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Clinical Development

RTH258/Brolucizumab

RTH258A2302 (HARRIER) / NCT02434328

A Two-Year, Randomized, Double-Masked, Multicenter, Two-Arm Study Comparing the Efficacy and Safety of RTH258 6 mg versus Aflibercept in Subjects with Neovascular Age-Related Macular Degeneration

Statistical Analysis Plan (SAP)

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11-Jan-2017	P1i or to DB lock	Creation of final version	N/A First final version (V1.0) approved in documentum system.	NIA
19-May-2017	Plior to DB lock	 Adjustments in relations to obselved protocol deviations and analysis restrictions, e.g. detailed specifications for the per-protocol set including censoring and the assessment of the ql 2 proportion based on a time-to-eventanalysis Introduction of "Other safety events of interest" under "Adverse events (AEs)" sub-section (2.8.2) 	Updated .	Sub-sections 1.2, 2.2, 2.4, 2.5. 2.6, 2.7, 2.8 and 5

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List of abbreviations

AE Adverse event

AR Analysis Restrictions

nAMD Neovascular Age-related Macular Degeneration

BCVA Best Corrected Visual Acuity

CI Confidence Interval

CNV Choroidal Neovascularization
CSFT Central Subfield Thickness

CSFTnr Central Subfield Thickness-neurosensory retina

CSFTtot Central Subfield Thickness-total

CSM Clinical Site Management
CSR Clinical Study report

CTM Clinical Trial Management

DA Disease Activity

DMC Data Monitoring Committee eCRF Electronic Case Report Form

FAS Full Analysis Set
IOP Intraocular Pressure
IP Investigational Product
IVR Interactive Voice Response

IVT Intravitreal

LSM Least Squares Mean

MedDRA Medical Dictionary for Drug Regulatory Affairs

PK Pharmacokinetics
PPS Per-Protocol Set

PRO Patient-reported Outcomes q8 Treatment every 8 weeks q12 Treatment every 12 weeks

QoL Quality of Life

RAP Report and Analysis Process
SAP Statistical Analysis Plan
SAF Safety Analysis Set
SE Standard Error

SOC System Organ Class SoC Standard of Care

TFLs Tables, Figures, Listings

VA Visual Acuity

WHO World Health Organization

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1 Introduction

The purpose of this Statistical Analysis Plan (SAP) is to describe the implementation of statistical analysis planned in the study protocol, and to provide detailed statistical methods that will be used for the Clinical Study Report (CSR) of study RTH258A2302.

Data will be analyzed according to the data analysis Section 11 of the study protocol which will be available in Appendix 16.1.1 of the CSR. Important information is given in the following sections and details will be provided, as applicable, in Appendix 16.1.9 of the CSR.

The SAP will be finalized before treatment unmasking. Any changes to the SAP after approval will be documented.

1.1 Study design

This is a prospective, randomized, double-masked, multicenter, two-arm study comparing the safety and efficacy of RTH258 IVT injections versus aflibercept IVT injections in subjects with neovascular age-related macular degeneration (AMD).

The two treatment arms are:

Arm 1: Brolucizumab 6 mg/50 μL (a.k.a RTH258 6 mg/50 μL)

Arm 2: Aflibercept 2 mg/50 μL (a.k.a Eylea 2 mg/50 μL)

Subjects in both arms will have visits every 4 weeks through Week 96.

According to protocol, approximately 330 subjects per arm (total 660 subjects) will be randomized in this trial. More details of the sample size calculation can be found in Section 3. By the time this first amendment is implemented, 743 subjects were randomized in the study.

In Arm 1, RTH258 6 mg will be initially injected 3 times at 4-week intervals, at Visit 1/Baseline, Visit 2/Week 4 and Visit 3/Week 8. Following these 3 loading doses, each subject will be injected every 12 weeks (q12) up to Visit 24/Week 92 unless there is disease activity assessed according to the guidance provided at Visit 5/Week 16, Visit 6/Week 20, Visit 8/Week 28, Visit 9/Week 32, Visit 11/Week 40, Visit 12/Week 44, Visit 14/Week 52, Visit 15/Week 56, Visit 17/Week 64, Visit 18/Week 68, Visit 20/Week 76, Visit 21/Week 80 or Visit 23/Week 88. If disease activity is identified, the subject will be reassigned to receive injections every 8 weeks (q8) thereafter, up to study exit. Refer to protocol Section 10.1 for disease activity guidance criteria.

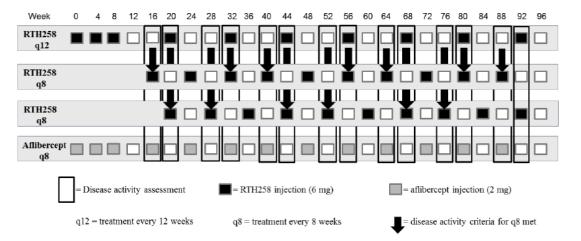
In Arm 2, aflibercept 2 mg, (EYLEA, comparator) will be injected 3 times at 4-week intervals (Visit 1/Baseline, Visit 2/Week 4 and Visit 3/Week 8), followed by injections q8 up to Visit 23/Week 88.

The dosing schedule by treatment is presented graphically below.

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Figure 1 Dosing schedule by treatment



1.1.1 Randomization

A member of the Statistical Programming group at Alcon who is not part of the study team will generate the randomized allocation for the study treatment assignment based on a randomization plan providing study specific criteria for randomization including block size and randomization ratio. Treatment is assigned to subjects through the Interactive Response Technology (IRT) system. Each subject number is associated with a treatment group according to the randomized allocation generated using the computer software SAS version 9.2 PROC PLAN. Subjects are assigned numbers sequentially according to time of randomization.

Eligible subjects will be randomized to one of the two treatment arms, Brolucizumab 6 mg/50 μ L or Aflibercept 2 mg/50 μ L, in a 1:1 ratio at Visit 1/Baseline. There are no stratification factors in this study. Central randomization, without stratification by investigational site, will be employed. The randomization schedule will be blocked to ensure a balance of treatment allocations across the study.

1.1.2 Masking

This is a double—masked study. The investigator, investigator staff (except for the unmasked site personnel and unmasked injecting physician), subjects and Sponsor personnel (except for those who have been delegated responsibility for working with the IP) involved with conduct of the trial are masked with regard to treatment assignment while the study is in progress. Sponsor personnel who have access to treatment codes (e.g., randomization specialist, personnel directly involved with bioanalysis of serum samples, unmasked monitors performing investigational product accountability and Clinical Supplies personnel) will not divulge the codes to subjects, Investigators, site staff, and Sponsor personnel involved in the conduct of the study. Masking is maintained by providing sham injections. With this setup, subjects will continue to receive masked treatment through the planned study duration (96 Weeks) to allow for further masked evaluation of efficacy and safety. Treatment masking will remain intact also for Investigators, and staff from the Sponsor who have contact with subjects or Investigators or those who are involved in the direct conduct of the study until the final database lock (Week 96) has occurred.

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The primally analysis at Week 48 will be performed with an unmasking of specified

The primaly analysis at Week 48 will be perfonned with an unmasking of specified individuals from the Sponsor who are not involved in the direct conduct of the trial. The biostatistician who is directly involved in the conduct of the study will remain masked to treatment assignments while the study is in progress.

Details on the conduct and logistics of the unmasked team that will perform the primaly analysis will be provided in a separate document (process map for Week 48 unmasking). Two process map documents detailing the work-flow were prepared, reviewed and agreed upon by the study team prior to Week 48 database lock and unmasking. These are

- 1. Process map for maintaining the mask during protocol deviation and analysis restriction determination for RTH258 in wet AMD during the submissions: This document describes how study team managed protocol deviation and analysis restriction assessment which require access to unmasked info1mation.
- 2. Maintaining the masking of the Phase III studies (RTH258A2301andRTH258A2302) after the 1 year primaiy analysis database lock: This document describes who will have access to unmasked infimmation post-DBL and the steps to be taken to minimize risks of unmasking and introduction of bias to the analysis.

1.1.3 Primary analysis

The primaly safety and efficacy analysis will be based on the Week 48 data, i.e. all data up to and including Week 48. This analysis will be perfimmed once all subjects completed their Week 48 visits or ternlinated the study before Week 48, while subjects continue to receive masked treatment through the plalllled study duration of 96 Weeks. The analysis of the data collected after the Week 48 visit will be performed once all subjects completed or discontinued from the study.

1.1.4 Data monitoring committee(DMC)

An independent Data Momtming Committee (DMC) will be established to momtor the safety of the trial palticipants, and make appropriate recommendations based on the safety data reviewed.

Details on the DMC membership, responsibilities, timing of meetings, data to be reviewed, and commumcation with the Sponsor will be described in the DMC chaiter. All statistical analysis conducted for the purpose of the DMC is outside the scope of this SAP and is covered in the DMC chatter and other suppolting documents. The unmasked analyses for the DMC will be conducted by an independent contract research organization. Access to the unmasked analysis results will be limited to the DMC members only.

1.2 Study objectives and endpoints

1.2.1 Objectives

Primary Objectives:

• To demonstrate that RTH258 6 mg is not inferior to aflibercept 2 mg with respect to the change in best-conected visual acuity (BCVA) from Baseline to Week 48

Key Secondary Objectives:

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 To demonstrate that RTH258 6 mg is not inferior to aflibercept 2 mg with respect to the change in BCVA from Baseline averaged over the period Week 36 to Week 48

- To estimate the propolition of ql 2 subjects up to Week 48 in the RTH258 6 mg
- To estimate the predictive value of the first ql 2 cycle for maintenance of ql2 treatment up to Week 48 in the RTH258 6 mg treatment aim

Other Secondary Objectives:

treatment rum

- To evaluate the efficacy of RTH258 6 mg relative to aflibercept 2 mg over the time period up to Week 96 by assessing changes in:
 - o BCVA
 - o Anatomical parameters of disease activity including central subfield thickness (CSFT), choroidal neovascularization (CNV) area, presence of subretinal, intraretinal, and subRPE fluid, and absence of intraretinal and subretinal fluid
 - o Presence of "q8 treatment need", including assessment of q1 2 status for subjects in the RTH258 6 mg treatment rum
 - o Visual function related subject repolted outcomes
- To assess the safety and tolerability of RTH258 6 mg relative to aflibercept 2 mg

1.2.2 Endpoints

1.2.2.1 Efficacy Endpoints

PrimaryEndpoint

The primaly efficacy endpoint is change in BCVA from baseline to Week 48

Key Secondary Endpoints

The key secondal yefficacy endpoints are:

- Average change in BCVA from Baseline over the period Week 36 through Week 48
- ql 2 treatment status at Week 48 for subjects randomized to RTH258 6 mg
- ql 2 treatment status at Week 48 within the subjects randomized to RTH258 6 mg and with no q8 need dming the first ql 2 cycle (Week 16 and Week 20)

Additional Secondary Efficacy Endpoints

- Change in BCVA from Baseline to each postbaseline visit
- Average change in BCVA from Baseline over the period Week 84 through Week 96
- Average change in BCVA from Baseline over the peli od Week 4 to Week 48/96
- Average change in BCVA from Baseline over the period Week 12 to Week 48/96
- Gain in BCVA of 15/10/5 letters or more from Baseline to each postbaseline visit
- Number and percentage of subjects with BCVA of 73 letters or more at each visit

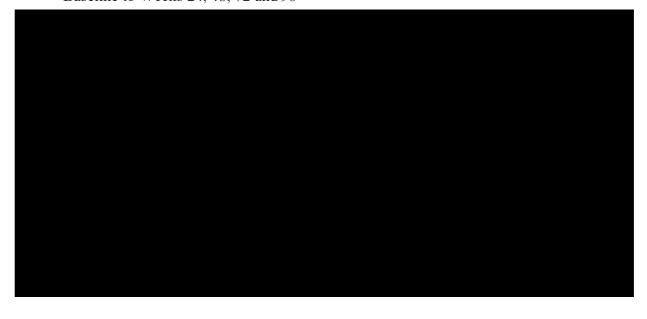
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• Loss in BCVA of 15/10/5 letters or more from Baseline to each postbaseline visit

- Loss in DC v A of 15/10/5 letters of more from baseline to each postoaseline visi
- q12 treatment status at Week 96 (for subjects randomized to RTH258 6 mg only)
- q12 t1eatment status at Week 96 within the subjects with no q8 need dming the 1st q12 cycle (Week 16, Week 20) (for subjects randomized to RTH258 6 mg only)
- 'q8 treatment need' at Week 16
- Change in CSFT from Baseline to each postbaseline visit
- Average change in CSFT from Baseline over the period Week 36 through Week 48/
 over the period Week 84 through Week 96
- Average change in CSFT from Baseline over the period Week 4 to Week 48/96
- Average change in CSFTns from Baseline over the peliod Week 12 to Week 48/96
- Change in CSFTns from Baseline to each postbaseline visit
- Change in area of CNV within the lesion from Baseline to Weeks 12, 48 and 96
- Presence of subretinal fluid (central subfield) at each postbaseline visit
- Presence of intraretinal fluid (central subfield) at each postbaseline visit
- Presence of sub RPE fluid (central subfield) at each postbaseline visit
- Simultaneous absence of subretinal and intraretinal fluid (central subfield) at each postbaseline visit
- Presence of subretinalhemonhage (central subfield) at each assessment visit
- Presence of intraretinal hemonhage (central subfield) at each assessment visit
- Simultaneous absence of subretinal and intraretinal hemonhage (central subfield) at each assessment visit
- Change in subject repo1ted outcomes (VFQ-25) total and subscale scores from Baseline to Weeks 24, 48, 72 and 96



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1.2.2.2 Safety Endpoins

The safety endpoints are based on the following assessments:

- Extent of exposure
- Adverse events
- General physical exam
- Vital signs
- Laborato 1 y tests (Blood chemistly, hematology and urinalysis)
- Loss in BCVA
- Slit-lamp examination (aqueous reaction [cells and flare])
- Fundus exam (retinal hemon hage/detachment, vitreal hemon hage density and vitl"eous cells)
- Color fundus photography (presence of geographic atl"ophy and fibrosis)
- Fundus autofluorescence (for presence and area of atrophy)
- IOP
- Post-injection assessment (gross assessment of vision, IOP, status of cential retinal artely and presence of retinal detachment/new inti-aocu lar hemonhage)
- Anti-diug antibodies (ADA) and sernm concenti ation of RTH258

2 Statistical methods

2.1 Data analysis general information

The primaly analysis at Week 48 and the final analysis after all subjects completed / telminated the study will be performed by the Biostatistics and statistical programming groups of Novaltis using SAS 9.4 or higher.

Tables will be presented based on the unit subject, with ocular parameters presented separately for the study- and fellow-eye as applicable.

Continuous variables will be summarized using the number of observations, mean, median, standard deviation, standard enors, quaitiles, minimum and maximum values. Categorical

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variables will be summarized with the number of observations, the number of observations for each category and the corresponding frequency and percent. Where appropriate, two-sided 95% confidence intervals for point estimates of the mean or proportion will be provided. Point estimates and two-sided 95% confidence intervals of treatment group differences and p-values will be provided as appropriate.

Output will be presented by treatment and for the study population descriptions at baseline, also for the overall populations. Listings will include the following identifying variables: treatment, investigator number, country, subject number, age, sex, race, and visit. In addition, ocular assessments will include identification of the study and fellow eye.

2.1.1 General definitions

Investigational product (IP) or treatment refers to both Broclucizumab 6 mg and Aflibercept 2 mg IVT injections.

Baseline (Day 1) is the date of the first study treatment in the study. The Baseline value for efficacy and safety variables is the last available value collected prior to the first treatment which can occur at the Baseline or Screening visits.

All data collected after the first study treatment are defined as *post-Baseline*. The *study day* for a post-Baseline scheduled or unscheduled visit is defined as:

Study day = (date of visit) - (date of first study treatment) + 1

The study day for a scheduled or unscheduled visit before Baseline is defined as

Study day = (date of visit) - (date of first study treatment)

End of study/end of treatment day mapping:

The end of study date (from the 'Visit date' form in CRF) is the date when a subject completes or discontinues the study. The "Date of Last Exposure" (from CRF 'Exposure' form) is the date of the last study treatment on or prior to the end of study date. For reporting data by visit in outputs, the end of study/end of treatment visit will be allocated to the actual (reported) visit number. If end of study date is not on a scheduled visit, then end of study visit will be allocated based on study day to the closest future scheduled study visit.

Unscheduled visits:

All data collected at unscheduled visits will not be used in 'by-visit' tabulation or graphs, but they will be included for analyses based on all post-Baseline values such as LOCF imputation, safety narratives, summary of maximum decrease or increase from baseline for laboratory and vital signs data.

All data collected at unscheduled visits will be included in listings.

2.2 Analysis sets

Subject evaluability based on pre-specified deviations from the protocol and/or analysis requirements and their impact on analysis sets will be determined prior to locking the database for the primary analysis at Week 48 and breaking the masked treatment assignment code.

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Before the Week 48 database lock, the relevant protocol deviations and analysis restrictions will be specified in the deviations and evaluability plan (DEP) document with the analysis restrictions also presented in Section 5.3. The corresponding identifications at the subject level will be captured in the database and locked prior to unmasking.

2.2.1 All Enrolled and All Randomized Analysis Sets

All enrolled analysis set includes all subjects who signed informed consent and are assigned subject numbers.

All randomized analysis set (RAN) includes all subjects who were randomized in IRT.

2.2.2 Efficacy Analysis Sets

All efficacy analyses will be conducted according to the randomized treatment assignment.

2.2.2.1 Full analysis set

The full analysis set (FAS) includes all randomized subjects who receive at least one IVT injection of the study treatment. The full analysis set (FAS) will serve as the primary analysis set for all efficacy analyses. The FAS represents the analysis set which is as close as possible to the intent-to-treat (ITT) principle of including all randomized subjects.

2.2.2.2 Per protocol analysis set

Supportive analyses of the primary and secondary endpoints will include analysis using the per protocol set (PPS). PPS is a subset of the FAS and will exclude subjects with protocol deviations and analysis restrictions that are expected to majorly affect the validity of the assessment of efficacy at Week 48 including for e.g. lack of compliance (including missed treatments and treatment misallocation), missing data, prohibited concomitant medication and deviation from inclusion/exclusion criteria. Discontinuation from treatment due to lack of efficacy and/or safety does not constitute a reason for exclusion from the PPS.

Before the Week 48 database lock the relevant protocol deviations and analysis restrictions will be identified at the subject level in the database.

When assessing the robustness of the overall efficacy conclusions, equal importance will be given to the FAS and PPS results understanding that a robust study will demonstrate similar conclusions from both analysis sets. Inconsistencies in key efficacy study results between the FAS and PPS will be examined and discussed in the clinical study report (CSR).

2.2.2.3 Safety Analysis Set

The safety analysis set (SAF) will include all subjects who receive at least one IVT injection. Subjects in the safety analysis set will be analyzed according to the treatment arm from which they received majority of treatments up to and including Week 44.

To capture potential procedure related AEs occurring in subjects without having received at least one IVT injection, all AEs of randomized subjects not belonging to the SAF occurring at or after the day of randomization will be listed separately.

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2.2.3 Subgroups of interest

The subgroups of interest are listed below:

- Age category (<75 years and ?.75 years)
- Gender (male and female)
- Baseline BCVA categories (:S55,56-70, ?.7 1 letters)
- Ba se line CSFT category (<400, ?.400 microns)
- Baseline lesion type (predominantly classic, minimally classic, occult)
- Baseline CNV lesion size (tertiles)
- Baseline lesion size by lesion type (predominant classic vs. minimally classic/occult) (tertiles)
- Baseline fluid status (intraretinal fluid (IRF), subretinal fluid (SRF), sub-retinal pigment epithelium (sub-RPE) fluid)

Subgroup analysis will be performed for the primary and key secondary efficacy variables. More details can be found in Sections 2.5.4, and 2.6.4.

2.3 Subject disposition, demographics and other baseline characteristics

Subject characteristics and study conduct summaries include tables and listings such as a subject disposition table, demographics and baseline characteristics tables, listing of treatment assignment by investigator, summary of scree n failures by reason and listing of subjects excluded from the full analysis, per-protocol and safety analysis sets including the conesponding reasons and censoring.

No tests for differences in background and demographic characteristics between tt-eatment groups will be performed. Potential related differences will be assessed based on clinical relevance.

2.3.1 Subject disposition

Subject disposition table will be based on the All-randomized analysis set. The following summar ies will be included in the disposition table: number and percent of subjects who were randomized and treated (= received at least one injection), completed the study, discontinued from tt·eatment/ study overall and by reason of discontinuation. Percentages will be based on the number of subjects who are randomized. If there were dosing enors where subjects received treatment other than what they were randomized to, separate summaries will be presented based on 'as tt·eated', while the 'as treated' status will be derived from the majority of tt·eatmenst received.

A subject is considered to have completed a study period (Week 48 / Week 96) if he/she did not discontinue study prior to the end of this period. Discontinuation at Week 48 with exit visit assessment performed is considered as 'co mpleted' for the Week 48 analysis.

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Number and percent of subjects who failed screening (i.e. were not randomized) will be presented by reason using the All-emolled analysis set. Appropriate table and listing of all screen failures along with the con esponding reason will also be presented as necessaly.

Number and percent of subjects who were excluded (i.e. not evaluable) from each of the SAF, FAS, and PPS will be presented using the All-randomized analysis set. A listing of subjects along with the analysis set that they were excluded from and the con esponding reasons will also be presented.

Number and percent of subjects with major protocol deviations and analysis restrictions will be presented by deviation/restriction categoly. A listing of all relevant deviations/restrictions will be presented.

A listing of subjects who discontinue from the study and/or treatment early will be provided. The listing will identify the visits completed and when the study or treatment was discontinued including the con esponding reasons.

2.3.2 Demographic and baseline characteristics

Demographic table will include: age (both as a continuous variable and using categories (:564, 65 to 74, 75 to 84, and 2:85), gender, race, ethnicity. Demographic summaiy tables will be presented for the All-randomized, SAF, FAS and PPS.

Baseline characteristics table will include: primalydiagnosis of nAMD, time since diagnosis of n AMD (days), whether nAMD is unilateral or bilateral, BCVA (both as a continuous variable (letters read) and using categories (:555, 56-70, 2:71 letters rea d), type of CNV (predominantly classic, minimally classic, occult), CNV location (subfoveal, juxtafoveal, extrafoveal, absent), area of CNV associated with the lesion (mm²), presence of subretinal fluid, presence of intraretinal fluid, presence of sub RPE fluid, presence of RAP lesion, central subfield neurosensoly retinal thickness (CSFTns) and central subfield thickness total (CSFTtot) (both as a continuous variable and using categories (<250, 2:250 μ m)/(<400, 2:400 lm) respectively). The baseline characteristics table will be presented separately for the study and fellow eye.

A subject listing containing all demographics info1m ation by investigator will be presented using the All-randomized analysis set. The listing will also include columns for the randomized treatment, the number of active injections by treatment and the majority of the actual treatment received for a subject.

2.4 Treatments (study treatment/ compliance, rescue medication concomitant therapies)

2.4.1 Study treatment *I* compliance

Extent of exposure to investigational product is calculated as the number of injections received. The following summaries will be presented based on the FAS and PPS.

- Overall number of treatments will be presented separately (active and sham, active only, sham only) in the following time periods:
 - o Baseline to Week 8

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o Week 12 to Week 44

- o Baseline to Week 44
- o Week 48 to Week 92
- o Baseline to Week 92
- Treatment exposme by visit: The number and percent of subjects who received active, sham injections, missed a tTeatment (active or sham) and missed visits will be presented separately by visit and by treatment status (q8, q12) for the Brolucizumab treatment group.
- Frequency of all observed dosing patterns up to and including Week 44 and up to Week
 92 differentiating between active and sham treatments, missed treatments and wrong treatments will be presented.
- Q12/q8 allocation for RTH258subjects by visit: Number and percent of RTH258 subjects on q12 and q8 including the number of subjects switched from q12 to q8 with related reasons.

2.4.2 Medical history, prior/concomitant medication and concomitant procedures

2421 Medical history

Medical history (ocular and non-oculai') will be tabulated by system organ class and prefened te1m of the MedDRA dictionaiy using the All-randomized analysis set. Ocular events will be presented sepai ately by study and fellow eye. A listing of all medical history data will be provided.

2422 Prior medication

Prior medications (ocular and non-ocular) will be summarized using number and percentage of subjects by ATC class and prefen ed term according to the WHO Drug reference list dictionaly using the all-randomized analysis set. Prior medications are those that have a start date prior to the first IVT injection date. Ocular medications will be presented separately for the study and fellow eye. Prior medications will be classified in addition as whether or not they were endedprior to the first IVT injection date. A listing of all prior medications will be provided.

2423 Concomitant medication

The number and percentage of subjects taking concomitant medications will be summarized by ATC class and prefened telm according to the WHO Drug Reference List dictionary using the safety analysis set. Medications that were taken dming the treatment period, including those that stalted prior to first injection but continued after treatment stalt, will be summarized as concomitant medications. Concomitant medications will be classified in addition as whether or not they stalted prior to first IVT injection for ocular medications, separate summaries will be presented for study and fellow eye. A listing of all concomitant medication will be provided.

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2424 Concomitnt procedures

The number and percentage of subjects who had procedures done during the study will be summarized by system organ class and prefe1Ted te1m according to the MedDRA dictionaly using the safety analysis set. For ocular procedures, separate summaries will be presented for study and fellow eye. A listing of all concomitant procedures will be provided.

2.5 Analysis of the primary and first key secondary objectives

2.5.1 Primary and first key secondary endpoints

- The primaly efficacy endpoint is change in BCVA from baseline to Week 48. Best-conected visual acuity will be measured based on the procedures developed for the Early Treatment Diabetic Retinopathy Study (ETDRS) and the results will be rep01ted in letters.
- The first key secondaly endpoint is average change in BCVA from Baseline over the period Week 36 through Week 48. For each subject, this endpoint is defined as the average of the changes from baseline to Weeks 36, 40, 44 and 48. The motivation for the choice of this endpoint is that, averaging the BCVA values over Week 36 to Week 48 will smooth out both random fluctuations and potential trough and peak values during the different treatment cycles. During the period Week 36 to Week 48, aflibercept and RTH258 subjects on q8 will have 2 assessments 4 weeks after the last dose, and 2 assessments 8 weeks after the last dose, 1 assessment 8 weeks after the last dose, and 1 assessment 12 weeks after the last dose.

The primary efficacy analyses of these two endpoints will be based on the FAS with last-observation-calTied-f 01ward (LOCF) imputation of missing BCVA values.

2.5.2 Statistical hypothesis, model, and method of analysis

The statistical hypothesis for the primaly and first key secondary endpoints is that RTH258 6 mg is not inferior to aflibercept 2 mg within a non-inferiority margin of 4 letters.

The following 2 hypotheses will be tested in the pre-specified hierarchical sequence according to their numbering \mathbf{HAn} , $\mathbf{n}=1$, 2

```
48 = Week 48, 36-48 = Week 36 through 48, R6=RTH258 6mg, A=aflibercept 2 mg
```

```
Hoi: \mu48R6 - \mu48A:S -4 letters vs. HAi: \mu48R6 - '48A\geq -4 letters
```

14 8R6 and μ48A being the co1Tesponding unknown hue mean BCVA changes from Baseline to Week48.

```
Ho2: \mu36-48R6 - \mu36-48A : S -4 letters vs. HA2: \mu36-48R6 - \mu36-48A > -4 letters
```

 μ 364&6 and t364&4 be ing the colTesponding unknown hue mean values for the average change in BCVA from Baseline over the period Week 36 through 48.

The primaly and first key secondary endpoints will be analyzed by fitting an analysis of var iance (ANOVA) model with treatment, baseline BCVA categories (:S55, 56-70, 2':71 letters)

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and age categories (<75, ≥ 75 years) as fixed effects. Least square means for each treatment group and treatment differences together with corresponding two-sided 95% CIs will be derived from the fitted model. Non-inferiority is demonstrated if the lower limit of the two-sided 95% confidence interval for the treatment difference (RTH258 6 mg– aflibercept 2 mg) is greater than -4 letters. The 2 hypotheses listed above will be tested in the pre-specified hierarchical sequence according to their numbering (H_{An} , n=1, 2). Consequently, confirmatory testing of the second hypothesis requires rejection of the first null hypothesis. In this setting, each hypothesis will be assessed at a two-sided significance level of 0.05, while keeping the global type I error rate at 0.05.

2.5.3 Handling of missing values/censoring/discontinuations

Missing data will be imputed using last observation carried forward (LOCF) method. Observed values from both scheduled and unscheduled visits will be used for the LOCF imputation. For subjects with no postbaseline value, the baseline value will be carried forward.

For subjects who discontinue treatment but continue in the study, the efficacy data will be censored at the time the subject started alternative anti-VEGF treatment in the study eye. Censored or missing data will be imputed by the last observation prior to receiving alternative anti-VEGF treatment.

2.5.4 Supportive analyses

The following supportive analyses will be done:

- 1. Descriptive statistics for the primary and first key secondary endpoints will be presented based on LOCF imputation for missing /censored values using the FAS and PPS. In addition observed data with and without censoring will be presented descriptively using the FAS. For the PPS, observed values will be presented descriptively excluding censored data. As a result, for the primary endpoint, all subjects with missing Week 48 BCVA value will not be considered. Similarly, for the endpoint 'average change in BCVA from Baseline over the period Week 36 through Week 48', only non-missing values at Weeks 36, 40, 44, and 48 will be averaged for the 'observed data' analysis.
- 2. ANOVA using the PPS with LOCF imputation for missing/censored values. The same model as in the primary analyses will be fitted for this supportive analysis.
- 3. Mixed model repeated measures (MMRM) using the FAS and PPS with observed data (including censoring for alternative anti-VEGF). The MMRM will include treatment, visit, baseline BCVA category, age category and treatment by visit interactions as fixed-effect terms and visit as a repeated measure. An unstructured covariance matrix will be used to model the within-subject error. For the MMRM analysis:
 - a. The treatment difference at Week 48 will be estimated using the LSM and 95% percent confidence interval.
 - b. For the endpoint of average change from Baseline over the period Week 36 through Week 48, a SAS code utilizing the ESTIMATE statement in PROC MIXED will be provided in the programming specification document to obtain

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SAP V2.0 9 the LSM estimate for the coITes p ondin g trea tment difference and 95%

the LSM estimate for the colles p ondin g trea tment difference and 95% confidence interval.

- c. If an MMRM model with unstructured covariance matrix does not converge, a more restricted covariance matrix can be considered in the following order until convergence is reached: variance components (VC), compound symmetJ.y (CS), first-order autoregressive (AR) and Toeplitz(TOEP).
- 4. Subgroup analyses will be conducted to assess the consistency of tJ.e a tm e nt effect across various subgroups described in Section 2.2.3. The FAS with missing values imputed using LOCF and observed case analysis will be used for the subgroup analyses.
 - a. Subgroup analyses will be conducted using the same model and analysis stJ·a teg ies d escr ibed for the primaly and first key secondalyanalyses but fitted by categoly of each of the subgroups. Subgroup variables that are used as fixed effects in the model will be removed from the model statement for the subgroup analysis.
 - b. Subgroup analysis results will be presented using forest plots.

2.6 Analysis of the second and third key secondary objectives

2.6.1 Second and third key secondary endpoints

The second and third key secondary endpoints are:

- 1. q12 tJ: ea tment status at Week 48 for subjects randomized to RTH258 6 mg.
- 2. q12 treatment status at Week 48 within the subjects randomized to RTH258 6 mg, with no q8 need during the first q12 cycle (Week 16 and Week 20), i.e. for how many subject was a positive q12- status for the first q12 cycle predictive for the adequacy of q12 n-ea tment up to Week 48.

2.6.2 Statistical hypothesis, model, and method of analysis

No hypothesis will be tested for the second and third key secondaly efficacy endpoints.

Propolition of subjects with positive q12 tJ·.eat ments at We ek 48 in the RTH 258 tJ.e· atment aim overall and within the subjects with no q8 n-eatment need dming the first q12 cycle (Week 16 and Week 20) will be presented together with two-sided 95% confidence intelvals..

While for the analysis of the overall q12 propmtion, all subjects in the FAS will be considered, the analysis of the predictive value of 'no q8-need dming the first q12 cycle' is based on the subset of FAS subjects with no identified q8-needat Week 16 and Week 20. For this subset a valid Week 20 disease activity is required while missing the Week 16 assessment is considered as no q8-need.

Thuing the conduct of the study, confounding effects emerged requiring consideration to allow for a sensitive assessment of the q12 potential of RTH258. These include the following findings:

- Eai·ly treatment/ study discontinuation
- Single missed visit

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• Forbidden concomitant medications / procedures

• Discrepancy between the disease activity assessment by masked investigator and the actual treatment received (specifically over-treatment, i.e. switch to q8 treatment without identified need. Remark: related under-treatment is not of concern as the analysis is based on the identified q8-need and not on the actual treatment).

• Other treatment allocations /applications deviating from the concept of disease activity'.

Following the estimand concept of the study protocol that consequences of lack of efficacy and/or lack of safety need adequate reflection in the efficacy estimates, the proportions of patients with a positive q12 treatment status will be derived as follows requiiing duration of effect (as assessed by the q8-need) together with 'sufficientefficacy and safety':

- For the 'duration of effect' requirement subjects will need to have the status of 'q8-need = no' at all <u>performed</u> disease activity assessments relevant for the con esponding endpoint unless the status 'q8-need = yes' is confounded by reasons other than lack of efficacy and/or safety (see censoring details below).
- The requil ement regarding 's ufficient efficacy and safety' will be addressed by considering subjects even without an explicit 'q8-need=yes' as having a negative q12 status in case any of the following confounding factors is attributable to lack of efficacy and/or lack of safety of the study treatment (assessed based on a masked medical review): early treatment / study discontinuation, use of forbidden concomitant medications / procedures and/or other deviation from treatment schedule (e.g. due to a missed visit/treatment). The conesponding q8-need will be allocated to the next disease activity assessment visit (according to protocol) following the occmTence of such a confounding factor.

In case the missing or confounded data regarding the q12-status are attributable to reasons other than lack of efficacy and/or safety the subject is censored within the q12-status analysis according to the following specifications:

- o Early treatment / study discontinuation: Censoring at the last valid disease activity assessment at or prior to the discontinuation. Single missed visit with a relevant disease activity assessment: Censoring at the last valid disease activity assessment prior to the missed visit.
- o Forbidden concomitant medications / procedures: Censoring at the last valid disease activity assessment prior to the con esponding application.
- o Discrepancy between disease activity assessment by masked investigator and the actual treatment received: Censoring at the visit of the discrepancy (assuming this disease activity assessment is valid)
- o Other treatment allocations /applications deviating from the concept of 'disease activity'. Censoring: at the last valid disease activity assessment at or prior to the deviation.

The estimate for the proportion of patients with a positive q12-status at Week 48 will be derived from Kaplan Meier time-to-event analyses for the event 'first q8-need' applying event allocations (in case of lack of efficacy and/or lack of safety) and censoring as described above. A corTesponding 95% CI will be derived from the LOGLOG transformation (see SAS Proc Lifetest, CONFTYPE=LLOGLOG).

The outcome of the Kaplan Meier analyses will be presented graphically by the estimated q12-probabilityover time, i.e. at each DAA-visit.

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Remark: Subjects without any relevant valid disease activity assessment are considered censored at BL for the overall q12-proportion and at Week 20 for the analysis of the predictive value of the first q12 cycle.

2.6.3 Handling of missing values/censoring/discontinuations

The details regarding handling of missing values and discontinuations including the timing of censoring within the time-to-event analyses for the event 'first q8-need' are specified above.

2.6.4 Supportive analyses

- 1. 'Conservative' approach:
 - a. For the overall q12-proportion at Week 48 the denominator is the number of FAS subjects in the RTH258 3 mg/6 mg groups, and the numerator is the corresponding number of subjects with no identified q8-need at Week 16, 20, 28, 32, 40 and 44 (while missing the Week 20, 32 and/or Week 44 assessment leads to an allocation of q8-need as compared to a missing assessment at Week 16, 28 and 40 which is considered as no q8-need at this visit) and no episode of overtreatment, i.e. treatments after Week 8 are limited to Week 20, 32 and 44 (and Week 56, 68, 80 and 92 for the Week 96 analysis).
 - b. Correspondingly for the q12-proportion at Week 48 in subjects with 'q8-need =no' during the first q12 cycle (Week 16 and Week 20) the denominator is the number of FAS subjects in the RTH258 3 mg/6 mg groups with no identified q8-need at Week 16 and Week 20 (requiring a valid assessment at Week 20 while missing the Week 16 assessment is considered a no q8-need), and the numerator being the number of corresponding subjects with a positive q12 treatment status at Week 48 i.e. with additionally 'q8 need =no' at Week 28, 32, 40 and 44 and no episode of overtreatment (see above).
- 2. 'LOCF' approach: This approach follows in principle the same concepts as described above under the 'conservative' approach with the difference that the numerator is the number of subjects with no identified q8-need and no episode of overtreatment, while only the available disease activity assessments are considered, i.e. missing assessments are not translated into a q8-need.

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3. 'Efficacy only' approach: This approach follows the concept of time-to-event analysis as described above for the primary analysis approach of the q12-status with the difference only requiring 'sufficient efficacy', i.e. an allocation of a negative q12-status - even without an explicit 'q8-need=yes' - in case any of the following confounding factors is attributable to lack of efficacy of the study treatment (assessed based on a masked medical review): early treatment / study discontinuation, use of forbidden concomitant medications / procedures and/or other deviation from treatment schedule (e.g. due to a missed visit/treatment) In case of a corresponding safety reason the subject will be censored at the last valid disease activity assessment at or prior to the corresponding event.

- 4. The analyses described above for the FAS will be repeated using PPS applying the same censoring and imputation concepts.
- 5. Subgroup analyses will be conducted to assess the consistency of the q12 proportion across various subgroups described in Section 2.2.3. These analysis will be based on the Kaplan Meier time-to-event analyses for the event 'first q8-need' as specified in section 2.6.2 using the FAS. Subgroup analysis results will be presented by the estimated q12-probability over time, i.e. at each DAA-visit and forest plots based on the 95% CI of the corresponding Week 48 probability.
- 6. Supportive analyses to assess the relationship between the actual investigator decisions and the treatment guidance provided in the protocol will be performed using the following analyses:
 - a. For each DA assessment visit, the number and percentage of subjects who according to the treatment guidance have a q8-need (see below) will be described separately for those with and without q8 treatment-need as assessed by the investigator for both treatment arms. For RTH258 subjects, the same analysis will be repeated, but only up to and including the first q8 treatment need decision.

Visit	Q8 Treatment need as derived from protocol guidance: A subject is considered to have a q8 treatment need at a given visit if at least one of the corresponding criteria is fulfilled.						
Week 16	Decrease in BCVA of ≥ 5 letters compared with Baseline						
	Decrease in BCVA of \geq 3 letters and CSFT increase \geq 75 μ m compared with Week 12						
	Presence of IRF at Week 16 while absent at Week 12						
	Increase in CSFTns of at least 10 microns from Week 12 to Week 16 (worsening of IRF)						
	Decrease in BCVA of \geq 5 letters from Week 12 AND presence of at least one of the following fluids at Week 16: IRF, SRF, and subRPE						
Weeks 20, 28,	Decrease in BCVA of ≥ 5 letters from Week 12 AND presence of						

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32, 40 and 44: at least one of the following fluids at the relevant visit: IRF, SRF, and subRPE

Weeks 52, 56, Decrease in BCVA of ≥ 5 letters from Week 48 AND presence of at least one of the following fluids at the relevant visit: IRF, SRF, 88 and 92

and subRPE

- b. For RTH258 subjects who were identified by the investigator as having their first q8-treatment need after Week 20, their status regarding the treatment guidance criteria at Week 16 and Week 20 will be presented. For this analysis, the number of subjects who met/did not meet the treatment guidance criteria at Week 16 and Week 20 will be presented in a cross tabulation.
- c. For subjects on q12 treatment at Week 48 and who lost 5 letters or more from Week 12 to Week 48, the treatment guidance status at each of the DA assessment visits will be presented. For this analysis, the number of subjects for each of the patterns of the treatment guidance status at Weeks 16, 20, 28, 32, 40 and 44 will be presented in a summary table similar to the one shown below:

Week	16	20	28	32	40	44	n (%)
Patterns	n	n	n	n	n	n	xx (xx.x%)
	р	n	n	n	n	n	xx(xx.x%)
Total							N (100%)

Treatment guidance status: n= negative status, p=positive status

Assessment of the relevance of the disease activity assessment visits 8 weeks after the last q12 treatment in the RTH258A2302 study

The RTH258A2302 study has disease activity assessment visits 8 weeks after the last q12 treatment at Weeks 28, 40, 52, 64, 76 and 88. The relevance of these additional DA assessment visits will be investigated using the following analyses:

a. Quantitative comparison within a treatment cycle and treatment group:

For RTH258 within each q12 cycle following Week 20 (i.e. Week 20 to Week 32, week 32 to week 44, Week 44 to Week 56, Week 56 to Week 68, Week 68 to Week 80, and Week 80 to Week92), the number of new q8-treatment needs will be compared between those identified 8 weeks after the last injection and those identified 12 weeks after the last injection. The following format will be used:

q12-cycle	Number of subjects at risk at the beginning of cycle	Total new q8-need	New Q8-need after 8 weeks from last injection	New Q8-need only after 12 weeks from last injection
Week 20 – Week 32	N = number of patient on q12 at Week 20	X (100*X/N %)	k (100*k/X %)	k (100*k/X %)

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	Week 32 – Week 44	N = number of patient on q12 at Week 32			
			:	:	
	Week 80 – Week 92	N = number of patient on q12 at Week 80			
	Total	N = number of patient on q12 at Week 20			

b. Quantitative comparison of new q8 needs identified at 8 week-assessments for RTH58 subjects versus 4 week-assessments for Eylea

For each q12-cycle, the proportion of RTH258 subjects (relative to the subjects still on q12) with a newly identified q8-need 8 weeks after the last injection will be compared to those Eylea subjects where a new q8 treatment need is identified 4-weeks from the last injection.

The following format will be used to present the result:

		RTH258	3	Eylea			
RTH258 Q12-cycle	Disease activity assessment visit	of after 8 weeks essment subjects since last		Disease activity assessment visit	New Q8-need after 8 weeks since last visit		
Week 20 – Week 32	Week 28 (last treatment Week 20)	N = number of patient on q12 at Week 20	K _{1r} (100*k _{1r} /N %)	Week 28 (last treatment Week 24)	N=number of patients on 'q12' (=wo q8- need) at week 20	K _{1e} (100* k _i /N %)	
Week 32 – Week 44	Week 40 (last treatment week 32)	N = K _{2r} (100*k _{2r} /N % number of patient on q12 at Week 32		Week 44 (last treatment week 40)	N=number of patients on 'q12' (=wo q8- need) at week 40	K _{2e} (100*k _{2e} /N %)	
Week 80 – Week 92	Week 88 (last treatment week 80)	N = number of patient on q12 at Week 80	K _{7r} (100*k _{2r} /N %)	Week 92 (last treatment week 88)	N=number of patients on 'q12' (=wo q8- need) at week 80	K _{7e} (100*k _{7e} /N %)	

Where K_{ir} =number of RTH258 subjects with new Q8-need after 8 weeks since last treatment on the ith q12 cycle; K_{ie} = number of Eylea subjects with new Q8-need after 4 weeks since last treatment during the ith RTH258 q12 cycle

c. Qualitative comparison of the disease activity between treatments regarding subjects with a new q8 need identified at 8 week-assessments for RTH58 subjects versus 4 week-assessments for Eylea

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For the coholt's Kir, Kie, i=1,...,7 (see above), the number and percentage of subjects with a positive disease activity status DA assessed according to the treatment guidance criteria given in Section 2.6.4 will be presented.

2.7 Analysis of additional secondary efficacy objective(s)

2.7.1 Secondary endpoints

The secondaly endpoints are:

- Change in BCVA from Baselineto each postbaseline visit
- Average change in BCVA from Baseline over the peliod Week 84 through Week 96.
 For each subject this endpoint is derived as the average of the changes from Baseline to Weeks 84, 88, 92 and 96
- Average change in BCVA from Baseline over the period Week 4 to Week 48. For each subject this endpoint is derived as the average of the monthly changes from Baseline up to Weeks 48
- Average change in BCVA from Baseline over the period Week 4 to Week 96. For each subject this endpoint is derived as the average of the monthly changes from Baselineup to Weeks 96
- Average change in BCVA from Baseline over the period Week 12 to Week 48. For
 each subject this endpoint is derived as the average of the monthly changes from
 Baseline to Weeks 12 up to week 48
- Average change in BCVA from Baseline over the period Week 12 to Week 96. For each subject this endpoint is derived as the average of the monthly changes from Baseline to Weeks 12 up to Week 96
- Number and percentage of subjects with a gain in BCVA from Baseline to each postbaseline visit will be presented for the following criteria:
 - o 2::15-letter ga in
 - o 2::10-letter ga in
 - o 2::5-1 etter gai n
 - o Note: Subjectswith BCVA value of 84 letters or more at a postbaseline visit will be considered as having met the criteria for the con esponding endpoint. This is to account for a ceiling effect, e.g. for the' 2::15-letter gain' endpoint, for those subjects with BCVA values at baseline >= 70 letters.
- Number and percentage of subjects with BCVA of 73 letters or more at each postbaseline visit
- Number and percentage of subjects with a loss in BCVA from Baseline to each postbaseline visit will be presented for the following criteria:
 - o 2::15-letterloss
 - o 2::10 -le tterloss

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o 2':5-letter loss

• ql2 treatment status at Week 96 (for subjects randomized to RTH258 6 mg only). This endpoint is analyzed using the KM method as given for the conesponding Week 48 endpoint.

- ql2 treatment status at Week 96 within the subjects with no q8 need dming the 1st ql2 cycle (Week 16, Week 20) for subjects randomized to RTH258 6 mg only. This endpoint is analyzed using the same KM method as given for the c01Tesponding Week 48 endpoint.
- Number and percent of subjects with q8 treatment need at Week 16.
- Change in CSFT from Baseline to each postbaseline visit
- Average change in CSFT from Baseline over the period Week 36 through Week 48.
- Average change in CSFT from Baselineover the period Week 84 through Week 96
- Average change in CSFT from Baseline over the period Week 4 to Week 48
- Average change in CSFT from Baseline over the period Week 4 to Week 96
- Average change in CSFTns from Baseline over the period Week 12 through Week 48
- Average change in CSFTns from Baseline over the period Week 12 through Week 96
- Change in CSFTns from Baseline to each postbaseline visit
- Change in area of CNV within the lesion (CNV lesion size) from Baseline to Weeks 12, 48 and 96
- Number and percent of subjects with presence of subretinalfluid (central subfield) at each postbaseline visit.
- Number and percent of subjects with presence of intraretinal fluid (central subfield) at each postbaseline visit.
- Number and percent of subjects with presence of sub RPE fluid (central subfield) at each postbaseline visit.
- Number and percent of subjects with simultaneous absence of subretinal and intraretinal fluid (central subfield)at each postbaseline visit.
- Number of subjects with presence of subretinal hemonhage (central subfield)at each assessment visit
- Number of subjects with presence of intraretinal hemonhage (central subfield)at each assessment visit
- Number of subjects with simultaneous absence of subretinal and intraretinal hemon hage (centralsubfield) at each assessmentvisit
- Change in patient-repmted outcomes (VFQ-25) total and subscale scores from Baseline to Weeks 24, 48, 72 and 96.

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2.7.3 Statistical hypothesis, model, and method of analysis

No formal statistical hypotheses will be tested for the additional secondary endpoints.

The analysis of these additional efficacy endpoints will be based on the FAS with LOCF imputation for missing values. For the endpoints of q12 status at Week 96, incomplete/missing/confounded data will be handled using the same methods as specified for the KM analysis for the key secondary endpoints 'q12 treatment status at Week 48 for subjects randomized to RTH258 6 mg'. Supportive analyses based on the PPS will be performed for endpoints related to BCVA and related to the q12 status. Additional analyses using the PPS will be conducted if the sensitivity analysis for the primary efficacy hypothesis suggests relevant differences between FAS and PPS results. In addition, these endpoints will also be summarized and presented descriptively.

a. Continuous endpoints:

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The continuous variables will be summarized using ANOVA models similar to the one

The continuous variables will be summarized using ANOVA models similar to the one specifiedfor the primary endpoint. Estimates of least square means for each treatment and for the treatment differences including 95% confidence intelvals and p-values for the treatment differences will be presented. In addition, descriptive statistics based on the observed data only will be presented by treatment and visit.

Note:

- For CNV lesion size, lesion type will be added as a class variable and baseline lesion size categories (see conesponding subgroup categories) instead of baseline BCVA category
- For the ANOVA analysis of change in CSFT, baseline CSFT categories (< 400, 2': 400 tm) will be used instead of baseline BCVA category as a class variable
- For the ANOVA analysis of change in neurosensory retinal thickness, the baseline neurosensory retina 1 thickness categories (<250, 2:250 μm) will be used instead of BCVA categoly as a class variable
- Line plots (LSM± 1 SE) will be presented for all the 'by visit' analyses

b. Categorical variables

Proporiions and treatment differences in proporiions along with 95% confidence intervals and p-values will be presented using a logistic regression with baseline BCVA and age categories as fixed effects.

Bar challs will be produced for all the categorical variables.

For the endpoints related to fluid / hemorThage status

- o Shift tables comparing the status at Baseline to each/specified postbaseline visit will be presented
- o For the analysis of presence of fluid by visit, additional analyses will be perfonned by only including subjects where the con esponding fluid was present at Baseline.
- o For the analysis of the endpoint 'simultaneous absence of subretinal and intraretinal fluid', additional analysis will be performed by only including subjects where the conesponding fluids (at least one fluid type is present) were present at Baseline.
- o 95% exact confidence intervals for the risk differences for the unstratfied analyses will be based on the Fan ington-Manning score statistic.

2.7.4 Handling of missing values/censoring/discontinuations

Missing data will be handled using LOCF and observed case analysis (i.e. no imputation). For the endpoints of ql 2 status, incomplete / confounded data will be handled using the same method as specified for the KM analysis for the key secondary endpoint, ql2 treatment status at Week 48.

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2.8 Safety analyses

There are no formal safety hypotheses in this study. The focus of the safety analysis will be a comprehensive descriptive assessment of all the safety endpoints including, shift tables and graphical presentation.

Safety analyses described in this section will be conducted using the safety analysis set on a treatment-emergent basis. For treatment-emergent safety analyses, subjects will be analyzed according to the actual treatment they received. If a subject received both study treatments, then the subject will be analyzed based on the majority of treatments received up to and including Week 44.

In addition to capturing specific safety assessments on the corresponding eCRF pages, findings from such assessments that are deemed to be clinically significant by the investigator will also be reported as adverse events. For the safety parameters of slit lamp, fundus exam and post injection assessments (except for post-injection IOP), data captured on the corresponding eCRF pages will be presented in listings while related clinically relevant findings will be part of the overall adverse event analysis.

Except for imputation of partial dates for adverse events, no imputation will be done for missing values for all safety analyses.

Ocular and non-ocular findings (e.g. adverse events) will be presented separately. All results related to ocular assessments will be presented using data from the study eye only except for adverse events where summaries will be presented separately for both the study and fellow eyes.

The primary safety analyses will include all treatment-emergent data, including data collected after the subject discontinued study treatment and started alternative anti-VEGF treatment. A sensitivity analysis will be conducted in which, for subjects who discontinued treatment but continued in the study, with application of alternative anti-VEGF, their safety data are censored at the time the subject started alternative anti-VEGF treatment. That is, only safety data collected prior to receiving alternative anti-VEGF treatment will be used for these analyses. These sensitivity analyses will be specified in the respective endpoint analysis.

For listings that present data from a subset of subjects who satisfy a certain criteria at one visit, data at all visits will be presented.

2.8.1 Extent of exposure

Analysis of extent of exposure is discussed in Section 2.4.1. Based on the SAF, the overall number of active and sham injections up to and including Week 48 and Week 96 will be presented descriptively (both as continuous and categorical variable). For the categorical presentation, the observed frequencies will be presented as the categories.

The number and percent of subjects who received wrong active treatment will also be presented using a shift table for 'as randomized' vs 'as treated' by visit. A listing will be provided for patients who received at least once a wrong treatment.

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2.8.2 Adverse events (AEs)

The definition of Adverse Event (AE) in the study protocol is restricted to events occuning after the first treatment exposure, while for this study AEs were collected from the time of infonned consent. In this analysis plan, events that stailed prior to the subject receiving treatment are presented separately as pre-treatment adverse events. All AEs occuning from when a subject signs infimmed consent to when a subject exits the study will be accounted for in the reporting. Analysis and presentation of AEs occmTingdming the screening period will be separated from those occmTing during the investigational period where a comparative evaluation of treatment-emergent AEs is intended. A treatment-emergent AE is an event not present prior to exposure to investigational product or any pre-existing event that worsens following exposme to investigational product. The period for treatment-emergent AE analysis stails from the first exposme to the investigational product until the subject exits the study.

Summaries (counts and percentages) for specific AEs will be presented by system organ class and prefened te1m according to the MedDRA dictionaly. Ocular and non-oculai (sys temic) AEs will be presented separately. Ocular AEs will be presented by study and fellow eye separate ly. In addition to an overall presentation of AEs, repolsi will be generated for special classes of AEs such as serious AEs (SAE), AEs resulting in treatment and/or study discontinuation, most frequent AEs (2 % in any treatment group for each PT), investigational product/administration procedure-related AEs and AEs by maximum severity.

Subject listings for all AEs, serious AEs, AEs that lead to discontinuation from treatment and/or study, will be presented.

A sensitivity analysis excluding AEs that stalied after a subject discontinued study treatment and stalted alternative anti-VEGF will be presented for the overall AE and SAE tables. Additionally, for subjects who discontinue treatment and stalted alternative anti-VEGF, a separate table (ocular for the study eye only, and non-ocular) by SOC and PT for AEs with onset date after start of alternative anti-VEGF will be presented. Additionally, for subjects who received both treatments, a separate table by system organ class and PT for AEs with onset date after the subject received the non-randomized treatment will be presented.

For subjects who were randomized but never treated, a subject listing will be provided that include all AEs that occmTed after signing info1med consent until the subject discontinued/exited from the study using the All-randomized analysis set.

A subject listing will be provided for AEs that occur after signing infmmed consent but prior to exposme to investigational product using the All-emolled analysis set. These listings will comprise all events occun ing during this period in any subject who consented to palticipate in the study.

The SOCs will be presented in alphabetical order. PrefeITed te1ms will be ordered within each SOC by decreasing incidence in the Brolucizumab 6 mg treatment aim. The MedDRA version used for repo1ting the study will be the latest available prior to the database lock and will be described in a footnote.

Summaly tables for in-text presentations will be summarized by PT.

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2.8.2.1 Adverse events of special interest (AESIs), arterial thromboembolic events (ATEs) and Venous Thromboembolic Events (VTEs)

The AESIs specified in the protocol are the following:

- Endophthalmitis
- Grade 3 aqueous flare/Grade 4 aqueous cells (see MOP for grading scale)
- Grade 2 aqueous flare/Grade 3 aqueous cells that fails to decrease to 1 or less within 30 days of the onset of the event (see MOP for grading scale)
- 2': 30 letter dec rease in B CV A compared with B ase line visual acuity
- Sustained (> 15 minutes) loss of light perception due to elevated IOP
- IOP > 30 mmH g at/past 60 minutes post-inject ion
- Any elevat ion of OP requiring surgical in tel vention (e.g., paracentesis)
- New retinal tear or detachment
- New vitreous hemoIThage > 2+ severity that does not resolve within 14 days of the onset of the event (see MOP for gradingscale)
- New diagnosis of geographic atrophy

AESis will be identified on the AE eCRF page and will be summarized using counts and percentages by system organ class and prefeITed te1m according to the MedDRA dictionally. A subject listing will also be presente d for AESis.

A sensitiv ity analysis excluding AES is that stalted after a subject discontinued study treatment and staited alternative anti-VEGF will be presented for the AESI table. Additionally, for subjects who discontinue treatment, a separate table for AESis with onset date after start of alternative anti-VEGF will also be presented.

ATEs and VTEs will be identified from the AE dataset by using a MedDRA SMQ search and will be summarized using counts and percentages by system organ class and prefeITed te1m accord in g to the MedDRA dictionary. A subject listing will also be presented for ATEs and VTEs. The following SMQs will be used:

Arterial Thromboembolic Events (ATEs)

- **Heart:** Ischae mic heart disease (SMQ) [SMQ Code: 20000043]
- **CNS:** Central nervous system haemoffhages and cerebrovasc ular condit ions (SMQ) [SMQ Code: 20000061]
- Other locations: Embolic and thro mbot ic events, aiterial (SMQ) [SMQ Code: 20000082]

Venous Thromboembolic Events (VTEs)

• Embolic and thrombotic events, venous (excl uding the ocular PTs: Retinal vein occlusion and Retinal vein thrombosis): Embolic and thromboticevents, venous (SMQ) [SMQ Code: 20000084]

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Note: A 'narrow' PT search will be used for all SMQs. List of the PTs based on appropriate version of MedDRA will be provided during analysis.

In addition to the ATE and VTE events, a separate table will be presented for the following AE risks:

Intraocular Inflammation

Preferred terms are presented in <u>Table 9</u>.

In addition, the intraocular inflammation AEs will be evaluated in pre-specified sub-groups (Endophthalmitis, Anterior Uveitis, Posterior Uveitis, and Other). Preferred terms for these intraocular inflammation sub-groups are presented in <u>Table 9</u>.

Retinal arterial occlusive events

The following NMQ PT searches will be used:

Angiogram Retina Abnormal, Arteriosclerotic Retinopathy, 'Macular Ischaemia, Retinal Aneurysm, Retinal Arteriovenous Malformation, Retinal Artery Embolism, Retinal Artery Occlusion, Retinal Artery Spasm, Retinal Artery Stenosis, Retinal Artery Thrombosis, Retinal Collateral Vessels, Retinal Infarction, Retinal Ischaemia, Retinal Perivascular Sheathing, Retinal Vascular Disorder, Retinal Vascular Occlusion, Retinal Vascular Thrombosis, Retinal Vasculitis, Retinogram Abnormal, Ocular Ischaemic Syndrome.

2.8.2.2 Other Safety Events of Interest

In addition to AESIs, other prespecified safety events of interest occurring after the first treatment exposure to when a subject exits the study will also be accounted for in the reporting. These AEs are presented in the table below. The other safety events of interest will be summarized (counts and percentages) by system organ class and preferred term according to the MedDRA dictionary. Ocular and non-ocular (systemic) AEs will be presented separately. Ocular AEs will be presented by study and fellow eye separately.

Systemic

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Safety Topic Of Interest	soc	Data Domain	Search Criteria Details	MedDRA Code	MedDRA Term	MedDRA Level	MedDRA Qualifier
Venous thromboembolic events	Vascular disorders	MEDDRA	For detailed description, please refer to the one in Embolic and thrombotic events (SMQ). In addition, PT Embolism was added. PT Vessel puncture site thrombosis was not considered for inclusion.	90000105	Venous thromboembolic events (excl. ocular) [LUCENTIS] (CMQ)	NMQ1	
Arterial Thromboembolic Events	Vascular disorders	MEDDRA		20000061	Central nervous system haemorrhages and cerebrovascular conditions (SMQ)	MQ2	NARROW
Arterial Thromboembolic Events	Vascular disorders	MEDDRA		20000043	Ischaemic heart disease (SMQ)	MQ1	NARROW
Arterial Thromboembolic Events	Vascular disorders	MEDDRA		20000082	Embolic and thrombotic events, arterial (SMQ)	MQ2	
Infectious Endophthalmitis	Infections and infestations	MEDDRA		90000101	Infectious endophthalmitis [LUCENTIS] (CMQ)	NMQ1	NARROW
Intraocular pressure increase	Investigations	MEDDRA		90001788	Increased intraocular pressure [RETINA] (CMQ)	NMQ1	
Traumatic Cataract	Eye disorders	MEDDRA		90001787	Traumatic cataract [RETINA] (CMQ)	NMQ1	
Retinal arterial occlusive events	Eye disorders	MEDDRA		90004735	Retinal artery occlusive events [RTH258] (CMQ)	NMQ1	
			<u> </u>		<u> </u>		

20000214

Hypersensitivity (SMQ)

MQ1

NARROW

MEDDRA

Immune

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Safety Topic Of Interest	soc	Data Domain	Search Criteria Details	MedDRA Code	MedDRA Term	MedDRA Level	MedDRA Qualifier
Hypersensitivity	system disorders						
Non-ocular haemorrhage	Vascular disorders	MEDDRA		90000106	Non-ocular haemorrhages [LUCENTIS] (CMQ)	NMQ1	
Systemic hypertension	Vascular disorders	MEDDRA		20000147	Hypertension (SMQ)	MQ1	NARROW
Glaucoma	Eye disorders	MEDDRA		90001789	Glaucoma without IOP [RETINA] (CMQ)	NMQ1	
Vitreous haemorrhage	Eye disorders	MEDDRA		10047655	Vitreous haemorrhage	PT	
Retinal pigment epithelial tear	Eye disorders	MEDDRA		10062971	Retinal pigment epithelial tear	PT	
Retinal detachment and retinal tear	Eye disorders	MEDDRA	Retinal detachment and retinal tear should be performed with and without LLT Serous detachment of macula	90001746	Retinal detachment and retinal tear [STANDARD] (NMQ)	NMQ1	NARROW
Intraocular inflammation	Eye disorders	MEDDRA		90004793	Intraocular inflammation [RTH258] (CMQ)	NMQ1	
Diastolic Blood Pressure		OTHER	CT only (No Argus) Diastolic High: either >105 with an increase from baseline >20 or >115 absolute Diastolic Low: either <50 with a decrease from baseline >20 or <40 absolute				
Intraocular pressure increase		OTHER	CT only (No Argus) IOP >/= 30 mmHg occurring at/past 60 minutes post- injection study visit IOP >/= 30 mmHg at any medical visit				

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Safety Topic Of Interest	soc	Data Domain	Search Criteria Details	MedDRA Code	MedDRA Term	MedDRA Level	MedDRA Qualifier
			IOP >/= 30 mmHg on at least two separate medical visits				
Systolic Blood Pressure		OTHER	CT only (No Argus) Systolic High: either >180 with an increase from baseline >30 or >200 absolute Systolic Low: either <90 with a decrease from baseline >30 or <75 absolute				
Long term safety two years and beyond		OTHER	Safety data in patients treated > 2 years				

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2.8.3 Deaths

All deaths that occurred during the treatment period will be identified on the AE eCRF page and will be summarized using counts and percentages by system organ class and preferred term according to the MedDRA dictionary. A subject listing will be presented for all deaths including date and cause of death.

2.8.4 Laboratory data

Clinical laboratory evaluations consist of hematology, blood chemistry and urinalysis.

Hematology (Complete Blood Count)

The following hematology parameters will be collected: hematocrit, hemoglobin, red blood cell (RBC) count, white blood cell (WBC) count with differential (absolute and percentage of neutrophils, lymphocytes, monocytes, eosinophils and basophils) and quantitative platelet count.

Observed values and change from baseline values for each hematology parameter will be presented descriptively by visit and treatment group. In addition, descriptive summaries will be presented graphically using boxplots. For the parameters presented in Table 1, each value will be categorized as low, normal or high using the clinically notable ranges as given in the table. A shift table showing category of each parameter at baseline relative to each post-baseline visit, to the last assessment, to the most extreme increase and most extreme decrease will be presented by treatment group.

The number and percent of subjects satisfying the liver event and/or liver laboratory trigger criteria shown in Table 2 will also be presented by visit.

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A subject listing will be provided for all laboratory data collected. Additional listings for subjects with at least one value satisfying the clinically notable criteria given on Table 1 and the liver event or liver laboratory triggers given on Table 2 will be presented.

Blood Chemistry

The following blood chemistry parameters will be collected: blood urea nitrogen (BUN), serum creatinine, BUN/creatinine ratio, uric acid, cholesterol, triglycerides, albumin, total globulin, A/G ratio, total serum iron, total protein, serum electrolytes (sodium, potassium, bicarbonate, chloride, calcium, magnesium), phosphorus, glucose and the following liver function tests (LFT): serum aspartate transaminase [AST (SGOT)], serum alanine transaminase [ALT (SPGT)], alkaline phosphatase, gamma glutamyl transaminase (GGT), total bilirubin, direct bilirubin, indirect bilirubin and lactate dehydrogenase (LDH).

The blood chemistry parameters will be analyzed and presented in the same manner as the hematology variables.

Urinalysis

The following urinalysis parameters will be collected: specific gravity, pH, color, protein, glucose, blood, ketones, bilirubin and microscopic examination (WBC, RBC, epithelial cells, bacteria, mucus, casts and crystals).

Two of the urinalysis variables (specific gravity and reaction pH) are continuous variables and will be presented in the same manner as the hematology and chemistry variables. Specific gravity will be represented with 3 decimal places in relation to the normal range provided by the laboratory. The remaining variables are categorical and will be presented in shift tables as described above.

Table 1 Clinically notable laboratory values

Panel/Test	Туре	Gender/ Age	Conventio nal Unit	Conventio nal Low	Conventio nal High	SI Unit	SI Low	SI High	Non- numeric
Chemistry/ Calcium	alert	All	mg/dL	6.1	12.9	mmol/L	1.52	3.22	
Chemistry/ Creatinine	reference	All	mg/dL	0.7	1.4	mmol/L	62	124	
Chemistry/ Glucose (non fasting)	alert	All	mg/dL	40	450	mmol/L	2.22	24.98	
Chemistry/ Potassium	alert	All	mEq/L	2.8	6.3	mmol/L	2.8	6.3	
Chemistry/ Sodium	alert	All	mEq/L	117	160	mmol/L	117	160	
HCG	alert	All							Negative, inconclusi ve
Hematology/ Hematocrit	alert	All	%	18	60	%	18	60	
Hematology/ Hemoglobin	alert	All	g/dL	8	22	g/L	80	220	

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Hematology/ Platelet	alert	All	K/cu mm	30	900	x10^9/L	30	900	
Hematology/ WBC	alert	All	K/cu mm	2	25	x10^9/L	2	25	

Table 2 Liver Event and Laboratory Trigger Definitions

	Definition/ threshold		
LIVER LABORATORY	3 x ULN < ALT/AST 5 x ULN		
TRIGGERS	1.5 x ULN <tbl 2="" td="" uln<="" x=""></tbl>		
LIVER EVENTS	ALT or AST $>$ 5 × ULN		
	ALP >2 × ULN (in the absence of known bone pathology)		
	TBL >2 × ULN (in the absence of known Gilbert syndrome)		
	Potential Hy's Law cases (defined as ALT or AST >3 × ULN and TBL >2 × ULN [mainly conjugated fraction] without notable increase in ALP to >2× ULN)		
	Any clinical event of jaundice (or equivalent term)		
	ALT or AST >3 × ULN accompanied by (general) malaise, fatigue, abdominal pain, nausea, or vomiting, or rash with eosinophilia*		
	Any adverse event potentially indicative of a liver toxicity**		

- * The Lab time of ALT/AST detection has to be within the start and end date of any of the AEs. The PTs for these events are: Malaise, Fatigue, Abdominal pain, Nausea, Vomiting, Drug reaction with eosinophilia and systemic symptoms, Eosinophilic cellulitis, Allergic eosinophilia.
- ** These events cover the following: hepatic failure, fibrosis and cirrhosis, and other liver damage related conditions; the non-infectious hepatitis; the benign, malignant and unspecified liver neoplasms

TBL: total bilirubin; ULN: upper limit of normal

2.8.5 Other safety data

2.8.5.1 Loss in BCVA

Counts and percentages of subjects with a predefined decrease in BCVA from Baseline to each post-baseline visits, to the last assessment and maximum loss from Baseline to any post-baseline assessment visit will be presented for the following cut off points: ≥ 10 -letter loss, ≥ 15 -letter loss ≥ 30 -letter loss.

A listing of all subjects with a \geq 15-letter loss in BCVA from baseline to any post-baseline visit will be presented. For subjects who had \geq 15-letter loss at any visit, BCVA values at all visits will be presented.

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2.8.5.2 Intraocular pressure

Intraocular pressure (IOP) measurements will be recorded in mmHg and rounded to the nearest whole number.

Descriptive summaries of pre-injection observed values and change from baseline IOP values will be presented at each study visit by treatment. Line plots of the mean change in IOP values with error bars representing \pm standard error by visit and treatment will be presented. The x-axis will be study visit and the y-axis will be the change from Baseline value.

A summary table with counts and percentages of subjects with observed IOP of >30 mmHg will be presented separately for pre- and post-injection by visit. In addition, counts and percentages of subjects with IOP >30 mmHg at the last assessment and at any postbaseline visit will be presented.

A summary table with counts and percentages of subjects with observed IOP \geq 21 mmHg in 3 consecutive scheduled visits will also be presented.

A subject listing of all IOP measurements will be pressed by visit. In addition, a listing of all subjects with observed IOP of more than 30 mmHg at any visit will be presented. For subjects with observed IOP >30 mmHg at any visit, IOP values at all visits will be presented.

2.8.5.3 Vital signs

Descriptive summaries of observed values and change from baseline in each vital sign parameters at each study visit will be presented.

A summary table with counts and percentage of subjects satisfying the criteria given in Table 3 will be presented by visit, to the last assessment visit and to at least one visit.

Variable	Category	Critical Values
Systolic blood pressure (mmHg)	High	Either >180 with an increase from baseline >30 or >200 absolute
	Low	Either <90 with a decrease from baseline >30 or <75 absolute
Diastolic blood pressure (mmHg)	High	Either >105 with an increase from baseline >20 or >115 absolute
	Low	Either <50 with a decrease from baseline > 20 or <40 absolute
Pulse rate (bpm)	High	Either >120 with an increase from baseline of >25 or > 130 absolute
	Low	Either <50 with a decrease from baseline >30 or <40 absolute

A line plot of mean change from baseline in the vital sign parameter by study visit and treatment with error bars representing ± 1 standard error will be presented. The x-axis will be study visit and the y-axis will be the mean change from baseline value.

A subject listing of all vital sign parameters will be presented. In addition, a separate listing for subjects satisfying at least one criterion in Table 3 will also be presented.

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2.8.5.4 Slit Lamp examination

A slit-lamp examination will be performed to evaluate the anterior segment of the eye, including lid/lashes, conjunctiva, cornea, lens, iris, aqueous cells and aqueous flare. All data collected on the corresponding eCRF page will be presented in a subject listing.

2.8.5.5 Fundus examination

Fundus examination will be performed to evaluate the health of the retina, macula, choroid, optic nerve, and vitreous. The retina will also be assessed for retinal detachment/tear and hemorrhage and the vitreous will be evaluated for hemorrhage and vitreal cells. All data collected on the fundus exam eCRF page will be presented in a subject listing.

2.8.6 Presence of geographic atrophy and fibrosis

Shift tables comparing Baseline vs post baseline values for presence of geographic atrophy (central subfield) and fibrosis (central subfield) from color fundus photography, as graded by the central reading center, will be presented. In addition, shift tables comparing the Baseline value to the last assessment visit, and to any visit with a presence of geographic atrophy and fibrosis will also be presented.

2.8.7 Post-injection assessment

Post-injection parameters to be evaluated in the study eye are gross assessment of vision, the status of the central retinal artery, presence of retinal detachment, new intraocular hemorrhage(s) and IOP.

A summary table with counts and percentage of subjects with IOP increase of ≥ 10 , ≥ 20 mmHg from pre-injection to post-injection will be presented by visit, to the last visit, and to any visit. IOP assessment done at 30 (± 15) minutes post-injection will be used for this analysis. Separate summaries will be presented for active and sham injections.

The difference in the pre-and post-injection IOP values will be presented descriptively by treatment and visit. Separate summaries will be presented for active and sham injections.

All post-injection assessment data collected on the eCRF will be presented in subject listings. In addition, a separate listing for subjects with post-injection IOP increase of ≥ 10 mmHg from pre-injection IOP will also be presented.

2.8.8 Presence of anti-drug antibody (ADA)

Blood samples to test for serum anti-drug antibody (ADA) will be collected following predetermined sample collection time points. Number and percent of subjects according to their ADA status (ADA negative, ADA positive without boost, induced, boosted) will be presented by treatment and by intraocular inflammation AE status. In addition, ADA titer pattern and shift table showing ADA titer at baseline relative to each post-baseline assessment visit, relative to the last assessment visit, and to any visit with most extreme increase in ADA titer will be presented by treatment. Subject listing of all ADA titer values will be presented for subjects with and without intraocular inflammation.

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Patient profile plots (including both efficacy and safety endpoints) will be presented for subjects with new positive ADA status after Baseline and/or two-fold increase in their titer. The visits where a positive ADA result is confilmed will be shown on the subject profile plot.

ADA data up to Week 36 will be analyzed for the Week 48 primaiy analysis. The final analysis will include all ADA data.

2.9 Pharmacokinetic endpoints

A subject listing will be provided for all subjects that have detectable sernm concentration value at any of the PK assessment visits.

PK data up to Week 36 will be analyzed for the Week 48 primary analysis. The final analysis will include all PK data.

2.10 Subject-reported outcome

2.10.1 Visual function questionnaire (VFQ-25)

Each subscale score has a range of Oto 100 inclusive and will be calculated from the re-scaled raw data as described in Table 4. A missing response will not be re-scaled (except for the response to question 15c, see below, which will be re-set to O if the response to question 15b is 1).

The answers to questions will be re-scaled as follows to calculate the total and subscale scores.

Table 4 Rescaling of VFQ-25 questions	S
---------------------------------------	---

Answer to question	Rescaling for questions 1, 3, 4 and 15c	Rescaling for question 2	Rescaling for questions 5 - 14, 16 and 16a	Rescaling for - questions 17 - 25
1	100	100	100	0
2	75	80	75	25
3	50	60	50	50
4	25	40	25	75
5	0	20	0	100
6	NA	0	NA	N/A

- Note that the answer to question 15c will subsequently be adjusted based on the answer to question 15b.
 - If the answer to 15b is 1 then the answer to 15c will be re-set to O.
 - If the answer to 15b is 2 or 3 then the answer to 15c will be re-set to missing

The general health rating is the re-scaled answer to question 1.

Response choice "6" indicates that the person does not perform the activity because of non-vision related problems. If this choice is selected, the item is coded as "missing."

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Subscales will be calculated where at least one of the (re-scaled) questions contributing to that subscale is non-missing, and otherwise set to missing. The scales and corresponding questions are shown in Table 5.

Table 5 Questions contributing to VFQ subscales

Subscale	Questions
General vision	2
Ocular pain	4 and 19
Near activities	5, 6 and 7
Distance activities	8, 9 and 14
Social functioning	11 and 13
Mental health	3, 21, 22 and 25
Role difficulties	17 and 18
Dependency	20, 23 and 24
Driving	15c, 16 and 16a
Color vision	12
Peripheral vision	10

The composite score is the average of the 11 subscales shown in Table 5. It will be set to missing if at least six of the subscales are missing.

Descriptive summary statistics for observed values and change from baseline to post baseline VFQ assessment visits will be presented using the full analysis set for the composite and subscale scores. Mean changes from baseline to each post baseline VFQ assessments visits will be compared between the study treatment group and the control group, based on adjusted means generated by an appropriate ANCOVA Model. Additionally, descriptive statistics will also be presented for the general health score. All analysis will be done on the rescaled values. The change from baseline will derived based the changes in the individual items scores and then averaged for the subscale score.

The VFQ-25 composite score and subscale scores will also be presented in a subject listing.

2.11 Interim analysis

No interim analysis prior to the primary analysis at Week 48 is planned for this study.

3 Sample size calculation

A sample size of 297 subjects per treatment arm is sufficient to demonstrate non-inferiority (margin = 4 letters) of RTH258 versus Ranibizumab with respect to the BCVA change from Baseline to Week 48 at a two-sided alpha level of 0.05 with a power of approximately 90% assuming equal efficacy and a common standard deviation of 15 letters. A power of at least 90% can be expected for the key secondary endpoint assuming that averaging over the 4 time points will not lead to an increase in the standard deviation.

To account for a drop-out rate of 10%, a total of 330 subjects will be randomized per treatment arm.

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4 Change to protocol specified analyses

The following additional secondary- endpoints that were not specified in the protocol were added to this **statistica**

- •
- Average change in CSFT from Baseline over the period Week 36 through Week 48
- Presence of geographic atrophy from color fundus photography
- Number and percentage of subjects with BCVA of 73 letters or more at each postbaseline visit
- → Average change in CSFT from Baseline over the period Week 4 to Week 48/96
- Average change in CSFT from Baseline over the period Week 36 through Week 48/
 over the period Week 84 through Week 96

The following subgroups of interest were added:

Baseline fluid status (IRF, SRF, sub-RPE)

5 Appendix

5.1 Imputation rules

5.1.1 AE date imputation

5.1.1.1 Adverse event end date imputation

- 1. If the AE end date month is missing, the imputed end date should be set to the earliest of the (31DECYYYY, date of death).
- 2. If the AE end date day is missing, the imputed end date should be set to the earliest of the (last day of the month, date of death).
- 3. If AE year is missing or AE is ongoing, the end date will not be imputed.

If the imputed AE end date is less than the existing AE sta1tdate then use AE strut date as AE end date.

5.1.1.2 Adverse event start date imputation

The following table explains the notation used in the logic matrix. Please note that completely missing stait dates will not be imputed.

The following table explains the notation used in the logic matrix.

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	Day	Month	Year
Partial Adverse Event Start Date	Not used	MON	YYYY
Treatment Start Date	Not used	TRTM	TRTY

The following matrix explains the logic behind the imputation.

	MON	MON < TRTM	MON = TRTM	MON > TRTM
	MISSING			
YYYY		(1)	(1)	(1)
MISSING	(1) No convention	No convention	No convention	No convention
YYYY < TRTY	(2.aError! Reference source not found.)	(2.bError! Reference source not found.)	(2.bError! Reference source not found.)	(Error! Reference source not found.)
	Before Treatment Start	Before Treatment Start	Before Treatment Start	Before Treatment Start
YYYY = TRTY	(4.a)	(4.b)	(4.c)	(4.c)
	Uncertain	Before Treatment Start	Uncertain	After Treatment Start
YYYY > TRTY	(3.a)	(3.b)	(3.b)	(3.b)
	After Treatment Start	After Treatment Start	After Treatment Start	After Treatment Start

Before imputing AE start date, find the AE start reference date.

- 1. If the (imputed) AE end date is complete and the (imputed) AE end date < treatment start date then AE start reference date = min (informed consent date, earliest visit date).
- 2. Else AE start reference date = treatment start date

Impute AE start date -

- 1. If the AE start date year value is missing, the date uncertainty is too high to impute a rational date. Therefore, if the AE year value is missing, the imputed AE start date is set to NULL.
- 2. If the AE start date year value is less than the treatment start date year value, the AE started before treatment. Therefore:
 - a. If AE month is missing, the imputed AE start date is set to the mid-year point (01JulYYYY).
 - b. Else if AE month is not missing, the imputed AE start date is set to the mid-month point (15MONYYYY).
- 3. If the AE start date year value is greater than the treatment start date year value, the AE started after treatment. Therefore:
 - a. If the AE month is missing, the imputed AE start date is set to the year start point (01JanYYYY).

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b. Else if the AE month is not missing, the imputed AE start date is set to the later of (month start point (01MONYYYY), AE start reference date + 1 day).

- 4. If the AE start date year value is equal to the treatment start date year value:
 - a. And the AE month is missing the imputed AE start date is set to the AE reference start date + 1 day.
 - b. Else if the AE month is less than the treatment start month, the imputed AE start date is set to the mid-month point (15MONYYYY).
 - c. Else if the AE month is equal to the treatment start date month or greater than the treatment start date month, the imputed AE start date is set to the later of (month start point (01MONYYYY), AE start reference date + 1 day).

If complete (imputed) AE end date is available and the imputed AE start date is greater than the (imputed) AE end date, then imputed AE start date should be set to the (imputed) AE end date.

5.1.2 Concomitant medication date imputation

5.1.2.1 Concomitant medication (CM) end date imputation

- 1. If the CM end date year value is missing, the date uncertainty is too high to impute a rational date. Therefore, if the CM end year value is missing or ongoing, the imputed CM end date is set to NULL.
- 2. Else, if the CM end date month is missing, the imputed end date should be set to the earliest of the (treatment follow up period date, 31DECYYYY, and date of death).
- 3. If the CM end date day is missing, the imputed end date should be set to the earliest of the (treatment follow up period date, last day of the month, date of death).

If the imputed CM end date is less than the existing CM start date, use the CM start date as the imputed CM end date.

5.1.2.2 Concomitant medication start date imputation

In order to classify a medication as prior and prior/concomitant, it may be necessary to impute the start date.

Completely missing start dates will be set to one day prior to treatment start date. As a conservative approach, such treatments will be classified as prior and concomitant (and summarized for each output).

Concomitant treatments with partial start dates will have the date or dates imputed. The following table explains the notation used in the logic matrix

	Day	Month	Year
Partial CMD Start Date	Not used	MON	YYYY
Treatment Start Date	Not used	TRTM	TRTY

The following matrix explains the logic behind the imputation.

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	MON MISSING	MON < TRTM	MON = TRTM	MON > TRTM
YYYY MISSING	(1) Uncertain	(1) Uncertain	(1) Uncertain	(1) Uncertain
YYYY < TRTY	(a) Before Treatment Start	(b) Before Treatment Start	(b) Before Treatment Start	(b) Before Treatment Start
YYYY = TRTY	(a) Uncertain	(b) Before Treatment Start	(a) Uncertain	(c) After Treatment Start
YYYY > TRTY	(a) After Treatment Start	(b) After Treatment Start	(b) After Treatment Start	(b) After Treatment Start

- 1. If the CM start date year value is missing, the imputed CM start date is set to one day prior to treatment start date.
- 2. If the CM start date year value is less than the treatment start date year value, the CM started before treatment. Therefore:
 - a. If the CM month is missing, the imputed CM start date is set to the mid-year point (01JulYYYY).
 - b. Else if the CM month is not missing, the imputed CM start date is set to the midmonth point (15MONYYYY).
- 3. If the CM start date year value is greater than the treatment start date year value, the CM started after treatment. Therefore:
 - a. If the CM month is missing, the imputed CM start date is set to the year start point (01JanYYYY).
 - b. Else if the CM month is not missing, the imputed CM start date is set to the month start point (01MONYYYY).
- 4. If the CM start date year value is equal to the treatment start date year value:
 - a. And the CM month is missing or the CM month is equal to the treatment start date month, then the imputed CM start date is set to one day prior to treatment start date.
 - b. Else if the CM month is less than the treatment start date month, the imputed CM start date is set to the mid-month point (15MONYYYY).
 - c. Else if the CM month is greater than the treatment start date month, the imputed CM start date is set to the month start point (01MONYYYY).

If complete (imputed) CM end date is available and the imputed CM start date is greater than the (imputed) CM end date, then imputed CM start date should be set to the (imputed) CM end date.

5.1.2.3 Medical history date of diagnosis imputation

Completely missing dates and partially missing end dates will not be imputed. Partial dates of diagnosis will be compared to the treatment start date.

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• IfDIAG year < treatment stalt date year and DIAG month is missing, the imputed DIAG date is set to the mid-year point (01JULYYYY)

- else if DIAG month is not missing, the imputed DIAG date is set to the mid-month point (15MONYYYY)
- If DIAG year = treatment stalt date year
 - and (DIAG month is missing OR DIAG month is equal to treatment stalt month), the imputed DIAG date is set to one day before treatment stalt date
 - else if DIAG month < treatment stalt month, the imputed DIAG date is set to the midmonth point (15MONYYYY)
 - else if DIAG month > treatment start month => data enor

IfDIAG year > treatment start date year => data e1rnr

5.2 Statistical models

5.2.1 Primary and first key secondary analysis

Analysis of Variance (ANOVA)

The following ANOVA model will be used for the primary and first key secondaly efficacy endpoints:

<change from Baseline in BCVA at Week 48> <average change from Baseline in BCVA from Week 36 to Week 48> = intercept + treatment + Baseline BCVA categ01y + age category+eITOL

The following pseudo SAS code will be used to perform the ANOVA analyses:

```
PROC MIXED DATA=<Dataset>order=Internal;

CLASS <Treatment> <BCVA CAT> <AGE CAT>;

MODEL <Chg_VA> = <Treatment> <BCVA CAT> <AGE CAT>/ SOLUTION

LSMEANS Treatment> / DIFF CL ALPHA = 0.05 OM;

ODS OUTPUT LSMEANS=outLsm DIFFS=Diffs;
```

RUN;

Where

```
<Chg_VA> = primary /first key secondary efficacy endpoint
<BCVA CAT> = baseline BCVA categ01y
<AGE CAT> = age categ01y
<Treatment>= randomized treatment assignment
```

The ternis in the brackets are to be adjusted according to the real data set and variable names. For the above analysis, the data stiucture is one record per FAS subject. Data will include all subjects in the FAS.

Mixed Model Repeated Measures (MMRM)

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The following MMRM model will be used for the supportive analysis of the primary and first key secondary efficacy variables:

<change from Baseline in BCVA at Week 48> <average change from Baseline in BCVA from Week 36 to Week 48> = intercept + treatment + Baseline BCVA category + age category + visit + treatment*visit + error.

The following pseudo SAS code will be used to perform the MMRM analyses:

```
PROC MIXED DATA=<Dataset> order=Internal;

CLASS USUBJID <Treatment> <VISIT> <BCVA CAT> <AGE CAT>;

MODEL <Chg_VA> = <Treatment> <VISIT> <BCVA CAT> <AGE CAT> <VISIT>*<Treatment> / solution DDFM=KENWARDROGER ALPHA=0.05;

REPEATED <VISIT>/type=UN subject=USUBJID;

LSMEANS <VISIT>*<Treatment> / DIFF CL ALPHA = 0.05 om;

ODS OUTPUT LSMEANS=outLsm DIFFS=Diffs;

RUN;
```

where

```
<Chg_VA> = primary/first key secondary efficacy endpoint
  <BCVA CAT> = baseline BCVA category
  <AGE CAT> = age category
  <Treatment> = randomized treatment assignment
...

...<VISIT> = ordered visit number
```

Note:

a. For the above MMRM analysis, the data structure is one record per FAS subject per scheduled visit. The data will include all subjects and have records for all scheduled visits, regardless of whether the assessment was missed or not at a given visit. Missing values will NOT be imputed using LOCF. Instead, the value will be passed to the model as missing.

5.2.2 Key secondary analysis

The following pseudo SAS code will be used for the logistic regression analysis

```
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       ODS OUTPUT ODDSRATIOS= OR;
RUN;
where,
       <RESP> = binomial endpoint.
        <BCVA CAT>= baseline BCVA category
        <AGE CAT> = age category
        <Treatment> = randomized treatment assignment
```

Note:

- o For the above analyses, the data structure is one record per subject and visit.
- The least square mean estimates obtained from the above model are for the log-odds ratios. The estimated difference in proportions and the corresponding 95% confidence intervals will be obtained by applying the delta method. The pseudo SAS code to derive the treatment difference and 95% CI from the least square mean output of the fitted model will be provided in the programming specification document.



5.3 Rule of exclusion criteria of analysis sets

Protocol deviations and analysis restrictions that are considered as major and will lead to exclusion of subjects from an analysis set are documented in Deviations and Evaluability Plan (DEP) document.

Table 6 shows subject classification conditions that will lead to exclusion from one or more analysis sets.

Table 6 Subject Classification

Analysis Set	Criteria that cause subjects to be excluded
RAN	Not randomized
FAS	Not in the RAN Did not receive at least one study treatment
SAF	Did not receive at least one study treatment

The following table specify all relevant analysis restrictioncriteria with their impact on the different analysis sets.

In case a subject has multiple PDs/ARs with impact on his/her evaluability the following mies are applied:

- A subject is excluded from an analysis set if at least one PD or AR with this consequence was identified. This rnle is built on the concept of the medical assessment of the 'reason' which considers the reason of an earlier event to potentially also be the reason for following PDs or ARs.
- In case of multiple censoring time points censoring will be perfmmed at the earliest.

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Table 7 **Analysis Restrictions**

i abie i	Analysis Restrictions							
Analysis restriction (AR)		Excl. from SAF Y/N	from FAS	Excl. from PPS Y/N	_	Censoring of DAA: 0,	Reason 0=other 1=LoE 2=LoS	Comment
AR_EST_01	Early study termination due to lack of efficacy	N	N	N	0	0	1	Early termination reason = lack of efficacy
AR_EST_02	Early study termination due to lack of safety* *- per definition provided in section 6.3.b	N	N	N	0	0	2	Early termination reason= AE; AE reviewed by clinical regarding link to treatment (lack of efficacy / safety)/ Censoring for the KM- analysis 'efficacy only'
AR_EST_03	Early study termination due to reasons other than lack of efficacy / safety	N	N	Y/N	0	0	0	Y: if before Week 36 N: otherwise
AR_ETD_01	Early treatment discontinuation due to lack of efficacy	Ζ	N	N	0	0	1	Early discontinuation reason = lack of efficacy
AR_ETD_02	Early treatment discontinuation due to lack of safety* *- per definition provided in section 6.3.b	N	N	N	0	0	2	Early discontinuation reason= AE; AE reviewed by clinical regarding link to treatment (lack of efficacy / safety)/ Censoring for the KM-analysis 'efficacy only'
AR_ETD_03	Early treatment discontinuation due to reasons other than lack of efficacy / safety	N	N	Y/N	4 /5 (case by case)	0	0	Y: if no valid BCVA value between Week 36 and 48 (case by case assessment including q8-status)) N: if at least Week 36 can be considered valid= under regular treatment' Remark: there are no DAA after treatment discontinuation, therefore no censoring related to DAA

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Analysis restriction (AR)	·	Excl. from SAF Y/N	from	Excl. from PPS Y/N	BCVA: 0, 1,	Censoring of DAA: 0,	Reason 0=other 1=LoE 2=LoS	Comment
AR_TRT_03	Missed active treatment during loading phase for reasons other than lack of efficacy or related safety event or PD (=TRT03)	N	N	Y/N	0	0 (FAS:3)	0	Exclude from PPS=NO, If only W4 is missing Exclude from PPS=YES, if otherwise
AR_TRT_03_S	Missed active treatment during loading phase for related safety event	N	N	N	0	0	2	
AR_TRT_05	Missed active treatment after loading for reasons other than lack of efficacy or related safety event or PD (=TRT05)	N	N	Y/N	3	3	0	Exclude from PPS =YES, if any missed active treatment between W16 and W32 Exclude from PPS =NO, if otherwise
AR_TRT_05_S	Missed active treatment after loading phase for related safety event	N	N	N	0	0	2	
AR_ MD_01	No valid BCVA assessments between Week 36 to 48 due to lack of efficacy	N	N	N	0	0	1	This AR should be allocated to the Week 36.
AR_ MD_02	No valid BCVA assessments between Week 36 to 48 due to lack of safety	N	N	N	0	0	2	This AR should be allocated to the Week 36.
AR_ MD_03	No valid BCVA assessments between Week 36 to 48 due to reasons other than lack of efficacy or safety	N	N	Υ	0	0 (FAS: 2)	0	This AR should be allocated to the Week 36.

For Analysis Sets in above table: Y = excluded from analysis set; N = not excluded from analysis set

For Reason in above table: LoE = lack of efficacy; LoS = lack of safety

^{*}Censoring: 0=no censoring, 1=exclusion of value at PD visit, 2=censoring at visit preceding PD visit (exclusion of values from all visits starting from PD visit), 3=censoring at PD-visit (exclusion of values from all visits following the PD visit), 4=censoring at the second visit following the PD-visit (exclusion of values from all visits starting from the third visit after the PD visit), 5= censoring at the first visit following the PD-visit (exclusion of values from all visits starting from the second visit after the PD visit;; censoring is applied within subjects qualifying for PPS

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LoE – lack of efficacy; LoS – lack of safety

Table below presents the prohibited medication list.

Table 8 **Prohibited Medications**

Medication	Examples (list may not be all inclusive)	Specification
Study eye: Intra- or periocular corticosteroids	Triamcinolone Dexamethasone	Within 6 months of Baseline or at any time during the study
Study eye: Anti-VEGF treatments	Ranibizumab (Lucentis) Aflibercept (Eylea) Pegaptanib (Macugen) Bevacizumab (Avastin)	Any time

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Non study eye: Treatment with unapproved or investigational treatment		At any time during the study
Non study eye: Treatment with aflibercept, bevacizumab, pegaptanib or ranibizumab	Ranibizumab (Lucentis) Aflibercept (Eylea) Pegaptanib (Macugen) Bevacizumab (Avastin)	Within 4 weeks of Baseline for aflibercept, bevacizumab, pegaptanib Within 2 weeks of Baseline for ranibizumab
Systemic: Chronic use (≥ 30 consecutive days) of systemic corticosteroids	Dexamethasone Hydrocortisone Prednisolone	Within 90 days of Baseline or any time during the study exceptions: low stable doses (defined as ≤ 10 mg prednisolone or equivalent for 90 days or
Anti-VEGF therapy systemically	Bevacizumab (Avastin)	Within 90 days of Baseline or at any time during the study

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	Investigational drug or biologic		Within 30 days of Baseline or within 5 half- lives of the investigational product (whichever is longer) or any time during the study

Table 9 **Preferred Terms for Intraocular Inflammation**

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Investigational drug or biologic	lives of the investigati (whicheve	r within 5 half-	Document: TDOC-0053361 Status: Effective
Table 9 Preferred Terms for I	Intraocular Inflammation List of PTs: Anterior Uveitis	List of PTs: Posterior Uveitis	List of PTs: Endophthalmitis
Optic neuritis	Anterior chamber cell	Vitritis	Pseudoendophthalmitis
Cogan's syndrome	Anterior chamber fibrin	Ocular vasculitis	Non-infectious endophthalmitis
Idiopathic orbital inflammation	Ciliary hyperaemia	Vitreous haze	Endophthalmitis
Toxic anterior segment syndrome	Aqueous fibrin	Retinitis	Panophthalmitis
Uveitis-glaucoma-hyphaema syndrome	Anterior chamber flare	Retinal vasculitis	ctive; C
Acute zonal occult outer retinopathy	Anterior chamber inflammation	Noninfective retinitis	CURREN
Macular oedema	Iritis	Noninfective chorioretinitis	1-3
Oculomucocutaneous syndrome	Iridocyclitis	Chorioretinitis	
Periorbital oedema	Cyclitis	Choroiditis	

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List of PTs: Other	List of PTs: Anterior Uveitis	List of PTs: Posterior Uveitis	List of PTs: Endophthalmitis
Ocular sarcoidosis	Cholesterolosis bulbi	Uveitis	Effe
Birdshot chorioretinopathy			ctive
Cyclitic membrane			
Tubulointerstitial nephritis and uveitis syndrome			
Ophthalmia neonatorum			
Vogt-Koyanagi-Harada syndrome			
Ocular pemphigoid			
Eye inflammation			
Ocular hyperaemia			
Retinal oedema			
Oculorespiratory syndrome			
Autoimmune uveitis			
Chorioretinopathy			

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05/19/2017 19:31:48		Management of Affected Area Approval
05/19/2017 19:51:53		Biostats