

**abbvie** Paritaprevir/r – ombitasvir and dasabuvir  
Protocol P15-398 (Affiliate study tracking no GER1501)

---

## Title Page

<b>Title</b>	Real World Evidence of the Effectiveness of Paritaprevir/r – Ombitasvir, ± Dasabuvir, ± Ribavirin in Patients with Chronic Hepatitis C - An Observational Study in Germany (LIFE-C)
<b>Protocol Version Identifier</b>	Protocol Version 3.0 (17. November 2016)
<b>Date of Last Version of Protocol</b>	Protocol Version 2.0 (22. October 2015)
<b>Research Question and Objectives</b>	What is the effectiveness and patient reported outcome or work productivity of the interferon-free regimen of Paritaprevir/r – Ombitasvir, ± Dasabuvir, ± Ribavirin in patients with CHC in a real life setting across different patient populations?
<b>Country(-ies) of Study</b>	Germany
<b>Main Author</b>	████████████████████
<b>Marketing Authorization Holder(s)</b>	AbbVie Ltd

**This study will be conducted in compliance with this protocol and all applicable local regulatory requirements**

---

**Confidential Information**

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie  
Version 3.0. (22. Apr 2015) – Germany V3.0 (17. November 2016)

Page 1 of 63

## 1.0 Table of Contents

1.0	Table of Contents.....	2
2.0	Abbreviations .....	5
3.0	Responsible Parties .....	8
4.0	Abstract .....	9
5.0	Amendments and Updates .....	13
6.0	Milestones .....	13
7.0	Rationale and Background .....	13
7.1	Background .....	13
7.2	Rationale .....	19
8.0	Research Question and Objectives .....	20
8.1	Research Question .....	20
8.2	Objectives .....	20
8.2.1	Primary Objective.....	20
8.2.2	Secondary Objectives .....	20
9.0	Research Methods.....	21
9.1	Study Design.....	21
9.2	Setting .....	22
9.2.1	Target Population.....	22
9.2.2	Study Duration .....	23
9.2.3	Termination Criteria .....	23
9.2.4	Investigator Selection Criteria.....	23
9.3	Variables .....	24
9.3.1	Primary Variable .....	24
9.3.2	Secondary Variables.....	24
9.4	Data Sources .....	24
9.4.1	Data to be Documented .....	24
9.4.1.1	Inclusion documentation .....	25
9.4.1.2	During Treatment Documentation .....	26
9.4.1.3	Post-Treatment Documentation.....	26

---

**Confidential Information**

9.4.1.4	HCV RNA Sample .....	29
9.4.1.5	Concomitant Medication .....	29
9.4.1.6	Standardized Assessment Tools .....	29
9.5	Study Size .....	33
9.6	Data Management .....	34
9.6.1	Electronic Case Report Forms .....	34
9.6.2	Assignment of Preferred Terms.....	36
9.7	Data Analysis .....	37
9.7.1	Analysis Population, Time Windows and Handling of Missing Data .....	37
9.7.2	Demographics and Disease Characteristics .....	38
9.7.3	Effectiveness Analysis .....	39
9.7.3.1	Primary Effectiveness Endpoint.....	39
9.7.3.2	Secondary Effectiveness Endpoints .....	39
9.7.3.3	Statistical Methods for Analysis of Effectiveness Variables.....	40
9.7.4	Clinical Laboratory Data .....	41
9.7.5	Patient Questionnaires .....	42
9.7.6	Tolerability Analysis .....	43
9.7.7	Interim Assessments.....	44
9.8	Quality Control .....	44
9.9	Limitations of the Research Methods .....	44
10.0	Protection of Human Subjects .....	45
11.0	Management and Reporting of Adverse Events/Adverse Reactions.....	45
11.1	Adverse Event Definition and Serious Adverse Event Categories .....	46
11.2	Severity .....	47
11.3	Relationship to Pharmaceutical Product .....	47
11.4	Serious Adverse Event Collection Period.....	48
11.5	Serious and non-serious Adverse Event Reporting .....	48
11.6	Pregnancy Reporting .....	48
12.0	Plans for Disseminating and Communicating Study Results.....	49
13.0	References .....	50
Annex 1.	FACIT-F - The Functional Assessment of Chronic Illness Therapy-Fatigue Scale.....	55
Annex 2.	Work Productivity and Activity Impairment (WPAI) .....	56

Confidential Information

Annex 3.	Pictorial Representation of Illness and Self-Measure (PRISM) .....	58
Annex 4.	PAM-13 Questionnaire Sample .....	59
Annex 5.	Patient Support Program (PSP) Utilization Questionnaire .....	60
Annex 6.	Patient Support Program (PSP) Utilization and Satisfaction Questionnaire .....	61
14.0	Protocol Signature Page .....	63



## 2.0 Abbreviations

Paritaprevir/r	Paritaprevir/ritonavir
AE	adverse event
APRI	AST to platelet ratio index
AFP	alfa fetoprotein
ALT	alanine-aminotransferase
AST	aspartate-aminotransferase
ANCOVA	analysis of covariance
BMI	body mass index
ABBVIE	Paritaprevir/r – ombitasvir ± dasabuvir
REGIMEN	
CA	competent authority
CD4	cluster of differentiation 4
CHC	chronic hepatitis C
CI	confidence interval
CP	core population
CPFSU	core population with sufficient follow-up data
DAA	direct-acting antiviral agent
DDI	drug-drug interaction
EC	ethics committee
EDC	electronic data capture
eCRF	electronic case report form
EMA	European Medicines Agency
EoT	end of treatment
FDA	Food and Drug Administration
FACIT-F	Functional Assessment of Chronic Illness Therapy- Fatigue Scale
FIB-4	Fibrosis-4 Score/Index

---

Confidential Information

γ-GT	gamma-glutamyltransferase
HCC	hepatocellular carcinoma
HCP	health care provider
Hb	Hemoglobin
HBV	hepatitis B virus
HCV	hepatitis C virus
HIV	human immunodeficiency virus
HOMA	homeostasis model assessment
ICMJE	International Committee of Medical Journal Editors
IEC/IRB	independent ethics committee/- review board
INN	international non-proprietary name
INR	international normalized ratio
LLoD	Lower limit of detection
LLoQ	Lower limit of quantification
MAH	Marketing Authorization Holder
MedDRA	Medical Dictionary for Regulatory Activities
MLR	multiple logistic regression
NCP	non-core population
NS3/NS4A	nonstructural protein 3/nonstructural protein 4A
NS5A	nonstructural protein 5A
NS5B	nonstructural protein 5B
OATP	organic anion-transporting polypeptide
OLT	orthotopic liver transplant
PAM-13	Patient Activation Measure 13
PCR	polymerase chain reaction
pegIFN	pegylated interferon
PRISM	Pictorial Representation of Illness and Self-Measure
PRO	Patient reported outcome
PSP	Patient support program

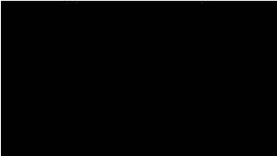
---

Confidential Information

PT	preferred term
RBV	ribavirin
RNA	ribonucleic acid
SAE	serious adverse event
SAP	statistical analysis plan
SD	standard deviation
SDP	study designated physician
SNP	single nucleotide polymorphism
SOC	system organ class
SP	safety population
SPC	Summary of Product Characteristics
SVR	sustained virological response
SVR12	SVR at 12 weeks after EoT
SVR24	SVR at 24 weeks after EoT
TP	target population
WPAI	Work productivity and activity impairment
WHO	World Health Organization

### 3.0 Responsible Parties

#### Study Designated Physician (SDP):

- 

#### Protocol Authors:

- 
- 

#### Vendor:

- IST GmbH, Soldnerstrasse 1, D-68219 Mannheim, Germany  
[www.istgmbh.com](http://www.istgmbh.com)

## 4.0 Abstract

**Title:**

Real World Evidence of the Effectiveness of Paritaprevir/r – Ombitasvir, ± Dasabuvir, ± Ribavirin in Patients with Chronic Hepatitis C – An Observational Study in Germany (LIFE-C, GER-1501)

**Rationale and Background:**

The interferon-free combination regimen of Paritaprevir/r – Ombitasvir with or without Dasabuvir (ABBVIE REGIMEN) ± ribavirin (RBV) for the treatment of chronic hepatitis C (CHC) has been shown to be safe and effective in randomized controlled clinical trials with strict inclusion and exclusion criteria under well controlled conditions.

The ABBVIE REGIMEN is available in Germany for the treatment of CHC since January 2015.

The rationale for this observational study is to determine how the efficacy and safety of the ABBVIE REGIMEN as demonstrated in pivotal trials translates into real world everyday clinical settings, which means evaluating its effectiveness. Whereas efficacy can be defined as a measure of the capacity of a treatment to produce the desired effect in a controlled environment, such as in a randomized controlled trial, effectiveness is the extent to which a drug achieves its intended effect in the usual clinical setting. Effectiveness trials typically have limited exclusion criteria and will involve the broader patient populations in routine clinical practice and per local label which might include patients with heterogenous compliance patterns and patients with significant comorbid conditions and could be used to model and disseminate best practices. Effectiveness research allows for external patient-, provider-, and system-level factors and can therefore be more relevant for health-care decisions by both providers in practice and policy-makers.

This observational study is the first effectiveness research examining the ABBVIE REGIMEN ± RBV, used according to local label, under real world conditions in Germany in a clinical practice patient population.

During the last decade when dual therapy with pegylated interferon (pegIFN) plus RBV was standard of care for the treatment of CHC, the discovery of predictive factors for virological response and the subsequent development of treatment algorithms marked a milestone in patient care for CHC. As a consequence, treatment could be effectively targeted to patients most likely to respond. Interestingly, many of the now well established predictors of response to pegIFN/RBV and first generation direct acting antivirals (DAAs) in combination with pegIFN/RBV were not predictive of outcome in the development trials of the ABBVIE REGIMEN ± RBV. This observational study may play an important part in bridging the data gaps. It may help identify predictive factors of response that are important in real world treatment settings and thus, could assist in further optimizing treatment with the interferon-free ABBVIE REGIMEN ± RBV in the future.

The label of the ABBVIE REGIMEN ± RBV will vary according to hepatitis C virus (HCV) genotype/subtype and stage of liver disease. It is therefore relevant to understand the pattern of use and outcome in daily clinical practice. In addition, this study will provide data on the impact of adherence on treatment outcomes in everyday settings, which may help treating physicians to improve the management of patients under their care.

The aim of this observational study is to provide evidence of the effectiveness and patient

**Confidential Information**

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie

reported outcome (PRO) or work productivity of the ABBVIE REGIMEN ± RBV in a real world setting across clinical practice patient populations.

**Research Question and Objectives:**

What is the effectiveness and patient reported outcome or work ability of the interferon-free ABBVIE REGIMEN ± RBV in patients with CHC in a real life setting across different patient populations?

Primary Objective

1. To describe in routine clinical practice the effectiveness of the interferon-free ABBVIE REGIMEN ± RBV in patients with CHC as evidenced by sustained virological response at 12 weeks after end of treatment (SVR12)

Secondary Objectives

2. To provide real world evidence for predictive factors of virological response
3. To document the effect of the ABBVIE REGIMEN ± RBV on PROs and work productivity in the German population
4. To describe the pattern of real world use of the ABBVIE REGIMEN ± RBV with respect to different patient and treatment characteristics
5. To evaluate the influence of adherence on treatment outcome in routine clinical practice
6. To describe the tolerability of the ABBVIE REGIMEN ± RBV
7. To collect information on co-morbidities and concomitant medication in the German population

**Study Design:**

This is a prospective, multi-center observational study in patients receiving the interferon-free ABBVIE REGIMEN ± RBV.

The prescription of a treatment regimen is at the discretion of the physician in accordance with local clinical practice and label, is made independently from this observational study and precedes the decision to offer the patient the opportunity to participate in this study.

**Target Population:**

Patients are eligible for observation in this cohort if the following applies:

- Treatment-naïve or -experienced adult male or female patients with confirmed CHC, genotype 1 or 4, receiving combination therapy with the interferon-free ABBVIE REGIMEN ± RBV according to standard of care and in line with the current local label
- If RBV is co-administered with the ABBVIE REGIMEN, it has been prescribed in line with the current local label (with special attention to contraception requirements and contraindication during pregnancy)
- Patients must voluntarily sign and date a patient authorization to use and/or disclose his/her pseudonymized health data prior to inclusion into the study
- Patient must not be participating or intending to participate in a concurrent interventional therapeutic trial

**Variables**

**Primary Variable**

**Confidential Information**

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie

- The percentage of patients achieving SVR12 (HCV RNA <50 IU/mL 12 weeks [i.e. ≥70 days] after the last actual dose of the ABBVIE REGIMEN)

**Secondary Variables**

- Type of treatment regimen (± Dasabuvir, ± RBV, intended and actual combination, dose and duration)
- Patient adherence
- Serious and non-serious adverse events and pregnancy occurrences
- Questionnaire scores on PROs: Chronic Illness Therapy-Fatigue (FACIT-F), Work Productivity and Activity Impairment (WPAI), Burden of Suffering (PRISM), Patient Activation Measure (PAM-13)
- Co-morbidities and concomitant medication
- HCV relapse or reinfection after achieving SVR12 until post treatment week 48

**Data Sources:**

Source documents are defined as original documents. The investigator will document patient data in his/her own patient files which will serve as source data for the study.

**Study Size:**

650 patients, recruited in approximately 50 sites

**Data Analysis:**

The core population (CP) is defined as all patients of the target population (TP) (definition see above), who have started the treatment combination recommended in the current local label for their disease characteristics. Patients not receiving the treatment recommended in the local label will be summarized in the non-core population (NCP). In addition, the core population with sufficient follow-up data (CPSFU) is defined as all CP patients, who have (i) evaluable HCV RNA data ≥70 days after the last actual dose of the ABBVIE REGIMEN or (ii) a HCV RNA value ≥50 IU/mL at the last measurement or (iii) had HCV RNA < 50 IU/mL at the last measurement, but no HCV RNA measurement ≥70 days after the last actual dose of the ABBVIE REGIMEN due to reasons related to safety (e.g. dropped out due to adverse event) or incomplete efficacy information (e.g. virologic failure such as relapse is reported in the electronic case report form (eCRF) but date and value of the corresponding HCV RNA test is missing). The safety population (SP) is defined as all patients who received at least one dose of the ABBVIE REGIMEN.

Descriptive and exploratory statistical methods will be used to analyze the data of the study. All baseline and disease characteristics will be summarized for the CP stratified by the CP analysis groups (based on genotype 1 subtype, fibrosis status, treatment experienced or naïve), which are relevant for scheduled treatment combination (± Dasabuvir, ± RBV) and duration (12 or 24 weeks). In addition, baseline summaries will be repeated for the SP and TP without stratification into subgroups. Further details of analysis populations and the CP analysis groups will be specified in the statistical analysis plan (SAP).

The primary effectiveness analysis will be performed for CP patients, stratified by the CP analysis groups. Response rates (i.e. SVR12 rate, end of treatment [EoT] response rate, relapse rate, viral breakthrough) will be determined for the various CP analysis groups. The

**Confidential Information**

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie

relapse rates will be estimated in patients of the CP analysis groups with EoT response and sufficient HCV RNA measurements post treatment. Viral breakthrough rates will be estimated in all patients of the CP analysis groups, who have at least one undetectable HCV RNA measurement on treatment and at least one on-treatment or EoT measurement thereafter. For all rates specified above 95%- confidence intervals (CIs) will be determined using the Wilson Score method.

Univariate and multiple logistic regression (MLR) methods will be used to investigate the impact of various explanatory covariates (e.g. demographic and disease characteristics, co-morbidities, type of treating institution, and prior treatment for CHC and response outcome in treatment experienced patients) on SVR12. These analyses will be of exploratory nature, data driven, and will be performed in the CP. Backward selection procedures will be applied to generate the final MLR models. A p-value <0.05 will be used for the covariates to stay in the model in a backward elimination step. Logistic regression methods will also be used to investigate the impact of treatment adherence on SVR12.

All safety variables will be summarized for patients in the SP using descriptive statistical methods stratified by the type of combination treatment.

**Milestones:**

Start of Data Collection:	November 2015
End of Data Collection:	approx. April 2018
Final Report of Study Results:	approx. April 2019



## 5.0 Amendments and Updates

- None

## 6.0 Milestones

- Start of Data Collection: November 2015
- End of Data Collection: approx. April 2018
- Final Report of Study Results: approx. April 2019

## 7.0 Rationale and Background

### 7.1 Background

Infection with the hepatitis C virus (HCV) is associated with considerable morbidity and mortality [1] and is a leading cause of chronic liver disease, cirrhosis, and hepatocellular carcinoma (HCC), as well as the most common indication for liver transplantation in many countries [2]. Around 60-85% of subjects exposed to HCV do not clear the virus and go on to develop chronic disease [3] [4]. Chronic hepatitis C (CHC) affects an estimated 2-3% of the world's population - equaling approximately 130-210 million individuals [5] [6]. The prevalence varies markedly from one geographic area to another ranging from 0.1-1% in Western Europe to 1-2% in Latin America and up to 4.9% in some regions of Eastern Europe [7] [8] [9] [10].

HCV demonstrates a high degree of genetic variability and has been classified into seven major genotypes (and a large number of subtypes) the distribution of which varies globally [11]. Genotypes 1 through 3 are found worldwide; the other genotypes have a more restricted distribution, genotype 4 is found predominantly in the Middle East, Central Africa, and Egypt; genotype 5 in South Africa; and genotype 6 mainly in Asia. HCV genotypes 1a and 1b are the most common forms, accounting for 60% of HCV infections worldwide [12] [13] [14] [15].

HCV is primarily transmitted by parenteral exposures to contaminated blood, most frequently by injection drug use, exposures in health-care settings and inadequate infection-control practices (tattoo, piercing). Occupational, perinatal and sexual exposure can also result in transmission of HCV [16] [17]. Since the early 1990's routine blood screening protocols have been introduced in most countries and as a consequence

transmission of the virus is rarely seen following receipt of blood, blood products or through organ transplants.

The natural course of CHC leads to progressive fibrosis and can eventually lead to cirrhosis of the liver over the course of 20-30 years in approximately 15-30% of infected individuals [18]. Once patients become cirrhotic, around 6% per year are expected to develop hepatic decompensation (ascites, encephalopathy, variceal hemorrhage, hepatorenal syndrome, or hepatic synthetic dysfunction) and around 3% per year will develop HCC [19]. Over the same time frame, between 4 and 5% of patients can be expected to require liver transplantation or die [19] [20]. Progression is not necessarily a linear process and can be accelerated by a number of factors including the age of the patient, duration of HCV infection, male gender, alcohol consumption and co-infection with other viruses such as hepatitis B virus (HBV) and human immunodeficiency virus (HIV) [4] but also by concomitant steatosis and obesity. Comorbid conditions can impact CHC treatment eligibility, safety, tolerability and efficacy of therapy [21] [22].

The burden of advanced liver disease varies widely across countries and is dependent upon several factors including chronic HCV prevalence and age distribution (and duration of infection) of those infected [23]. Due to an aging cohort of patients and an associated increase in the incidence of severe liver disease, the burden of CHC will continue to increase. In persons 30–49 years of age, the prevalence of the disease is 3–fold higher than in other age groups. By 2020, the rates of HCC and liver-related deaths among individuals with CHC are expected to increase by 81% and 180%, respectively [24].

The eradication of the virus, defined as the absence of HCV ribonucleic acid (RNA) in serum (as shown by a sensitive test) at the end of treatment (EoT) and 12-24 weeks later (sustained virological response [SVR]), is the therapeutic goal of CHC treatment [25] [26] [27] and is generally accepted as a virological cure, thus, eventually preventing the aforementioned complications [26] [27].

Achieving an SVR was associated with significant reduction in all-cause death compared to patients who did not achieve SVR (5-year mortality rate in HCV genotype 1-infected patients: 6.7% vs 14.4%, respectively) [28]. In another study the 10-year cumulative all-cause mortality rate was 8.9% in patients with SVR and 26.0% without SVR ( $p < 0.001$ ), the liver-related mortality or transplantation was 1.9% with SVR and 27.4% without SVR ( $p < 0.001$ ), the rate of HCC was 5.1% with and 21.8% without SVR ( $p < 0.001$ ), and the rate of patients experiencing liver failure was 2.1% with vs. 29.9% ( $p < 0.001$ ) without SVR [29]. Patients with SVR following treatment with pegylated interferon (pegIFN) with or without RBV have also shown improvement in liver histology and a reduction in liver-related death in several studies [30] [31] [32]. Moreover, patients with compensated

cirrhosis who achieve SVR essentially eliminate their subsequent risk of decompensation, may achieve histologic regression, and decrease their risk of HCC by two-thirds [33] [34] [35].

In the 1980's and 1990's interferon alfa was the first drug to show activity against HCV. However, the effectiveness of interferon monotherapy in the treatment of CHC infection was generally unsatisfactory resulting in an overall SVR rate across genotypes of <20% [36] [37]. Combination therapy with interferon plus ribavirin (RBV) improved SVR rates but still overall rates across genotypes remained below 50% [38] [39]. Following the introduction of long-acting interferons (peginterferon alfa-2a and peginterferon alfa-2b [i.e. pegIFNs]) in combination with RBV more than a decade ago, further advances have been made in efficacy with overall rates of SVR up to 54-63% [39] [40] [41]. SVR rates vary substantially by HCV genotype with genotype 1 being the most difficult-to-treat, thus requiring longer treatment periods to obtain SVR with interferon-based dual therapy. SVR rates up to around 50% can be achieved in patients with genotype 1 whereas for genotypes 2 and 3 cure rates of up to 80% can be achieved [41].

Treatment with pegIFN and RBV is associated with considerable, often treatment-limiting toxicities including cytopenias, neuro-psychiatric disorders and influenza-like symptoms.

In 2011 the first direct-acting antivirals (DAAs), specifically the protease inhibitors boceprevir and telaprevir, have been approved by the US Food and Drug Administration (FDA) and the European Medicines Agency (EMA) for treatment of HCV genotype 1. These first generation DAAs have significantly improved efficacy with rates of SVR reported as high as 63-75% among treatment-naïve HCV genotype 1 individuals [42] [43] [44]. However, these DAAs must be used in combination with pegIFN and RBV as triple combination therapy and the tolerability profile is further impaired by additional DAA specific adverse effects such as rash, pruritus, dysgeusia and anemia [42] [43] [44]. Treatment regimens with these DAAs are rather complicated with the necessity of futility rules and a response guided therapy duration of up to 48 weeks in selected patients.

Since 2014 the new standard of care for genotype 1 is pegIFN and RBV combined with either the nonstructural protein 3/nonstructural protein 4A (NS3/4A) protease inhibitor simeprevir or the nucleotide nonstructural protein 5B (NS5B) polymerase inhibitor sofosbuvir [45] [46].

Simeprevir is a NS3/4A protease inhibitor which was approved by the FDA at the end of 2013 and by the EMA in May 2014. In the phase III studies QUEST 1 and 2 treatment-naïve patients with genotype 1 yielded SVR rates of 80%, around 90% of these patients were eligible for truncated therapy of 24 weeks in a response guided treatment setting [47] [48]. Very similar results were reported for patients with prior relapse in the

PROMISE trial [49]. In the ATTAIN study 771 treatment-experienced partial and null-responder patients were randomized to either simeprevir plus pegIFN and RBV or telaprevir plus pegIFN and RBV. Although efficacy rates were similar (SVR was 55% and 54%, respectively) the safety profile of simeprevir was significantly improved, in particular with regards to anemia (13% vs. 37%) and pruritus (31% vs. 43%), while serious adverse events (SAEs) were reported by 2% and 9% of patients, respectively [50].

Notably, among patients infected with HCV genotype 1a the presence of a common pre-existing Q80K polymorphism (pre-existing resistance-associated variant or not) results in significantly reduced response rates and thus, it is recommended that patients infected with HCV genotype 1a are screened for this mutation, and if the respective variant is present, consideration is given to selecting an alternative therapy [51].

Sofosbuvir acts as an RNA chain terminator within the catalytic site of the NS5B polymerase. It was approved by the FDA in December 2013 and by the EMA in January 2014 for treatment of genotype 1, 4, 5, and 6 along with pegIFN plus RBV and in genotype 2 and 3 patients as an interferon-free regimen with RBV only.

In the NEUTRINO phase III trial with sofosbuvir plus pegIFN/RBV in 326 treatment-naïve genotype 1, 4, 5 and 6 patients, the overall SVR was 90% (92% in genotype 1a and 82% in genotype 1b; 80% in cirrhotic patients) with a tolerability profile similar to pegIFN plus RBV. One further advantage of this triple treatment regimen is the treatment duration of just 12 weeks [52].

Data on the interferon-free combination of sofosbuvir plus RBV in treatment-naïve patients with genotype 1 are only available from small trials and results are somewhat inconsistent. When given for a duration of 24 weeks SVR rates of 50-68% have been reported and this regimen is currently only recommended for patients who cannot take pegIFN [45] [46] [53] [54].

Thus, currently available approved treatment regimens are not optimal for many patients and there is a clear unmet need for effective anti-HCV compounds which can increase the likelihood of successful treatment and/or decrease the need for pegIFN as components of CHC therapy, ideally with shorter treatment duration.

Combinations of multiple DAAs targeting different steps of viral replication have the potential to significantly improve CHC treatment compared to current therapies by increasing SVR rates, eliminating interferon as a component of therapy, increasing the safety and tolerability of treatment, shortening duration of therapy and simplifying the treatment algorithm. In addition, wider application of DAA therapy and better responses with combination DAA regimens could significantly reduce the public health burden of this disease.

---

Confidential Information

AbbVie's interferon-free regimen for the treatment of CHC includes 3 DAAs targeting different steps in HCV replication. Paritaprevir (ABT-450) is a NS3/NS4A protease inhibitor with nanomolar potency *in vitro* and is co-administered with low-dose ritonavir, an inhibitor of the cytochrome P-450 enzyme CYP3A4. As a pharmacologic enhancer of Paritaprevir, ritonavir co-administration results in higher drug exposures than administration of Paritaprevir alone [55]. Ombitasvir (ABT-267) is a nonstructural protein 5A (NS5A) inhibitor with picomolar potency *in vitro*, and Dasabuvir (ABT-333) is a NS5B non-nucleoside polymerase inhibitor with nanomolar potency *in vitro*.

The 3 DAA combination of Paritaprevir/r – Ombitasvir plus Dasabuvir with or without RBV has been initially evaluated in 6 Phase III studies with genotype 1 infected patients (SAPPHIRE-I [56], SAPPHIRE-II [57], PEARL-II [58], PEARL-III [59], PEARL-IV [59], TURQUOISE-II [60]).

Therapy for 12 weeks with the above regimen in non-cirrhotic patients resulted in the following SVR rates 12 weeks after EoT (SVR12):

**Table 1 - SVR12 rates in clinical trials:**

Population and treatment duration	Genotype	SVR12 Paritaprevir/r + Ombitasvir + Dasabuvir + RBV	SVR12 Paritaprevir/r + Ombitasvir + Dasabuvir
Non-cirrhotic, treatment-naïve (12 weeks)	1a	95-97% (SAPPHIRE-I, PEARL-IV)	90% (PEARL-IV)
	1b	98 – 99.5% (SAPPHIRE-I, PEARL-III)	99% (PEARL-III)
Non-cirrhotic, treatment- experienced (12 weeks)	1a	96% (SAPPHIRE-II)	n.a.
	1b	97% (SAPPHIRE-II, PEARL-II)	100% (PEARL-II)

These results suggest that the ABBVIE REGIMEN with RBV is the optimal regimen for genotype 1a infected patients, while patients with genotype 1b do not require RBV.

The TURQUOISE-II [60] study explored the efficacy of the ABBVIE REGIMEN in the traditionally most difficult-to-treat cirrhotic patients. This large study enrolled exclusively genotype 1 infected patients with cirrhosis, including treatment-naïve and treatment-experienced individuals. All patients received the ABBVIE REGIMEN with RBV and were

**Confidential Information**

randomized to 12 or 24 weeks of therapy. Overall 92% and 96% of patients achieved SVR following treatment for 12 or 24 weeks, respectively. Analysis of subgroups demonstrated that the small difference in SVR between treatment arms was due largely to the subgroup of genotype 1a treatment-experienced prior null responders treated for 12 weeks who achieved an SVR of 80%. This subgroup of patients achieved an SVR of 93% when treated for 24 weeks. Among genotype 1a infected patients, partial responders and relapsers had higher SVR rates than null responders in the 12 week treatment group, while similar SVR rates were seen among the null responders, partial responders and relapsers treated for 24 weeks, suggesting that the longer duration of 24 weeks is required only for cirrhotic genotype 1a null responders. SVR rates were very high across all subgroups in genotype 1b treatment-experienced patients treated for 12 and 24 weeks.

The ABBVIE REGIMEN has been studied with and without RBV in over 2,300 patients in Phase III trials across a variety of patient populations including those with compensated cirrhosis. Based on Phase III data, the ABBVIE REGIMEN, with or without RBV, was well tolerated with a low discontinuation rate. Adverse events (AEs) were typically mild, and many of the AEs and laboratory abnormalities reported were attributable to the presence of RBV. However, these AEs were much milder than observed when RBV was given in combination with interferon. Transient, asymptomatic serum alanine aminotransferase (ALT) elevations were observed at a low rate, were not associated with hepatic dysfunction and generally resolved with ongoing treatment. A disproportionate number of the cases were in women on concurrent systemic ethinyl-estradiol-containing therapy (i.e., contraceptives) and discontinuation of the hormonal therapy with continuation or brief interruption of the ABBVIE REGIMEN led to resolution in serum ALT elevation. Transient elevations in serum bilirubin (predominantly indirect) were observed in subjects receiving the ABBVIE REGIMEN with RBV, related to the inhibition of the bilirubin transporters, organic anion-transporting polypeptides (OATPs) 1B1/1B3, by ABT-450 and RBV-induced hemolysis. Bilirubin elevations occurred after initiation of treatment, peaked by study Week 1, and generally resolved with ongoing therapy. Bilirubin elevations were not associated with aminotransferase elevations. The frequency of indirect bilirubin elevations was lower among subjects who did not receive RBV.

Response of CHC genotype 4 was assessed in the phase II study PEARL-I in which 86 treatment-naïve patients were randomized to the 2 DAA combination of Paritaprevir/r – ombitasvir with vs. without RBV for 12 weeks. The SVR was 100% with RBV vs. 91% without RBV [61]. No serious SAEs or AEs leading to discontinuation were reported.

These results from pivotal studies are encouraging and the new interferon-free regimens might provide physicians with the armamentarium to cure the vast majority of patients

---

Confidential Information



infected with CHC. However, the medical community is expecting data which show how these results translate into routine clinical practice particularly after the experience with the first protease inhibitors which were available to physicians and where the outcome in everyday life and especially the tolerability was far less favorable in certain difficult-to-treat patient subgroups than expected from the development trials [62] [63].

## 7.2 Rationale

The ABBVIE REGIMEN ± RBV for the treatment of CHC has been shown to be safe and effective in randomized controlled clinical trials with strict inclusion and exclusion criteria under well controlled conditions.

The ABBVIE REGIMEN has become available in Germany for the treatment of CHC in January 2015.

The rationale for this observational study is to determine how the efficacy and safety of the ABBVIE REGIMEN as demonstrated in pivotal trials translates into real world everyday clinical settings, evaluating its effectiveness. Whereas efficacy can be defined as a measure of the capacity of a treatment to produce the desired effect in a controlled environment, such as in a randomized controlled trial, effectiveness is 'the extent to which a drug achieves its intended effect in the usual clinical setting' [64]. Effectiveness trials typically have limited exclusion criteria and will involve the broader patient populations in routine clinical practice, treated per local label, which might include patients with heterogenous compliance patterns and patients with significant comorbid conditions and could be used to model and disseminate best practices. Effectiveness research allows for external patient-, provider-, and system-level factors and can therefore be relevant for health-care decisions by both providers in practice and policy-makers [65].

This observational study is the first effectiveness research examining the ABBVIE REGIMEN ± RBV, used according to local label, under real world conditions in Germany in clinical practice patient populations.

During the last decade when dual therapy with pegIFN plus RBV was standard of care for the treatment of CHC, management of patients and clinical outcome were improved following the discovery of predictive factors of virological response, often in observational studies with large data bases [66]. Thus treatment could be targeted to patients most likely to respond and futile treatment stopped in patients with a low likelihood of virological cure. HCV genotype and subtype, baseline viral load, fibrosis stage, age, treatment exposure and on-treatment virological response proved to be useful predictors

---

### Confidential Information

for the eradication of HCV in everyday clinical practice [27]. More recently the discovery of a genetic disposition of the Interleukin 28B (IL28B) single nucleotide polymorphism (SNP) contributed further to our understanding of virological responses to treatment [67]. For new interferon-free treatment regimens knowledge of predictive factors of virological response is extremely sparse and several of the now well established predictors of response were not initially identified through analyses of the development trials. This observational study may play an important part in bridging the data gaps and could help identify predictive factors of virological response in everyday clinical settings which were not detected in interventional trials and which could be used to further optimize treatment with the interferon-free ABBVIE REGIMEN in the future.

The label of the ABBVIE REGIMEN will vary according to HCV genotype/subtype and stage of liver disease. It is therefore relevant to understand the pattern of use and outcome in daily clinical practice. In addition, this study will provide data on the impact of adherence on treatment outcomes in everyday settings which may help treating physicians to improve the management of patients under their care.

The aim of this observational study is to provide evidence of the effectiveness and patient reported outcome (PRO) or work productivity of the ABBVIE REGIMEN ± RBV in a real world setting across clinical practice patient populations.

## **8.0 Research Question and Objectives**

### **8.1 Research Question**

What is the effectiveness and patient reported outcome or work ability of the interferon-free ABBVIE REGIMEN ± RBV in patients with CHC in a real life setting across clinical practice patient populations?

### **8.2 Objectives**

#### **8.2.1 Primary Objective**

1. To describe in routine clinical practice the effectiveness of the interferon-free ABBVIE REGIMEN ± RBV in patients with CHC as evidenced by SVR12.

#### **8.2.2 Secondary Objectives**

1. To provide real world evidence for predictive factors of virological response
2. To document the effect of the ABBVIE REGIMEN ± RBV on PROs and work productivity in the German population

---

Confidential Information



3. To describe the pattern of real world use of the ABBVIE REGIMEN ± RBV with respect to different patient and treatment characteristics
4. To evaluate the influence of adherence on treatment outcome in routine clinical practice
5. To describe the tolerability of the ABBVIE REGIMEN ± RBV
6. To collect information on co-morbidities and concomitant medication in the German population

## 9.0 Research Methods

### 9.1 Study Design

This is a prospective, multi-center observational study in patients receiving the interferon-free ABBVIE REGIMEN with or without RBV. The prescription of a treatment regimen is at the discretion of the physician in accordance with local clinical practice and label, is made independently from this observational study and precedes the decision to offer the patient the opportunity to participate in this study.

Adult patients chronically infected with HCV, receiving the interferon-free ABBVIE REGIMEN will be offered the opportunity to participate in this study during a routine clinical visit at the participating sites.

After written patient authorization has been obtained, patient data including demographic data, HCV disease characteristics, co-morbidities, co-medication, treatment details, and laboratory assessments as recorded in the patient's medical records (source documentation) will be documented in the electronic case report form (eCRF) Patients will be observed for the duration of the ABBVIE REGIMEN therapy and for up to 48 weeks after treatment completion. No patient identifiable information will be captured, a unique patient number will be automatically allocated by the web based eCRF system once the investigator or designee creates a new patient file.

This study is focusing on collecting real-world data. Follow-up visits, treatment, procedures and diagnostic methods will follow physicians' routine clinical practice. The observational study period entails the following data collection schemes, data documented will be those closest to the time windows as indicated in Figure 1:

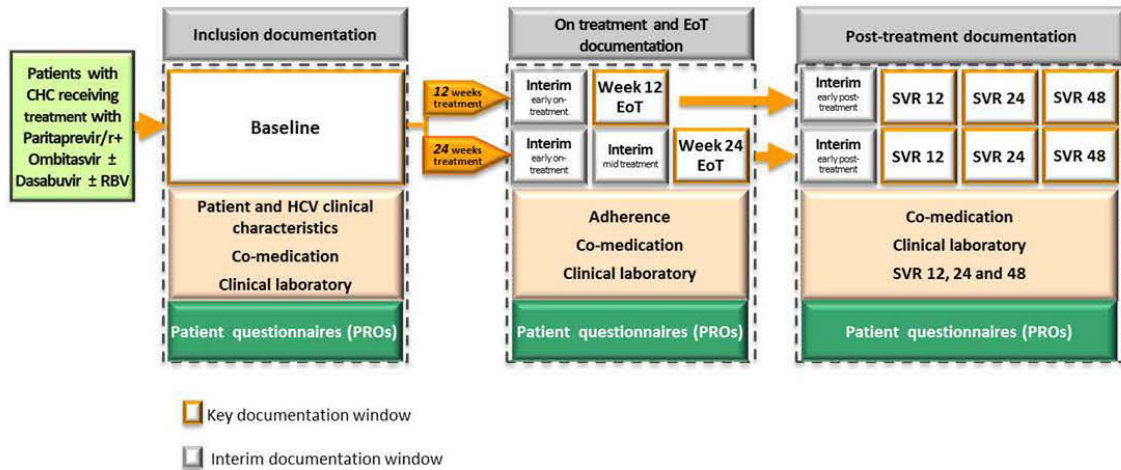
- 12-week treatment regimen: five visits plus two interim data collection windows
- 24-week treatment regimen: five visits plus three interim data collection windows

This schedule is based on the anticipated regular follow-up for patients undergoing treatment for CHC.

---

Confidential Information

Figure 1 - Study Flowchart



## 9.2 Setting

For overall research design and observational documentation schedule refer to Section 9.1 and 9.4.1 as well as to Figure 1.

### 9.2.1 Target Population

Patients are eligible for observation in this cohort if the following applies:

- Treatment-naïve or -experienced adult male or female patients with confirmed CHC, genotype 1 or 4, receiving combination therapy with the interferon-free ABBVIE REGIMEN ± RBV according to standard of care and in line with local label.
- If RBV is co-administered with the ABBVIE REGIMEN, it has been prescribed in line with the current local label (with special attention to contraception requirements and contraindication during pregnancy)
- Patients must voluntarily sign and date a patient authorization to use and/or disclose his/her pseudonymized health data prior to inclusion into the study
- Patient must not be participating or intending to participate in a concurrent interventional therapeutic trial

#### Confidential Information

### **9.2.2 Study Duration**

This is a prospective, observational study. The inclusion period will be approximately 12 months and the observational period of the study will be from baseline visit until 48 weeks post-treatment.

The observational period for patients receiving 12 weeks of ABBVIE REGIMEN will be max. 60 weeks (12 weeks treatment and 48 weeks post-treatment observation) and for patients receiving 24 weeks of ABBVIE REGIMEN the observational period will be max. 72 weeks (24 weeks treatment and 48 weeks post-treatment observation).

### **9.2.3 Termination Criteria**

For patients who terminate the ABBVIE REGIMEN prematurely for whatever reason the EoT eCRF page should be filled in and the reason for treatment discontinuation should be documented. If the reason for ABBVIE REGIMEN discontinuation is due to an SAE, the event must be reported to AbbVie within 24 hours of physician awareness (see Section 11.5).

If, in such patients, there is evidence of virological response during therapy or at EoT, the SVR12, SVR24 and SVR48 pages should be completed if respective data is available.

### **9.2.4 Investigator Selection Criteria**

University centers and outpatient clinics qualified by training and experience in the management of patients with CHC will be selected to participate in this study. The AbbVie Affiliate Medical Director will ensure that sites participating in the study are representative of the medical practice in the country, have the ability to conduct the study and their availability of the target patient population. The type of the participating treating institute will be documented in the eCRF.

## 9.3 Variables

### 9.3.1 Primary Variable

- The percentage of patients achieving SVR12 (HCV RNA <50 IU/mL 12 weeks [i.e. ≥70 days] after the last actual dose of the ABBVIE REGIMEN)

### 9.3.2 Secondary Variables

- 
- Type of treatment regimen (± Dasabuvir, ± RBV, intended and actual combination, dose and duration)
- Patient adherence
- Serious and non-serious adverse events and pregnancy occurrences
- Questionnaire scores on PROs: Chronic Illness Therapy-Fatigue (FACIT-F), Work Productivity and Activity Impairment (WPAI), Burden of Suffering (PRISM), Patient Activation Measure (PAM-13)
- Co-morbidities and concomitant medication
- HCV relapse or reinfection after achieving SVR12 until post treatment week 48

## 9.4 Data Sources

Source documents are defined as original documents. The investigator will document patient data in his/her own patient files which will serve as source data for the study. Data are collected from the source documents for each patient in the study, consisting of medical records containing demographic data, medical, treatment and diagnostic documentation and laboratory assessments.

The investigator(s)/institution(s) will permit study-related monitoring, audits, independent ethics committee/- review board (IEC/IRB) review, and regulatory inspection(s), providing direct access to source data documents.

### 9.4.1 Data to be Documented

This observational study covers three documentation periods, see Figure 1. An overview on data to be collected throughout the study is summarized in **Table 2**.

---

Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie  
Version 3.0. (22. Apr 2015) – Germany V3.0 (17. November 2016)

Page 24 of 63

After the patient has signed the patient authorization form, the following data will be documented in the eCRF, if available from the patient charts based on assessments done in physicians' routine clinical practice.

#### 9.4.1.1 Inclusion documentation

The following will be documented:

- Demographic information
  - Interleukin 28B (IL28B) genotypes
- CHC disease characteristics
  - Year of diagnosis and mode of infection
  - Stage of liver fibrosis
- CHC treatment history
  - Naïve or experienced
  - If experienced, most recent prior therapy and outcome
- Relevant medical history, co-morbidities and co-infections
- Concomitant medication, see 9.4.1.5
- ABBVIE REGIMEN ± RBV
- Laboratory data

<u>Key clinical chemistry</u>	<u>Remarks</u>
▪ ALT (alanine-aminotransferase)	including upper limit of normal (ULN),
▪ AST (aspartate-aminotransferase)	including ULN, AST to platelet ratio index (APRI) and Fibrosis-4 Score/Index (FIB-4)* will be calculated
▪ γ-GT (gamma-glutamyltransferase)	
▪ Total bilirubin	
▪ Albumin	
▪ Creatinine	creatinine clearance <sup>#</sup> will be calculated
▪ AFP	
<u>Key hematology</u>	
▪ Hb (Hemoglobin)	
▪ Platelets	
▪ Prothrombin time	or international normalized ratio (INR)
<u>Virology</u>	
▪ HCV genotype and subtype	
▪ HCV RNA	quantitative/ qualitative HCV RNA by polymerase chain reaction (PCR) test, see 9.4.1.4
<u>HIV-infected patients only</u>	
▪ CD 4 count (cluster of differentiation 4)	most recent assessment
▪ HIV RNA	in copies/mL

---

**Confidential Information**

\*derived from patient's age, ALT, AST and platelets  
\*by Cockcroft-Gault-Formula based on creatinine, gender, age and weight

- Patient questionnaires, see table 2 and 9.4.1.6

#### 9.4.1.2 During Treatment Documentation

Follow-up visits are scheduled by the physician per routine clinical practice. Likewise, treatment, procedures and diagnostic methods will follow physicians' routine clinical practice.

The following will be documented:

- Laboratory data

Key clinical chemistry

- ALT
- AST
  
- $\gamma$ -GT
- Total bilirubin
- Creatinine

Remarks

including ULN  
including ULN,  
APRI and FIB-4 will be calculated

creatinine clearance will be calculated

Key hematology

- Hb
- Platelets

Virology

- HCV RNA

quantitative/ qualitative HCV RNA PCR test, see 9.4.1.4

HIV-infected patients only

- CD 4 count
- HIV RNA

most recent assessment  
in copies/mL

- Concomitant medication, see 9.4.1.5
- Adherence to ABBVIE REGIMEN  $\pm$  RBV
- Tolerability (sAEs and AEs, see 11.5) and pregnancies (see 11.6)
- Patient questionnaires see table 2 and 9.4.1.6

#### 9.4.1.3 Post-Treatment Documentation

Follow-up visits are scheduled by the physician per routine clinical practice. Likewise, treatment, procedures and diagnostic methods will follow physicians' routine clinical practice.

The following will be documented:

---

**Confidential Information**

- **Laboratory data**

- Key clinical chemistry

- ALT
    - AST
  
    - $\gamma$ -GT
    - Total bilirubin
    - Albumin
    - Creatinine
  - Remarks  
including ULN  
including ULN,  
APRI and FIB-4, will be calculated  
  
  
  
  
  
  
  
  
  
creatinine clearance will be calculated

- Key hematology

- Hb
    - Platelets
    - Prothrombin time
  - or INR

- Virology

- HCV RNA
  - quantitative/ qualitative HCV RNA PCR test, see 9.4.1.4

- HIV-infected patients only

- CD 4 count
    - HIV RNA
  - most recent assessment  
in copies/mL

- **Tolerability (sAEs, see 11.4) and pregnancies (see 11.6)**
- **Patient questionnaires see table 2 and 9.4.1.6**



**Table 2 - Data Documentation Schedule**

Assessment/ Procedure (only available data to be collected; no diagnostic or monitoring procedures to be applied to the patients apart from those of routine clinical practice)	Baseline	Treatment Period			Post-treatment (PT) Period			
		On-treatment visits	Mid treatment visit for pts receiving 24 weeks of therapy	EoT <sup>b</sup>	Early PT visit	SVR 12 visit	SVR 24 visit	SVR 48 visit
Patient authorization	X <sup>a</sup>							
Demographic information	X							
IL28B	X							
Relevant CHC disease characteristics	X							
Liver fibrosis stage	X					X		X
CHC treatment history	X							
HCV genotype and subtype	X							
HCV RNA samples	X	X	X	X	X	X	X	X
Clinical chemistry and hematology	X	X	X	X	X	X	X	X
ABBVIE REGIMEN initiation documentation	X							
ABBVIE REGIMEN adherence		X	X	X				
Concomitant medication	X	X	X	X				
Relevant medical history, co-morbidities	X							
sAE, AE and pregnancy reporting	X	X	X	X	X <sup>c</sup>	X <sup>d</sup>	X <sup>d</sup>	X <sup>d</sup>
For patients receiving RBV: Evidence, in accordance with local label, that female patient or female partner of male patient is not pregnant	X							
Patient questionnaires: FACIT-F	X	X	X	X		X		X
Patient questionnaire: WPAI	X			X		X	X	
Patient questionnaire: PRISM	X					X		X
Patient questionnaires: PAM-13	X			X				
Patient questionnaire: PSP <sup>e</sup> (U <sup>f</sup> )			X		X			
Patient questionnaire: PSP <sup>e</sup> (U <sup>f</sup> & S <sup>g</sup> )		X		X		X		

Abbreviations: EoT = End of Treatment (at Week 12 or 24 or at premature discontinuation),  
PT = Post-Treatment

- a Written patient authorization must be obtained before any data documentation in the eCRF
- b Patients who prematurely discontinue should return to the site to document EoT data
- c Tolerability documentation until PT week 4
- d Pregnancy reporting for patients treated with DAA plus RBV
- e applicable for patients enrolled in the PSP
- f Utilization
- g Satisfaction

**Confidential Information**



#### 9.4.1.4 HCV RNA Sample

HCV RNA sample – the following needs to be documented:

- **Quantitative HCV RNA by PCR test**
  - Test name and result in IU/mL
  - Lower limit of detection (LLoD) in IU/mL and lower limit of quantification (LLoQ) in IU/mL
  
- **Qualitative HCV RNA by PCR test**
  - Test name and result (positive/negative)
  - LLoD in IU/mL

#### 9.4.1.5 Concomitant Medication

Concomitant medication - the following will be documented:

- Concomitant medication used from the time when the decision is made to initiate treatment with the ABBVIE REGIMEN until after the last dose

It should be verified by the treating physician that concomitant medication can be safely administered with the ABBVIE REGIMEN (including ritonavir) and RBV. Some medications may be contra-indicated, some may require dose adjustments due to potential for drug-drug interactions (DDIs). The investigator or qualified designee should review the concomitant medication(s) labels and screen concomitant medications at each visit for potential DDIs.

#### 9.4.1.6 Standardized Assessment Tools

This study will assess quality of life, patient activation, patient health and work ability using PRO instruments: FACIT-F, WPAI, PRISM, PAM-13, PSP (Utilization), and PSP (Utilization & Satisfaction). Validated translations of these patient questionnaires will be administered.

#### **The Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)**

The Functional Assessment of Chronic Illness Therapy-Fatigue Scale (FACIT-F Scale) is a 13-item questionnaire that assesses self-reported fatigue and its impact upon daily

---

Confidential Information

activities and function. It was developed in 1994-1995 to meet a growing demand for the precise evaluation of fatigue associated with anemia in cancer patients. Subsequent to its development, it has been employed in over 150 published studies including over 40,000 people. Since 1995, studied groups have included cancer patients receiving chemotherapy, cancer patients not receiving chemotherapy, long term cancer survivors, childhood cancer survivors and several other clinical samples including people with rheumatoid arthritis, osteoarthritis, psoriatic arthritis, ankylosing spondylitis, multiple sclerosis, psoriasis, systemic sclerosis/ scleroderma, sarcoidosis, paroxysmal nocturnal hemoglobinuria, chronic obstructive pulmonary disease (COPD), stroke, HIV/AIDS, systemic lupus erythematosus (SLE), hidradenitis suppurativa, Crohn's disease, ulcerative colitis, primary Sjögren's syndrome, Gaucher disease, chronic immune thrombocytopenia, chronic kidney disease, and Parkinson's disease, as well as the general United States population. In all cases, the FACIT-F Scale has been found to be reliable and valid.

The FACIT-F Scale has been used by over 200 investigators from medical and educational institutions, industry sponsors, and cooperative multicenter clinical trial organizations. Applications include use in Phase II, III, and IV clinical trials, in health-practice self-studies; for symptom management, and in other chronic illness treatment evaluations. The FACIT-F Scale is typically used in the clinical trial setting but has also been used in screening, survivorship, and end-of-life evaluations.

The FACIT-F Scale is written at the 4th grade-reading level as measured by the Lexile Framework, and is specifically formatted for ease of self-administration. Respondent burden takes 2-3 minutes for an average patient to complete The FACIT-F questionnaire is presented in Annex 1.

### **Assessment of work productivity and activity impairment (WPAI)**

Assessments of work productivity and activity impairment as assessed by the WPAI Hep C v2.0 will be evaluated according to the WPAI-SHP scoring manual. The WPAI yields four types of scores, the results of which will be presented as percentage of impairment from 0 to 100. Higher percentages indicate greater impairment:

1. % absenteeism: percentage of work time missed due to hepatitis C
2. % presenteeism: percentage of impairment while working due to hepatitis C
3. % TWP: percentage of overall work impairment due to hepatitis C
4. % TAI: percentage of general (non-work) activity impairment due to hepatitis C

---

Confidential Information

The WPAI Hep C v2.0 consists of 6 questions aimed at the following targets:

- Q1. currently employed (yes, no)
- Q2. hours missed due to hepatitis C in the last seven days
- Q3. hours missed due to other reasons in the last seven days
- Q4. hours actually worked in the last seven days
- Q5. degree hepatitis C affected productivity while working
- Q6. degree hepatitis C affected regular activities

The four scores will be derived as follows:

- 1. % absenteeism:  $100 \cdot Q2 / (Q2 + Q4)$
- 2. % presenteeism:  $100 \cdot Q5 / 10$
- 3. % TWP:  $100 \cdot \{Q2 / (Q2 + Q4) + [Q4 / (Q2 + Q4)] \cdot Q5 / 10\}$
- 4. % TAI:  $100 \cdot Q6 / 10$

A score will be set to missing if one or more of the items Q1-Q6 that are needed for the calculation of the score are missing. No imputation will be performed for missing items.

The summary table will present the absolute and relative frequencies of employed and unemployed patients and descriptive statistics for the four scores. Further details of the analysis will be specified in the SAP. The WPAI should require approximately 5 minutes to complete and is presented in Annex 2.

### **Pictorial Representation of Illness and Self-Measure (PRISM)**

The burden of suffering can be evaluated by using PRISM (Pictorial Representation of Illness and Self-Measure), which is a brief quantitative method to assess the perceived burden of suffering due to illness [68]. The PRISM tool consists of an A4-size paperboard, which stands for the patient's life and a yellow disk, representing the patient, is fixed at the bottom right-hand corner. The patient is asked to reflect the importance of the illness in his/her life by placing a red disk, which represents his/her illness, on the metal board. Thereby, the PRISM tool provides a graphic representation of the patient's illness in relation to the patient. Validity and reliability of the PRISM tool were assessed with over 700 patients with a variety of chronic physical illnesses (including RA, SLE, OA, DM II and COPD) and has been shown to strongly correlate with psychological variables and with SF-36 subscale scores.

PRISM will be presented in a cardboard version and should require approximately 2 minutes to complete (Annex 3).

### **Patient Activation Measure – (PAM-13)**

Patient Activation refers to people's ability and willingness to take on the role of managing their health and health care [69]. The concept of activation focuses on skills and knowledge required for day-to-day management of one's own health [69]. Positive changes in patient activation can lead to positive self-management behaviour changes in patients with chronic conditions [70].

Patient activation interventions have been developed for patients with cancer, diabetes, hypertension, obstetrical and gynaecological issues, and end-stage renal disease [71]. Such interventions work to increase patient involvement in personal healthcare through education and skill-building, often targeted toward patients initiating specific conversations with their clinicians, thereby promoting a bidirectional interaction between clinicians and patients [72].

#### **The Patient Activation Measure**

The Patient Activation Measure (PAM) is a tool for measuring the level of patient engagement in their healthcare. It was designed to assess an individual's knowledge, skill and confidence for self-management [73]. PAM was developed by Hibbard and colleagues in 2004 originally as a 22 item scale, the PAM 22, and subsequently as a 13 item short form [74] [75]. The PAM's 13-item scale asks people about their beliefs, knowledge and confidence for engaging in a wide range of health behaviours and then assigns an activation score based on their responses to the 13-item scale. The PAM was formulated in two versions targeted at people with or without chronic disease, with few reported semantic differences. The authors also report that the measure has good psychometric properties indicating that it can be used at the individual patient level to tailor interventions and assess changes. Hibbard and colleagues [74] identified four elements; knowledge, skills, confidence and behaviours critical for coping with a chronic illness, and suggested four stages of activation that patients go through on their way to becoming fully activated in managing their own health. The PAM 13 questionnaire should require approximately 7 minutes to complete and is presented in Annex 4.

#### **Patient Support Program (PSP) Questionnaire**

The PSP utilization and satisfaction assessment will evaluate the frequency of utilization and patient's overall satisfaction with the Patient Support Program "AbbVie Care".

---

Confidential Information

AbbVie Care is a free-of-charge, comprehensive multilingual patient support program, designed to accompany HCV patients under AbbVie HCV medication throughout their treatment. The service includes a wide set of education materials (in German, Russian and Turkish), automated reminder messages, a free service hotline (Mon-Sun, 8am - 10pm), a personal telephone coach as well as online resources ([www.abbvie-care.de](http://www.abbvie-care.de)).

The PSP questionnaire should require approximately 2-5 minutes to complete and is presented in Annex 5-6.

PRO data are not considered a potential source of adverse reactions. However, participating sites should review the PRO data and if a possible product-related event (including a suspected adverse reaction) is noted, the health care provider (HCP) must determine whether the event is related to Paritaprevir/r – Ombitasvir ± Dasabuvir (or any other AbbVie authorized product) and if so, it should be reported to AbbVie. The relevant AbbVie Pharmacovigilance contact details are specified in Section 11.0.

## 9.5 Study Size

In studies investigating the interferon-free ABBVIE REGIMEN ± RBV, SVR12 rates of about 95% were observed, even in difficult-to-treat CHC patients (e.g. cirrhotic G1a treatment experienced patients). To describe in routine clinical practice the effectiveness of the ABBVIE REGIMEN ± RBV in patients with CHC a precise estimate of the SVR12 rates in the core population of this study should be achieved (see Section 9.7.1 for the definition of the core population).

It is expected, that during the planned recruitment period of 12 months about 650 patients with ABBVIE REGIMEN ± RBV can be included into this observational study, and that at least 620 patients will be evaluable in the core population. As obvious from.

Table 3, if the SVR12 rate is at least 95%, then with 620 patients the width of the 95% confidence interval (CI) will not be wider than 3.5%. Even in the case that fewer patients will be enrolled and only 590 patients can be evaluated in the core population, the 95% CI will have a width of ≤3.6% for a SVR12 rate of 95%.

### Table 3 Width of 95% Confidence Interval for SVR12

---

Confidential Information

Number of patients	SVR12 rates	95% Confidence Interval*		
		Lower Limit	Upper Limit	Width
620	95%	93.0	96.5	3.5%
590	95%	92.9	96.5	3.6%
62	95%	86.5	98.3	11.8%

\* exact two-sided 95% confidence interval according to Wilson's Score method

Assuming, that in total 620 patients will be evaluable, and subgroups of interest consist of at least 10% of the entire group (i.e. ≥62 patients), then the width of the 95% CI will be <12% for a SVR12 rate of 95%, which is also considered sufficiently precise for subgroup analyses.

## 9.6 Data Management

### 9.6.1 Electronic Case Report Forms

Data for this study will be recorded by each participating center via an electronic data capture (EDC) system using a web-based eCRF from the company AMEDON, located in Lübeck, Germany. The eCRF software from AMEDON is server based and accessed by users via the internet. The users only need an internet browser. AMEDON's eCRF was confirmed to meet existing regulatory requirements for eCRFs and be compliant with the stipulations laid down in 21 CFR Part 11.

The eCRF is a closed application. Only registered users are granted access. Data entered are exclusively stored on the central server. There are no data backed up on the computer of the user. An audit trail documents each episode of an access or a transaction in the eCRF. Data are transmitted 128-bit encrypted (SSL & MD5). The database is protected by a firewall, by SSL-Certificate and SSH (Secure Shell). A backup of the stored data is being run every 24 h.

Access to the AMEDON computer center is securely protected by two barriers with owning based access control and additionally one with knowledge based access control. Visitors can only access the computer center with attendance of at least one employee of the computer center. All visits are logged with name and time.

To ensure confidentiality of data during maintenance of software or equipment, it is ensured that servers can only be accessed from separate computers in the AMEDON office. Technicians of the computer center have no access to the database. Study data are replicated on at least two storage areas in different rooms.

---

#### Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie  
 Version 3.0. (22. Apr 2015) – Germany V3.0 (17. November 2016)

Page 34 of 63

Access to the EDC system will be provided for the duration of the study through a password-protected method of internet access. To obtain a user account for the eCRF application of a project, the user has to contact the data management Support Team. Each user receives his/her individual user account with user name and password to his/her personal email address only. After the registration, the user receives an email with the personal details. The email contains the user name, password and the link to the application. Each user has an own access to the productive eCRF (group accounts are not accepted). For identity protection, it is not allowed that users pass on their access codes to other persons. All actions of a user are assigned to a user within the database. Confirmed actions are considered to be the electronic equivalent of a user's signature, and are therefore saved in the data base.

Examinations, diagnostic measures, laboratory assessments, findings and observations routinely performed in patients with CHC included in this cohort, will be transcribed by the investigator or designee from the source documents into the eCRF. Only data specified in the protocol will be entered into the eCRF. For each enrolled patient, the investigator or designee will create a new patient file in the eCRF and a unique patient number will be automatically allocated by the system.

If a patient withdraws Informed Consent, data documentation is immediately stopped. Study data obtained up to the date Informed Consent has been withdrawn can be used for analyses if not explicitly revoked by patient. If use of the data has been explicitly revoked by patient, data will be deleted from the eCRF (but still remains in the audit trail for regulatory purposes).

A comprehensive data validation program utilizing front-end checks in the eCRF will validate the data. Automated checks for data consistency will be implemented; discrepancies need to be solved by the researcher in the eCRF before the module can be completed.

Follow-up on eCRF data for medical plausibility will be done by AbbVie personnel (or their representatives). Queries will be generated in the eCRF for online resolution at the site. The investigator or an authorized member of the investigator's staff will make any necessary data corrections to the eCRF. All change information, including the date and person performing the corrections, will be available via the audit trail, which is part of the EDC system.

The principal investigator of each site will finally review the eCRFs for completeness and accuracy of available data and provide his or her electronic signature and date to the eCRFs as evidence thereof.

---

**Confidential Information**



At the end of the study and database closure, AMEDON will uninstall the eCRF application and delete all data in the database as per their SOPs. Prior to that, data will be provided to the responsible statistician for analyses. In addition, eCRF data (PDF-files) of patients enrolled at specific sites will be made available to the sites for archiving at study end (e.g. via CD). The complete set of eCRF data will be passed to the sponsor and archived in the pertinent sponsor repository for 10 years. After this period, data will be deleted/destroyed as per AbbVie SOPs.

Whereas eCRF data are hosted on AMEDON servers, study questionnaire data are located on IST servers in a protected and access-restricted environment. Original Questionnaires will be sent from the participating site to:

IST GmbH  
Soldnerstrasse 1  
68219 Mannheim  
Germany

For information on publishing of study data, please refer to section 12 ('Plans for Disseminating and Communicating Study Results').

### **9.6.2 Assignment of Preferred Terms**

AEs will be coded using the Medical Dictionary for Regulatory Activities (MedDRA) and will be tabulated by primary MedDRA system organ class (SOC) and preferred term (PT). For treatments, surgical and medical procedures the international non-proprietary name (INN) Drug Terms and Procedures Dictionary will be used.



## 9.7 Data Analysis

### 9.7.1 Analysis Population, Time Windows and Handling of Missing Data

The target population (TP) is defined as all patients who fulfill the criteria specified in Section 9.2.1. The core population (CP) is defined as all patients of the TP, who have started the treatment combination recommended in the current local label for their disease characteristics. Patients not receiving the treatment recommended in the local label will be summarized in the non-core population (NCP). In addition, the core population with sufficient follow-up data (CPSFU) is defined as all CP patients, who fulfil one of the following criteria:

- (1) evaluable HCV RNA data  $\geq 70$  days after the last actual dose of the ABBVIE REGIMEN (i.e. data within the SVR12 time window)
- (2) a HCV RNA value  $\geq 50$  IU/mL at the last measurement post-baseline (i.e. no virological response achieved at the last measurement on-treatment or post-treatment)
- (3) HCV RNA  $< 50$  IU/mL at the last measurement post-baseline, but no HCV RNA measurement  $\geq 70$  days after the last actual dose of the ABBVIE REGIMEN due to reasons related to safety (e.g. dropped out due to AE) or incomplete efficacy information (e.g. virologic failure such as relapse is reported in the eCRF but date and value of the corresponding HCV RNA test is missing). This means only patients who had virological response at their last on-treatment or post-treatment measurement, but had no HCV RNA measurements  $\geq 70$  days post-treatment for reasons not related to safety or effectiveness (e.g. lost-to-follow-up or patient not willing to perform an additional HCV RNA test  $\geq 70$  days post-treatment) will be excluded from this analysis.

The Safety Population (SP) is defined as all patients who received at least one dose of the ABBVIE REGIMEN.

In accordance with the non-interventional nature of the study all HCV RNA measurements will be performed at the sole discretion of the physician and all HCV RNA measurements have to be entered into the eCRF. All recorded HCV RNA values will be assigned to appropriate time points (baseline, on-treatment visits, EoT visit, post-treatment visits). The time windows for the assignments will be specified in the statistical analysis plan (SAP).

No data will be imputed for any effectiveness or safety analyses except for the analyses of the HCV RNA endpoints. When there is no HCV RNA value in a visit time window post-baseline, but prior to EoT, the closest values before and after the window, regardless of the value chosen for the subsequent and preceding window, will be used for the flanking imputation described below. If a patient has a missing HCV RNA value at a post-baseline visit prior to EoT but has undetectable HCV RNA (with LLoD  $\leq 50$  IU/mL) or unquantifiable, but detectable HCV RNA levels (with LLoQ  $\leq 50$  IU/mL) at both the preceding and succeeding measurements, the HCV RNA level will be considered undetectable or unquantifiable, respectively, at this visit for this patient. In addition, if a patient has an unquantifiable HCV RNA level at the preceding measurement and an undetectable HCV RNA level at the succeeding measurement, or vice versa, the HCV RNA level will be imputed as unquantifiable at this visit for this patient. For virological response at EoT a corresponding backward imputation approach will be applied. This means if HCV RNA is missing at EoT, then unquantifiable or undetectable will be assumed for EoT, if the succeeding HCV RNA value is undetectable or unquantifiable. For SVR12 the single last available HCV RNA measurement  $\geq 70$  days post-treatment will be used. Subsequent to this flanking and backward imputation, if the HCV RNA value remains missing at a specific time point, then the patients will be considered as virological failure at this time point (i.e. not undetectable or unquantifiable).

### 9.7.2 Demographics and Disease Characteristics

All baseline and disease characteristics will be summarized for the CP stratified by the CP analysis groups (i.e. based on genotype 1 subtype, fibrosis status, treatment experienced or naïve), which are relevant for scheduled treatment combination (ABBVIE REGIMEN  $\pm$  RBV) and duration (12 and 24 weeks). In addition, baseline summaries will be repeated for the SP and the TP without stratification into subgroups. Summary statistics (n, mean, median, standard deviation [SD], and range) will be generated for continuous variables (e.g. age and body mass index [BMI]). The number and percentage of patients will be presented for categorical variables (e.g. gender and race). Further details of analysis populations and the CP analysis groups will be specified in the SAP, taking into account the ABBVIE REGIMEN recommended in the current local label for various patient groups.

### 9.7.3 Effectiveness Analysis

The primary effectiveness analysis on clinical outcomes will be performed on all patients in the CP stratified by the CP analysis groups. Due to the non-interventional nature of this study several different methods for determination of the HCV RNA value can be applied. For the purpose of the statistical analysis, a HCV RNA measurement is considered  $\leq 50$  IU/mL,

- if a PCR test was used
- and the test result is undetectable and the LLoD of the test is  $\leq 50$  IU/mL or the test result is unquantifiable and the LLoQ is  $\leq 50$  IU/mL

#### 9.7.3.1 Primary Effectiveness Endpoint

The percentage of patients achieving SVR12 (single last HCV RNA  $< 50$  IU/mL 12 weeks [i.e. at least 70 days] after the last actual dose of the ABBVIE REGIMEN) is the primary effectiveness endpoint.

#### 9.7.3.2 Secondary Effectiveness Endpoints

The secondary effectiveness endpoints are:

- The percentage of patients with virological response (HCV RNA  $< 50$  IU/mL) at EoT
- The percentage of patients with relapse (defined as HCV RNA  $< 50$  IU/mL at EoT followed by HCV RNA  $\geq 50$  IU/mL)
- The percentage of patients with breakthrough (defined as at least one documented HCV RNA  $< 50$  IU/mL followed by HCV RNA  $\geq 50$  IU/mL during treatment).
- The number and percentage of patients meeting each and any of the following SVR12 non-response categories:
  - On-treatment virologic failure (breakthrough [defined as above ] or failure to suppress [each measured on-treatment HCV RNA value  $\geq 50$  IU/mL])
  - Relapse (defined as HCV RNA  $< 50$  IU/mL at EoT or at the last on-treatment HCV RNA measurement followed by HCV RNA  $\geq 50$  IU/mL post-treatment)

---

Confidential Information

- Premature study drug discontinuation with no on-treatment virologic failure
- Missing SVR12 data and/or none of the above criteria

### 9.7.3.3 Statistical Methods for Analysis of Effectiveness Variables

The simple percentage of patients achieving SVR12 will be calculated and a two-sided 95% confidence interval (CI) of the percentage based on the Wilson's Score method will be computed.

Corresponding methods will be used for other response rates (EoT response rate, relapse rate, viral breakthrough). The relapse rates will be estimated in patients of the CP analysis groups with EoT response and sufficient HCV RNA measurements post-treatment. Viral breakthrough rates will be estimated in all patients of the CP analysis groups, who have at least one undetectable HCV RNA measurement on-treatment and at least one on-treatment or EoT measurement thereafter.

Univariate and multiple logistic regression (MLR) methods will be used to investigate the impact of the following explanatory covariates on SVR12:

- Key demographic information
- Mode of CHC infection
- HCV RNA level at baseline
- Most recent stage of liver fibrosis
- HCV genotype and subtype (if available)
- Type of treating institute
- Liver and/or CHC related co-morbidities
- Key clinical chemistry and hematology laboratory variables at baseline
- In treatment experienced patients only:
  - Most recent prior treatment for CHC
  - Outcome of most recent prior CHC treatment

Further details and additional covariates will be specified in the SAP.

These analyses will be of exploratory nature, data driven, and will be repeatedly performed for the CP. Backward selection procedures will be applied to generate the final MLR models which consider only covariates for which the percentage of patients with available data is greater than 80% of the patient group analyzed. A p-value <0.05 will be used for the covariates to stay in the model in a backward elimination step. Logistic

---

Confidential Information

regression methods will also be used to investigate the impact of treatment adherence on SVR12.

#### 9.7.4 Clinical Laboratory Data

All reported clinical laboratory test results will be assigned to one of the time points using the time windows specified in the table below.

**Table 4 - Analysis Time Windows**

Phase	Time point	Time Window
Pre-Treatment	Baseline	Last value prior to start of study treatment (i.e. $\leq$ study day 1)
Treatment Weeks	4 (day 29)	Study day during treatment period (Study day 1 = first treatment day) 15 - 42
	8 (day 57)	43 - 70
	12 (day 85)	71 - 98
	16 (day 113)	99 - 126
EoT	Actual EoT	Study day of last dose (28 days prior to EoT - 14 days post EoT)
Post Treatment	4 weeks (28 days post EoT)	8 – 56 post EoT
	12 weeks (84 days post EoT)	57 – 126 post EoT
	24 weeks (168 days post EoT)	127 – 252 post EoT
	48 weeks (336 days post EoT)	253 – 420 post EoT

Mean changes from baseline to each post-baseline visit will be summarized descriptively.

Laboratory data values collected during the treatment period will be categorized as low, normal, or high based on reference ranges used in this study. The number and percent of patients who experience post-baseline shifts during treatment in clinical laboratory values

Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie  
Version 3.0. (22. Apr 2015) – Germany V3.0 (17. November 2016)

Page 41 of 63

from low/normal to high and high/normal to low based on the reference range will be summarized.

Additional details of the analyses of clinical laboratory data will be specified in the SAP.

### **9.7.5 Patient Questionnaires**

#### **Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)**

The FACIT-F Scale is written at the 4th grade-reading level as measured by the Lexile Framework, and is specifically formatted for ease of self-administration. Respondent burden takes 2-3 minutes for an average patient to complete. The FACIT-F questionnaire is presented in Annex 1.

#### **Assessment of work productivity and activity impairment – WPAI Hep C V2.0**

The WPAI questionnaire will be used to measure work absenteeism, work presenteeism, and daily activity impairment. The WPAI questionnaire was created as a patient-reported quantitative assessment of both reduced productivity at work and non-work activities. WPAI has been validated as a general health measure (WPAI-GH) and can be easily modified for specific health condition, disease or problem (WPAI-SHP). WPAI Hep C V2.0 is the HCV specific questionnaire that will be used in this study). Respondents are asked about time missed from work and time while at work during which productivity was impaired in the past seven days. Results of WPAI are expressed as a percentage of impairment from 0 to 100, with higher percentages indicating greater impairment and less productivity:

- % Presenteeism – percentage of impairment while working due to health problem
- % Absenteeism – percentage of work time missed due to health problem
- % Total work productivity impairment (TWP) – percentage of overall work impairment due to health problem
- % Total activity impairment (TAI) – percentage of general (non-work) activity impairment due to health problem

The WPAI Hep C should require approximately 5 minutes to complete and is presented in Annex 2.

### Pictorial Representation of Illness and Self-Measure (PRISM)

The burden of suffering can be evaluated by using PRISM (Pictorial Representation of Illness and Self-Measure), which is a brief quantitative method to assess the perceived burden of suffering due to illness. The PRISM tool consists of an A4-size metal board, which stands for the patient's life and a yellow disk, representing the patient, is fixed at the bottom right-hand corner. The patient is asked to reflect the importance of the illness in his/her life by placing a red disk, which represents his/her illness, on the metal board (Annex 3).

### Patient Activation Measure – (PAM-13)

PAM 13 is a measure used to assess the patient knowledge, skill, and confidence for self-management. It should require approximately 7 minutes to complete and is presented in Annex 4.

## **9.7.6 Tolerability Analysis**

All tolerability variables will be summarized using descriptive statistical methods for the SP stratified by type of combination treatment and scheduled treatment duration.

All SAEs, non-serious AEs and pregnancy occurrences are to be reported for patients included in the study (see Section 11.0 and 9.2.3). AEs will be coded using MedDRA. The number and percentage of patients with treatment-emergent AEs (i.e. any reported event that begins or worsens in severity after initiation of study drug through 30 days post-study drug dosing) will be tabulated by primary MedDRA SOC and PT. Corresponding summary tables will be provided for all serious treatment-emergent AEs. The tabulation of the number of patients with treatment-emergent AEs by severity and relationship to study drug will also be provided. Patients reporting more than one AE for a given MedDRA PT will be counted only once for that term using the most severe incident for the severity summary table and the most related for the relationship summary table. Patients reporting more than one type of event within a SOC will be counted only once for that SOC.

Additional details of the analysis of AEs will be specified in the SAP.



### **9.7.7 Interim Assessments**

Interim assessments are planned, details will be specified in the SAP.

### **9.8 Quality Control**

The sites will be instructed in the protocol, the functionality and handling of the eCRF, and the requirement to maintain source documents for each patient in the study (see Section 9.4).

A comprehensive data validation program utilizing front-end checks in the eCRF will validate the data. Automated checks for data consistency will be implemented, discrepancies need to be solved by the researcher in the eCRF before the module can be completed. Follow-up on eCRF data for medical plausibility will be done by AbbVie personnel (or their representatives). The principal investigator of each site will finally review the eCRFs for completeness and accuracy of available data and provide his or her electronic signature and date to eCRFs as evidence thereof.

Continuous monitoring of the study and frequent site telephone contacts will be done by AbbVie or a CRO working on behalf of AbbVie.

### **9.9 Limitations of the Research Methods**

The limitations of observational studies, such as uncontrolled confounding by lack of randomization, and difficulties to clearly interpret treatment effects in the context of missing data are well known. Their validity can be increased by accurate outcome measurements, documentation of the most common confounders, sufficient length of follow-up and by activities to obtain complete recording of available data as well as by searches for missing key data.

The most important outcome measure in this study is HCV RNA. Missing or unrecorded follow-up HCV RNA data can in particular lead to an underestimation of the real SVR rate as compared to the SVR rate of interventional trials. Highly sensitive and quantitative diagnostic tests are required to measure HCV RNA levels in blood. In an observational study each center will be using its own test – either commercially available or so-called “home-brew” tests – which might change from one visit to the next within a patient data set. The challenge is to accurately and consistently document test properties such as the LLoD and the ILLoQ to put the results into perspective of prior outcomes from



randomized controlled trials with (usually) central laboratory assessments for all trial participants.

## 10.0 Protection of Human Subjects

This observational study will be run in compliance with local laws and regulations (§ 4 Arzneimittelgesetz, AMG). Notification/submission to the responsible regulatory authorities, Ethics Committee (EC), Health Insurance bodies and Competent Authorities (CAs) will be done as required by local laws and regulations.

The investigator is responsible to ensure that written patient authorization to use and/or disclose patients' pseudonymized health data will be obtained prior to patient inclusion.

To maintain patient confidentiality, no demographic data that can identify the patient will be collected (e.g. initials, date of birth) - only the patient age will be collected. In order to protect patient identity, a unique number will be assigned to each patient and related study recording.

## 11.0 Management and Reporting of Adverse Events/Adverse Reactions

PRO data are not considered a potential source of adverse reactions. However, participating sites should review the PRO data and if a possible product-related event (including a suspected adverse reaction) is noted, the HCP must determine whether the event is related to the ABBVIE REGIMEN ± RBV (or any other AbbVie authorized product) and if so, it should be reported to AbbVie.

Medication errors (this refers to any unintentional error in the prescribing, dispensing, or administration of a medicinal product while in control of the HCP, patient or consumer) should be reported by the HCP to AbbVie.

The relevant AbbVie Pharmacovigilance contact details are specified below:

Name: Dr. [REDACTED]

Address: Mainzer Straße 81, 65189 Wiesbaden, Germany

Tel.: [REDACTED]

Fax: [REDACTED]

---

Confidential Information

## 11.1 Adverse Event Definition and Serious Adverse Event Categories

An adverse event (AE) is defined as any untoward medical occurrence in a patient, which does not necessarily have a causal relationship with their treatment. An AE can therefore be any unfavorable and unintended sign (including an abnormal laboratory finding), symptom, or disease temporally associated with the use of a medicinal product, whether or not the event is considered causally related to the use of the product.

Such an event can result from use of the drug as stipulated in the labeling, as well as from accidental or intentional overdose, drug abuse, or drug withdrawal. Any worsening of a pre-existing condition or illness is considered an AE.

If an AE meets any of the following criteria, it is considered a serious adverse event (SAE):

<b>Death of Patient:</b>	An event that results in the death of a patient.
<b>Life-Threatening:</b>	An event that, in the opinion of the investigator, would have resulted in immediate fatality if medical intervention had not been taken. This does not include an event that would have been fatal if it had occurred in a more severe form.
<b>Hospitalization:</b>	An event that results in an admission to the hospital for any length of time. This does not include an emergency room visit or admission to an outpatient facility.
<b>Prolongation of Hospitalization:</b>	An event that occurs while the study patient is hospitalized and prolongs the patient's hospital stay.
<b>Congenital Anomaly:</b>	An anomaly detected at or after birth, or any anomaly that results in fetal loss.
<b>Persistent or Significant Disability/Incapacity:</b>	An event that results in a condition that substantially interferes with the activities of daily living of a study patient. Disability is not intended to include experiences of relatively minor medical significance such as headache, nausea, vomiting, diarrhea, influenza, and accidental trauma (e.g. sprained

---

Confidential Information

ankle).

**Important Medical Event  
Requiring Medical or  
Surgical Intervention to  
Prevent Serious Outcome:**

An important medical event that may not be immediately life-threatening or result in death or hospitalization, but based on medical judgment may jeopardize the patient and may require medical or surgical intervention to prevent any of the outcomes listed above (i.e. death of patient, life threatening, hospitalization, prolongation of hospitalization, congenital anomaly, or persistent or significant disability/incapacity). Additionally, any elective or spontaneous abortion or stillbirth is considered an important medical event. Examples of such events include allergic bronchospasm requiring intensive treatment in an emergency room or at home, blood dyscrasias or convulsions that do not result in inpatient hospitalization, or the development of drug dependency or drug abuse.

## 11.2 Severity

The following definitions will be used to rate the severity for any AE being collected as an endpoint/data point in the study and for all SAEs.

- Mild:** The AE is transient and easily tolerated by the patient.
- Moderate:** The AE causes the patient discomfort and interrupts the patient's usual activities.
- Severe:** The AE causes considerable interference with the patient's usual activities and may be incapacitating or life threatening.

## 11.3 Relationship to Pharmaceutical Product

The following definitions will be used to assess the relationship of the AE to the use of product:

- Reasonable Possibility** An AE where there is evidence to suggest a causal relationship between the product and the AE.

---

Confidential Information

**No Reasonable Possibility** An AE where there is no evidence to suggest a causal relationship between the product and the AE.

If no reasonable possibility of being related to product is given, an alternate etiology must be provided for the AE.

#### 11.4 Serious Adverse Event Collection Period

SAEs will be reported to AbbVie from the time the physician obtains the patient's authorization to use and disclose information until 30 days or 5 half-lives following the intake of the last dose of physician-prescribed treatment.

#### 11.5 Serious and non-serious Adverse Event Reporting

In the event of an **SAE**, the physician will:

- For events from patients using the ABBVIE REGIMEN ± RBV (or any other AbbVie authorized product) report to AbbVie within 24 hours of the physician becoming aware of the event by using the eCRF system or notifying the AbbVie contact person identified in Section 11.0.
- For events from patients using a non-AbbVie product - notify the Marketing Authorization Holder (MAH) of the product within 24 hours of the physician becoming aware of the event.

In the event of a **non-serious AE**, the physician will:

- For events from patients using the ABBVIE REGIMEN ± RBV report to AbbVie by using the eCRF system.

#### 11.6 Pregnancy Reporting

Patients and their partners should avoid pregnancy and males should avoid sperm donation throughout the course of the HCV treatment and for 30 days after the end of treatment with DAAs only, or for 7 months after the last dose of RBV (or per local RBV label) and/or consistent with local treatment guidelines for RBV.

In the event of a pregnancy occurrence in the patient, the physician will report to AbbVie within 24 hours of the physician becoming aware of the pregnancy by using the eCRF system or notifying the AbbVie contact person identified in Section 11.0.

---

Confidential Information

The investigator is encouraged to report the pregnancy information to the voluntary RBV Pregnancy Registry, if RBV is included within the regimen.

## **12.0 Plans for Disseminating and Communicating Study Results**

At the end of this observational study, a report will be written by AbbVie or a CRO working on behalf of AbbVie. The required standard study report template will be followed. This report will contain a description of the objectives of the study, the methodology and its results and conclusions. The completed eCRFs, [patient questionnaires, interim assessments] the final study output and study report are the confidential property of AbbVie and may not be released to unauthorized people in any form (publications or presentations) without express written approval from AbbVie. The study results will be submitted to local authorities by the participating countries per local laws and regulations.

The results of this study will be made publicly available on one of the primary registries in the World Health Organization (WHO) Registry Network which meet the requirements of the International Committee of Medical Journal Editors (ICMJE) and through scientific publications. Authorship will be in line with ICMJE' authorship requirements [76].

## 13.0 References

- [1] Lozano R, Naghavi M, Foreman K, et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380: 2095-128.
- [2] Chen SL, Morgan TR. The natural history of hepatitis C virus (HCV) Infection. *Int J Med Sci* 2006; 3: 47-52.
- [3] Hoofnagle JH. Course and outcome of hepatitis C. *Hepatology* 2002; 36 (Suppl 1): S21-9.
- [4] Di Bisceglie AM. Natural history of hepatitis C: its impact on clinical management. *Hepatology* 2000; 31: 1014-8.
- [5] Pawlotsky JM. Hepatitis C virus: from discovery to eradication in 40 years? *Clin Microbiol Infect* 2011; 17: 105-6.
- [6] Lavanchy D. Evolving epidemiology of hepatitis C virus. *Clin Microbiol Infect* 2011; 17: 107-15.
- [7] WHO. Weekly epidemiological record. 2000; 75, 17-28. Available at <http://www.who.int/docstore/wer/pdf/2000/wer7503.pdf>.
- [8] Szabo SM, Bibby M, Yuan Y et al. The epidemiologic burden of hepatitis C virus infection in Latin America. *Ann Hepatol* 2012; 11: 623-35.
- [9] Pereira LMMB, Martelli CMT, Moreira RC et al. Prevalence and risk factors of hepatitis C virus infection in Brazil, 2005 through 2009: a cross-sectional study. *BMC Infect Dis* 2013; 13: 1-12.
- [10] *Eurosurveillance* 2003; 8 (5): 99-118.
- [11] Smith DB, Bukh J, Kuiken C, et al. Expanded classification of hepatitis C virus into 7 genotypes and 67 subtypes: updated criteria and genotype assignment web resource. *Hepatology* 2014; 59: 318-27.
- [12] US Department of Health and Human Services - Centers for Disease Control and Prevention. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV related chronic disease. *CDC Report* 1998; 47: 1-39
- [13] Houghton M. Hepatitis C viruses. In: Fields BN, Knipe DM, Howley PM, eds, *Fields Virology* (3rd ed). Philadelphia: Lippincott - Raven, 1996: 1035-58.
- [14] Global surveillance and control of hepatitis C. Report of a WHO Consultation organized in collaboration with the Viral Hepatitis Prevention Board, Antwerp, Belgium. *J Viral Hepat* 1999; 6: 35-47.
- [15] WHO. HCV genotypes. Available at <http://www.who.int/csr/disease/hepatitis/whocdscsrlyo2003/en/index2.html#genome>; accessed July 07, 2014.
- [16] Prati D. Transmission of hepatitis C virus by blood transfusions and other medical procedures: a global review. *J Hepatol* 2006; 45: 607-16.

---

**Confidential Information**

- [17] Central and Eastern European Harm Reduction Network (CEEHRN). Hepatitis C among drug users in the new EU member states and neighborhood: Recommendations for action. CEEHRN brochure/leaflet 2006. Available at <http://www.aidsactioneurope.org/clearinghouse/topics/hepatitis-c-among-drug-users-new-eu-member-states-and>.
- [18] Alberti A, Chemello L, Benvegnù L. Natural history of hepatitis C. *J Hepatol* 1999; 31 (Suppl 1): 17-24.
- [19] Alazawi W, Cunningham M, Dearden J, Foster GR. Systematic review: outcome of compensated cirrhosis due to chronic hepatitis C infection. *Aliment Pharmacol Ther* 2010; 32: 344-55.
- [20] Brown RS. Hepatitis C and liver transplantation. *Nature* 2005; 436: 973-78.
- [21] Villano SA, Vlahov D, Nelson KE, Cohn S, Thomas DL. Persistence of viremia and the importance of long-term follow-up after acute hepatitis C infection. *Hepatology* 1999; 29: 908-14.
- [22] Thomas DL, Astemborski J, Rai RM, et al. The natural history of hepatitis C virus infection: host, viral, and environmental factors. *JAMA* 2000; 284: 450-6.
- [23] Dore GJ, Ward J, Thursz M. Hepatitis C disease burden and strategies to manage the burden (Guest Editors Mark Thursz, Gregory Dore and John Ward). *J Viral Hepat* 2014; 21 (Suppl 1): 1-4.
- [24] Davis GL, Albright JE, Cook SF, Rosenberg DM. Projecting future complications of chronic hepatitis C in the United States. *Liver Transpl* 2003; 9: 331-8.
- [25] Strader DB, Wright T, Thomas DL, Seeff LB. AASLD practice guidelines: diagnosis, management, and treatment of hepatitis C. *Hepatology* 2004; 39: 1147-70.
- [26] Dienstag LJ, McHutchison JG. American gastroenterological association technical review on the management of hepatitis C. *Gastroenterology* 2006; 130: 231-64.
- [27] Ghany MG, Strader DB, Thomas DL, Seeff LB. AASLD practice guidelines: diagnosis, management, and treatment of hepatitis C: an update. *Hepatology* 2009; 49: 1335-74.
- [28] Backus LI, Boothroyd DB, Phillips BR, et al. A sustained virologic response reduces risk of all-cause mortality in patients with hepatitis C. *Clin Gastroenterol Hepatol* 2011; 9: 509-16.
- [29] Van der Meer AJ, Veldt BJ, Feld JJ, et al. Association between sustained virological response and all-cause mortality among patients with chronic hepatitis C and advanced hepatic fibrosis. *JAMA* 2012; 308: 2584-93.
- [30] Everson GT, Balart L, Lee SS, et al. Histological benefits of virological response to peginterferon alfa-2a monotherapy in patients with hepatitis C and advanced fibrosis or compensated cirrhosis. *Aliment Pharmacol Ther* 2008; 27: 542-51.
- [31] Poynard T, McHutchison JG, Manns M, et al. Impact of pegylated interferon alfa-2b and ribavirin on liver fibrosis in patients with chronic hepatitis C. *Gastroenterology* 2002; 122: 1303-13.
- [32] Shiffman M, Hofmann CM, Thompson EB, et al. Relationship between biochemical, virologic and histologic response during interferon treatment of chronic hepatitis C. *Hepatology* 1997; 26: 780-5.

---

**Confidential Information**



- [33] Bruno S, Stroffolini T, Colombo M, et al. Sustained virological response to interferon-alpha is associated with improved outcome in HCV-related cirrhosis: a retrospective study. *Hepatology* 2007; 45: 579-87.
- [34] Di Bisceglie AM, Shiffman M, Everson GT, et al. Prolonged antiviral therapy with peginterferon to prevent complications of advanced liver disease associated with hepatitis C: results of the hepatitis C antiviral long-term treatment against cirrhosis (HALT-C) trial. *Hepatology* 2007; 46 (Suppl S1): 290A.
- [35] Camma C, Di Bona D, Schepis F, et al. Effect of peginterferon alfa-2a on liver histology in chronic hepatitis C: a meta-analysis of individual patient data. *Hepatology* 2004; 39: 333-42.
- [36] McHutchison JG, Gordon SC, Schiff ER, et al. Interferon alfa-2b alone or in combination with ribavirin as initial treatment for chronic hepatitis C. Hepatitis Interventional Therapy Group. *NEJM* 1998; 339: 1485-92.
- [37] Zeuzem S, Feinman SV, Rasenack J, et al. Peginterferon  $\alpha$ -2a in patients with chronic hepatitis C. *NEJM* 2000; 343: 1666-72.
- [38] Poynard T, McHutchison JG, Goodman Z, Ling MH, Albrecht J. Is an "à la carte" combination interferon alfa-2b plus ribavirin regimen possible for the first line treatment in patients with chronic hepatitis C? *Hepatology* 2000; 31: 211-8.
- [39] Fried MW, Shiffman M, Reddy KR, et al (for the PEGASYS<sup>®</sup> International Study Group). Peginterferon alfa-2a plus ribavirin for chronic hepatitis C virus infection. *NEJM* 2002; 347: 975-82.
- [40] Manns M, McHutchison JG, Gordon SC et al. PegInterferon alfa-2b plus ribavirin compared with interferon alfa-2b plus ribavirin for initial treatment of chronic hepatitis C: a randomized trial. *Lancet* 2001; 358: 958-65.
- [41] Hadziyannis SJ, Sette H Jr, Morgan TR et al. Peginterferon-alpha 2a and ribavirin combination therapy in chronic hepatitis C: a randomized study of treatment duration and ribavirin dose. *Ann Intern Med* 2004; 140: 346-55.
- [42] Jacobson IM, McHutchison JG, Dusheiko GM et al. Telaprevir in combination with peginterferon and ribavirin in genotype 1 HCV treatment-naive patients: final results of phase 3 ADVANCE study. *Hepatology* 2010; 52 (Suppl S1): 427A.
- [43] Sherman KE, Flamm SL, Afdhal NH et al. Telaprevir in combination with peginterferon alfa2b and ribavirin for 24 or 48 weeks in treatment-naive genotype 1 HCV patients who achieved an extended rapid viral response: final results of Phase 3 ILLUMINATE study. *Hepatology* 2010; 52 (Suppl S1): 401A.
- [44] Poordad F, McCone J, Bacon BR et al. Boceprevir (BOC) combined with peginterferon alfa-2b/ribavirin (P/R) for treatment-naive patients with hepatitis C (HCV) genotype 1: SPRINT-2 final results. *Hepatology* 2010; 52 (Suppl S1): 402A.
- [45] EASL Recommendations on Treatment of Hepatitis C 2014. *J Hepatol* 2014; doi: 10.1016/j.jhep.2014.05.001 (Epub ahead of print).
- [46] AASLD. Recommendations for Testing, Managing, and Treating Hepatitis C. 2014: 1-50. Available at [http://www.hcvguidelines.org/sites/default/files/full\\_report.pdf](http://www.hcvguidelines.org/sites/default/files/full_report.pdf).
- [47] Jacobson IM, Dore G, Foster G et al. Simeprevir with pegylated interferon alfa 2a plus ribavirin in treatment-naive patients with chronic hepatitis C virus genotype 1 infection

---

**Confidential Information**

- (QUEST-1): a phase 3, randomised, double-blind, placebo-controlled trial. *Lancet* 2014; doi: 10.1016/S0140-6736(14)60494-3 (Epub ahead of print).
- [48] Manns M, Marcellin P, Poordad F, et al. Simeprevir with pegylated interferon alfa 2a or 2b plus ribavirin in treatment-naïve patients with chronic hepatitis C virus genotype 1 infection (QUEST-2): a randomised, double-blind, placebo-controlled phase 3 trial. *Lancet* 2014; doi: 10.1016/S0140-6736(14)60538-9 (Epub ahead of print).
- [49] Forns X, Lawitz E, Zeuzem S, et al. Simeprevir with Peginterferon and ribavirin leads to high rates of SVR in patients with HCV genotype 1 who relapsed after previous therapy: a phase 3 trial. *Gastroenterology*. 2014; 146: 1669-79.
- [50] Reddy KR, Zeuzem S, Zoulim F, et al. A Phase III randomised, double-blind study to evaluate the efficacy, safety and tolerability of simeprevir vs telaprevir in combination with pegylated interferon and ribavirin in chronic hepatitis C virus genotype 1 treatment-experienced patients: the ATAIN study. Abstract APASL 2014 Brisbane, Australia. Available at [http://www.natap.org/2014/APASL/APASL\\_20.htm](http://www.natap.org/2014/APASL/APASL_20.htm).
- [51] Full prescribing information Olysio. Available at <http://www.olyzio.com/shared/product/olyzio/prescribing-information.pdf>; accessed February 09, 2014.
- [52] Lawitz E, Mangia A, Wyles D, et al. Sofosbuvir for previously untreated chronic hepatitis C infection. *NEJM* 2013; 368: 1878-87.
- [53] Lalezari L, Nelson D, Hyland R, et al. Once daily sofosbuvir plus ribavirin for 12 and 24 weeks in treatment-naïve patients with HCV infection: the QUANTUM study. *J Hepatol* 2013; 58 (Suppl 1): S346.
- [54] Osinusi A, Meissner EG, Lee YJ, et al. Sofosbuvir and ribavirin for hepatitis C genotype 1 in patients with unfavorable treatment characteristics: a randomized clinical trial. *JAMA* 2013; 310: 804-11.
- [55] Menon RM, Klein CE, Lawal AA, et al. Pharmacokinetics and tolerability of the HCV protease inhibitor ABT-450 following single ascending doses in healthy adult volunteers with and without ritonavir. Abstract of HepDART 2009, Kohala Coast, Hawaii, USA. Available at [http://www.natap.org/2009/hepDART/hepDART\\_03.htm](http://www.natap.org/2009/hepDART/hepDART_03.htm).
- [56] Feld JJ, Kowdley KV, Coakley E, et al. Treatment of HCV with Paritaprevir/r ombitasvir and dasabuvir with ribavirin. *NEJM* 2014; 370: 1594-603.
- [57] Zeuzem S, Jacobson IM, Baykal T, et al. Retreatment of HCV with Paritaprevir/r-ombitasvir and dasabuvir with ribavirin. *NEJM* 2014; 370: 1604-14.
- [58] Andreone P, Colombo MG, Enejosa JV, et al. ABT-450, ritonavir, ombitasvir, and dasabuvir achieves 97% and 100% sustained virologic response with or without ribavirin in treatment-experienced patients with HCV genotype 1b infection. *Gastroenterology* 2014; doi: 10.1053/j.gastro.2014.04.045 (Epub ahead of print).
- [59] Ferenci P, Bernstein D, Lalezari J, et al. Paritaprevir/r-ombitasvir and dasabuvir with or without ribavirin for HCV. *NEJM* 2014; 370: 1983-92.
- [60] Poordad F, Hezode C, Trinh R, et al. Paritaprevir/r-ombitasvir and dasabuvir with ribavirin for hepatitis C with cirrhosis. *NEJM* 2014; 370: 1973-82.

---

**Confidential Information**

- [61] Hezode C, Marcellin P, Pol S, et al. Results from the phase 2 PEARL-I study: interferon-free regimens of PARITAPREVIR/R + ABT-267 with or without ribavirin in patients with HCV genotype 4 infection. *J Hepatol* 2014; 60 (Suppl 1): S24.
- [62] Hezode C, Fontaine H, Dorival C et al. Effectiveness of telaprevir or boceprevir in treatment-experienced patients with HCV genotype 1 infection and cirrhosis. *Gastroenterology* 2014; 147: 132-42.
- [63] Colombo M, Fernández I, Abdurakhmanov D, et al. Safety and on-treatment efficacy of telaprevir: the early access programme for patients with advanced hepatitis C. *Gut* 2014; 63: 1150-8.
- [64] Marley J. Efficacy, effectiveness, efficiency. *Aust Prescr* 2000; 23: 114-5.
- [65] Singal AG, Higgins PDR, Waljee AK. A primer on effectiveness and efficacy trials. *Clin Trans Gastroenterol* 2014; 5 (e45): 1-4.
- [66] Marcellin P, Cheinquer H, Curescu M, et al. High sustained virologic response rates in rapid virologic response patients in the large real-world PROPHECY cohort confirm results from randomized clinical trials. *Hepatology* 2012; 56: 2039-50.
- [67] Thompson AJ, Muir AJ, Sulkowski MS, et al. IL28B polymorphism improves viral kinetics and is the strongest pre-treatment predictor of SVR in HCV-1 patients. *Gastroenterology* 2010; 139: 120-9.
- [68] Büchi et al. Preliminary validation of PRISM (Pictorial Representation of Illness and Self measure) – a brief method to assess suffering. *Psychother Psychosom* 2002; 71:333-41.
- [69] Hibbard JH, Greene J, Becker ER, et al. Racial/ethnic disparities and consumer activation in health. *Health Affairs* 2008; 27:1442-53.
- [70] Hibbard JH, Mahoney ER, Stock R, Tusler M. Do increases in patient activation result in improved self-management behaviours? *Health Serv Res* 2007; 42:1443-63.
- [71] Alegría M, Sribney W, Perez D, Laderman M, Keefe K. The role of patient activation on patient-provider communication and quality of care for US and foreign born Latino patients. *J Gen Internl Med* 2009; 24 (Suppl 3):534-41.
- [72] Pilling S, Williams M, Brackett R, et al. Part I, patient perspective: activating patients to engage their providers in the use of evidence-based medicine: a qualitative evaluation of the VA Project to Implement Diuretics (VAPID). *Implementation Science* 2010; 5:23.
- [73] Dixon A, Hibbard J, Tusler M. How do people with different levels of activation self-manage their chronic conditions? *Patient* 2009; 2:257-68.
- [74] Hibbard JH, Stockard J, Mahoney ER, Tusler M. Development of the Patient Activation Measure (PAM): conceptualizing and measuring activation in patients and Consumers. *Health Serv Res* 2004; 39:1005-26.
- [75] Hibbard JH, Mahoney ER, Stockard J, Tusler M. Development and testing of a short form of the patient activation measure. *Health Serv Res* 2005; 40:1918-30.
- [76] International Committee of Medical Journal Editors. Available at <http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>; accessed July 07, 2014.

---

**Confidential Information**

## Annex 1. FACIT-F - The Functional Assessment of Chronic Illness Therapy-Fatigue Scale

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

		Not at all	A little bit	Some-what	Quite a bit	Very much
HI7	I feel fatigued.....	0	1	2	3	4
HI12	I feel weak all over.....	0	1	2	3	4
An1	I feel listless ("washed out").....	0	1	2	3	4
An2	I feel tired.....	0	1	2	3	4
An3	I have trouble <u>starting</u> things because I am tired.....	0	1	2	3	4
An4	I have trouble <u>finishing</u> things because I am tired.....	0	1	2	3	4
An5	I have energy.....	0	1	2	3	4
An7	I am able to do my usual activities.....	0	1	2	3	4
An8	I need to sleep during the day.....	0	1	2	3	4
An12	I am too tired to eat.....	0	1	2	3	4
An14	I need help doing my usual activities.....	0	1	2	3	4
An15	I am frustrated by being too tired to do the things I want to do.....	0	1	2	3	4
An16	I have to limit my social activity because I am tired.....	0	1	2	3	4

**Confidential Information**

## Annex 2. Work Productivity and Activity Impairment (WPAI)

### Work Productivity and Activity Impairment Questionnaire Hepatitis C, V2 (WPAI: Hepatitis C)

The following questions ask about the effect of your hepatitis C on your ability to work and perform normal daily activities. Please fill in the blanks or circle a number, as indicated.

- 1) Are you currently in paid employment?  NO  YES  
If NO, tick "NO" and skip to question 6.

The next questions refer to the **past seven days**, not including today.

- 2) During the past seven days, how many hours did you miss from work because of problems associated with your hepatitis C? Include hours you missed on sick days, times you went in late, left early, etc., because of your hepatitis C. Do not include time you missed to participate in this study.

\_\_\_\_\_ HOURS

- 3) During the past seven days, how many hours did you miss from work because of any other reason, such as annual leave, holidays, time off to participate in this study?

\_\_\_\_\_ HOURS

- 4) During the past seven days, how many hours did you actually work?

\_\_\_\_\_ HOURS (If "0", skip to question 6.)

---

Confidential Information



5. During the past seven days, how much did hepatitis C affect your productivity while you were working?

*Think about days you were limited in the amount or kind of work you could do, days you accomplished less than you would like, or days you could not do your work as carefully as usual. If hepatitis C affected your work only a little, choose a low number. Choose a high number if hepatitis C affected your work a great deal.*

Consider only how much hepatitis C affected productivity while you were working.

Hepatitis C had no effect on my work	_____	Hepatitis C completely prevented me from working
	0 1 2 3 4 5 6 7 8 9 10	

CIRCLE A NUMBER

6. During the past seven days, how much did your hepatitis C affect your ability to perform your normal daily activities, excluding your job?

*By normal activities, we mean the usual activities you perform, such as working around the house, shopping, childcare, exercising, studying, etc. Think about times you were limited in the amount or kind of activities you could perform and times you accomplished less than you would like. If hepatitis C affected your activities only a little, choose a low number. Choose a high number if hepatitis C affected your activities a great deal.*

Consider only how much hepatitis C affected your ability to perform your normal daily activities, excluding your job.

Hepatitis C had no effect on my daily activities	_____	Hepatitis C completely prevented me from performing my daily activities
	0 1 2 3 4 5 6 7 8 9 10	

CIRCLE A NUMBER

WPAI: HepC V2.0 (English - United Kingdom)

In Germany the German Version WPAI: HepC V2.1 (German - Germany) will be used

---

**Confidential Information**

**No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie**

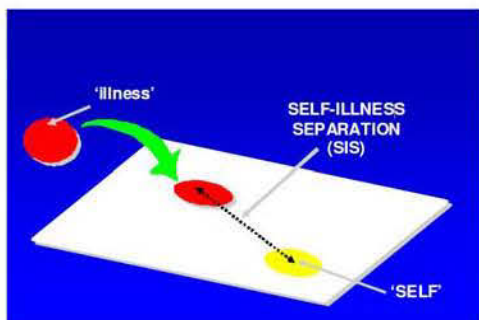
### Annex 3. Pictorial Representation of Illness and Self-Measure (PRISM)

#### PRISM-Instrument

The examiner presents a white, A-4 sized paperboard with a fixed yellow circle in the lower right corner, measuring 7cm in diameter. He explains to the patient that the plate represents his life and that the yellow circle represents the centre of his life, his “self”. Then he introduces a red magnetic disc having a diameter of 5cm as “illness”

#### Conducting the PRISM-test and measurement of self-illness-separation (SIS)

The examiner asks the patient to place the red disc on the board in such a way that it shows which place the illness currently occupies in his life. The distance between the centre of the “self” and the illness disc is called “self-illness separation” SIS and is measured in cm. The minimum amounts to 0cm, the maximum to 27cm (range is 0-27)





## Annex 4. PAM-13 Questionnaire Sample

Below are some statements that people sometimes make when they talk about their health. Please indicate how much you agree or disagree with each statement as it applies to you personally by circling your answer. Your answers should be what is true for you and not what you think others might want you to say.

If the statement does not apply to you, circle N/A.

1. When all is said and done, I am the person who is responsible for taking care of my health	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
2. Taking an active role in my own health care is the most important thing that affects my health	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
3. I am confident I can help prevent or reduce problems associated with my health	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
4. I know what each of my prescribed medications do	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
5. I am confident that I can tell whether I need to go to the doctor or whether I can take care of a health problem myself	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
6. I am confident that I can tell a doctor concerns I have even when he or she does not ask	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
7. I am confident that I can follow through on medical treatments I may need to do at home	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
8. I understand my health problems and what causes them	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
9. I know what treatments are available for my health problems	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
10. I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
11. I know how to prevent problems with my health	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
12. I am confident I can figure out solutions when new problems arise with my health	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)
13. I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress	Disagree Strongly (1)	Disagree (2)	Agree (3)	Agree Strongly (4)	N/A (5)

Insignia Health. "Patient Activation Measure; Copyright © 2003–2011, University of Oregon. All Rights reserved." Contact Insignia Health at [www.insigniahealth.com](http://www.insigniahealth.com)

DRAFT Version 0.03/CBA BG

### Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie  
Version 3.0. (22. Apr 2015) – Germany V3.0 (17. November 2016)

Page 59 of 63

## Annex 5. Patient Support Program (PSP) Utilization Questionnaire

### Patient Support Program (PSP) Utilization Questionnaire

12 weeks treatment: At Interim early post-treatment visit

24 weeks treatment: At Interim mid treatment visit and Interim early post-treatment visit

Since the last visit, have you utilized any components from the AbbVie Patient Support Program?

No

→ Please ignore questions below and return questionnaire to your physician or study nurse

Yes

↓  
Please specify service(s) used:

●  Personal support (e.g. Care Coach)

▲  Educational and information material (e.g. magazines, leaflets, diaries)

✘  Printed

→ Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly

✚  Online

→ Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly

■  Additional digital and mobile resources

★  Web-portal

→ Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly

●  Reminders

#### Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie

## Annex 6. Patient Support Program (PSP) Utilization and Satisfaction Questionnaire

### Patient Support Program (PSP) Utilization and Satisfaction Questionnaire

12 weeks treatment: At Interim early on-treatment visit, week 12 EoT visit and SVR 12 visit

24 weeks treatment: At Interim early on-treatment visit, week 24 EoT visit and SVR 12 visit

Since the last visit, have you utilized any components from the AbbVie Patient Support Program?

No

→ Please ignore questions below and return questionnaire to your physician or study nurse

Yes

→ What is your level of satisfaction of the AbbVie Patient Support Program in general?

- Very good
- Good
- Satisfactory
- Poor

→ Did the Program address your needs?  Yes, fully  Yes, mostly  No

Please specify service(s) used:

●  Personal support (e.g. Care Coach)

→ Please specify your level of satisfaction:  Very good  
 Good  
 Satisfactory  
 Poor

▲  Educational and information material (e.g. magazines, leaflets, diaries)

✘  Printed

→ Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly

→ Please specify your level of satisfaction:  Very good  
 Good  
 Satisfactory  
 Poor

✚  Online

→ Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly

→ Please specify your level of satisfaction:  Very good  
 Good  
 Satisfactory  
 Poor

### Confidential Information

No use or disclose outside AbbVie is permitted without prior written authorization from AbbVie

■  Additional digital and mobile resources

- ★  Web-portal
- Please specify how often used:  Usually daily  
 Several times per week  
 Usually once weekly  
 Less than once weekly
  - Please specify your level of satisfaction:  Very good  
 Good  
 Satisfactory  
 Poor

- Reminders
- Please specify your level of satisfaction:  Very good  
 Good  
 Satisfactory  
 Poor

---

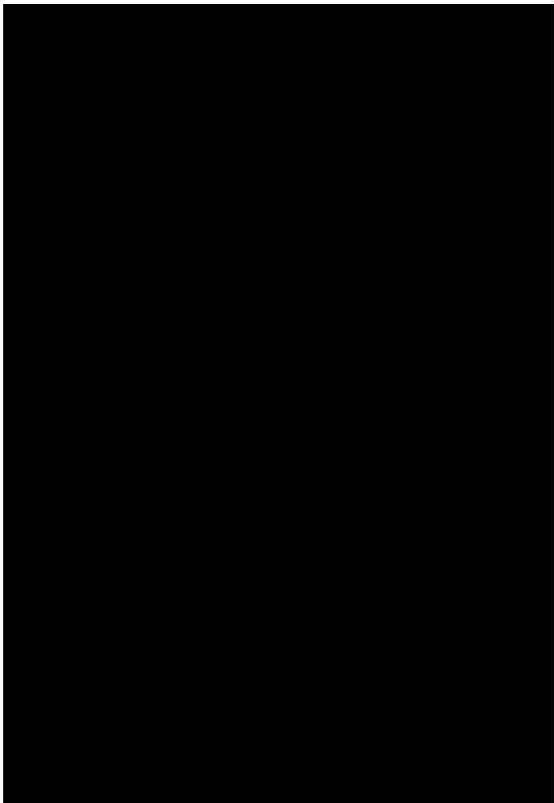
**Confidential Information**

## 14.0 Protocol Signature Page

**AbbVie**  
**Post Marketing Observational Study**  
**Protocol (P15-398)**

**Real World Evidence of the Effectiveness of Paritaprevir/r – Ombitasvir, ±  
Dasabuvir, ± Ribavirin in Patients with Chronic Hepatitis C - An Observational  
Study in Germany (LIFE-C)**

Approved by:



\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

\_4. FEB 2017\_  
Date

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

---

Confidential Information