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Standardization of OCT Angiography Nomenclature in Retinal Vascular Diseases

Consensus-Based Recommendations

Marion R. Munk, MD, PhD,[1,2,3] Ferhat Turgut, MD,[1,4,5,*] Livia Faes, MD,[6,7] Damian Jaggi, MD,[2] K. Bailey Freund, MD,[7,8] Srinivas R. Sadda, MD,[9,10] Tunde Peto, MD,[11] Ruikang K. Wang, PhD,[12,13] Michael Pircher,[14] Christine A. Curcio, PhD,[15] Jennifer Sun, MD,[16] Amir H. Kashani, MD, PhD,[17] on behalf of the International Retinal Imaging Society Research Group*

Objective: To develop a consensus nomenclature for OCT angiography (OCTA) findings in retinal vascular diseases (RVDs).

Design: Expert consensus using standardized online surveys with modified Likert scale.

Participants: Retinal vascular disease imaging experts, OCT biomedical engineers, and the members of the International Retinal Imaging Society (IntRIS)

Methods: A PubMed literature review identified quantitative and qualitative terms forming the basis for a consensus-building process using a modified Delphi method. Agreement levels were categorized as "Accepted" (median $\geq$6), "Considerable Consensus" (median, 6–7; interquartile range [IQR] $\leq$3), "Strong Consensus" (median $\geq$8; IQR $\leq$2), and "Refined Strong Consensus" (median $\geq$8, IQR $\leq$2, with $\geq$70% of responses in the 8–10 range). A multidisciplinary expert panel refined the terminology through 3 survey rounds, leading to a final survey conducted by IntRIS members.

Main Outcome Measures: Consensus on OCTA nomenclature in RVD.

Results: The literature review identified 58 relevant papers, yielding 51 quantitative and 108 qualitative terms. A series of 3 surveys was used to refine the nomenclature framework for describing OCTA findings. The selected framework includes a generic term ("OCTA signal"), adjective terms ("presence/absence," "decreased/increased," "normal/abnormal"), and descriptive/etiologic terms ("of unknown cause," "due to blockage," "due to non-perfusion"). In the final survey among 44 IntRIS members, the framework achieved strong consensus for overall acceptance (median, 8.0; IQR, 7.0–9.0). The term "OCTA signal" met refined strong consensus criteria (median, 8.0; IQR, 8.0–9.0, with $\geq$70% of responses in the 8–10 range). Adjective terms, including "absence/presence" and "increased/decreased," were also rated with strong consensus (median, 8.0; IQR, 7.0–9.0). Similarly, descriptive/etiologic terms achieved strong consensus (median, 8.0; IQR, 7.0–9.0). Adoption of the framework for clinical practice and scientific reporting was rated with strong consensus (clinical: median, 8.0; IQR, 7.0–9.0; scientific: median, 9.0; IQR, 8.5–10.0).

Conclusions: This study establishes a strong consensus framework for reporting OCTA findings in RVD for clinical and scientific contexts.

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OCT angiography (OCTA) has rapidly emerged as a valuable imaging modality in the field of ophthalmology, offering clinicians noninvasive visualization of retinal and choroidal vasculature with unparalleled detail and depth.[1] By leveraging the principles of OCT, OCTA provides high-resolution images of perfused vessels, enabling precise assessment of retinal perfusion and microvascular morphology.[2] This capability has advanced the diagnosis and management of various retinal vascular diseases (RVDs), including diabetic retinopathy, age-related macular degeneration, and retinal vascular occlusions.[3–8] OCT's ability to capture distinct layers of the retina and choroid in a rapid, reproducible manner has made it an indispensable tool in the armamentarium of retinal specialists.[2,9]

Despite its transformative potential, OCTA's relatively recent introduction into clinical practice has led to a lack of standardized terminology for describing its findings.[10–12] This absence of uniform nomenclature poses a significant

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challenge in communication among clinicians, researchers, and imaging specialists, hindering the exchange of information, and impeding the advancement of the field. The diverse array of imaging protocols, acquisition parameters, and image processing algorithms further complicates matters, resulting in inconsistency and ambiguity in terminology usage.[13] Moreover, many commonly used terms do not reflect the underlying principle of OCTA. For example, the term "flow" is not technically accurate in describing OCTA findings, because OCTA images retinal blood cells based on motion contrast, rather than directly measuring blood flow or volume. Therefore, "flow" inaccurately suggests a quantitative assessment of blood volume, whereas OCTA primarily provides qualitative insights into presence or absence of particular movement, sometimes also described as "flux."[14,15]

Recognizing the critical need for standardized OCTA terminology, our research group embarked on a comprehensive effort to address this challenge. Through meticulous literature review, expert panel discussions, and targeted surveys, the current landscape of OCTA terminology was analyzed to propose a unified framework aimed at promoting clarity, consistency, and precision in communication. By harnessing the collective expertise of clinicians, researchers, and imaging technologists, the initiative aimed to establish a common language that facilitates meaningful dialogue, fosters collaboration, and ultimately enhances patient care in the realm of RVDs.

Methods

The study was conducted by an executive committee and an expert panel (Fig 1). The executive committee consisted of nonvoting experts in the field of RVD and imaging and surveying and standardized literature research (M.R.M., A.H.K., F.T, L.F., and D.J.) who managed various essential tasks: performing extensive literature research, facilitating expert discussions, drafting the questionnaires, assessing meticulously responses and comments, organizing feedback, and overseeing manuscript preparation and revisions. Simultaneously, the expert panel, consisting of 7 specialists (K.B.F., S.R.S., J.S., T.P., R.W., M.P. and C.A.C.) in RVD and imaging, a histologist with expertise in retinal and macular diseases, and OCTA-proficient medical physics engineers, contributed through an iterative process aimed at refining the categorization of terms.

Retinal vascular diseases were defined for this study as a group of conditions characterized by abnormalities in the retinal vasculature, such as diabetic retinopathy and retinal vein occlusion. These diseases were chosen because of their clear classification within retinal pathology and their clinical significance in OCTA imaging.

To identify relevant publications for the development of the OCTA nomenclature framework, a systematic literature review was conducted using PubMed. The search focused on studies published between January 2015 and December 2021. The inclusion criteria encompassed peer-reviewed articles written in English that specifically addressed RVDs, such as diabetic retinopathy and retinal vein occlusion. Eligible studies included those discussing or proposing terminology for quantitative or qualitative OCTA metrics, as well as articles reporting original data on imaging protocols, technical artifacts, and vascular density assessments. The requirement for informed consent was waived because of the retrospective nature of the study.

Exclusion criteria were applied to ensure a focused analysis. Articles unrelated to RVD or those without OCTA-based imaging analysis were excluded, along with studies exclusively addressing nonvascular retinal or choroidal diseases, such as age-related macular degeneration or macular dystrophies. Additionally, case reports, editorials, and commentaries without detailed terminology discussions were excluded from the review.

The search strategy utilized terms such as "OCTA," "retinal vascular disease," "diabetic retinopathy," and "retinal vein occlusion," among others. Articles were screened for relevance by 2 independent reviewers, and duplicate studies were removed. A total of 58 articles meeting these criteria were included for further analysis, forming the basis of the nomenclature framework development.

From the literature, both quantitative and qualitative terms were identified. Quantitative terms were defined as those involving numerical measurements or computations derived from OCTA metrics, such as vascular density, capillary perfusion density, and vessel length density. These terms rely on measurable values, typically expressed as percentages or absolute values, and are commonly used in research and clinical settings to provide objective assessments of retinal vascular integrity.

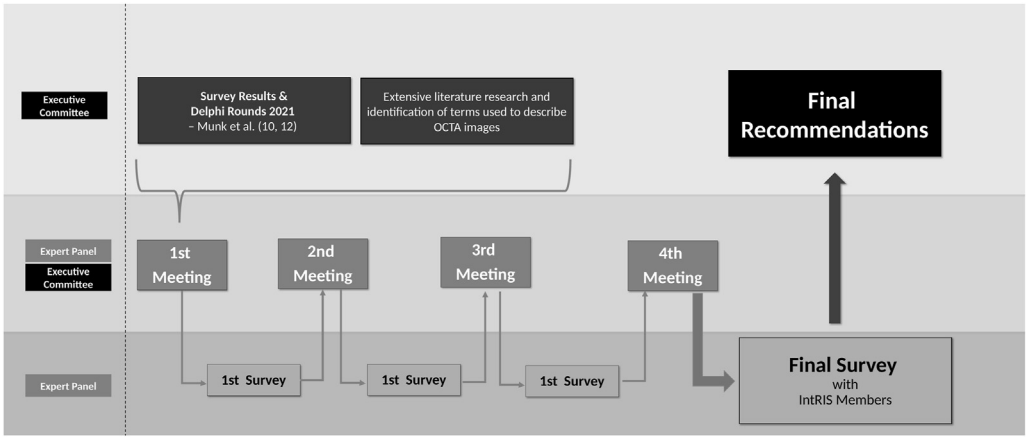

Figure 1. Flow chart illustration of the consensus process leading to the final recommendations. IntRIS = International Retina Imaging Society; OCTA = OCT angiography.

In contrast, qualitative terms were defined as descriptors of visual features or patterns observed in OCTA images, without direct numerical measurement. Examples include signal absence/presence, flow void, and nonperfusion. These terms focus on the structural appearance and patterns of the retinal vasculature.

These findings, combined with insights from 2 previous surveys[10,12] and Delphi method applications aimed at standardizing OCTA nomenclature in RVD, laid the groundwork for the expert panel.

The study employed a series of structured surveys using Microsoft Forms and expert panel discussions to develop and validate a standardized OCTA nomenclature framework for RVDs. The virtual meetings were recorded and transcribed. Each meeting was summarized, and action items were identified and implemented in the next survey. Before implementation, the transcript summary and action items were distributed to each member of the research group for additional comments and corrections. The same group of experts (expert panel) participated consistently across the 3 primary survey rounds, ensuring reliability and consistency in the consensus-building process.

To achieve broader validation, the final survey was distributed to members of the International Retinal Imaging Society (IntRIS), a group of MDs and PhDs with established expertise in clinical and basic research related to retinal imaging. Membership in IntRIS requires documented contributions to the field through publications and other scientific activities, making these individuals highly qualified to evaluate the proposed OCTA nomenclature framework. Importantly, the IntRIS members were not involved in the initial development of the framework, ensuring an independent assessment of the terminology.

Post-survey data analysis was performed using spreadsheet software (Microsoft Excel, Version 16.86) to calculate mean values, standard deviations, median, interquartile range (IQR), and frequency distributions for each outcome. These statistics provided a quantitative summary of participants' perceptions and preferences regarding the proposed OCTA framework.

Consistent with established practices, we defined a median of 6 as the threshold for acceptance and suitability in the final survey.[16] To ensure a rigorous assessment of consensus, we applied a structured classification based on median scores and IQR (Table 1). A term was accepted if it achieved a median score of $\geq$6, with no strict IQR criteria applied. We defined considerable consensus as a median score in the range of 6 to 7 with an IQR $\leq$3, reflecting moderate agreement among participants. For strong consensus, we applied stricter criteria: a median score of $\geq$8 with an IQR $\leq$2, indicating minimal variability and high agreement. Additionally, to refine the definition of strong consensus further, we assessed the percentage of responses falling within the 8 to 10 range. Terms achieving $\geq$70% agreement in this range were classified as exhibiting refined strong consensus, combining both central tendency and response distribution measures to strengthen the robustness of our findings.

Results

The literature review yielded 58 pertinent papers, from which the executive committee derived a list of 51 quantitative and 108 qualitative terms. Additionally, 8 prevalent scan patterns and 6 montage size variations were documented.

Four virtual meetings were held with the entire research group, compromising the executive committee and the expert panel. Each meeting was followed by online surveys employing a modified Likert scale and including example images to test and fine tune the proposed framework.

Initial Virtual Meeting and Survey Results

In the initial virtual meeting, there was strong agreement that qualitative terms identified from the literature review do not accurately reflect the principles of OCTA. Many terms already regularly used in the literature were repurposed from dye angiography. Dye-angiography-derived terms refer to terminology historically used in fluorescein or indocyanine green angiography, such as "flow void," "capillary non-perfusion," and "leakage." These terms were included in the literature review when they were found to have been adapted for use in OCTA, despite differences in the underlying imaging principles. However, their continued use in the context of OCTA may lead to misinterpretations, as these terms do not fully align with the motion-contrast-based mechanism of OCTA. In contrast, OCTA-specific terms were defined as terminology uniquely developed to describe findings specific to OCTA technology. Examples include "decorrelation signal," which captures motion contrast generated by erythrocytes, "projection artifact," referring to signals from overlying vessels appearing in deeper layers, and "shadowing," related to signal attenuation due to opacities. This distinction highlights the importance of adapting or replacing dye-angiography-derived terms to better reflect the principles and capabilities of OCTA.

It was agreed that instead of using these, a new framework aligned with signal source and physical principles of the OCTA modality was needed. A general framework proposal was established, consisting of a generic, adjective, and descriptive/etiologic terms. Suggestions for the generic term had to be in line with the underlying physical principles of OCTA.[17–19] The purpose of the

Table 1. Classification of Acceptance and Consensus Levels Based on Median, Interquartile Range, and Response Distribution

Acceptance and Consensus Level	Median Range	IQR Criteria	Description
Accepted	$\geq$6	No strict IQR criteria	General acceptance of a term or definition.
Considerable consensus	6–7	IQR $\leq$3	Moderate agreement with some variability.
Strong consensus	$\geq$8	IQR $\leq$2	High agreement with minimal variability.
Refined strong consensus	$\geq$8	IQR $\leq$2 and $\geq$70% of responses in 8–10 range	Highest level of consensus, integrating both distribution and agreement percentage.

IQR = interquartile range.

adjective term was to describe the degree of signal, and finally the descriptive/etiologic term was intended to represent the potential origin of the signal.

In the initial survey conducted in July 2022, the expert panel evaluated and ranked terms identified during the first online meeting to assess their acceptance and applicability. The survey consisted of 10 questions focused on selecting and prioritizing terminology for describing OCTA images. Experts provided rankings and ratings for the proposed terms, offering key insights into their preferences. Additionally, the survey included an exploration of adjective terms and descriptive/etiologic terms to refine their use in OCTA image interpretation.

Generic Terms

Concerning the proposed generic terms, "signal" and "OCTA signal" emerged as the top-ranked terms (Fig 2).

The assessment of the accuracy of the individual generic terms, rated on a scale from 1 (least appropriate) to 5 (most appropriate), revealed that "OCTA signal" received the highest score with a median of 5 (IQR, 3.5−5). This was followed by "flow signal," "signal variance," and "decorrelation signal," each with a median of 4 (IQR, 3−4). Other terms received the following scores: "decorrelation" with a median of 4 (IQR, 2.5−4), "signal void" with a median of 4 (IQR, 2−4), and "motion signal" with a median of 4 (IQR, 2−4.25).

In the subsequent question experts were asked to select the single most appropriate generic term. Here the distribution was: 3 responses for "signal," 2 for "OCTA signal," and 1 each for "variance" and "flow signal."

Adjective Term

Several accompanying adjective terms were suggested in the virtual meeting. In the survey, the adjective term, "absence/presence" was preferred by 4 experts, "decreased/increased" by 2, and "hypo/hyper" by 1. The ranking of adjective terms revealed "decreased/increased" at the top, followed by "absence/presence" (Fig 3).

Descriptive/Etiologic Terms

For descriptive/etiologic terms a large framework of different terms was suggested in the virtual meeting. The goal here was to cover as many potential underlying causes as possible. There was only discordance in a couple of terms, these were then included in the survey. For example, there was no agreement for the appropriate term to describe a change in OCTA signal due to a possible impairment of perfusion. This question was therefore included in the following survey. The survey results exhibited that the term "…due to decreased perfusion" was preferred by the experts (Fig 4).

For signal changes not associated with retinal vasculature, 6 experts favored "nonvascular," and 1 chose "not associated with retinal vasculature." For signal changes due to media opacity, 4 experts agreed on "…due to shadowing," with other suggestions including "due to signal attenuation," "due to shadowing artifact," and "due to media opacity."

Second Virtual Meeting and Survey Results

After the initial survey, a virtual meeting with the research group was conducted to review the survey results and comments in November 2022. The experts agreed that the proposed framework to describe OCTA images should include:

(i) a generic term, either "signal" or "OCTA signal," reflecting the fundamental principles of OCTA, irrespective of OCTA device;

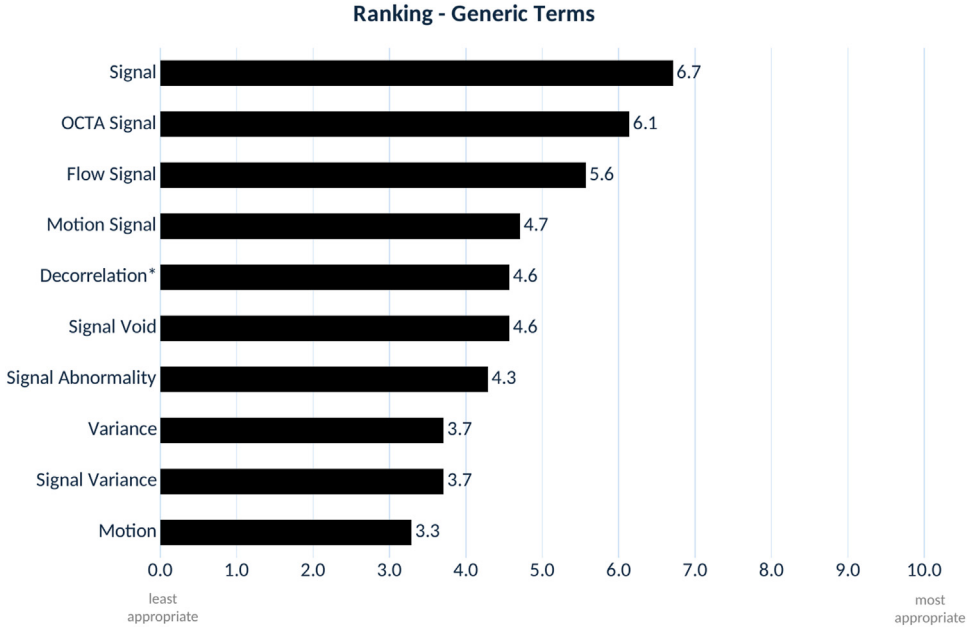

Figure 2. The 10 generic terms were ranked by the 7 experts (top = most appropriate; bottom = least appropriate). The x-axis indicates the level of appropriateness among experts regarding each term. *± signal; ± abnormality. OCTA = OCT angiography.

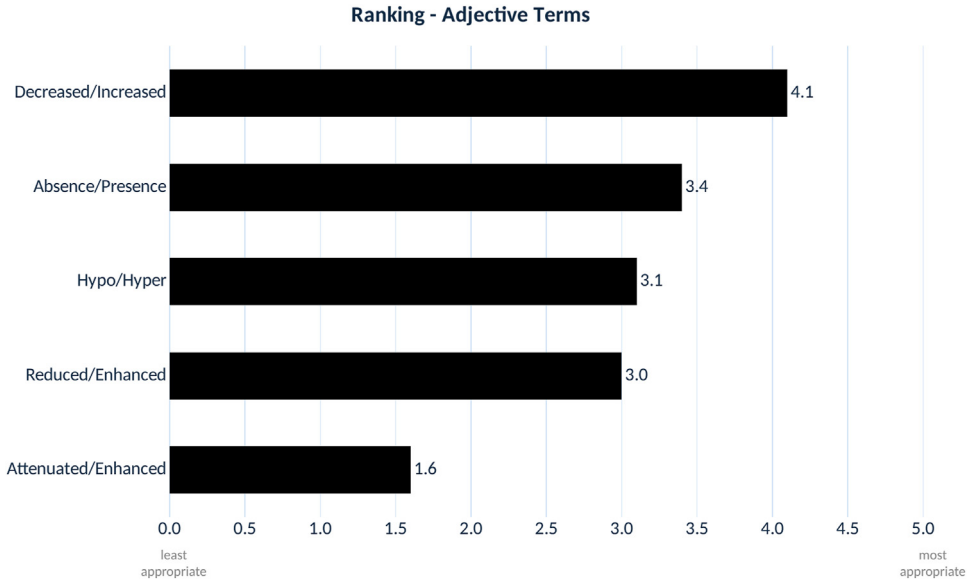

Figure 3. The ranking of adjective terms by the experts resulted in the following ascending order: decreased/increased, absence/presence, hypo/hyper, reduced/enhanced, attenuated/enhanced. The x-axis indicates the level of appropriateness among experts regarding each term.

(ii) an adjective term indicating the degree of the signal, such as "presence/absence" and "decreased/increased";

(iii) expressions describing the origin of the signal, including:
- "… of unknown cause"
- "… due to blockage"
- "… due to decreased perfusion"
- "non-vascular" (absence of signal which is not associated with retinal structures)
- "… due to shadowing" (absence of signal due media/vitreous opacities)
- "… due to projection artifacts"
- "… due to acquisition artifacts"

Building on the results of the virtual meeting, a second survey was conducted in January 2023. This survey aimed to further refine the terminology framework by evaluating its application to 5 representative OCTA cases featuring retinal vascular pathologies. The expert panel assessed various aspects of term usage, including their comfort level with the terms, their likelihood of adopting them in clinical settings and scientific publications, and their overall impressions of the terms' appropriateness. Panelists rated the terms on a scale of 1 to 10 (1 = completely inaccurate and awkward, 10 = completely accurate and appropriate).

The overall median score for describing the OCTA images and the displayed pathologies using the new framework was 7.0 (IQR, 6.5−8.0). The sentiment toward "OCTA signal" yielded a median of 9.0 (IQR, 9.0−9.0). Comfort with "absence/presence" or "increased/decreased" had a mean of 8.0 (IQR, 8−9). The sentiment for descriptive/etiologic terms demonstrated a mean of 6.0 (IQR, 5.0−7.5). Readiness to use these terms in clinical settings had a mean of 7.0 (IQR, 5.0−8.5), and, for scientific papers, it was 8.0 (IQR, 7.0−9.0). Written feedback indicated that the list of

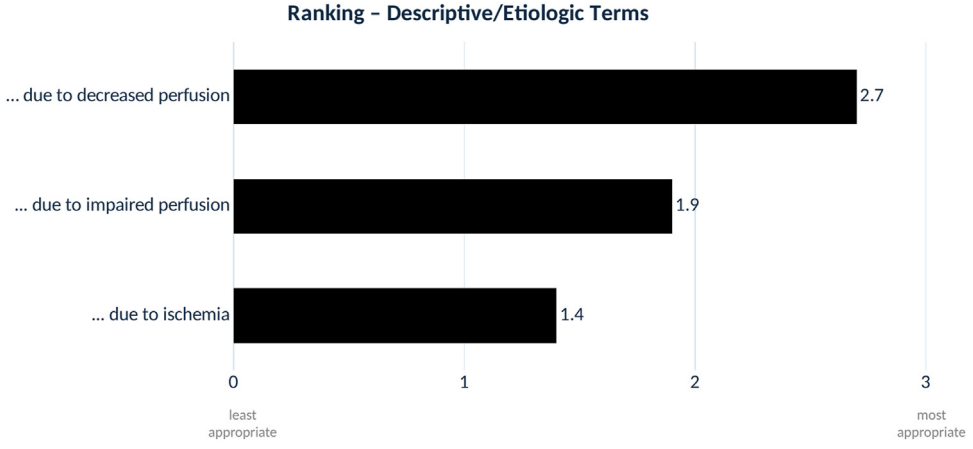

Figure 4. The ranking of descriptive/etiologic terms (top = most appropriate; bottom = least appropriate). The x-axis indicates the level of appropriateness among experts regarding each term.

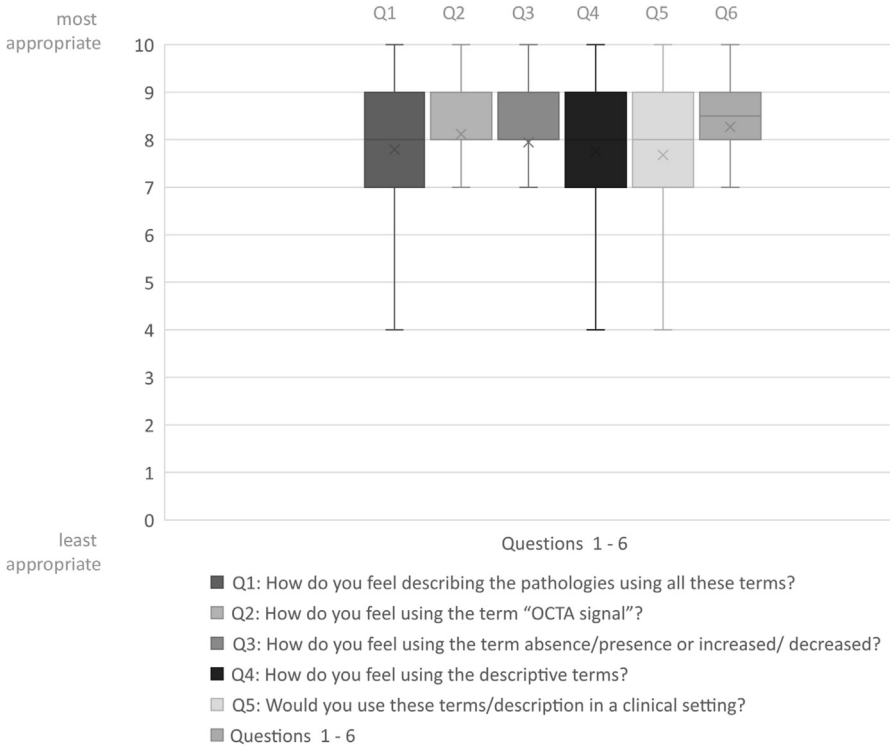

Figure 5. Boxplots depicting the distribution of responses for each of the 6 survey questions. The boxplots illustrate key statistical measures, including the median (central line within the box), the interquartile range (IQR, represented by the box, spanning from the first quartile [Q1] to the third quartile [Q3]), and the minimum and maximum values (whiskers extending from the box, excluding outliers). OCTA = OCT angiography.

descriptive/etiologic terms was incomplete to describe the full range of pathologies.

Third Virtual Meeting and Survey Results

The framework was refined based on the feedback and discussion during the third virtual meeting in July 2023. The list of descriptive/etiologic terms was expanded to include a "vascular origin/ vascular abnormality" category and to further specify artifacts:

- "… of unknown cause"
- "… due to blockage"
- "… due to decreased perfusion"
- "… due to non-perfusion"
- "… non-vascular" (absence of signal not associated with retinal structures)
- "… due to vascular origin"
- "… due to shadowing" (absence of signal due to media/ vitreous opacities)
- "… due to projection artifacts"
- "… due to acquisition artifacts"
- "… due to neovascularization"

Additionally, a new instruction was added to describe the location (deep, middle, and superficial capillary plexus, choriocapillaris, supraretinal, vitreal, etc.), as well as the type of scan (en face slab, individual OCTA B-scan), and scanning pattern (3 × 3,

Table 2. Final Survey Results with Consensus Evaluation

Final Survey Questions	Median	IQR	Responses in 8–10 Range, %	Consensus Level
How do you feel describing the pathologies using all these terms?	9.0	7.0–9.0	66.2%	Strong Consensus
How do you feel using the term "OCTA signal"?	8.0	8.0–9.0	75.8%	Refined Strong Consensus
How do you feel using the term absence/presence or increased/ decreased?	8.0	8.0–9.0	76.6%	Refined Strong Consensus
How do you feel the descriptive terms?	8.0	7.0–9.0	68.5%	Strong Consensus
Would you use these terms/description in a clinical setting?	8.0	7.0–9.0	67.4%	Strong Consensus
Would you use these terms when writing a scientific paper?	8.5	8.0–9.0	78.0%	Refined Strong Consensus

IQR = interquartile range.

6 × 6, 12 × 12, montage 15 × 9). It was highlighted again that the suggested terms form the basis for a flexible framework and that users are encouraged to employ new phrases as long as they align with the basic principles of OCTA. The updated survey with the same image examples was distributed to the experts in July 2023. A median of 8.0 (IQR, 7.5−9.0) for the sentiment toward describing pathologies using the framework was achieved. The sentiment for "OCTA signal" was 9.0 (IQR, 9.0−10.0). Comfort with "absence/presence" or "increased/decreased" demonstrated a median of 9.0 (IQR, 8.0−9.5). The assessment of sentiments toward the usage of descriptive/etiologic terms yielded a median of 8.0 (IQR, 6.5−9.0). Readiness to use terms in clinical settings achieved a median of 8 (IQR, 5.0−10.0), and for scientific papers, it was 9.0 (IQR, 8.5−10.0).

Final Survey

In September 2023, the final survey was distributed to members of IntRIS to ensure comprehensive validation of the proposed framework.[20]

This survey targeted IntRIS members with substantial expertise in retinal diseases and OCTA who had not participated in prior study activities, ensuring an independent evaluation. Out of 156 members, total of 44 members met these criteria and completed the survey, and the detailed questionnaire is available in the Material S1 (available at www.ophthalmologyretina.org). The results of this final survey are presented in Figure 5 and Table 2.

Discussion

A new framework for describing OCTA images in RVD is presented, reflecting the underlying physical principles of OCTA. This framework achieved overall strong consensus in experts regularly working with OCTA. The analysis of the expert surveys provided valuable insights into the selection and preference of terminology for describing OCTA images in RVDs. Deliberate measures were implemented to ensure the robustness and objectivity of the proposed nomenclature, supported by validation from a diverse group of experts. Although some contributors to this study had previously authored terms in OCTA literature, potential bias was minimized by including 44 independent experts from IntRIS in the validation process. This broader involvement helped to provide a balanced perspective and address potential concerns about any pre-existing terminology preferences. The multiparameter approach to defining consensus levels provides a more nuanced evaluation of agreement among experts. Incorporating both the median and the IQR allowed for an evaluation that reflects central tendencies while addressing the degree of variability. Further refinement through the calculation of percentage agreement in the 8 to 10 range strengthens the reliability of terms classified as refined strong consensus. This robust approach aims to ensure that the proposed nomenclature meets high standards of acceptability and reproducibility within the expert community.

An initial effort failed to reach consensus on OCTA nomenclature.[10,12] This activity included a large survey among retina specialists worldwide followed by a Delphi including RVD imaging experts. The previous rounds focused on terms which were most frequently used in prior literature and were collected via a systematic literature review. Although the previous effort failed to establish a widely accepted framework for OCTA description, it highlighted that the currently used terms are inadequate and misleading.[10,12] A prior attempt introduced commonly used terms in the literature such as "flow void," "flow alteration," "flow deficit," and "flow attenuation," alongside more descriptive/etiologic terms like "decorrelation abnormality due to projection artifact" and "decorrelation abnormality of unknown origin," which have not yet been widely adopted in the literature. Interestingly, these latter terms were well received, and despite some, like "decorrelation abnormality due to projection artifact," approaching consensus in the Delphi rounds and consistently ranking highly, no clear agreement was reached on which terms should be used in the future. The experts concluded that these more descriptive/etiologic terms represent a potential path forward, however, they still remain underdeveloped. This paved the way for the current consensus framework, which was not only accepted by the small expert group but also appears to be gaining broader acceptance beyond specialists, as evidenced by our final survey. This was confirmed in the first meeting and survey, where a strong need for a nomenclature respecting the physical principles of OCTA emerged. Generic terms such as "flow," "flow void," and "flow deficit" are frequently used in OCTA literature; however, these terms are not appropriate for the description of OCTA images for several reasons: In OCTA, motion contrast of blood cells is used to visualize the vasculature. The term flow inaccurately suggests a quantitative assessment of blood flow or volume. OCT angiography primarily provides qualitative insights into the presence or absence of movement of particles with reflective properties, such as erythrocytes. In OCTA, areas without detectable signal may indicate either an absence or extremely slow movement of red blood cells that falls below the detection threshold. However, this does not imply a "void" of signal; rather, it highlights technical limitations, such as insufficient sensitivity to detect low blood flow. Further, it provides a qualitative or semiquantitative assessment of flow based on motion contrast of red blood cells. A perceived decrease in this OCTA signal may result from various factors, including actual decrease in blood flow, projection artifacts, signal attenuation due to overlying tissue, or limited sensitivity of the OCTA device to certain flow speeds. Using terms such as "flow decrease" without specifying the context can oversimplify or misrepresent the underlying cause. It implicates a quantitative, volumetric measure which is not in line with what we actually see on an OCTA.

The initial survey revealed a hierarchy of preference among generic terms, with "signal," "OCTA signal," and "flow signal" emerging as the top choices based on rankings. Surveys revealed that "OCTA signal" and "motion (contrast)"

received the highest scores for accuracy, indicating their suitability for describing OCTA images. Techniques to generate motion contrast images differ and include phase variance, speckle variance OCT, split-spectrum amplitude-decorrelation angiography and optical microangiography.[19,21–23] In the second survey, after the virtual research group discussion, it was agreed to use the term "OCTA signal" as the underlying generic term because it respects all current and future techniques to generate OCTA images.

When selecting accompanying adjective terms, experts favored terms like "absence/presence" and "decreased/increased," reflecting the importance of indicating the qualitative aspects of OCTA findings. The IQRs suggest a moderate level of variability in responses, indicating diverse perspectives within the participant group. The minimum and maximum values highlight the range of responses, showcasing the variability in participants' comfort levels with the proposed nomenclature. It was crucial for us not only to select possible terms for describing OCTA images with experts but also to obtain the acceptance rate from a wide range of additional experts. This enables the establishment of a uniform language for OCTA descriptions, both in research and clinical settings. The outcome of multiple survey rounds has largely achieved this objective. With several rounds of surveys, it became also clear that we cannot provide a complete set of terms that should be used to describe images, but rather a framework anticipating the evolution of new terms. This was especially seen with respect to the adjective terms where the subsequent survey rounds added terms, such as normal/abnormal on top of the initial proposed terms absence/presence, and increased/decreased in the need to describe the diversity of changes seen on OCTA images. This fact became even more evident in terms of descriptive/etiologic terms, where the subsequent surveys led to additional proposed terms.

Overall, a strong agreement was achieved for the entire framework. However, there was a variability in the results, indicating very strong and less strong agreement. Survey questions 1, 4, and 5 showed a higher variability in agreement. This may have stemmed from differences in interpretation of terms, varying levels of familiarity with certain nomenclature, and technical nuances related to OCTA imaging techniques.

It is essential to recognize the evolving nature of OCTA technology and its applications in clinical practice.[24] As OCTA continues to advance, new challenges and opportunities arise in terms of terminology and interpretation. For instance, as imaging protocols evolve to capture deeper vascular layers, specific pathological features, or enable time-resolved OCTA imaging, the need for specialized terminology may emerge to accurately describe these findings. Although our current framework provides a foundation for standardized OCTA terminology, we acknowledge that certain challenges, such as accurately distinguishing between layers like the choriocapillaris and inner choroid, remain. Addressing these depth and segmentation issues will be essential in future efforts, as achieving precise layer-specific terminology is crucial for the accurate interpretation of OCTA images. Therefore, ongoing dialogue and collaboration among experts will be essential to adapt the nomenclature to meet evolving clinical needs and technological advancements.

In the broader context of medical imaging, standardized terminologies exist to describe pathological features on the basis of the underlying physical principle of various modalities. For instance, terms like "hypo-/hyper-reflective" are commonly used for OCT images, "hypo-/hyper-fluorescent" for fluorescence angiographies, and "hypo-/hyper-intense" for magnetic resonance images.[25] These terms reflect characteristic features of the depicted tissues or structures based on the physical principles of each imaging technique. Similarly, the physical principle underlying OCTA imaging involves capturing the change of light scattering by moving erythrocytes in the retinal vasculature. Given this parallel with other technologies, the accepted term "OCTA signal" aligns well with established conventions and contributes to creating a uniform nomenclature for OCTA descriptions.

The impact of scan patterns and montage sizes on OCTA findings was considered in developing the nomenclature framework. Smaller scan patterns, such as 3×3 mm and 6×6 mm, offer high resolution and are ideal for identifying microvascular abnormalities, capillary dropout, or small areas of nonperfusion. Larger patterns, such as 12×12 mm, provide a broader view of the retinal vasculature but may have lower resolution, potentially affecting the detection of finer vascular details. Montage imaging, created by combining multiple smaller scans, enables a panoramic view of the retina but introduces additional challenges, such as projection artifacts, stitching misalignments, and signal attenuation. These factors influenced the inclusion of terms like "projection artifact" and "signal void," ensuring that the nomenclature could accommodate findings from various scan configurations.

Moreover, the establishment of standardized OCTA nomenclature not only facilitates communication among clinicians and researchers but also has implications for patient care. A consistent language for describing OCTA findings can improve interdisciplinary collaboration, enable more accurate diagnosis and monitoring of RVDs, and enhance the comparability of studies across different centers and research groups. This, in turn, can lead to improved patient outcomes and more informed treatment decisions.

Overall, these results contribute to understanding the acceptance and feasibility of the standardized OCTA nomenclature in both clinical and research settings.

Conclusions

The surveys underscored the complexity of selecting appropriate terminology for the description of OCTA images, highlighting the need to balance factors such as preference, accuracy, and clinical utility. The positive

reception of certain terms demonstrates their potential for standardization in both clinical practice and research, facilitating clearer communication and more consistent interpretation of OCTA findings. At the same time, the varying levels of agreement toward descriptive/etiologic terms emphasize the importance of ongoing evaluation and refinement to ensure that the proposed nomenclature addresses the diverse requirements of clinicians and researchers. The framework proposed here provides a structured approach to describing OCTA findings in RVD, offering flexibility for the integration of novel terms as the field evolves. Furthermore, this framework lays the groundwork for future expansions to other conditions, such as age-related macular degeneration and macular dystrophies. Early efforts to extend the nomenclature to these conditions have been encouraging, with preliminary results achieving broad acceptance among retinal imaging experts.

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[1] Gutblick Practice Group, Pfäffikon, Switzerland.

[2] Department of Ophthalmology, Inselspital, University Hospital Bern, Bern, Switzerland.

[3] Feinberg School of Medicine, Northwestern University Chicago, Chicago, Illinois.

[4] Stadtspital Zürich, Zürich, Switzerland.

[5] Department of Ophthalmology, Semmelweis University, Budapest, Hungary.

[6] Medical Retina Department, Moorfields Eye Hospital National Health Service Foundation Trust, London, United Kingdom.

[7] Vitreous Retina Macula Consultants New York, New York.

[8] Department of Ophthalmology, New York University Grossman School of Medicine, New York, New York.

[9] Doheny Eye Institute, Pasadena, California.

[10] University of California – Los Angeles, Los Angeles, California.

[11] Centre for Public Health, Queen's University Belfast, Belfast, United Kingdom.

[12] Department of Bioengineering, University of Washington, Seattle, Washington.

[13] Department of Ophthalmology, University of Washington, Seattle, Washington.

[14] Center for Medical Physics and Biomedical Engineering, Medical University of Vienna, Vienna, Austria.

[15] Department of Ophthalmology and Visual Sciences, University of Alabama at Birmingham Heersink School of Medicine, Birmingham, Alabama.

[16] Joslin Diabetes Center, Beetham Eye Institute, Harvard Department of Ophthalmology, Boston, Massachusetts.

[17] Wilmer Eye Institute, Johns Hopkins University, Baltimore, Maryland.

*M.R.M. and F.T. contributed equally to this work.

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Conception and design: Munk, Turgut, Faes, Jaggi, Freund, Sadda, Peto, Wang, Pircher, Curcio, Sun, Kashani

Data collection: Munk, Turgut, Faes, Jaggi, Kashani

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Abbreviations and Acronyms:
IntRIS = International Retina Imaging Society; ; **IQR** = interquartile range; ; **OCTA** = OCT angiography; ; **RVD** = retinal vascular disease..

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Correspondence:
Marion R. Munk, MD, PhD, Augenarzt Praxisgemeinschaft Gutblick AG, Zentrum Staldenbach 8, 8808 Pfäffikon, Switzerland. E-mail: marion_munk@hotmail.com.

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