

# OPHTHALMIC HOSPITALIST INTEREST GROUP

## NEWSLETTER

Donna Kim, MD | Maggie Hymowitz, MD

### Announcements

#### Happy Holidays OHIG

Have a wonderful (and quiet for those on call) holiday season and happy new year!

#### Quarterly Newsletters

In 2025, we will be switching to quarterly newsletters with deep dives into issues related to hospital-based ophthalmic care.

#### Join the Community!

Have a question or topic about inpatient/ER consults? Share on the [AAO/OHIG community](#)! Log in with your AAO username.

#### OHIG Topic Wishlist

Have a case you would like to feature in an OHIG newsletter? We welcome your ideas and expertise. Email [ohig@ohig.org](mailto:ohig@ohig.org).

#### Welcome New Members!

Thanks for joining OHIG! Please verify your information on the [OHIG website](#).



### Articles

#### [Eye Stroke Protocol in the ED, J of Stroke and Cerebral Vascular Disease, 2024](#)

Fundus photography and OCT in the ED can allow for rapid remote diagnosis of CRAO/BRAO with greater diagnostic accuracy in hyper acute cases with normal appearing fundi.

#### [A Telemedicine-Enabled IV Thrombolytic Treatment Pathway for Patients with Hyperacute Non-Arteritic CRAO, AJO, 2024](#)

Using fundus photography triage, IV thrombolytic for CRAO is associated with better VA outcomes compared to observation.

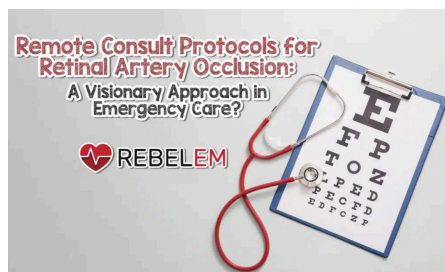
#### [The Role of Ophthalmology in Tele-Stroke Consults for Triaging Acute Vision Loss, OAEM 2024](#)

Telemedicine services can increase access to stroke care in neurologically underserved or rural areas.

## PEARLS



### ED Perspectives on Remote Consult Protocols for RAO's



Read ER physician perspectives on perceived strengths and limitations of ED remote consult protocols for time sensitive interventions such as TPA.

[Click here](#) to view.

### Holiday Eye Hazards



Patient tips on preventing holiday eye hazards including glue/glitter craft in the eye, tree branch or pine needle pokes, baking flour in the face, champagne cork injuries, snow blindness, and more. 'Tis the season for eye safety!

[Click here](#) to view.

## CONSULT ROUNDS



Valerie Biousse, MD

Professor of Ophthalmology and Neurology

Reunite Harris Chair of Ophthalmic Research

Emory University School of Medicine, Atlanta GA, USA

Teleconsults are viewed as a way to address ophthalmology coverage for ED's amid a waning number of available on-call ophthalmologists.

Emory University is a leading pioneer for ED teleophthalmology. We have the privilege of featuring **Dr. Valerie Biousse** who is known for her research work involving fundus photography, OCT, and AI for the diagnosis of neuro-ophthalmic disease in ED settings. She has over 500 publications and is a past President of the North American Neuro-ophthalmology Society (NANOS).

### Qr: How do you triage neuro-ophthalmology inpatient/ ED patient consult requests?

We have so many complex neuro-ophthalmology consultations that arrive at our various hospitals and EDs that we always have handled the neuroophthalmology consultations separately from the general ophthalmology consultations. During weekdays, all neuroophthalmology consultations are sent directly to the neuroophthalmology team who is based in the Ophthalmology outpatient clinic in close proximity to the ED and the hospital. Patients are transported to the outpatient eye clinic whenever

possible or are seen at bedside. At night and during weekends, the ophthalmology residents on call see all neuroophthalmology consultations which are staffed by a neuroophthalmology fellow or attending.

**Q2: Emory has made exciting advances in effective triage/ telemedicine protocols incorporating fundus photography and OCT for the ED. Could you share elements of your workflow? Were there any helpful considerations or challenging issues that came up during your implementation process?**

See highlighted articles authored by Dr. Biousse (click to view):

[Remote Diagnosis of Retinal Detachment in an Emergency Room Department Using Nonmydriatic Ocular Imaging, Telemedicine and E-Health, 2024](#)

[Eye Stroke Protocol in the Emergency Department, Journal of Stroke and Cerebrovascular Disease, 2024](#)

[A Telemedicine-Enabled IV Treatment Pathway for Patients with Hyperacute Non-Arteritic CRAO, AJO, 2024.](#)

[Breaking the Barriers: Methodology of Implementation of a Non-Mydriatic Ocular Fundus Camera in an ED, Survey of Ophthalmology, 2024.](#)

**Q3: Many ophthalmologists would love to have a fundus camera/OCT in their ED but run into barriers highlighted in your articles. What advice do you have for increasing ED “buy in” for setting up an imaging infrastructure for ophthalmology consults?**

I suggest sharing the above publications with them since they demonstrate a definite positive impact on patient outcomes. In addition to improving the quality of care and preventing diagnostic error such as missed papilledema in headache patients, a camera often eliminates the need for an immediate in person ophthalmology consultation and therefore reduces the length of stay of patients in the ED and decreases the burden on the on call team. They may avoid a trip to the ED in the middle of the night. A publication from our group (still under review) showed that 90% of consultations to rule out papilledema were done remotely by just interpreting imaging obtained in the ED (no in person consultation). That resulted in 50% reduction in ED length of stay when papilledema was ruled out and dramatic improvement in residents wellness who do not have to travel to ED's at all times just to "rule out papilledema". ED providers are usually happy about prevention of diagnostic errors and improvement of ED flow.

**Q4: Financial support is also key for new technology and clinical workflows. Who covered the cost of your fundus camera/OCT device? Your paper also refers to a billing process where the ED receives a technical fee, and ophthalmology receives a medical fee for these imaged consults. Can you tell us more about this?**

The camera was purchased by the hospital whose administration understood the benefits, and was installed with the help of the hospital IT team and connected to our ophthalmology imaging software by

the ophthalmology IT team. It took us one month of intensive work with all parties to make it work. It is connected to our electronic medical records which allows the ophthalmology team to review the images remotely and to interpret and bill directly similar to what we do when we see a patient in clinic. We bill for fundus photographs (99250). The technical fee goes to the ED because the ED technicians and nurses are the one obtaining the imaging studies and the interpreting ophthalmologist bills for the medical fee.

When discussing with the people who may buy a camera it is essential to highlight that the camera needs to be of very high quality and chosen for an ED environment. If you get poor quality imaging studies, you will not be able to provide adequate services and the benefits of the camera will be lost; so buying an very good (even if expensive) camera that will last years is essential.

**Q5: Who is typically in the hot seat for CRAO rule outs that need to be read urgently, especially on overnight and weekends?**

We have a specific acute vision loss protocol in place which triggers an EyeStroke alert when the diagnosis of CRAO is confirmed on the ocular imaging. When an acute CRAO is suspected, the ED takes pictures immediately and pages neuroophthalmology during weekdays and the ophthalmology resident on call at night and during weekends asking for an immediate live interpretation of the pictures; if the resident is unsure, they call an attending for help, which is easy because anyone can review pictures remotely. We chose to install a nonmydriatic hybrid camera that combines true color photographs of the posterior pole and an OCT of the optic nerve and macula (Topcon Maestro2). This makes it very easy to confirm a diagnosis of CRAO remotely without even dilating the pupils or seeing the patient. The OCT is key in this situation. When we confirm the diagnosis of acute CRAO remotely, the EyeStroke alert is activated and our stroke neurologist take care of the patient and possible treatment with thrombolysis if the patient is seen shortly after vision loss. This process greatly accelerates the diagnosis of acute CRAO and allows administration of any treatment with a few hours of vision loss onset.

**Q6: Secure imaging transfer/remote viewing can be a sizable hurdle for telemedicine. Can you tell us more about Emory's DICOM compatibility with EHR and what you would suggest for others who are hoping to facilitate this process at their institution?**

It is very easy to do that if you buy a camera that has DICOM compatible with your EHR. This is the job of IT. All you have to do is ask about DICOM and EHR compatibility before choosing the camera and talk to your ophthalmology IT (who know all imaging companies and all cameras) to make sure it will be possible. You have to make sure the camera is connected so that the entire process is automated. You cannot allow anyone to just text or email pictures of the camera screen which is not HIPAA compliant. If the camera is connected, then pictures can be viewed by anyone; they are stored in EHR and you can interpret in the patient's EHR with only few steps and bill at the same time similar to what we all do everyday in the eye clinic.



**Q7: Any other sage words of advice for individuals who wish to model your ED set up at Emory?**

Get enthusiastic, know the literature, so that you have a few selling points before meeting with your administration.

Not only will the camera help them and improve patient care, but the camera will make your inpatient/ED consultations much easier: this is why you want color AND OCT! Who can evaluate correctly a visual complaint without OCT access nowadays?? We need it and the residents need it to avoid mistakes. It makes the residents much happier because they feel they have real backup: there is a big difference between a resident telling us on the phone that "the nerve is swollen or the retina looks abnormal" and us saying "let me look at the imaging" prior to us (the attendings) committing to an evaluation and treatment without seeing the patient.

Don't be cheap: just get the best camera you want! you will have this camera for a long time, so make sure it is what you need based on where you are and the type of consults you see. I have been reviewing fundus photographs remotely for 15 years, and I cannot imagine doing it with just color or just OCT. I need both to be performant and confident. You need good imaging of the posterior pole and of course NON MYDRIATIC or it will not be used.

*We are grateful for the invaluable expertise of **Dr. Valerie Biousse** who inspires us to create similar successful and sustainable models of ED ophthalmology consult coverage at other institutions. Thank you!!!*

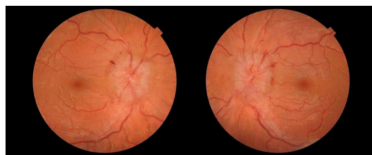
## OHIG Survey Question

**Question:** Do you have ophthalmic imaging (fundus photography/OCT) available at your ED for teleconsults? What advice you can share about setting up this process at your institution?

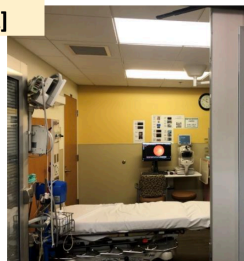
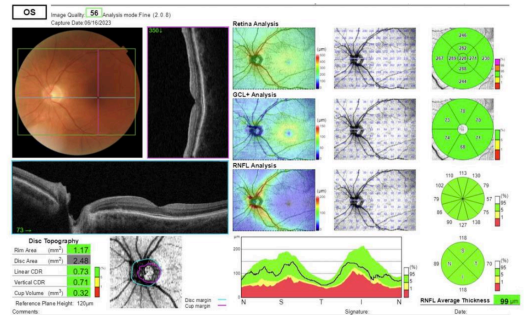
Please share your responses/questions on the AAO/OHIG community page: <https://aao.mobilize.io/main/groups/47315/lounge>

# Implementation of an Ocular Fundus Camera in EUH-ED: A New Paradigm — Valérie Biousse, MD \_ vbiousse@emory.edu

- Non-mydriatic automated hybrid ocular fundus camera combining:
  - Color ocular fundus photographs
  - Optical coherence tomography



- < 5min for photos
- No pupillary dilation
- < 10 min for training
- Easy [techs, NP, PA]



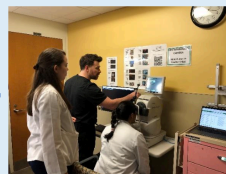
- **Billing: CPT 92250**
- **Technical fee to ED**
- **Medical fee to Ophthalmology**

- Dedicated Ophthalmology Room in ED

## Patient arrives @ EUH-ED

- **Triage in waiting room [day/night/weekend]:**

- Eye complaint
- Headache
- Severe hypertension
- Stroke/brain tumor/neurologic complaint

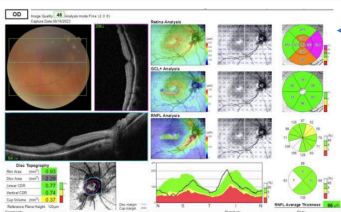


### Images go in EPIC

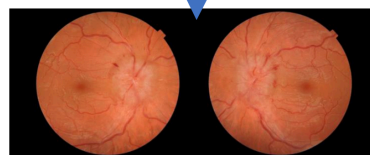
-(Camera with compatible DICOM)

### Interpretation:

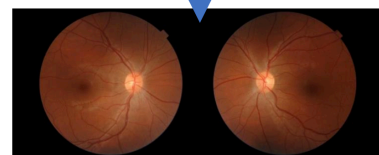
- ED/Neurology
- On-call Ophthalmology (remote)



**Acute CRAO => Stroke alert**  
=>IV tPA @4.5hrs post vision loss  
In-person Ophthalmology consultation after stroke alert



**Bilateral optic nerve edema**  
=>Papilledema protocol initiated  
In-person Ophthalmology consultation after workup initiated



**Normal optic nerves (rule-out papilledema)**  
=>Rapid discharge  
No in-person consultation

**Official interpretation by ophthalmologist and billing within 24 hours – real time if requested (pager)**

## Immediate positive Impact on Healthcare Delivery

- **For ED Ophthalmology consultations:**
  - More efficient and safer [less diagnostic errors] – OCT helps!!!
  - Accelerated [remote diagnoses; unnecessary in-person consults avoided]
  - Improved outcomes [rapid diagnoses => rapid treatments => better outcomes]
    - Diagnosis of visual loss secondary to giant cell arteritis
    - Thrombolysis within 4.5 hours for acute central retinal artery occlusion
- **Prevention of diagnostic errors in the ED/hospital:**
  - Diagnosis of papilledema [intracranial hypertension] in headache patients
  - Correction of missed diagnoses after review of photographs
- **Accelerated discharge and prevention of unnecessary tests**
  - Rule out papilledema remotely [headaches; CSF shunt malfunction...]
- **End organ damage:**
  - Malignant hypertension; diabetic retinopathy