

**Clinical trial results:****An Open-label, Single Arm, Multicenter Phase 2 Study of the Bruton's Tyrosine Kinase Inhibitor PCI-32765 (Ibrutinib) in Patients With Relapsed or Refractory Chronic Lymphocytic Leukemia or Small Lymphocytic Lymphoma With 17p Deletion (RESONATE™-17)****Summary**

EudraCT number	2012-004476-19
Trial protocol	GB SE BE DE
Global end of trial date	19 May 2016

**Results information**

Result version number	v2 (current)
This version publication date	28 June 2017
First version publication date	01 May 2016
Version creation reason	

**Trial information****Trial identification**

Sponsor protocol code	PCYC-1117-CA
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**Additional study identifiers**

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT01744691
WHO universal trial number (UTN)	-

Notes:

**Sponsors**

Sponsor organisation name	Pharmacyclics LLC.
Sponsor organisation address	995 East Arques Avenue, Sunnyvale, California, United States, 94085
Public contact	Clinical Trial information, Pharmacyclics LLC, 140 87740330, info@pcyc.com
Scientific contact	Clinical Trial information, Pharmacyclics LLC, 140 87740330, info@pcyc.com

Notes:

**Paediatric regulatory details**

Is trial part of an agreed paediatric investigation plan (PIP)	No
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	No

Notes:

## Results analysis stage

Analysis stage	Final
Date of interim/final analysis	09 January 2017
Is this the analysis of the primary completion data?	No
Global end of trial reached?	Yes
Global end of trial date	19 May 2016
Was the trial ended prematurely?	No

Notes:

## General information about the trial

Main objective of the trial:

The primary objective of this study is to evaluate the efficacy of ibrutinib in terms of ORR according to an Independent Review Committee (IRC). ORR based upon IRC assessment is the proportion of responders in the all treated population. Responders were subjects who achieved partial response (PR) or better, ie, complete response (CR), complete response with incomplete marrow recovery (CRi), nodule partial response (nPR) or PR, per IWCLL 2008 criteria with the clarification for treatment-related lymphocytosis.

Protection of trial subjects:

The study was conducted in accordance with the Declaration of Helsinki and ICH GCP

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	01 January 2013
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

## Population of trial subjects

### Subjects enrolled per country

Country: Number of subjects enrolled	United States: 84
Country: Number of subjects enrolled	Australia: 7
Country: Number of subjects enrolled	Belgium: 3
Country: Number of subjects enrolled	Canada: 2
Country: Number of subjects enrolled	Germany: 13
Country: Number of subjects enrolled	New Zealand: 2
Country: Number of subjects enrolled	Sweden: 8
Country: Number of subjects enrolled	Turkey: 12
Country: Number of subjects enrolled	United Kingdom: 14
Worldwide total number of subjects	145
EEA total number of subjects	38

Notes:

### Subjects enrolled per age group

In utero	0
Preterm newborn - gestational age < 37 wk	0

Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	0
Adolescents (12-17 years)	0
Adults (18-64 years)	75
From 65 to 84 years	68
85 years and over	2

## Subject disposition

### Recruitment

Recruitment details:

Key Inclusion Criteria:

- Documentation of del (17p13.1)
- Must have relapsed or refractory CLL/SLL after receiving at least 1 prior line of systemic therapy.
- Measurable nodal disease by computed tomography (CT)

Key Exclusion Criteria:

- History or current evidence of Richter's transformation or prolymphocytic leukemia
- Prior hematologic st

### Pre-assignment

Screening details:

One hundred forty-five subjects were enrolled and 144 subjects received at least 1 dose of PCI-32765 and constitute the all treated population and the safety analysis set.

### Period 1

Period 1 title	overall study (overall period)
Is this the baseline period?	Yes
Allocation method	Non-randomised - controlled
Blinding used	Not blinded

### Arms

Arm title	ibrutinib
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Arm description:

All subjects will receive ibrutinib 420 mg (3 x 140-mg capsules) orally once daily.

Arm type	Experimental
Investigational medicinal product name	Ibrutinib
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Capsule
Routes of administration	Oral use

Dosage and administration details:

All subjects will receive ibrutinib 420 mg (3 x 140-mg capsules) orally once daily.

Number of subjects in period 1 <sup>[1]</sup>	ibrutinib
Started	144
Completed	101
Not completed	43
Unacceptable toxicity, AE or death	18
Consent withdrawn by subject	3
Physician decision	4
Progressive Disease	18

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Notes:

[1] - The number of subjects reported to be in the baseline period are not the same as the worldwide number enrolled in the trial. It is expected that these numbers will be the same.

Justification: There was 1 additional subject enrolled who, however, did not receive any study medication and was excluded from all analyses.

## Baseline characteristics

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### Reporting groups

Reporting group title	overall study
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Reporting group description:

All subjects received PCI-32765 420 mg (3 x 140-mg capsules) orally once daily.

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Reporting group values	overall study	Total	
Number of subjects	144	144	
Age categorical			
Count of Participants			
Units: Subjects			
<=18 years	0	0	
Between 18 and 65 years	75	75	
>=65 years	69	69	
Age continuous			
Units: years			
arithmetic mean	64.4		
standard deviation	± 9.9	-	
Gender categorical			
Units: Subjects			
Female	48	48	
Male	96	96	

## End points

### End points reporting groups

Reporting group title	ibrutinib
Reporting group description: All subjects will receive ibrutinib 420 mg (3 x 140-mg capsules) orally once daily.	

### Primary: Overall Response Rate

End point title	Overall Response Rate <sup>[1]</sup>
End point description: The primary objective of this study is to evaluate the efficacy of ibrutinib in terms of ORR according to an Independent Review Committee (IRC). ORR based upon IRC assessment is the proportion of responders in the all treated population. Responders were subjects who achieved partial response (PR) or better, ie, complete response (CR), complete response with incomplete marrow recovery (CRI), nodule partial response (nPR) or PR, per IWCLL 2008 criteria with the clarification for treatment-related lymphocytosis.	
End point type	Primary
End point timeframe: The median time on study for all treated participants is 33.3 (range 0.5 - 40.1) months	

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.

Justification: Response rate and 95% CI calculated based on normal approximation with Wilson's score method. However, as this has been a single arm study, no statistical analyses have been performed.

End point values	ibrutinib			
Subject group type	Reporting group			
Number of subjects analysed	144			
Units: % of participants with response by PI				
number (confidence interval 95%)	77.8 (70.3 to 83.8)			

### Statistical analyses

No statistical analyses for this end point

### Secondary: Number of Participants With Treatment Emergent Adverse Events (AEs) [ Time Frame: From first dose of PCI-32765 to within 30 days of last dose for each participant or until study closure ]

End point title	Number of Participants With Treatment Emergent Adverse Events (AEs) [ Time Frame: From first dose of PCI-32765 to within 30 days of last dose for each participant or until study closure ]
End point description: Participants who received at least 1 dose of PCI-32765 and constitute the all treated population.	
End point type	Secondary
End point timeframe: From first dose of PCI-32765 to within 30 days of last dose for each participant or until study closure	

<b>End point values</b>	ibrutinib			
Subject group type	Reporting group			
Number of subjects analysed	144			
Units: Participants	144			

### **Statistical analyses**

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No statistical analyses for this end point

## Adverse events

### Adverse events information

Timeframe for reporting adverse events:

From first dose of PCI-32765 to within 30 days of last dose for each participant or until study closure

Adverse event reporting additional description:

Number of participants who had experienced at least one treatment emergent AE

Assessment type	Systematic
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### Dictionary used

Dictionary name	MedDRA
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Dictionary version	17.0
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### Reporting groups

Reporting group title	PCI-32765
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Reporting group description:

All subjects will receive PCI-32765 420 mg (3 x 140-mg capsules) orally once daily.

<b>Serious adverse events</b>	PCI-32765		
Total subjects affected by serious adverse events			
subjects affected / exposed	76 / 144 (52.78%)		
number of deaths (all causes)	19		
number of deaths resulting from adverse events	2		
Neoplasms benign, malignant and unspecified (incl cysts and polyps)			
Richter's syndrome			
subjects affected / exposed	6 / 144 (4.17%)		
occurrences causally related to treatment / all	0 / 6		
deaths causally related to treatment / all	0 / 2		
Chronic lymphocytic leukaemia			
subjects affected / exposed	5 / 144 (3.47%)		
occurrences causally related to treatment / all	0 / 5		
deaths causally related to treatment / all	0 / 2		
Basal cell carcinoma			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Hodgkin's disease			

subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
<b>B-cell small lymphocytic lymphoma</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
<b>Lymphoma transformation</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Skin papilloma</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Squamous cell carcinoma of skin</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Vulval cancer stage 0</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Vascular disorders</b>			
<b>Arterial haemorrhage</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Hypertension</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Orthostatic hypotension</b>			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>General disorders and administration site conditions</b>			
Pyrexia			
subjects affected / exposed	3 / 144 (2.08%)		
occurrences causally related to treatment / all	3 / 7		
deaths causally related to treatment / all	0 / 0		
Fatigue			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 0		
Asthenia			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
General physical health deterioration			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Localised oedema			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Oedema peripheral			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Reproductive system and breast disorders</b>			
Prostatomegaly			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		

Respiratory, thoracic and mediastinal disorders			
Pleural effusion			
subjects affected / exposed	3 / 144 (2.08%)		
occurrences causally related to treatment / all	1 / 6		
deaths causally related to treatment / all	0 / 0		
Alveolitis allergic			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Haemoptysis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Haemothorax			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Interstitial lung disease			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Pneumonitis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Pulmonary embolism			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Pulmonary mass			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		

Pulmonary oedema			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Psychiatric disorders			
Psychotic disorder			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Injury, poisoning and procedural complications			
Subdural haematoma			
subjects affected / exposed	3 / 144 (2.08%)		
occurrences causally related to treatment / all	2 / 3		
deaths causally related to treatment / all	0 / 0		
Alcohol poisoning			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 3		
deaths causally related to treatment / all	0 / 0		
Femoral neck fracture			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Meniscus injury			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Muscle rupture			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Post procedural haematuria			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		

Post procedural haemorrhage subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Traumatic haematoma subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Cardiac disorders			
Atrial fibrillation subjects affected / exposed	8 / 144 (5.56%)		
occurrences causally related to treatment / all	3 / 11		
deaths causally related to treatment / all	0 / 0		
Acute myocardial infarction subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 1		
Pericarditis subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 4		
deaths causally related to treatment / all	0 / 0		
Cardiac failure subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Myocardial infarction subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	1 / 1		
Pericardial effusion subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Sinus node dysfunction			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Nervous system disorders</b>			
Syncope			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Cerebrovascular accident			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Critical illness polyneuropathy			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Encephalopathy			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Haemorrhage intracranial			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Blood and lymphatic system disorders</b>			
Anaemia			
subjects affected / exposed	4 / 144 (2.78%)		
occurrences causally related to treatment / all	1 / 5		
deaths causally related to treatment / all	0 / 0		
Febrile neutropenia			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	2 / 2		
deaths causally related to treatment / all	0 / 0		
Autoimmune haemolytic anaemia			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Coagulopathy			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Haemolytic anaemia			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Immune thrombocytopenic purpura			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Iron deficiency anaemia			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Spontaneous haematoma			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Thrombocytopenia			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Eye disorders			
Iritis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	2 / 2		
deaths causally related to treatment / all	0 / 0		
Gastrointestinal disorders			

Colitis				
subjects affected / exposed	2 / 144 (1.39%)			
occurrences causally related to treatment / all	1 / 2			
deaths causally related to treatment / all	0 / 0			
Diarrhoea				
subjects affected / exposed	2 / 144 (1.39%)			
occurrences causally related to treatment / all	0 / 2			
deaths causally related to treatment / all	0 / 0			
Colitis ischaemic				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	0 / 1			
deaths causally related to treatment / all	0 / 0			
Gastric ulcer haemorrhage				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	1 / 1			
deaths causally related to treatment / all	0 / 0			
Gastritis				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	2 / 2			
deaths causally related to treatment / all	0 / 0			
Intestinal obstruction				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	1 / 1			
deaths causally related to treatment / all	0 / 0			
Oral mucosal blistering				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	0 / 1			
deaths causally related to treatment / all	0 / 0			
Stomatitis				
subjects affected / exposed	1 / 144 (0.69%)			
occurrences causally related to treatment / all	1 / 1			
deaths causally related to treatment / all	0 / 0			
Upper gastrointestinal haemorrhage				

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Vomiting			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Hepatobiliary disorders			
Cholecystitis			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
Cholecystitis acute			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Hepatic function abnormal			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Skin and subcutaneous tissue disorders			
Livedo reticularis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Skin erosion			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Stevens-Johnson syndrome			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Trichodysplasia spinulosa			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Renal and urinary disorders</b>			
<b>Acute kidney injury</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
<b>Renal failure</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
<b>Renal infarct</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	1 / 1		
<b>Musculoskeletal and connective tissue disorders</b>			
<b>Arthritis</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	2 / 2		
deaths causally related to treatment / all	0 / 0		
<b>Myalgia</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	2 / 2		
deaths causally related to treatment / all	0 / 0		
<b>Osteoporosis</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 0		
<b>Arthralgia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		

Chondromalacia			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Dactylitis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Muscular weakness			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Infections and infestations			
Pneumonia			
subjects affected / exposed	21 / 144 (14.58%)		
occurrences causally related to treatment / all	15 / 32		
deaths causally related to treatment / all	0 / 4		
Urinary tract infection			
subjects affected / exposed	5 / 144 (3.47%)		
occurrences causally related to treatment / all	1 / 5		
deaths causally related to treatment / all	0 / 0		
Cellulitis			
subjects affected / exposed	4 / 144 (2.78%)		
occurrences causally related to treatment / all	1 / 4		
deaths causally related to treatment / all	0 / 0		
Bronchitis			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 0		
Pyelonephritis			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 0		
Sepsis			

subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 2		
<b>Septic shock</b>			
subjects affected / exposed	2 / 144 (1.39%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 1		
<b>Appendicitis</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Aspergillus infection</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Atypical pneumonia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Bacteraemia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Campylobacter gastroenteritis</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Cystitis</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Empyema</b>			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Epiglottitis			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Gastroenteritis clostridial			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Groin abscess			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Herpes simplex			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Influenza			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Lower respiratory tract infection viral			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Lung infection			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Lymphadenitis bacterial			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Oropharyngeal candidiasis</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Pneumocystis jirovecii pneumonia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Sinusitis fungal</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Staphylococcal sepsis</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Subcutaneous abscess</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Varicella zoster virus infection</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Metabolism and nutrition disorders</b>			
<b>Hypercalcaemia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Hyperkalaemia</b>			

subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Hypomagnesaemia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
<b>Hyponatraemia</b>			
subjects affected / exposed	1 / 144 (0.69%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		

Frequency threshold for reporting non-serious adverse events: 5 %

<b>Non-serious adverse events</b>	PCI-32765		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	144 / 144 (100.00%)		
<b>Neoplasms benign, malignant and unspecified (incl cysts and polyps)</b>			
<b>Basal cell carcinoma</b>			
subjects affected / exposed	11 / 144 (7.64%)		
occurrences (all)	11		
<b>Vascular disorders</b>			
<b>Hypertension</b>			
subjects affected / exposed	39 / 144 (27.08%)		
occurrences (all)	51		
<b>General disorders and administration site conditions</b>			
<b>Fatigue</b>			
subjects affected / exposed	53 / 144 (36.81%)		
occurrences (all)	61		
<b>Pyrexia</b>			
subjects affected / exposed	31 / 144 (21.53%)		
occurrences (all)	47		
<b>Oedema peripheral</b>			

subjects affected / exposed occurrences (all)	27 / 144 (18.75%) 36		
Chills subjects affected / exposed occurrences (all)	9 / 144 (6.25%) 9		
Peripheral swelling subjects affected / exposed occurrences (all)	9 / 144 (6.25%) 11		
Respiratory, thoracic and mediastinal disorders			
Cough subjects affected / exposed occurrences (all)	46 / 144 (31.94%) 71		
Dyspnoea subjects affected / exposed occurrences (all)	18 / 144 (12.50%) 28		
Oropharyngeal pain subjects affected / exposed occurrences (all)	13 / 144 (9.03%) 16		
Epistaxis subjects affected / exposed occurrences (all)	12 / 144 (8.33%) 14		
Nasal congestion subjects affected / exposed occurrences (all)	10 / 144 (6.94%) 16		
Productive cough subjects affected / exposed occurrences (all)	10 / 144 (6.94%) 13		
Rhinorrhoea subjects affected / exposed occurrences (all)	8 / 144 (5.56%) 10		
Psychiatric disorders			
Insomnia subjects affected / exposed occurrences (all)	12 / 144 (8.33%) 13		
Depression			

subjects affected / exposed occurrences (all)	10 / 144 (6.94%) 10		
Anxiety subjects affected / exposed occurrences (all)	8 / 144 (5.56%) 8		
Investigations Weight increased subjects affected / exposed occurrences (all)	20 / 144 (13.89%) 27		
Weight decreased subjects affected / exposed occurrences (all)	16 / 144 (11.11%) 20		
Injury, poisoning and procedural complications Contusion subjects affected / exposed occurrences (all)	10 / 144 (6.94%) 15		
Fall subjects affected / exposed occurrences (all)	8 / 144 (5.56%) 9		
Cardiac disorders Atrial fibrillation subjects affected / exposed occurrences (all)	9 / 144 (6.25%) 9		
Nervous system disorders Headache subjects affected / exposed occurrences (all)	18 / 144 (12.50%) 20		
Dizziness subjects affected / exposed occurrences (all)	14 / 144 (9.72%) 22		
Peripheral sensory neuropathy subjects affected / exposed occurrences (all)	12 / 144 (8.33%) 19		
Blood and lymphatic system disorders Anaemia			

subjects affected / exposed	32 / 144 (22.22%)		
occurrences (all)	42		
Neutropenia			
subjects affected / exposed	29 / 144 (20.14%)		
occurrences (all)	76		
Increased tendency to bruise			
subjects affected / exposed	23 / 144 (15.97%)		
occurrences (all)	25		
Thrombocytopenia			
subjects affected / exposed	21 / 144 (14.58%)		
occurrences (all)	43		
Spontaneous haematoma			
subjects affected / exposed	8 / 144 (5.56%)		
occurrences (all)	16		
Eye disorders			
Vision blurred			
subjects affected / exposed	16 / 144 (11.11%)		
occurrences (all)	20		
Visual acuity reduced			
subjects affected / exposed	12 / 144 (8.33%)		
occurrences (all)	13		
Dry eye			
subjects affected / exposed	11 / 144 (7.64%)		
occurrences (all)	11		
Lacrimation increased			
subjects affected / exposed	11 / 144 (7.64%)		
occurrences (all)	17		
Eye irritation			
subjects affected / exposed	8 / 144 (5.56%)		
occurrences (all)	10		
Gastrointestinal disorders			
Diarrhoea			
subjects affected / exposed	61 / 144 (42.36%)		
occurrences (all)	89		
Nausea			

subjects affected / exposed	34 / 144 (23.61%)		
occurrences (all)	45		
Constipation			
subjects affected / exposed	21 / 144 (14.58%)		
occurrences (all)	23		
Dyspepsia			
subjects affected / exposed	18 / 144 (12.50%)		
occurrences (all)	25		
Vomiting			
subjects affected / exposed	16 / 144 (11.11%)		
occurrences (all)	18		
Abdominal pain			
subjects affected / exposed	14 / 144 (9.72%)		
occurrences (all)	15		
Stomatitis			
subjects affected / exposed	11 / 144 (7.64%)		
occurrences (all)	18		
Abdominal pain upper			
subjects affected / exposed	8 / 144 (5.56%)		
occurrences (all)	8		
Gastrooesophageal reflux disease			
subjects affected / exposed	8 / 144 (5.56%)		
occurrences (all)	9		
Skin and subcutaneous tissue disorders			
Night sweats			
subjects affected / exposed	23 / 144 (15.97%)		
occurrences (all)	27		
Rash maculo-papular			
subjects affected / exposed	13 / 144 (9.03%)		
occurrences (all)	16		
Rash erythematous			
subjects affected / exposed	12 / 144 (8.33%)		
occurrences (all)	14		
Rash			
subjects affected / exposed	11 / 144 (7.64%)		
occurrences (all)	13		

<p>Skin lesion</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>11 / 144 (7.64%)</p> <p>13</p>		
<p>Pruritus</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>9 / 144 (6.25%)</p> <p>9</p>		
<p>Renal and urinary disorders</p> <p>Haematuria</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>9 / 144 (6.25%)</p> <p>11</p>		
<p>Musculoskeletal and connective tissue disorders</p> <p>Arthralgia</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Muscle spasms</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Back pain</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Myalgia</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Pain in extremity</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Musculoskeletal pain</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>41 / 144 (28.47%)</p> <p>57</p> <p>28 / 144 (19.44%)</p> <p>31</p> <p>23 / 144 (15.97%)</p> <p>27</p> <p>17 / 144 (11.81%)</p> <p>19</p> <p>15 / 144 (10.42%)</p> <p>25</p> <p>8 / 144 (5.56%)</p> <p>9</p>		
<p>Infections and infestations</p> <p>Upper respiratory tract infection</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>Urinary tract infection</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>30 / 144 (20.83%)</p> <p>38</p> <p>28 / 144 (19.44%)</p> <p>47</p>		

Pneumonia			
subjects affected / exposed	13 / 144 (9.03%)		
occurrences (all)	16		
Nasopharyngitis			
subjects affected / exposed	18 / 144 (12.50%)		
occurrences (all)	29		
Sinusitis			
subjects affected / exposed	16 / 144 (11.11%)		
occurrences (all)	21		
Bronchitis			
subjects affected / exposed	13 / 144 (9.03%)		
occurrences (all)	16		
Metabolism and nutrition disorders			
Decreased appetite			
subjects affected / exposed	28 / 144 (19.44%)		
occurrences (all)	32		
Hyperuricaemia			
subjects affected / exposed	18 / 144 (12.50%)		
occurrences (all)	22		
Hyponatraemia			
subjects affected / exposed	10 / 144 (6.94%)		
occurrences (all)	11		
Hypokalaemia			
subjects affected / exposed	9 / 144 (6.25%)		
occurrences (all)	13		
Hyperglycaemia			
subjects affected / exposed	8 / 144 (5.56%)		
occurrences (all)	10		

## More information

### Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
22 February 2013	Changed the exclusion criteria governing number of prior lines of systematic therapy for CLL from 4 or more to 5 or more due to rapidity by which subjects with del17p CLL become relapsed or refractory to historical therapies. Updated text for the management of ibrutinib with concomitant CYP3A4/5 inhibitors. Updated text for the management of ibrutinib with concomitant anticoagulation therapy. Provided further clarification for restart of ibrutinib after anticoagulation therapy. Provided guidance on perioperative holding of ibrutinib that was not previously available Clarified that ophthalmologic examination should be performed by an ophthalmologist. Clarified that CT scans needed to be obtained for neck, chest, abdomen and pelvis. Except in the UK, PROs were no longer collected in the study.
16 December 2013	Aligned the efficacy and safety populations to subjects who have received at least 1 dose of ibrutinib. Delayed timing of the primary analysis to at least 12 months after the last subject's first dose of ibrutinib. Provided clarification that any updates to the timing of the primary or final analysis would be pre-specified in the SAP and would not warrant another protocol amendment as long as study conduct was not impacted. Updated guideline for the use of concomitant QT-prolonging agents. Updated guideline for concomitant use of anticoagulation and antiplatelet agents and included precautions for commonly used supplements such as fish oil and Vitamin E

Notes:

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### Interruptions (globally)

Were there any global interruptions to the trial? No

### Limitations and caveats

None reported