

Gastroenterology: Hepatitis C - Elbasvir/Grazoprevir 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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Gastroenterology: Hepatitis C - Elbasvir/Grazoprevir Order Set: Order Set: Conceptual Structure

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

Publication date 05/03/2018

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Preface

Table 1. Revision History

Date	Life Cycle Event
May 3, 2018	Published
May 3, 2018	Reviewed
August 29, 2017	Pre-published
August 10, 2017	Created

Table 2. Clinical White Paper Contributors

Name	Role	Affiliation
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Table 3. Artifact Identifier

Domain	Artifact ID	Name
urn:va.gov:kbs:knart:artifact:rl	3b1639d1-b90b-523d-83b9-cdc4f9dc90bb	B28

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
ClinicalVenue	Outpatient	SNOMED CT	33022008 Hospital-based outpatient department (environment)	N/A	N/A
ClinicalVenue	Medical Service			N/A	N/A
PatientAgeGroup	Adult patients with chronic Hepatitis C infection	SNOMED CT	133936004 Adult (person)	N/A	N/A
PatientGender	All			N/A	N/A

Models

Table 5. Model References

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

Chapter 1. External Data Definitions

Definitions

Table 1.1. HCV genotype 1 time

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime
Annotation:
Codes: elm:element[elm:Code]: [397662006 Hepatitis C virus genotype determination (procedure)]
dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-5 year))
high: elm:Today()

Table 1.2. Hepatitis B surface antigen (HBsAg) 1 time

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime
Annotation:
Codes: elm:element[elm:Code]: [47758006 Hepatitis B surface antigen measurement (procedure)]
dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-10 year))
high: elm:Today()

Table 1.3. Hepatitis B core antibody (HBcAb) 1 time

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime
Annotation:
Codes: elm:element[elm:Code]: [59582004 Hepatitis B core antibody measurement (procedure)]
dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-10 year))
high: elm:Today()

Table 1.4. Hepatitis B surface antibody (HBsAb) 1 time

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime
Annotation:
Codes: elm:element[elm:Code]: [65911000 Hepatitis B surface antibody measurement (procedure)]
dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-10 year))
high: elm:Today()

Table 1.5. Hepatitis A antibody (HAVAb) 1 time

Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime
Annotation:
Codes: elm:element[elm:Code]: [697001 Hepatitis A virus antibody measurement (procedure)]

<p>dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-10 year)) high: elm:Today()</p>
--

Table 1.6. HCV viral load (quantitative HCV RNA) 1 time

<p>Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime Annotation: Codes: elm:element[elm:Code]: [395197008 Hepatitis C viral load (procedure)] dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-6 month)) high: elm:Today()</p>
--

Table 1.7. HIV test 1 time

<p>Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime Annotation: Codes: elm:element[elm:Code]: [359796005 Measurement of both Human immunodeficiency virus 1 antibody and Human immunodeficiency virus 2 antibody (procedure)] dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-5 year)) high: elm:Today()</p>
--

Table 1.8. Resistance-associated substitutions 1 time

<p>Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime Annotation: Codes: elm:element[elm:Code]: [8671fdfe-53a5-4cae-91a3-61fd23f5bbd4 Analysis of resistance-associated substitutions in Hepatitis C virus genes (procedure)] dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-5 year)) high: elm:Today()</p>
--

Table 1.9. Qualitative human chorionic gonadotropin 1 time

<p>Expression: type=elm:Retrieve , dataType=anf:ClinicalStatement, codeProperty=topic, dateProperty=dateTime Annotation: Codes: elm:element[elm:Code]: [386558001 Chorionic gonadotropin, beta-subunit measurement (procedure)] dateRange[elm:Interval] low: elm:Add(elm:Today() elm:Quantity(-2 week)) high: elm:Today()</p>

Triggers

No trigger definitions are present.

Chapter 2. Expression Definitions

No expression definitions are present.

Chapter 3. Medications

Elbasvir/grazoprevir is contraindicated in patients with decompensated cirrhosis. Elbasvir/grazoprevir should not be used in combination with 1) strong CYP3A inducers; or 2) OATP1B1/3 inhibitors; or 3) efavirenz. 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 elbasvir/grazoprevir.

HEP drug interactions link [<http://www.hep-druginteractions.org>]

([Morgan 2017]) Chronic hepatitis C virus (HCV) infection: Treatment considerations link [<https://www.hepatitis.va.gov/provider/guidelines/hcv-treatment-considerations.asp>]

Qualifications for the following treatment include: Genotype 1a, Treatment-Naïve or Treatment-Experienced (PEG/RBV), No NS5A Polymorphisms at Position 28, 30, 31, or 93, without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

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

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

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]

unstructured[0]: 28 tablets 2 refills

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition.eventFrequency.lowerBound: 1

repetition.eventFrequency.upperBound: 1

repetition.eventFrequency.includeLowerBound: TRUE

repetition.eventFrequency.includeUpperBound: TRUE

	<p>repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 day (qualifier value) </p> <p>Qualifications for the following treatment include: Genotype 1a, Treatment-Naïve, with NS5A Polymorphisms at Position 28, 30, 31, or 93, without Cirrhosis or with Compensated Cirrhosis (CTP A).</p>
<p><input type="checkbox"/> Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 3 refills (routine)</p>	<p>actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]</p> <p>statementType: Precoordinated Expression 385644000 Requested (qualifier value) </p> <p>topic: Postcoordinated Expression [416118004 Administration (procedure)] ->(260686004 Method (attribute))>[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))>[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 Route of administration (attribute))>[260548002 Oral (qualifier value)]</p> <p>unstructured[0]: 28 tablets 3 refills</p> <p>requestedResult.lowerBound: 1</p> <p>requestedResult.upperBound: 1</p> <p>requestedResult.includeLowerBound: TRUE</p> <p>requestedResult.includeUpperBound: TRUE</p> <p>requestedResult.measureSemantic: Precoordinated Expression 421026006 Conventional release oral tablet (dose form) </p> <p>priority: Precoordinated Expression 50811001 Routine (qualifier value) </p> <p>repetition.periodDuration.lowerBound: 1</p> <p>repetition.periodDuration.upperBound: 112</p> <p>repetition.periodDuration.includeLowerBound: TRUE</p> <p>repetition.periodDuration.includeUpperBound: TRUE</p> <p>repetition.periodDuration.resolution: 1</p> <p>repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 day (qualifier value) </p> <p>repetition.eventFrequency.lowerBound: 1</p> <p>repetition.eventFrequency.upperBound: 1</p> <p>repetition.eventFrequency.includeLowerBound: TRUE</p> <p>repetition.eventFrequency.includeUpperBound: TRUE</p> <p>repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 day (qualifier value) </p>
<p><input type="checkbox"/> 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:Instance, classType=anf:ClinicalStatement]</p> <p>statementType: Precoordinated Expression 385644000 Requested (qualifier value) </p> <p>topic: Postcoordinated Expression [416118004 Administration (procedure)] ->(260686004 Method (attribute))>[129445006</p>

|Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))>[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))>[260548002 |Oral (qualifier value)]

unstructured[0]: 3 capsules every evening; take with food 140 capsules 2 refills

statementAssociation.statementId: 8063df5e-58d2-439f-8434-dc5a5b82b7f4

statementAssociation.statementId: 196fc302-c2b4-4802-96ba-49651d474337

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

□ 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:Instance, classType=anf:ClinicalStatement]

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

topic: Postcoordinated Expression [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)]

unstructured[0]: take 3 capsules every morning and 3 capsules every evening; take with food; 140 capsules 2 refills

requestedResult.lowerBound: 3

requestedResult.upperBound: 3

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 112

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency.lowerBound: 1
 repetition.eventFrequency.upperBound: 1
 repetition.eventFrequency.includeLowerBound: TRUE
 repetition.eventFrequency.includeUpperBound: TRUE
 repetition.eventFrequency.measureSemantic: Precoordinated
 Expression 3157002 |Evening (qualifier value)|

Qualifications for the following treatment include: Genotype 1a, Treatment-Experienced (First Generation Protease Inhibitor Plus PEG/RBV), No NS5A Polymorphisms at Position 28, 30, 31, or 93, without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)daily
 actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Re-
 requested (qualifier value)|
 topic: Postcoordinated Expression [416118004 |Administration
 (procedure)] ->(260686004 |Method (attribute))>[129445006 |
 Administration - action (qualifier value)] ->(363701004 |Direct
 substance (attribute))>[Rx;1734636 elbasvir 50 MG / grazo-
 previr 100 MG Oral Tablet] ->(410675002 |Route of adminis-
 tration (attribute))>[260548002 |Oral (qualifier value)]
 unstructured[0]: 28 tablets 2 refills
 requestedResult.lowerBound: 1
 requestedResult.upperBound: 1
 requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 requestedResult.measureSemantic: Precoordinated Expression
 421026006 |Conventional release oral tablet (dose form)|
 priority: Precoordinated Expression 50811001 |Routine (quali-
 fier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency.lowerBound: 1
 repetition.eventFrequency.upperBound: 1
 repetition.eventFrequency.includeLowerBound: TRUE
 repetition.eventFrequency.includeUpperBound: TRUE
 repetition.eventFrequency.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|

□ 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:Instance, classType=anf:ClinicalStatement]

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

topic: Postcoordinated Expression [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)]

unstructured[0]: take 3 capsules every morning and 3 capsules every evening; take with food; 140 capsules 2 refills

statementAssociation.statementId: 8063df5e-58d2-439f-8434-dc5a5b82b7f4

statementAssociation.statementId: 196fc302-c2b4-4802-96ba-49651d474337

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

□ 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:Instance, classType=anf:ClinicalStatement]

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

topic: Postcoordinated Expression [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)]

requestedResult.lowerBound: 3

requestedResult.upperBound: 3

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|

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

repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency[0].lowerBound: 1
 repetition.eventFrequency[0].upperBound: 1
 repetition.eventFrequency[0].includeLowerBound: TRUE
 repetition.eventFrequency[0].includeUpperBound: TRUE
 repetition.eventFrequency[0].measureSemantic: Precoordinated Expression 73775008 |Morning (qualifier value)|
 repetition.eventFrequency[1].lowerBound: 1
 repetition.eventFrequency[1].upperBound: 1
 repetition.eventFrequency[1].includeLowerBound: TRUE
 repetition.eventFrequency[1].includeUpperBound: TRUE
 repetition.eventFrequency[1].measureSemantic: Precoordinated Expression 3157002 |Evening (qualifier value)|

Qualifications for the following treatment include: Genotype 1a, Treatment-Experienced (PEG/RBV or First Generation Protease Inhibitor Plus PEG/RBV), with NS5A Polymorphisms at Position 28, 30, 31, or 93, without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 3 refills (routine) daily
 actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
 topic: Postcoordinated Expression [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)]
 unstructured[0]: 28 tablets 3 refills
 requestedResult.lowerBound: 1
 requestedResult.upperBound: 1
 requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|
 priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 112

repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency.lowerBound: 1
 repetition.eventFrequency.upperBound: 1
 repetition.eventFrequency.includeLowerBound: TRUE
 repetition.eventFrequency.includeUpperBound: TRUE
 repetition.eventFrequency.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|

☐ 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:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Re-
 quested (qualifier value)|
 topic: Postcoordinated Expression [416118004 |Administration
 (procedure)] ->(260686004 |Method (attribute))>[129445006
 |Administration - action (qualifier value)] ->(363701004 |Di-
 rect substance (attribute))>[Rx;312817 Ribavirin 200 MG
 Oral Capsule] ->(410675002 |Route of administration (at-
 tribute))>[260548002 |Oral (qualifier value)]
 unstructured[0]: take 3 capsules every morning and 3 capsules
 every evening; take with food; 140 capsules 2 refills
 requestedResult.lowerBound: 1
 requestedResult.upperBound: 1
 requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 requestedResult.measureSemantic: Precoordinated Expression
 420692007 |Conventional release oral capsule (dose form)|
 priority: Precoordinated Expression 50811001 |Routine (quali-
 fier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated
 Expression 258703001 |day (qualifier value)|

☐ 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:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Re-
 quested (qualifier value)|

topic: Postcoordinated Expression [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)]

unstructured[0]: take 3 capsules every morning and 3 capsules every evening; take with food; 168 capsules 2 refills

requestedResult.lowerBound: 3

requestedResult.upperBound: 3

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.measureSemantic: Precoordinated Expression 420692007 |Conventional release oral capsule (dose form)|

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

repetition.eventFrequency.lowerBound: 1

repetition.eventFrequency.upperBound: 1

repetition.eventFrequency.includeLowerBound: TRUE

repetition.eventFrequency.includeUpperBound: TRUE

repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Qualifications for the following treatment include: Genotype 1b, Treatment-Naïve or Treatment-Experienced (PEG/RBV), without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

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

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

topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]

unstructured[0]: 28 tablets 2 refills

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 requestedResult.measureSemantic: Precoordinated Expression 420692007 |Conventional release oral capsule (dose form)|
 priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency.lowerBound: 1
 repetition.eventFrequency.upperBound: 1
 repetition.eventFrequency.includeLowerBound: TRUE
 repetition.eventFrequency.includeUpperBound: TRUE
 repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Qualifications for the following treatment include: Genotype 1b, Treatment-Experienced (First Generation Protease Inhibitor Plus PEG/RBV), without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)daily
 actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
 topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]
 unstructured[0]: 28 tablets 2 refills
 requestedResult.lowerBound: 1
 requestedResult.upperBound: 1
 requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 priority: Precoordinated Expression 49499008 |Stat (qualifier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE

```

repetition.periodDuration.resolution: 1
repetition.periodDuration.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|
repetition.eventFrequency.lowerBound: 1
repetition.eventFrequency.upperBound: 1
repetition.eventFrequency.includeLowerBound: TRUE
repetition.eventFrequency.includeUpperBound: TRUE
repetition.eventFrequency.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|
□ 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:Instance, classType=anf:ClinicalStatement]
    statementType: Precoordinated Expression 385644000 |Re-
    requested (qualifier value)|
    topic: Postcoordinated Expression [416118004 |Administration
    (procedure)] ->(260686004 |Method (attribute))->[129445006
    |Administration - action (qualifier value)] ->(363701004 |Di-
    rect substance (attribute))->[Rx;312817 Ribavirin 200 MG
    Oral Capsule] ->(410675002 |Route of administration (at-
    tribute))->[260548002 |Oral (qualifier value)]
    unstructured[0]: take 3 capsules every morning and 3 capsules
    every evening; take with food; 140 capsules 2 refills
    repetition.periodDuration.lowerBound: 1
    repetition.periodDuration.upperBound: 84
    repetition.periodDuration.includeLowerBound: TRUE
    repetition.periodDuration.includeUpperBound: TRUE
    repetition.periodDuration.resolution: 1
    repetition.periodDuration.measureSemantic: Precoordinated
    Expression 258703001 |day (qualifier value)|
□ 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:Instance, classType=anf:ClinicalStatement]
    topic: Postcoordinated Expression [416118004 |Administration
    (procedure)] ->(260686004 |Method (attribute))->[129445006
    |Administration - action (qualifier value)] ->(363701004 |Di-
    rect substance (attribute))->[Rx;312817 Ribavirin 200 MG
    Oral Capsule] ->(410675002 |Route of administration (at-
    tribute))->[260548002 |Oral (qualifier value)]
    unstructured[0]: take 3 capsules every morning and 3 capsules
    every evening; take with food; 168 capsules 2 refills
    requestedResult.lowerBound: 3
    requestedResult.upperBound: 3
    requestedResult.includeLowerBound: TRUE
    requestedResult.includeUpperBound: TRUE

```

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|
 priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|
 repetition.eventFrequency.lowerBound: 1
 repetition.eventFrequency.upperBound: 1
 repetition.eventFrequency.includeLowerBound: TRUE
 repetition.eventFrequency.includeUpperBound: TRUE
 repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

Qualifications for the following treatment include: Genotype 4, Treatment-Naïve, without Cirrhosis or with Compensated Cirrhosis (CTP A).

☐ Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 2 refills (routine)

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

statementType: Precoordinated Expression 385644000 |Requested (qualifier value)|
 topic: Postcoordinated Expression [416118004 |Administration (procedure)] ->(260686004 |Method (attribute))->[129445006 |Administration - action (qualifier value)] ->(363701004 |Direct substance (attribute))->[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 |Route of administration (attribute))->[260548002 |Oral (qualifier value)]
 unstructured[0]: 28 tablets 2 refills
 requestedResult.lowerBound: 1
 requestedResult.upperBound: 1
 requestedResult.includeLowerBound: TRUE
 requestedResult.includeUpperBound: TRUE
 priority: Precoordinated Expression 50811001 |Routine (qualifier value)|
 repetition.periodDuration.lowerBound: 1
 repetition.periodDuration.upperBound: 84
 repetition.periodDuration.includeLowerBound: TRUE
 repetition.periodDuration.includeUpperBound: TRUE
 repetition.periodDuration.resolution: 1
 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

	repetition.eventFrequency.lowerBound: 1 repetition.eventFrequency.upperBound: 1 repetition.eventFrequency.includeLowerBound: TRUE repetition.eventFrequency.includeUpperBound: TRUE repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 day (qualifier value)
Qualifications for the following treatment include: Genotype 4, Treatment-Experienced (PEG/RBV), without Cirrhosis or with Compensated Cirrhosis (CTP A).	
<input type="checkbox"/> Elbasvir/grazoprevir (50 mg/100 mg) 1 tablet oral, daily, 28 tablets 3 refills (routine)	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	statementType: Precoordinated Expression 385644000 Requested (qualifier value) topic: Postcoordinated Expression [416118004 Administration (procedure)] ->(260686004 Method (attribute))>[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))>[Rx;1734636 elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 Route of administration (attribute))>[260548002 Oral (qualifier value)] unstructured[0]: 28 tablets 3 refills requestedResult.lowerBound: 1 requestedResult.upperBound: 1 requestedResult.includeLowerBound: TRUE requestedResult.includeUpperBound: TRUE priority: Precoordinated Expression 50811001 Routine (qualifier value) repetition.periodDuration.lowerBound: 1 repetition.periodDuration.upperBound: 84 repetition.periodDuration.includeLowerBound: TRUE repetition.periodDuration.includeUpperBound: TRUE repetition.periodDuration.resolution: 1 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 day (qualifier value) repetition.eventFrequency.lowerBound: 1 repetition.eventFrequency.upperBound: 1 repetition.eventFrequency.includeLowerBound: TRUE repetition.eventFrequency.includeUpperBound: TRUE repetition.eventFrequency.measureSemantic: Precoordinated Expression 258703001 day (qualifier value)
<input type="checkbox"/> Ribavirin 200 mg capsule oral, take 2 capsules every morning and 3 capsules every evening; take with food 140 capsules 3 refills (routine)	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	statementType: Precoordinated Expression 385644000 Requested (qualifier value)

topic: Postcoordinated Expression [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)]

unstructured[0]: take 3 capsules every morning and 3 capsules every evening; take with food; 140 capsules 3 refills

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 112

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)]

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

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

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

topic: Postcoordinated Expression [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)]

unstructured[0]: take 3 capsules every morning and 3 capsules every evening; take with food; 168 capsules 3 refills

requestedResult.lowerBound: 3

requestedResult.upperBound: 3

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)]

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)]

repetition.eventFrequency.lowerBound: 1

repetition.eventFrequency.upperBound: 1

	repetition.eventFrequency.includeLowerBound: TRUE repetition.eventFrequency.includeUpperBound: TRUE repetition.eventFrequency.measureSemantic: Precoordinated Expression 3157002 Evening (qualifier value)
Qualifications for the following treatment include: Reduced-Dose Ribavirin for Patients with Renal Impairment (Creatinine Clearance 30–50 mL/min/1.73 m ²).	
<input type="checkbox"/> 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)	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	statementType: Precoordinated Expression 385644000 Re- requested (qualifier value) topic: Postcoordinated Expression [416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Di- rect substance (attribute))->[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002 Route of administration (at- tribute))->[260548002 Oral (qualifier value)] unstructured[0]: 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 requestedResult.measureSemantic: Precoordinated Expression 421026006 Conventional release oral tablet (dose form) priority: Precoordinated Expression 50811001 Routine (quali- fier value) repetition.periodDuration.lowerBound: 1 repetition.periodDuration.upperBound: 84 repetition.periodDuration.includeLowerBound: TRUE repetition.periodDuration.includeUpperBound: TRUE repetition.periodDuration.resolution: 1 repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 day (qualifier value) statementAssociation.statementId: 542f11a9-9eb6-4f- f8-a1e2-18730f009b49 statementAssociation.statementId: 40380a63-e53e-439f- b344-2ed76e972366
<input type="checkbox"/> 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 3 refills (routine)	
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]	statementType: Precoordinated Expression 385644000 Re- requested (qualifier value) topic: Postcoordinated Expression [416118004 Administration (procedure)] ->(260686004 Method (attribute))->[129445006 Administration - action (qualifier value)] ->(363701004 Di-

rect substance (attribute))>[Rx;312817 Ribavirin 200 MG Oral Capsule] ->(410675002 |Route of administration (attribute))>[260548002 |Oral (qualifier value)]

unstructured[0]: 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 3 refills

requestedResult.measureSemantic: Precoordinated Expression 421026006 |Conventional release oral tablet (dose form)|

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

repetition.periodDuration.includeLowerBound: TRUE

repetition.periodDuration.includeUpperBound: TRUE

repetition.periodDuration.resolution: 1

repetition.periodDuration.measureSemantic: Precoordinated Expression 258703001 |day (qualifier value)|

statementAssociation.statementId: 6121ecb0-9c74-48a1-aa06-17dd0c640919

statementAssociation.statementId: 6121ecb0-9c74-48a1-aa06-17dd0c640919

Qualifications for the following treatment include: Reduced-Dose Ribavirin for Patients with Renal Impairment (Creatinine Clearance < 30 mL/min/1.73 m²).

☐ Ribavirin 200 mg capsule oral, take 1 capsule daily with food 28 capsules 2 refills (routine)

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

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

topic: Postcoordinated Expression [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)]

unstructured[0]: take with food. 28 capsules 2 refills

requestedResult.lowerBound: 1

requestedResult.upperBound: 1

requestedResult.includeLowerBound: TRUE

requestedResult.includeUpperBound: TRUE

requestedResult.resolution: Precoordinated Expression 420692007 |Conventional release oral capsule (dose form)|

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

repetition.periodDuration.lowerBound: 1

repetition.periodDuration.upperBound: 84

```

repetition.periodDuration.includeLowerBound: TRUE
repetition.periodDuration.includeUpperBound: TRUE
repetition.periodDuration.resolution: 1
repetition.periodDuration.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|
repetition.eventFrequency.lowerBound: 1
repetition.eventFrequency.upperBound: 1
repetition.eventFrequency.includeLowerBound: TRUE
repetition.eventFrequency.includeUpperBound: TRUE
repetition.eventFrequency.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|
□ Ribavirin 200 mg capsule oral, take 1 capsule daily with food 28 capsules 3 refills (routine)
actionSentence[type=elm:Instance, classType=anf:ClinicalStatement]
statementType: Precoordinated Expression 385644000 |Re-
quested (qualifier value)|
topic: Postcoordinated Expression [416118004 |Administration
(procedure)] ->(260686004 |Method (attribute))->[129445006
|Administration - action (qualifier value)] ->(363701004 |Di-
rect substance (attribute))->[Rx;312817 Ribavirin 200 MG
Oral Capsule] ->(410675002 |Route of administration (at-
tribute))->[260548002 |Oral (qualifier value)]
unstructured[0]: take with food. 28 capsules 3 refills
requestedResult.lowerBound: 1
requestedResult.upperBound: 1
requestedResult.includeLowerBound: TRUE
requestedResult.includeUpperBound: TRUE
requestedResult.resolution: Precoordinated Expression
420692007 |Conventional release oral capsule (dose form)|
priority: Precoordinated Expression 50811001 |Routine (quali-
fier value)|
repetition.periodDuration.lowerBound: 1
repetition.periodDuration.upperBound: 112
repetition.periodDuration.includeLowerBound: TRUE
repetition.periodDuration.includeUpperBound: TRUE
repetition.periodDuration.resolution: 1
repetition.periodDuration.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|
repetition.eventFrequency.lowerBound: 1
repetition.eventFrequency.upperBound: 1
repetition.eventFrequency.includeLowerBound: TRUE
repetition.eventFrequency.includeUpperBound: TRUE
repetition.eventFrequency.measureSemantic: Precoordinated
Expression 258703001 |day (qualifier value)|

```

Chapter 4. Laboratory Tests

Guidance for providers who are referring a patient to gastroenterology 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: Postcoordinated 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: Postcoordinated Expression Hepatic function panel 1 time (routine)

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

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

☐ Basic metabolic panel 1 time (routine)

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

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

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

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

Recommended if it has not been done for the past 5 years

Condition:elm:Not (elm:Exists(HCV genotype 1 time))

☐ HCV genotype 1 time (routine)

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

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

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

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

These tests are recommended if they have not been done for the past 10 years

Condition:elm:Not (elm:Exists(Hepatitis B surface antigen (HBsAg) 1 time))

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

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

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

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

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

Condition:elm:Not (elm:Exists(Hepatitis B core antibody (HBcAb) 1 time))

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

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

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

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

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

Condition:elm:Not (elm:Exists(Hepatitis B surface antibody (HBsAb) 1 time))

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

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

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

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

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

Condition:elm:Not (elm:Exists(Hepatitis A antibody (HAVAb) 1 time))

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

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

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

topic: Postcoordinated 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.

Condition:elm:Not (elm:Exists(HCV viral load (quantitative HCV RNA) 1 time))

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

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

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

topic: Postcoordinated 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.

Condition:elm:Not (elm:Exists(HIV test 1 time))

☐ HIV test 1 time (routine)

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

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

topic: Postcoordinated Expression 359796005 |Measurement of both Human immunodeficiency virus 1 antibody and Human immunodeficiency virus 2 antibody (procedure)|

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

Condition:elm:Not (elm:Exists(Resistance-associated substitutions 1 time))

☐ Resistance-associated substitutions 1 time (routine)

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

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

topic: Postcoordinated Expression 8671fdfe-53a5-4cae-91a3-61fd23f5bbd4 |Analysis of resistance-associated substitutions in Hepatitis C virus genes (procedure)|

priority: Precoordinated Expression 49499008 |Stat (qualifier value)|

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

Condition:elm:Not (elm:Exists(Qualitative human chorionic gonadotropin 1 time))

☐ Qualitative human chorionic gonadotropin 1 time (routine)

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

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

topic: Postcoordinated Expression 386558001 |Chorionic gonadotropin, beta-subunit measurement (procedure)|

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

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

☐ Provide links to VA Hepatitis C patient education documents:

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

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

topic: Postcoordinated Expression TSR-NoCode

([VA 2018a])

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

([VA 2017a])

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

([VA 2017b])

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

([VA 2017c])

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

([VA 2016a])

Taking Your Hepatitis C Therapy: Zepatier(TM) with or without Ribavirin link [<https://www.hepatitis.va.gov/pdf/patient-zepatier.pdf>]

([VA 2016b])

Managing Side Effects of Zepatier(TM) link [<https://www.hepatitis.va.gov/pdf/side-effects-zepatier.pdf>]

([VA 2016c])

Managing Side Effects of Zepatier(TM) + Ribavirin link [<https://www.hepatitis.va.gov/products/patient/side-effects-handouts.asp>]

([VA 2017d])

Tracking My Hepatitis C Treatment Results link [<https://www.hepatitis.va.gov/products/patient/tracking-chart.asp>]

([VA 2015])

FAQs about Sustained Virologic Response to Treatment for Hepatitis C link [<https://www.hepatitis.va.gov/pdf/sustained-virological-response.pdf>]

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	References
SNOMED CT	133936004 Adult (person)	Adult patients with chronic Hepatitis C infection	1
SNOMED CT	1421000205106 Basic metabolic panel (procedure)	Postcoordinated Expression	1
SNOMED CT	167181009 Measurement of renal clearance of creatinine (procedure)	Postcoordinated Expression	1
SNOMED CT	258703001 day (qualifier value)	Precoordinated Expression	34
SNOMED CT	26604007 Complete blood count (procedure)	Postcoordinated 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	2
SNOMED CT	385644000 Requested (qualifier value)	Precoordinated Expression	36
SNOMED CT	386558001 Chorionic gonadotropin, beta-subunit measurement (procedure)	Precoordinated Expression	2
SNOMED CT	395197008 Hepatitis C viral load (procedure)	Precoordinated Expression	2
SNOMED CT	397662006 Hepatitis C virus genotype determination (procedure)	Precoordinated Expression	2

System	Code	Display Text	References
SNOMED CT	420692007 Conventional release oral capsule (dose form)	Precoordinated Expression	5
SNOMED CT	421026006 Conventional release oral tablet (dose form)	Precoordinated Expression	10
SNOMED CT	440685005 Calculation of international normalized ratio (procedure)	Postcoordinated Expression	1
SNOMED CT	453231000124104 Primary care provider (occupation)	Primary Care physicians	1
SNOMED CT	47758006 Hepatitis B surface antigen measurement (procedure)	Postcoordinated Expression	2
SNOMED CT	49499008 Stat (qualifier value)	Precoordinated Expression	2
SNOMED CT	50811001 Routine (qualifier value)	Precoordinated Expression	32
SNOMED CT	59582004 Hepatitis B core antibody measurement (procedure)	Postcoordinated Expression	2
SNOMED CT	65911000 Hepatitis B surface antibody measurement (procedure)	Postcoordinated Expression	2
SNOMED CT	697001 Hepatitis A virus antibody measurement (procedure)	Postcoordinated Expression	2
SNOMED CT	73775008 Morning (qualifier value)	Precoordinated Expression	1
SNOMED CT	8671fdfe-53a5-4cae-91a3-61f2365111d4 Analysis of resistance-associated substitutions in Hepatitis C virus genes (procedure)	Postcoordinated Expression	2
SNOMED CT	Hepatic function panel 1 time (routine)	Postcoordinated Expression	1
SNOMED CT	TSR-NoCode	Postcoordinated Expression	1
SNOMED CT	[416118004 Administration (procedure)] ->(260686004 Method (attribute))>[129445006 Administration - action (qualifier value)] ->(363701004 Direct substance (attribute))>[Rx;1734636	Postcoordinated Expression	7

System	Code	Display Text	References
	elbasvir 50 MG / grazoprevir 100 MG Oral Tablet] ->(410675002 Route of administration (attribute))->[260548002 Oral (qualifier value)]		
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	15

Chapter 7. Behavior Symbols

Table 7.1. Group Organizational Behavior

Sym- bol	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

Sym- bol	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

Sym- bol	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.

Sym- bol	Name	Definition
◇	Could	An action with this behavior may be included in the set of actions processed by the end user.
➤	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

Sym- bol	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

Sym- bol	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

Sym- bol	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

Sym- bol	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 - Elbasvir/Grazoprevir Order Set Conceptual Structure Document*

[KVRpt] *Gastroenterology: Hepatitis C - Elbasvir/Grazoprevir Order Set KNART Validation Report*

[VA 2018a] *Department of Veterans Affairs. (2018a). Viral hepatitis home. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/> (link [<https://www.hepatitis.va.gov/>])*

[VA 2017a] *Department of Veterans Affairs. (2017a). Chronic hepatitis C and alcohol use. Retrieved May 03, 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 2017b] *Department of Veterans Affairs. (2017b). What to expect before your treatment for hepatitis C virus. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/products/patient/hepatitisC-pretreatment.asp> (link [<https://www.hepatitis.va.gov/products/patient/hepatitisC-pretreatment.asp>])*

[VA 2017c] *Department of Veterans Affairs. (2017c). Ribavirin information for patients. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/pdf/patient-ribavirin.pdf>])*

[VA 2016a] *Department of Veterans Affairs. (2016a). Taking your hepatitis C therapy: Zepatier™ with or without ribavirin. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/pdf/patient-zepatier.pdf> (link [<https://www.hepatitis.va.gov/pdf/patient-zepatier.pdf>])*

[VA 2016b] *Department of Veterans Affairs. (2016b). Managing side effects of zepatier™. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/pdf/side-effects-zepatier.pdf> (link [<https://www.hepatitis.va.gov/pdf/side-effects-zepatier.pdf>])*

[VA 2016c] *Department of Veterans Affairs. (2016c). Managing side effects of zepatier(TM) + ribavirin. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/pdf/side-effects-zepatier-ribavirin.pdf> (link [<https://www.hepatitis.va.gov/products/patient/side-effects-handouts.asp>])*

[VA 2017d] *Department of Veterans Affairs. (2017d). Tracking my hepatitis C treatment results. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/products/patient/tracking-chart.asp> (link [<https://www.hepatitis.va.gov/products/patient/tracking-chart.asp>])*

[VA 2015] *Department of Veterans Affairs. (2015). FAQs about sustained virologic response to treatment for hepatitis C. Retrieved May 03, 2018, from <https://www.hepatitis.va.gov/pdf/sustained-virological-response.pdf> (link [<https://www.hepatitis.va.gov/pdf/sustained-virological-response.pdf>])*

[Back 2018] *Back, D., et al. (2018). HEP drug interactions. Retrieved Apr 16, 2018, from <https://www.hep-druginteractions.org/> (link [<http://www.hep-druginteractions.org/>])*

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 2017e] *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>])
- [Morgan 2017] *Morgan, T., & Yee, H. (2017). Chronic hepatitis C virus (HCV) infection: Treatment considerations. Retrieved Apr 22, 2018, from https://www.hepatitis.va.gov/provider/guidelines/hcv-treatment-considerations.asp* (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 2017c] *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 2017d] *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 2016d] *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 2016e] *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/>])