compensated Cirrhosis (CTP A).
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 5 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 5 refills (routine)
Genotype 1 with Decompensated Cirrhosis (CTP B or C).
# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)
# Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)
actionSentence[type=elm:ExpressionRef, classType=]
Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)

# Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)

Genotype 1, Ribavirin Intolerant, with Decompensated Cirrhosis (CTP B or C).

# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 5 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 5 refills (routine)

Genotype 1, Pre- or Post-Liver Transplant (Including CTP A, B, or C or Suitable Candidate with Hepatocellular Carcinoma).

# Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

# Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)

# Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)

# Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)

# Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)

actionSentence[type=elm:ExpressionRef, classType=]

<p>Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)</p>
<p>Genotype 4, 5, or 6 without Cirrhosis or with Compensated Cirrhosis (CTP A).</p>
<p># Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p>Genotype 4, 5, or 6 with Decompensated Cirrhosis (CTP B or C).</p>
<p># Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p># Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)</p>
<p># Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)</p>
<p>Genotype 4, Post-Liver Transplant.</p>
<p># Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ledipasvir/sofosbuvir (90 mg/400 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)</p>
<p># Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)</p>
<p>actionSentence[type=elm:ExpressionRef, classType=]</p>
<p>Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 5 pills per day as tolerated 126 capsules 2 refills (routine)</p>
<p># Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)</p>



<p>actionSentence[type=elm:ExpressionRef, classType=]</p> <p>Ribavirin 200 mg capsule oral, take 1 capsule every morning and 2 capsules every evening; take with food; increase dose by 1 capsule every 2 weeks, up to 6 pills per day as tolerated 140 capsules 2 refills (routine)</p> <p># Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)</p> <p>actionSentence[type=elm:ExpressionRef, classType=]</p> <p>Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 2 refills (routine)</p> <p># Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)</p> <p>actionSentence[type=elm:ExpressionRef, classType=]</p> <p>Ribavirin 200 mg capsule oral, take 3 capsules every morning and 3 capsules every evening; take with food 168 capsules 2 refills (routine)</p> <p>Reduced-Dose Ribavirin for Patients with Renal Impairment (Creatinine Clearance 30–50 mL/min/1.73 m<sup>2</sup>)</p>	
<p># Ribavirin 200 mg capsule oral, take 1 capsule every other day, alternating with 2 capsules on alternate days; on 2-capsule days, take 1 capsule in the morning and one capsule in the evening; take with food 42 capsules 2 refills (routine)</p> <p>actionSentence[type=elm:ExpressionRef, classType=]</p> <p>Ribavirin 200 mg capsule oral, take 1 capsule every other day, alternating with 2 capsules on alternate days; on 2-capsule days, take 1 capsule in the morning and one capsule in the evening; take with food 42 capsules 2 refills (routine)</p>	

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# Chapter 4. Laboratory Tests

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Routine tests in referrals for management of hepatitis C

---

# Complete blood count 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression 26604007 |Complete blood  
count (procedure)|

priority: Precoordinated Expression 50811001 |Routine  
(qualifier value)|

# Hepatic function panel 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression T26958001 |Hepatic function  
panel (procedure)|

priority: Precoordinated Expression 50811001 |Routine  
(qualifier value)|

# International normalized ratio 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression 440685005 |Calculation of  
international normalized ratio (procedure)|

# Basic metabolic panel 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression 1421000205106 |Basic  
metabolic panel (procedure)|

priority: Precoordinated Expression 50811001 |Routine  
(qualifier value)|

# Glomerular Filtration rate 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression 167181009 |Measurement of  
renal clearance of creatinine (procedure)|

priority: Precoordinated Expression 50811001 |Routine  
(qualifier value)|

The following lab is recommended if not performed within the previous 5 years.

---

# HCV genotype 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|

topic: Precoordinated Expression 397662006 |Hepatitis C virus genotype determination (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

The following labs are recommended if not performed within the previous 10 years.

# Hepatitis B surface antigen (HBsAg) 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|

topic: Precoordinated Expression 47758006 |Hepatitis B surface antigen measurement (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Hepatitis B core antibody (HBcAb) 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|

topic: Precoordinated Expression 59582004 |Hepatitis B core antibody measurement (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Hepatitis B surface antibody (HBsAb) 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|

topic: Precoordinated Expression 65911000 |Hepatitis B surface antibody measurement (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

# Hepatitis A antibody (HAVAb) 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|

topic: Precoordinated Expression 697001 |Hepatitis A virus antibody measurement (procedure)|

priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

The following lab is recommended if not performed within the previous 6 months.

# HCV viral load (quantitative HCV RNA) 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|  
topic: Precoordinated Expression 395197008 |Hepatitis C viral load (procedure)|  
priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

The following lab is recommended if not performed within the previous 5 years.

---

# HIV test 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|  
topic: Precoordinated Expression 359796005 |Measurement of both Human immunodeficiency virus 1 antibody and Human immunodeficiency virus 2 antibody (procedure)|  
priority: Precoordinated Expression 50811001 |Routine (qualifier value)|

The following lab is recommended if not performed within the previous 2 weeks.

---

# Qualitative human chorionic gonadotropin 1 time (routine)

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 | Requested (qualifier value)|  
topic: Precoordinated Expression 386558001 |Chorionic gonadotropin, beta-subunit measurement (procedure)|

---

# Chapter 5. Patient and Caregiver Education

This section should be available to users in gastroenterology settings and for primary care providers who are referring a patient to gastroenterology for management of hepatitis C

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## # Hepatitis C Information for Veterans

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression TSR-NoCode

([VA 2017b])

Hepatitis C Information for Veterans link [<https://www.hepatitis.va.gov/pdf/Hepatitis-C-Factsheet-Veterans.pdf>]

## # Chronic Hepatitis C and Alcohol Use

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression TSR-NoCode

([VA 2017c])

Chronic Hepatitis C and Alcohol Use link [<https://www.hepatitis.va.gov/products/patient/hepatitisC-alcohol-brochure.asp>]

## # What to Expect Before Your Treatment for Hepatitis C Virus

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression TSR-NoCode

([VA 2017d])

What to Expect Before Your Treatment for Hepatitis C Virus link [<https://www.hepatitis.va.gov/products/patient/hepatitisC-pretreatment.asp>]

## # Ribavirin: Information for Patients

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression TSR-NoCode

([VA 2017e])

Ribavirin: Information for Patients link [<https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf>]

## # Taking Your Hepatitis C Therapy: Harvoni(R) with or without Ribavirin

actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |  
Requested (qualifier value)|

topic: Precoordinated Expression TSR-NoCode

([VA 2017f])	Taking Your Hepatitis C Therapy: Harvoni(R) with or without Ribavirin link [https://www.hepatitis.va.gov/products/patient/sofosbuvir-simeprevir-handouts.asp]
# Managing Side Effects of Harvoni(R)	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	
statementType: Precoordinated Expression 385644000   Requested (qualifier value)	
topic: Precoordinated Expression TSR-NoCode	
([VA 2015a])	Managing Side Effects of Harvoni® link [https://www.hepatitis.va.gov/pdf/side-effects-harvoni.pdf]
# Managing Side Effects of Harvoni(R) and Ribavirin	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	
statementType: Precoordinated Expression 385644000   Requested (qualifier value)	
topic: Precoordinated Expression TSR-NoCode	
([VA 2015b])	Managing Side Effects of Harvoni(R) and Ribavirin link [https://www.hepatitis.va.gov/pdf/side-effects-harvoni-ribavirin.pdf]
# Tracking My Hepatitis C Treatment Results	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	
statementType: Precoordinated Expression 385644000   Requested (qualifier value)	
topic: Precoordinated Expression TSR-NoCode	
([VA 2017g])	Tracking My Hepatitis C Treatment Results link [https://www.hepatitis.va.gov/pdf/HCV-tracking-chart.pdf]
# FAQs about Sustained Virologic Response to Treatment for Hepatitis C	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	
statementType: Precoordinated Expression 385644000   Requested (qualifier value)	
topic: Precoordinated Expression TSR-NoCode	
([VA 2017h])	FAQs about Sustained Virologic Response to Treatment for Hepatitis C link [https://www.hepatitis.va.gov/products/patient/sustained-virological-response.asp]

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# Chapter 6. Tabular List

## *Terminology Service Request (TSR) Mappings*

**Table 6.1. Terminology Versions**

Name	Identifier	Version
SNOMED CT	2.16.840.1.113883.6.96	United States Edition 20180301

**Table 6.2. Terminology References**

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	133936004  Adult (person)	Adult patients	1
SNOMED CT	1421000205106   Basic metabolic panel (procedure)	Precoordinated Expression	1
SNOMED CT	167181009  Measurement of renal clearance of creatinine (procedure)	Precoordinated Expression	1
SNOMED CT	258703001  day (qualifier value)	Precoordinated Expression	9
SNOMED CT	26604007  Complete blood count (procedure)	Precoordinated Expression	1
SNOMED CT	3157002  Evening (qualifier value)	Precoordinated Expression	3
SNOMED CT	33022008  Hospital-based outpatient department (environment)	Outpatient	1
SNOMED CT	359796005  Measurement of both Human immunodeficiency virus 1 antibody and Human immunodeficiency virus 2 antibody (procedure)	Precoordinated Expression	1
SNOMED CT	385644000  Requested (qualifier value)	Precoordinated Expression	36
SNOMED CT	386558001  Chorionic gonadotropin, beta-subunit measurement (procedure)	Precoordinated Expression	1
SNOMED CT	395197008  Hepatitis C viral load (procedure)	Precoordinated Expression	1
SNOMED CT	397662006  Hepatitis C virus genotype determination (procedure)	Precoordinated Expression	1

System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	420692007  Conventional release oral capsule (dose form)	Precoordinated Expression	7
SNOMED CT	421026006  Conventional release oral tablet (dose form)	Precoordinated Expression	3
SNOMED CT	440685005  Calculation of international normalized ratio (procedure)	Precoordinated Expression	1
SNOMED CT	453231000124104   Primary care provider (occupation)	Primary Care physicians	1
SNOMED CT	47758006  Hepatitis B surface antigen measurement (procedure)	Precoordinated Expression	1
SNOMED CT	50811001  Routine (qualifier value)	Precoordinated Expression	21
SNOMED CT	59582004  Hepatitis B core antibody measurement (procedure)	Precoordinated Expression	1
SNOMED CT	65911000  Hepatitis B surface antibody measurement (procedure)	Precoordinated Expression	1
SNOMED CT	697001  Hepatitis A virus antibody measurement (procedure)	Precoordinated Expression	1
SNOMED CT	73775008  Morning (qualifier value)	Precoordinated Expression	4
SNOMED CT	T26958001  Hepatic function panel (procedure)	Precoordinated Expression	1
SNOMED CT	TSR-NoCode <sup>c</sup>	Precoordinated Expression	9
SNOMED CT	[416118004   Administration (procedure)] ->(260686004  Method (attribute))->[129445006   Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))->[Rx;1591943 ledipasvir 90 MG / sofosbuvir 400 MG Oral Tablet] ->(410675002  Route of administration (attribute))->[260548002  Oral (qualifier value)]	Postcoordinated Expression	3



System	Code	Display Text <sup>a</sup>	References <sup>b</sup>
SNOMED CT	[416118004   Administration (procedure)] ->(260686004  Method (attribute))->[129445006   Administration - action (qualifier value)] ->(363701004  Direct substance (attribute))->[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002  Route of administration (attribute))->[260548002  Oral (qualifier value)]	Postcoordinated Expression	11

<sup>a</sup>If a code is used multiple times in the KNART, only the display text of the first instance is shown.

<sup>b</sup>Count of the number of times the given code system and code pair is used in the KNART.

<sup>c</sup>TSR-NoCode is a placeholder indicating a code was requested, but was not provided.

---

# Chapter 7. Behavior Symbols

**Table 7.1. Group Organizational Behavior**

Symbol	Name	Definition
#	Sentence Group	A group of related alternative actions is a sentence group if the item referenced by the action is the same in all the actions, and each action simply constitutes a different variation on how to specify the details for that item. For example, two actions that could be in a SentenceGroup are "aspirin, 500 mg, 2 times per day" and "aspirin, 300 mg, 3 times per day". In both cases, aspirin is the item referenced by the action, and the two actions represent two different options for how aspirin might be ordered for the patient. Note that a SentenceGroup would almost always have an associated selection behavior of "AtMostOne", unless it's a required action, in which case, it would be "ExactlyOne".
#	Logical Group	A group with this behavior logically groups its sub-elements, and may be shown as a visual group to the end user, but it is not required to do so.
►	Visual Group	Any group marked with this behavior should be displayed as a visual group to the end user.

**Table 7.2. Group Selection Behavior**

Symbol	Name	Definition
#	Any	Any number of the items in the group may be chosen, from zero to all.
#	All	All the items in the group must be selected as a single unit.
#	AllOrNone	All the items in the group are meant to be chosen as a single unit: either all must be selected by the end user, or none may be selected.
#	ExactlyOne	The end user must choose one and only one of the selectable items in the group. The user may not choose none of the items in the group.
★	AtMostOne	The end user may choose zero or at most one of the items in the group.
✱	OneOrMore	The end user must choose a minimum of one, and as many additional as desired.

**Table 7.3. Required Behavior**

Symbol	Name	Definition
◆	Must	An action with this behavior must be included in the actions processed by the end user; the end user may not choose not to include this action.
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.

Symbol	Name	Definition
➤	MustUnlessDocumented	An action with this behavior must be included in the set of actions processed by the end user, unless the end user provides documentation as to why the action was not included.

**Table 7.4. Precheck Behavior**

Symbol	Name	Definition
▲	Yes	An action with this behavior is one of the most frequent actions that is, or should be, included by an end user, for the particular context in which the action occurs. The system displaying the action to the end user should consider "pre-checking" such an action as a convenience for the user.
#	No	An action with this behavior is one of the less frequent actions included by the end user, for the particular context in which the action occurs. The system displaying the actions to the end user would typically not "pre-check" such an action.

**Table 7.5. Cardinality Behavior**

Symbol	Name	Definition
◆	Single	An action with this behavior may only be completed once.
❖	Multiple	An action with this behavior may be repeated multiple times.

**Table 7.6. Item Flags**

Symbol	Name	Definition
✎	fillIn	This item, in a list entry, allows the user to enter a fill in value that is not present in the set of presented choices.

**Table 7.7. Read Only Behavior**

Symbol	Name	Definition
#	true	For a particular action or action group, specifies whether the elements are read only.

---

# Appendix A. References

This appendix contains the list of related resources and supporting documents used in creating this KNART.

## List of References

### Related Resources

[CCWP] *Gastroenterology: Hepatitis C Clinical Content White Paper*

[CSD] *Gastroenterology: Hepatitis C - Ledipasvir/Sofosbuvir Order Set Conceptual Structure Document*

[KVRpt] *Gastroenterology: Hepatitis C - Ledipasvir/Sofosbuvir Order Set KNART Validation Report*

[UL 2018] *University of Liverpool. 2018. Hep Drug Interactions. Accessed April 25, 2018 from <https://www.hep-druginteractions.org/>. (link [<https://www.hep-druginteractions.org/>])*

[VA 2017b] *US Dept of Veterans Affairs. 2017. Hepatitis C Information for Veterans. Accessed April 25, 2018 from <https://www.hepatitis.va.gov/pdf/Hepatitis-C-Factsheet-Veterans.pdf>. (link [<https://www.hepatitis.va.gov/pdf/Hepatitis-C-Factsheet-Veterans.pdf>])*

[VA 2017c] *US Dept of Veterans Affairs. Chronic Hepatitis C and Alcohol Use. 2017. [Internet]. Accessed April 25, 2018 from <https://www.hepatitis.va.gov/products/patient/hepatitisC-alcohol-brochure.asp>. (link [<https://www.hepatitis.va.gov/products/patient/hepatitisC-alcohol-brochure.asp>])*

[VA 2017d] *Department of Veterans Affairs. What to expect before your treatment for hepatitis C virus. 2017. [Internet]. Accessed Apr 25, 2018 from <https://www.hepatitis.va.gov/products/patient/hepatitisC-pretreatment.asp> (link [<https://www.hepatitis.va.gov/products/patient/hepatitisC-pretreatment.asp>])*

[VA 2017e] *Department of Veterans Affairs. Ribavirin information for patients. 2017. [Internet]. Accessed April 22, 2018 from <https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf>])*

[VA 2017f] *Department of Veterans Affairs. Taking Your Hepatitis C Therapy: Harvoni(R) with or without Ribavirin. 2017. [Internet]. Accessed April 22, 2018 from <https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/products/patient/sofosbuvir-simeprevir-handouts.asp>])*

[VA 2015a] *Department of Veterans Affairs. Managing side effects of harvoni®. 2015. [Internet]. Accessed Apr 22, 2018, from <https://www.hepatitis.va.gov/pdf/side-effects-harvoni-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/pdf/side-effects-harvoni-ribavirin.pdf>])*

[VA 2015b] *Department of Veterans Affairs. Managing side effects of harvoni® and ribavirin. 2015. [Internet]. Accessed Apr 22, 2018, from <https://www.hepatitis.va.gov/pdf/side-effects-harvoni-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/pdf/side-effects-harvoni-ribavirin.pdf>])*

[VA 2017g] *Department of Veterans Affairs. Tracking my hepatitis C treatment results. 2017. [Internet]. Accessed Apr 22, 2018, from <https://www.hepatitis.va.gov/pdf/HCV-tracking-chart.pdf> (link [<https://www.hepatitis.va.gov/pdf/HCV-tracking-chart.pdf>])*

[VA 2017h] *Department of Veterans Affairs. FAQs about Sustained Virologic Response to Treatment for Hepatitis C. 2017. [Internet]. Accessed Apr 22, 2018, from <https://www.hepatitis.va.gov/products/>*

*patient/sustained-virological-response.asp* (link [<https://www.hepatitis.va.gov/products/patient/sustained-virological-response.asp>])

## Supporting Evidence

[AASLD 2017] *American Association for the Study of Liver Diseases and the Infectious Diseases Society of America. HCV Guidance: Recommendations for Testing, Managing, and Treating Hepatitis C. Updated September 2017* (link [<https://doi.org/10.1002/hep.27950>])

[Fox 2017] *Fox RK. Summary of FDA Approval for Mavyret. Published August 2017* (link [<https://www.hepatitis.va.gov/provider/hcv/mavyret-approval.asp>])

[VA 2017a] *U.S. Department of Veterans Affairs. After the Initial Diagnosis of HCV: Overview of Next Steps. Published May 2017* (link [<https://www.hepatitis.va.gov/products/next-steps.asp>])

[VA 2017i] *U.S. Department of Veterans Affairs National Hepatitis C Resource Center Program and the National Viral Hepatitis Program. Chronic Hepatitis C Virus (HCV) Infection: Treatment Considerations from the Department of Veterans Affairs National Hepatitis C Resource Center Program and the HIV, Hepatitis, and Related Conditions Program in the Office of Specialty Care Services. Updated March 2017* (link [<https://www.hepatitis.va.gov/provider/guidelines/hcv-treatment-considerations.asp>])

[NLM 2017a] *U.S. National Library of Medicine. HARVONI- ledipasvir and sofosbuvir tablet, film coated [Gilead Sciences, Inc]. Updated April 2017* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f4ec77e4-bae8-4db0-b3d5-bde09c5fa075>])

[NLM 2017b] *U.S. National Library of Medicine. MAVYRET- glecaprevir and pibrentasvir tablet, film coated [AbbVie Inc.]. Updated August 2017* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7bf99777-0401-9095-8645-16c6e907fcc0>])

[NLM 2016] *U.S. National Library of Medicine. REBETOL- ribavirin capsule; REBETOL- ribavirin liquid [Merck Sharp & Dohme Corp.]. Updated January 2016* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=04d2b6f4-bd9b-4871-9527-92c81aa2d4d0>])

[NLM 2017c] *U.S. National Library of Medicine. ZEPATIER- elbasvir and grazoprevir tablet, film coated [Merck Sharp & Dohme Corp.]. Updated February 2017* (link [<https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=164dc02a-9180-426a-b8b5-04ab39d2bbd4>])

[VA 2016a] *VA Pharmacy Benefits Management Services, Medical Advisory Panel, VISN Pharmacist Executives and Office of Public Health. Elbasvir/Grazoprevir (Zepatier™) Criteria for Use. Published February 2016* (link [<https://www.pbm.va.gov/apps/VANationalFormulary/>])

[VA 2016b] *VA Pharmacy Benefits Management Services, Medical Advisory Panel, VISN Pharmacist Executives and Office of Public Health. Ledipasvir/Sofosbuvir (Harvoni®) and Sofosbuvir/Velpatasvir (Epclusa®) Criteria for Use. Published September 2016* (link [<https://www.pbm.va.gov/apps/VANationalFormulary/>])