



OPHTHALMIC PHOTOGRAPHERS' SOCIETY  
EYE IMAGING EXPERTS

BOARD OF CERTIFICATION

**CRA<sup>TM</sup>**

# **Certified Retinal Angiographer Program Guide**

**Accredited by NCCA**  
**(National Commission for Certifying Agencies)**  
*The Accreditation Body of the National Organization for Competency Assurance*



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If the date on this Program Guide is more than three months old, please check the OPS website to make sure you have the most current version.

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**NOTES:**



# OPHTHALMIC PHOTOGRAPHERS' SOCIETY

EYE IMAGING EXPERTS

## INTRODUCTION

Welcome. Thank you for your interest in the **Certified Retinal Angiographer™ (CRA™)** Program. This Program Guide details the process and procedures involved in becoming a CRA™. It contains the program application, details the eligibility and portfolio requirements and includes the written and performance examination content outlines. The CRA™ Program is administered by the Ophthalmic Photographers' Society Board of Certification (OPS BOC).

The Ophthalmic Photographers' Society is a non-profit organization dedicated to a highly specialized form of medical photography. The main objectives of the Society are to provide primary and continuing education in the field of ophthalmic imaging, to set and maintain standards for the profession through certification programs, and to promote scientific advancement in the technology.

The Society serves as a professional organization for its members, sponsoring educational meetings and promoting the exchange of information and the field of ophthalmic imaging nationwide.

The OPS holds its Annual Educational Meeting in conjunction with the annual meeting of the American Academy of Ophthalmology. The OPS meeting program includes presentations of papers on advances in scientific photography and instrumentation, as well as an extensive educational program.

OPS' membership includes ophthalmologists, optometrists, veterinarians, pathologists, medical and ophthalmic photographers, nurses, ophthalmic assistants, technicians, technologists, researchers, and engineers. Active members promote the objectives of the Society. Sustaining members are organizations and individuals actively involved with ophthalmology or ophthalmic photography for commercial or charitable purposes. Anyone involved in ophthalmic photography is encouraged to apply to the OPS Membership Office ([ops@opsweb.org](mailto:ops@opsweb.org)).

The Society created the Board of Certification (BOC) in 1979. The OPS BOC serves as the formal body responsible for the certification of retinal angiographers and ophthalmic photographers. The National Commission for Certifying Agencies (NCCA) accredited the OPS BOC certification program in 1999, and reaccredited in 2010. CRA™ Certification requires submission of work examples that meet established standards and successful completion of written and performance examinations. To date, more than 740 ophthalmic photographers have attained the Certified Retinal Angiographer™ (CRA™) credential. Membership in the OPS, while encouraged, is not a requirement for certification.

# CERTIFICATION POLICIES

## CERTIFICATION

The Ophthalmic Photographers' Society Board of Certification (OPS BOC) is responsible for certification of retinal angiographers and ophthalmic photographers. Certification designates an individual who has met the OPS BOC's standards of competence. The Board of Certification administers all examinations.

### CRA™

**Certified Retinal Angiographer™ (CRA™)** designates an individual who has met the OPS BOC standards of competence in fundus photography and retinal angiography. The OPS BOC standards are meant to assure delivery of competent, professional fundus photography and retinal angiography services.

CRA™s demonstrate competence by understanding and being able to:

- Identify the ocular anatomy.
- Recognize common ocular pathology.
- Perform single frame fundus photography.
- Perform sequential stereo fundus photography.
- Perform rapid sequence fluorescein angiography.

CRA™ examinations are offered at least twice a year in different regional locations. The examination schedule is published on the OPS Website (<http://www.opsweb.org>), and in the *OPS Newsletter*. The schedule also is available from the CRA™ Section Chair (CRA@opsweb.org). The examination dates and locations are announced at the OPS Annual Educational meeting each fall.

The Ophthalmic Photographers' Society Board of Certification is the only agency authorized to designate an individual as a Certified Retinal Angiographer™. The OPS BOC developed its program to facilitate voluntary certification of ophthalmic photographers. Its sole purpose is recognition of attainment of a standard level of knowledge and skill in fundus photography and retinal angiography. Certification does not guarantee recognition by any other individual, group, agency or institution; the liability of the OPS BOC or its representatives is limited strictly to this recognition by the OPS BOC.

### Provisional Certified Retinal Angiographer (Provisional CRA)

The designation Provisional Certified Retinal Angiographer (Provisional CRA), describes an individual who has met the criteria of the CRA™ **except the work experience eligibility requirement**. The OPS BOC established the Provisional CRA Program for those who wish to become CRA-certified, but do not yet meet the work experience requirements for the CRA Program. Individuals using formal education or professional certification as a substitute for up to one year of the work experience requirement are eligible to participate in the Provisional CRA Program. The work experience waiver procedures are described in the eligibility requirements section on **page 8**.

The Board offers the Provisional CRA to support those who choose ophthalmic photography as their vocation. The Provisional CRA serves a population who greatly benefits from the OPS's services, educational support and programming as they work towards meeting the requirements for full certification.

To become a Provisional CRA, an applicant must submit a portfolio that satisfies the board's eligibility requirements and pass the CRA written and performance examinations. Once the CRA Section Chair receives and approves documentation of the required work experience, the CRA Section Chair will upgrade the candidate's Provisional CRA status to CRA™. An applicant awarded Provisional CRA status may use the designation Provisional CRA. The Provisional CRA must not use the designation CRA™.

## STATEMENT OF NONDISCRIMINATION

The Ophthalmic Photographers' Society Board of Certification shall admit applicants of any age, sex or sexual orientation, race, religion, color, national origin, handicap or marital status to all rights, privileges, programs, and examinations generally made available through its association. It shall not discriminate on the basis of age, sex or sexual orientation, race, religion, color, national origin, handicap or marital status in the administration of its certification policies.

## APPLICATION

CRA applicants may download a **Program Application** from the OPS Web Site (<http://www.opsweb.org>) or request an application from the OPS Membership Office (1-800-403-1677 or OPS@opsweb.org). The completed application and portfolio should be submitted to the Portfolio Committee Chair. To ensure evaluators have adequate time to review your portfolio, the program application and portfolio should be **submitted a minimum of eight weeks** in advance of a desired examination date.

Submission of the **Program Application** establishes a relationship between the Ophthalmic Photographers' Society Board of Certification and the individual applicant. All correspondence, scores and certificates are mailed directly to the applicant's home address. **Each applicant is responsible for notifying the Board of Certification directly of any change of name, email address or home address.** This will enable all confidential correspondence concerning certification and recertification to reach the applicant.

By applying for the CRA™ examination the applicant agrees to the terms set forth in this program guide regarding certification requirements and examination. Applicants attest that all information they submit is true and complete to the best of their knowledge. Any misrepresentation or misconduct in the application or examination process may result in disqualification or revocation of certification. (See Disciplinary Policy on **page 30**)

Applicants with accepted portfolios are eligible to examine and will receive an **Examination Application** and a schedule of the upcoming examinations. The application must be completed and returned along with the examination fee (Checks made payable to OPS BOC), copy of current CPR certificate and a letter of employment verification and/or evidence of formal education or professional certification. Examination applications must be received **at least four weeks** before any test date. Eligibility requirements for the CRA and requirements for Provisional CRA are explained in greater detail on **page 8**. The Board of Certification reserves the right to limit the number of applicants accepted for a scheduled examination, or to cancel a scheduled examination.

## SPECIAL TESTING ARRANGEMENTS

Applicants who have been diagnosed with a physical, mental or reading impairment, as defined by the Americans with Disabilities Act, may receive assistance when taking the test. If you have a disability that would prevent you from taking the examination under standard test conditions, contact the CRA Section Chair to apply for special accommodations at least six weeks prior to a scheduled test date.

Applicants whose religious practices prevent them from taking the examination on Saturdays or Sundays should contact the CRA Section Chair to apply for special accommodations **at least six weeks** prior to a scheduled test date.

The CRA Section chair will make a reasonable effort to accommodate requests for special testing arrangements. These arrangements, if approved by the Board of Certification as reasonable for conducting of the examinations, will be provided at no additional charge.

## FEES

The CRA examination fee for current OPS members is \$365 and \$450 for non-OPS members (non-OPS member fee includes a one-year OPS membership). There is no time limit for completion of the examination once an individual has submitted payment.

The examination fee includes a \$50 non-refundable application fee and covers one administration each of the CRA written examination and the CRA performance examination. The fee for retesting for either or both components is \$225.

### Examination Fees:

OPS Member	\$365.00
Non - Member	\$450.00 (includes 1 year OPS Membership)

### Retesting Fees:

\$225.00 (Written, Performance or Both)

**Note: All fees must be remitted in US dollars.** Payment by credit card can be made on the OPS Website "Store" (opsweb.org) or with the **OPS Membership Office (1-800-403-1677)**.

**\*\*\*All bank fees related to insufficient funds will be invoiced to the applicant.**

**\*\*\*All test center fees related to failure to appear without sufficient notice (2 weeks or notice of illness or family emergency) will be invoiced to the applicant.**

## REFUNDS

Examination fees (minus a \$50 application fee) are fully refundable, with certain exceptions. For example, the BOC will subtract fees it incurs on behalf of the candidate who fails to appear at an examination site. The BOC also will not refund any portion of the fee if a candidate fails the examination or begins it and chooses not to complete the exam. If an applicant finds the fundus cameras available for the performance examination unsatisfactory, such that his or her performance would be compromised, he or she may request examination at a future test site. A credit for the performance examination fee will be applied to the future examination. Since the purpose of the Certification Program is to provide a statement of standardized capability, including the ability to use various types of fundus cameras, no liability will be assumed by the Board of Certification or its representatives for expenses, direct or indirect, incurred by the applicants or their employers.

Refund requests must be submitted to the CRA Section Chair. Refunds are made payable and mailed to the party that originated the payment of the examination fee.

## REPORT OF EXAMINATION RESULTS

Applicants will be notified by mail of their results **within eight weeks of the test date**. Applicants who pass the examination will receive a report noting only that they have passed the examination. The CRA™ examination is designed to be a minimum competency examination, and is not intended to distinguish scores achieved above the passing point. Therefore, no numeric scores will be reported for applicants who pass the examination. The OPS BOC established this policy as a safeguard against misuse of examination scores.

Applicants who do not pass the examination will receive notice of their score with a diagnostic report showing areas of strength and weakness.

The OPS BOC will not release any results early; all examination results are mailed at the same time. No examination results will be reported by telephone. Results of the examination are confidential and are released only to the applicant. The OPS BOC reserves the right to release to the general public; a certificant's name and status.

**Please note that written exam results may be available upon exam completion at some test centers and sites.**



## RECEIPT OF CERTIFICATION

Once the Board of Certification notifies applicants that they have completed all requirements for certification, they may use the title Certified Retinal Angiographer™ or CRA™ as long as the certificant maintains his or her certification (see recertification guidelines on **page 28**). This designation may be used as part of a signature, and on letterheads and business cards etc. The OPS BOC mails certificates to successful applicants with their notification.

## RE-TESTING

Re-examination of the CRA™ written or performance examination(s) requires filing an examination application and fee. The fee for re-testing is listed under FEES. Applicants should review their detailed examination results to determine those subject areas in which further study may be needed.

## APPEALS AND GRIEVANCES

Should certification be denied, applicants have 30 days to appeal the decision in writing to the CRA™ Section Chair. Should the section chair deny this appeal, the applicant has another 30 days to appeal to the Board of Certification. Any charge or complaint will be investigated, reviewed and reported to all parties concerned. The Chairman of the OPS BOC may appoint a special committee to conduct an impartial review. The members of the committee shall be outside the sphere of OPS BOC influence. The committee will make recommendations to the OPS BOC. The OPS BOC, which will deliberate and vote as a whole, shall render the final decision regarding the recommendation of the committee. The OPS BOC's decision is final and binding.

## REVOCAION

Fraud or misrepresentation on the application, portfolio, or in the examination can result in denial or revocation of Certification. The OPS BOC reserves the right to void examination results, bar participation in the certification program, revoke certification or other sanctions in accordance with the Disciplinary Policy (**Page 30**). The OPS BOC will consider such actions if members have reason to question the validity of an applicant's examination results, suspects misconduct at a test center or suspects an applicant has reported fraudulent information. Denial or revocation of certification may be appealed in writing to the Chairman of the OPS BOC.

## RE-CERTIFICATION

The OPS/BOC requires each Certified Retinal Angiographer™ (CRA™) to re-certify at three-year intervals by accumulating Continuing Education Credits in the field of Ophthalmic Photography and related curriculum. The purpose of CRA recertification is to enhance continued competence of certificants through continuing education. Approved courses encourage exposure to new approaches and technology in addition to the renewal of basic skills. The Board deems a three-year interval appropriate given the pace of changing advances in Ophthalmology and Ophthalmic Photography, the time commitment required to achieve the required CECs, and the availability of programming. CRA™ recertification is required at three-year intervals following initial certification. The requirements for recertification are listed on **page 28**.

## RECORDS

All applications, correspondence, supporting documentation and materials generated in the testing process will be held for one year following attainment of the CRA™ credential. Computer records of applicant demographics and test scores are kept indefinitely.

## STATEMENT OF PROPRIETARY INTEREST

The Board of Certification has no commercial or proprietary interest in any products used or mentioned in the certification program. The use of brand names in this program guide or on any examination, is only for illustration and does not imply OPS BOC endorsement.

# REQUIREMENTS FOR CERTIFICATION

## EXAMINATION ELIGIBILITY REQUIREMENTS

Eligibility for the written and performance examinations is contingent upon fulfilling these requirements:

1. Submission and acceptance of a satisfactory portfolio (See Portfolio Requirements).
2. A letter from the employing physician(s) or institution(s) verifying the applicant's employment history as a Retinal Angiographer for a minimum of two years.

This two-year work experience requirement is meant to allow time for an applicant to acquire, through hands-on experience, the knowledge and skills necessary to perform fundus photography and fluorescein angiography. It should include enough patient interaction to allow an applicant to develop the clinical judgment and patient management skills necessary for competent performance as a retinal angiographer. A competent retinal angiographer must be able to elicit cooperation from a non-cooperative or challenging patient for acceptable performance of rapid sequence fluorescein angiography. A competent retinal angiographer should be able to recognize and react to medical and photographic complications during fluorescein angiography.

Formal education or professional certification in photography, ophthalmic photography or ophthalmology, may be used as a substitute for up to one year of the work experience requirement. An official transcript mailed directly from the academic institution to the CRA™ Section Chair or a photocopy of a current JCAHPO certificate must be submitted for documentation and verification. Work experience substitution waivers will be granted in the following increments:

Associate Degree in Photography or  
Certified Ophthalmic Assistant (COA) = 3 months work experience

Bachelor's Degree in Photography or  
Certified Ophthalmic Technician (COT) = 6 months work experience

Bachelor's Degree in Medical/Scientific Photography/Imaging  
or Certified Ophthalmic Medical Technologist (COMT) = 9 months work experience

Bachelor's Degree in Medical/Scientific Photography/Imaging  
(With advanced electives in Ophthalmic Photography) or  
Bachelor's Degree in Ophthalmic Photography = 12 months work experience

Internships or practicum are considered part of a formal education program. These clinical experiences do not qualify as work experience.

Individuals using formal education or professional certification as a substitute for up to one year of the work experience requirement are eligible to participate in the Provisional CRA Program. In order to take the written and performance examinations, a candidate must fulfill the eligibility requirements with the exception of the work experience requirement and must have a work experience waiver approved by the CRA Section Chair.

3. Submission of a copy of a current certificate in cardiopulmonary resuscitation (CPR) that included both written and hands-on examinations. (American Red Cross or American Heart Association preferred).

## VERIFICATION OF ELIGIBILITY INFORMATION

The Board of Certification reserves the right to verify the experience and/or education attested to by the applicant by calling the employer(s) listed on the application form or requesting written documentation of the submitted information either prior to or after the examination.

Applicants will be declared ineligible for examinations if any of their eligibility requirements are found to be unsatisfactory.

## SUCCESSFUL COMPLETION

The following requirements are necessary to achieve the designation of Certified Retinal Angiographer by the Ophthalmic Photographers' Society Board of Certification.

Applicants must achieve:

- satisfactory completion of all eligibility requirements
- a passing score on the written examination.
- a passing score on the performance examination.

## CRA ADVISOR PROGRAM

The Board of Certification developed the CRA advisor program to provide guidance to prospective CRA applicants. Advisors are Certified Retinal Angiographers. Each CRA advisor is provided the latest **CRA™ Program Guide** for reference and must work within parameters established by the Board of Certification. The advisor can offer the applicant advice and direction. Interested applicants are encouraged to contact a member of the CRA Advisor Program Committee.

**ALLISON W. SCHMIDT, CRA**  
**Chair, CRA Advisor Program Committee**  
E-mail: [advisor@opsweb.org](mailto:advisor@opsweb.org)

## OPS LENDING LIBRARY

The OPS Board of Education developed the lending library to provide access to standard texts in Ophthalmology and Ophthalmic Imaging that may be of assistance in preparation for the CRA examination. The Advisor Committee member can assist you in selecting books that address exam content areas you feel you would like to study further. Books are lent from the **OPS Membership Office (1-800-403-1677) [ops@opsweb.org](mailto:ops@opsweb.org)**

## STATEMENT ON ADMINISTRATION OF INTRAVENOUS INJECTIONS

The administration of intravenous injections is not required during the performance examination and is not a requirement for certification. Therefore, the Board of Certification has no legal authority to test or certify the competency of applicants in the administration of intravenous injections.

The Board of Certification recommends that applicants check with the appropriate agency or agencies within the state that they practice to determine that state's requirements. States regulate the credentials required to administer intravenous injections. The laws and required credentials of each state vary.

**NOTES:**

# PORTFOLIO REQUIREMENTS

## SECTION OUTLINE

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## PORTFOLIO REQUIREMENTS

**The portfolio must be produced entirely by the applicant.** This includes, but is not limited to, digital export, processing and/or printing of black & white materials included in the portfolio. An outside lab may be used to process color film and/or produce slides from digital files for the slide section. All digital submissions must be written to a single, non-re-writable CD/DVD or uploaded to the BOC drop box (link available on the ops website: <http://www.opsweb.org/Certif/Certif.html>). Detailed image and folder labeling instructions are found within this section.

**The portfolio submission form (found at the end of this program guide) must be completed and submitted with the portfolio.** By signing the portfolio submission form, the applicant attests to the authenticity of the work submitted. Submission of work completed by anyone other than the applicant constitutes fraud. Fraud or misrepresentation of the portfolio may result in disqualification of the applicant.

The CRA™ portfolio should reflect the pride, skill and professionalism of the applicant. It is more important to demonstrate the quality of photography rather than unique pathology. **The portfolio may include normal eyes where applicable.** The Portfolio Committee reviews all images, whether digital or 35mm slides, using the same rating standards.

# PHOTOGRAPHY REQUIREMENTS

## Color Imaging Section

This section demonstrates the applicant's ability to produce clinical color images. For all but one image, the field of view (20,35,45,60 degrees) is not assigned. In all but that instance, the candidate may select the most appropriate field of view based on pathology and the photographic assignment.

### General criteria

All original images must be produced using a fundus camera. All images submitted must be **of diagnostic quality (digital color images saved with minimal or lossless compression are acceptable) saved on a CD-R/DVD-R, uploaded to the BOC Drop Box (instructions and link available on the OPS website: <http://www.opsweb.org/Certif/Certif.html>) or submitted as original 2x2 35mm color positive transparencies.**

**Nineteen required color images** arranged/identified according to the Image *Portfolio Guide* on **page 13**.

Refer to the *Field Definition Guide* on **page 14** for field definition of these images.

### Required color photographs:

- 1 & 2 Sequential stereo pair of the posterior pole (disc & macula)
- 3 & 4 Sequential stereo pair centered on the optic disc
- 5 Macula, centered on the fovea
- 6 Temporal to the macula
- 7 High magnification of optic disc (2X magnification or 20 degree field)
- 8 Nasal to optic disc
- 9 Superior temporal arcade
- 10 Inferior temporal arcade
- 11 Lesion in mid-periphery (peripheral to the arcade)
- 12 Disc & macula (posterior pole) of a high myopic or aphakic eye
- 13 Fundus photo **THROUGH** media opacity (hazy view)
- 14 Fundus photo **AROUND** media opacity (same eye as #13) (clear view)
- 15 Posterior pole through small pupil (< 3 mm)
- 16 Fundus camera photo **FOCUSED ON THE IRIS** (same eye as in #15)
- 17 Fundus photo **THROUGH AN IOL**
- 18 Fundus camera photo **FOCUSED ON THE IRIS** (same eye as in #17)
- 19 Fundus camera photo focused on a contact lens on an eye

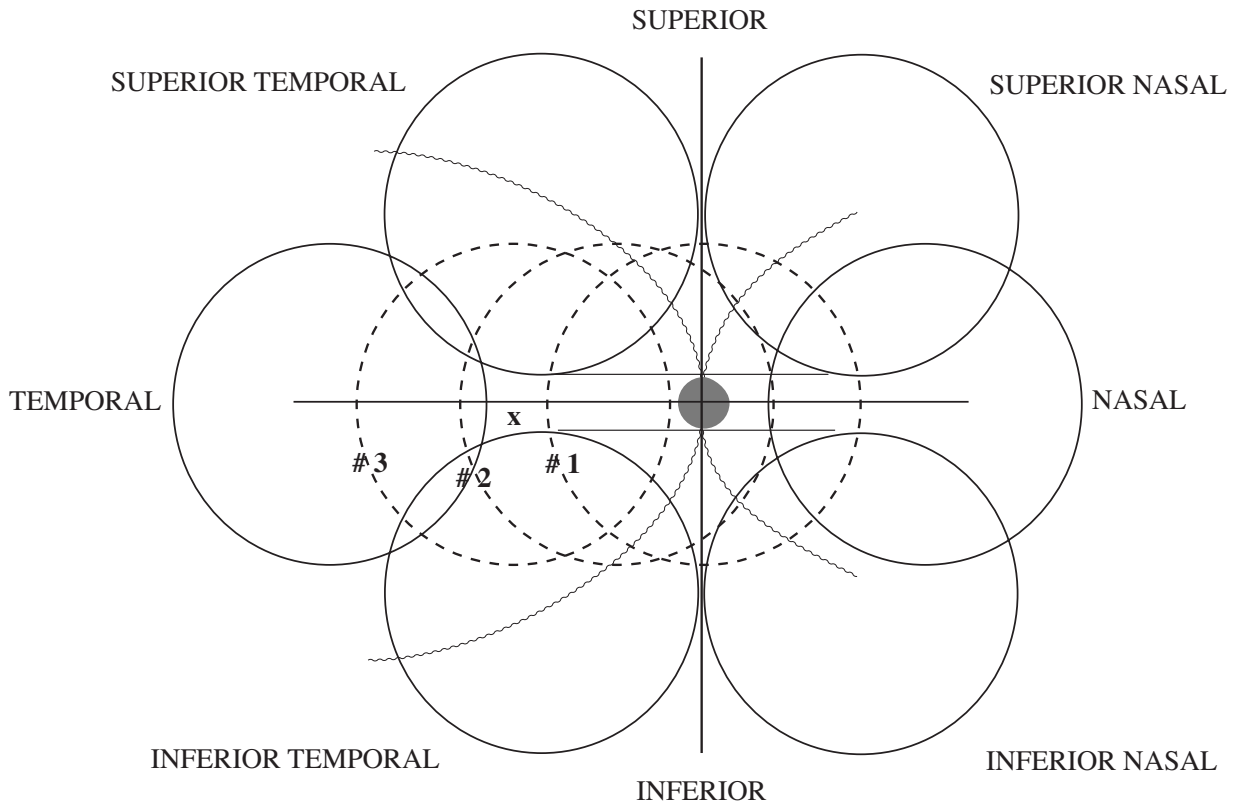
## IMAGE PORTFOLIO GUIDE

POSTERIOR POLE  Stereo  1	POSTERIOR POLE  Pair  2	OPTIC DISC  Stereo  3	OPTIC DISC  Pair  4
MACULA (centered on fovea)  5	TEMPORAL TO MACULA  6	OPTIC DISC 2X OR 20 DEGREE  7	NASAL TO OPTIC DISC  8
SUPERIOR TEMPORAL ARCADE  9	INFERIOR TEMPORAL ARCADE  10	LESION IN MID-PERIPHERY (peripheral to the arcade)  11	DISC & MACULA OF HIGH MYOPIC OR APHAKEIC EYE  12
PHOTO THROUGH MEDIA OPACITY (hazy view)  13	PHOTO AROUND MEDIA OPACITY (Same eye as #13) (clear view)  14	POSTERIOR POLE THROUGH SMALL PUPIL (< 3 mm)  15	FUNDUS CAMERA FOCUSED ON IRIS (Same eye as #15)  16
PHOTO THROUGH IOL  17	FUNDUS CAMERA FOCUSED ON IRIS (Same eye as # 17)  18	FUNDUS CAMERA FOCUSED ON A CONTACT LENS ON AN EYE  19	

**The images are taken at the assigned field-of-view (20,35,45,60 degrees). If not defined, you may take the images at whatever field-of-view you deem appropriate for the pathology and assignment.**

# FIELD DEFINITION GUIDE

Circles Approximate a 30 Degree  
Field-of-View



## RIGHT EYE

**# 1. CENTERED ON OPTIC DISC**

**#2. POSTERIOR POLE**

**#3. MACULA, CENTERED ON FOVEA**

**\*\*\*Use the assigned field-of-view (20,35,45,60 degrees). If field of view (20,35,45,60 degrees) is not defined, you may take the images at whatever field-of-view you deem appropriate for the pathology and assignment.**



## **ANGIOGRAPHY SECTION**

This section demonstrates the applicant's ability to capture the flow dynamics of fluorescein dye passing through the circulatory systems of the eye in a clinical setting.

### **General criteria**

All images must be produced using a fundus camera or SLO.

All images must be submitted as positive black & white digital files on CD-R/DVD-R, prints or transparencies.

All images must be printed/saved in sequential order on contact or proof sheets (proof sheet may be submitted as a digital file).

**Three angiograms are required**; each must be of a different patient. The diagnosis may be normal. The angiograms may be, but are not required to be bilateral.

The **three angiograms** may be produced using 35mm film, digital equipment or any combination of the two. Each angiogram must be submitted according to the following list of requirements.

### **Requirements:**

#### **1. Contact or Proof Sheets**

**Film angiograms** - An 8" X 10" black and white contact sheet, printed on photographic paper or transparency material. **The timer must be recorded on the contact sheet.**

**Digital angiograms** - A proof sheet (16 or 20 up), printed on photo-quality paper, for each submission or saved as a high quality digital file. **The timer must be recorded on the proof sheet.**

#### **2. Enlargements**

**Film Enlargements** - An 8" X 10" black and white enlargement on photographic paper of the early, mid and late phases of the **primary eye only** from each of the three angiogram ssubmitted in **#1**. **The timer must be recorded on the images.**

Refer to the Phases of Circulation Guide in this section.

**Digital Enlargements** - An 8" X 10" black and white enlargement on photo-quality paper of the early, mid and late phases of the **primary eye only** from each of the three angiogram ssubmitted in **#1**. For digital submissions on CD-R/DVD-R or via upload, images are submitted as minimal or lossless compressed images. **The timer must be recorded on the images.**

Refer to the Phases of Circulation Guide in this section.

#### **3. Color Images**

A color image of the posterior pole of the primary eye of each of the corresponding **THREE angiograms** requested in **# 1**. If the area of pathology covered by the angiogram is not in the posterior pole, then a second image centered on the area of pathology of the involved eye must also be submitted.

**Film angiograms** - **Submit a second 35mm slide page** containing the color slide(s) of the posterior pole of the primary eye of the corresponding **THREE angiograms** requested in **# 1**.

#### **Digital angiograms -**

Print Submissions - Include the color image in the contact print.

CD-R/DVD-R Submissions - Label the image(s) as described in the Portfolio Assembly Section (**page 16**) and place in the appropriate FA folder; use FA3C for the posterior pole image and FA3C2 for an additional image if the pathology is not in the posterior pole.

## PHASES OF CIRCULATION GUIDE

Use this guide to determine which frames to select from each angiogram to document the early, mid and late circulation phases for each of the three angiograms required for the portfolio.

### EARLY CIRCULATION PHASE (Filling Phases) (Arterial Phase, Venous Phase)

Fluorescein dye is present only in the choroid and retinal arteries or in the choroid, retinal arteries and veins.

### MID CIRCULATION PHASE (Early Recirculation Phase)

Fluorescein dye of high intensity is equally present in the retinal arteries and veins.

### LATE CIRCULATION PHASE (Late Recirculation Phase) (Elimination Phase)

5 minutes or later post injection, fluorescein dye of reduced intensity is present in the choroid, retinal arteries and veins or the choroidal and retinal vessels are dark.

## PORTFOLIO RATING STANDARDS

The Portfolio Committee uses standards established and approved by the Board to perform ratings of CRA portfolios. Two members of the Portfolio Committee independently rate each portfolio and, when required, the Committee Chair arbitrates scores.

CRA™ portfolios are rated by applying the following standards:

Intent:	Is the required image/ slide or print present?
Field of view:	Does the image/ slide or print show the specified field of view?
Focus:	Is the image/ slide or print within an acceptable range of focus?
Exposure:	Is the image/ slide or print exposure within an acceptable range?
Contrast:	Is the image/print contrast within an acceptable range?
Artifacts:	Is the image/slide or print free of undesirable artifacts?

All criteria for each required image/ slide or print must be met for the portfolio to be found satisfactory.

## PORTFOLIO ASSEMBLY

The required image files or slides and prints, must be labeled as described below.

**Submit Digital Image files as described below** on a single CD-R/DVD-R or to the BOC dropbox in four folders labeled: **CF, FA1, FA2 and FA3.**

Label the CD/DVD-R with the applicant's name as it appears on the Portfolio Submission Form. If using the dropbox, please zip each folder using Winzip (PC) or "Create Archive" (Mac) and upload each zipped folder.

- **CF Folder:**
  - CF1 through CF19,
  - Use L and R to identify stereo orientation (CF1L, CF2R).
- **FA1 Folder:**
  - FA1proof
  - FA1E(for early), FA1M(for mid), FA1L(for late), FA1C(for color image[s]).
- **FA2 Folder:**
  - FA2proof
  - FA2E(for early), FA2M(for mid), FA2L(for late), FA2C(for color image[s]).
- **FA3 Folder:**
  - FA3proof
  - FA3E(for early), FA3M(for mid), FA3L(for late), FA3C(for color image[s]).

## **Label slides and prints as defined below.**

Slides must be mounted in cardboard or plastic slide mounts. **Do not use glass mounts.**

**All slides must be labeled** with the following and placed in transparent slide pages:

**Front:**

- Stereo orientation if applicable
- Image # from Slide Folio Guide

**Back:**

- Applicant's name

**All prints must be labeled** with the following and placed in transparent print pages:

**Back:**

- Applicant's name
- Circulation phase
- Frame #

**The portfolio will be deemed unsatisfactory if it contains extra examples of the requested images, slides or prints.**

## **PORTFOLIO SUBMISSION**

The portfolio must be submitted on a single, non-rewritable CD/DVD, uploaded to the BOC Drop Box or submitted in plastic pages and a binder as described below. Take the same care packaging your portfolio as you did producing it. Package the CD/DVD in a jewel case and mail in a bubble envelope. CD/DVD's will not be returned to candidates, please maintain a copy for yourself. Slide/print submissions should be simple to re-package for mailing after review. Care in assembling and packaging your portfolio is the best way to help assure that your portfolio materials will be returned to you in their original condition.

### **CRA Portfolio Binder Specifications for slide/print submissions**

1. 1/2" three ring binder (x1)
2. Side-loading slide pages (x2)
3. Clear print pages (x12)

Complete the Portfolio Submission Form (**page 41**) and place it in the **CRA Portfolio Binder** or in the envelope with the CD/DVD submission. If uploading to the BOC Drop Box, scans of the signed portfolio submission form and program application may be included in the upload and the fees may be submitted on the OPS store: <http://www.opsweb.org/Store/Store.html>.

**Do not include your employment verification letter or CPR certificate with this submission. These documents are submitted with the Examination Application.**

Send the portfolio to the address on the portfolio submission form or to the BOC Drop Box. The CRA Portfolio Committee will review the portfolio within 30 days. Portfolios meeting the requirements will receive a letter of acceptance. Slide/print Portfolios will be returned. Portfolios submitted on CD/DVD or uploaded to the drop box will not be returned. Portfolios not meeting the requirements will receive a critique of the unacceptable segments. The applicant can correct any deficiencies and resubmit the required component(s); if the portfolio committee returns the entire portfolio, correct the required components and resubmit the entire portfolio.

The Ophthalmic Photographers' Society Board of Certification assumes no liability for any materials lost or damaged in shipping and handling. The Board of Certification recommends that applicants maintain a copy of the portfolio for their personal records.

The Portfolio Committee will notify the CRA Section Chair of the applicant's examination eligibility. The Section Chair will send the applicant an Examination Application and information regarding upcoming examination dates.

# CRA™ EXAMINATION

## EXAMINATION PHILOSOPHY

The designation of CRA™ is meant to assure the “consumer” that the Certified Retinal Angiographer™ has demonstrated an established level of competency in fundus photography and fluorescein angiography. No barriers exist to discriminate against applicants for testing. Certification requires a thorough knowledge of the subject matter. The examination is designed to pass applicants who display a level of knowledge and ability to perform competently as retinal angiographers.

## EXAMINATION PROCEDURES

The CRA performance and written examinations may be conducted on a single day or on two separate days. Dependent on the number of applicants, the applicants may be divided into two groups for the performance and written examinations. If both the performance and written examination will be conducted on Saturday, applicants should not plan on being released from the test site before six pm Saturday evening. If the written examination will be conducted Sunday morning, applicants should not plan on being released from the test site before noon on Sunday.

Time is not intended to be a factor in the completion of the examination. Sufficient time is allotted for each examination section to be completed.

## PREPARING FOR THE EXAMINATION

The CRA examination tests the applicant’s knowledge of general digital photography, fundus photography and fluorescein angiography. The Examination Content Outline and Weightings (**page 19**) identify the areas in which to concentrate for the examination.

A list of study resources begins on **page 31**. The list is not meant to represent all material covered by the examination. OPS sponsored courses, workshops, accompanying handouts and the OPS Web Site at <http://www.opsweb.org> provide additional valuable resources.

## RULES FOR EXAMINATIONS

- The examinations will be administered only on the date and time posted except for applicants who have requested and received special testing arrangements. Please be prompt. Late arrivals will not be admitted to the exam.
- During the registration period, applicants reporting for examination must sign the test site roster and provide a photographic identification, such as a driver’s license or passport.
- No books, papers, reading materials or scratch paper may be on the exam tables. Purses, bags and brief cases must be under your seat during the examinations.
- No test materials, documents or scratch/work sheets of any sort are to be taken from the examination rooms.
- During any segment of these examinations, applicants can not give or receive help from other examinees. Examiners are required to report any instance where there is evidence of cheating. Any such evidence will result in the cancellation of test scores or disqualification from the certification program.
- All instructions given by the examiners must be followed and all directions on the exam booklet should be read in order to assure proper processing of examination results.
- If you have difficulty with the directions during the written examination please raise your hand until an examiner assists you.
- It is the responsibility of all applicants to make sure that all the information requested on the exam book cover is current and correct.
- If an applicant leaves the room during the exam, he or she must have the examiner’s permission. Belongings must remain in the exam room. No additional time will be given.
- Visitors are not permitted in examination areas.
- The chief examiner may dismiss an applicant from the test as he or she deems appropriate, for example: if admission to the center is unauthorized; if an applicant creates a disturbance; if an applicant gives or receives help; if an applicant attempts to remove test materials or notes from any examination room; or if an individual impersonates an applicant.

## WRITTEN EXAMINATION CONTENT OUTLINE and PERCENTAGES

- I. Applies the Principles of the Anatomy and Physiology of the Eye (8%; 12 questions)
- A. Demonstrates an understanding of external ocular structures
  - B. Demonstrates an understanding of anterior and posterior segment structures including:
    - 1 anterior structures: (cornea, anterior chamber, iris, lens)
    - 2 posterior structures:( vitreous, retinal layers, pigment epithelium, choroid, optic nerve)
  - C. Demonstrates an understanding of anatomical landmarks and terminology
  - D. Understands the circulation properties (iris, retina, optic nerve, choroid)
  - E. Understand metabolic processes of the retina
- II. Applies the Concepts of Pathology of the Eye (10%; 15 questions)
- A. Recognize and identify the ocular manifestations and associated findings of:
    - 1 systemic diseases
    - 2 vascular diseases
    - 3 retinal diseases
    - 4 optic nerve disorders
    - 5 inflammatory diseases
    - 6 ocular trauma
    - 7 ocular tumors
    - 8 hereditary/congenital diseases
    - 9 anterior segment diseases affecting patient safety or image quality
  - B. Recognize and identify the common clinical findings relating to:
    - 1 diabetic retinopathy
    - 2 hypertensive retinopathy
    - 3 macular degeneration
    - 4 vascular occlusions
    - 5 ocular histoplasmosis
    - 6 central serous retinopathy
    - 7 toxoplasmosis
    - 8 cystoid macular edema
    - 9 macular hole
    - 10 angioid streaks
    - 11 macroaneurysm
    - 12 hereditary macular dystrophies
    - 13 malignant melanoma
    - 14 hemangioma
    - 15 retinoblastoma
    - 16 choroidal nevus
    - 17 optic atrophy
    - 18 optic neuritis
    - 19 glaucoma
    - 20 papilledema
    - 21 drusen
    - 22 uveitis
    - 23 retinal detachment/tear
    - 24 retinopathy of prematurity
    - 25 sickle cell retinopathy
    - 26 cytomegalovirus retinitis
    - 27 anterior ischemic optic neuropathy
    - 28 coloboma
    - 29 Coats' disease
    - 30 epiretinal membrane
    - 31 retinal toxicity
    - 32 Stargardts
    - 33 retinal plaque
    - 34 retinitis pigmentosa
    - 35 lattice degeneration

### III. Patient Management

(5%; 7 questions)

- A. Performs a patient flashlight examination to determine:
  - 1 contraindications to dilation:
    - a. narrow angles
    - b. contact lenses
    - c. iris fixated/anterior chamber intraocular lens
  - 2 media conditions (e.g., scarring/cornea and lens)
  - 3 the presence of inflammation (e.g., infection)
- B. Informs patient of procedures to be performed, pharmacologic agents to be administered, expected outcomes, and potential side effects
- C. Answers patient questions concerning the procedure
- D. Elicits cooperation from uncooperative or physically disabled patients
- E. Provides for written informed consent for angiography
- F. Establishes/reviews patient records including:
  - 1 medical/surgical history
  - 2 allergies
  - 3 pregnancy
  - 4 ocular history
  - 5 photographic history
- G. Administers prescribed drops:
  - 1 verifies physician's orders
  - 2 maintains sterile technique
  - 3 monitor and assess the effects of the drops
- H. Recognizes and respond to adverse reactions to prescribed drops

### IV. Patient/Operator Safety

(2%; 3 questions)

- A. Demonstrates proficiency in CPR
- B. Adheres to Universal Precautions as defined by the CDC
- C. Observes Occupational Safety and Health Administration (OSHA) and The National Institute for Occupational Safety and Health (NIOSH) regulations relating to ophthalmic photography
- D. Observes HIPAA confidentiality and privacy regulations relating to ophthalmic photography

### V. General Photography - Film

(2%; 3 questions)

- A. Understands the function and properties of 35mm black and white negative, and/or color transparency film including:
  - 1 ISO/film speed
  - 2 contrast
  - 3 exposure
  - 4 color balance

### VI. General Photography - Digital

(10%; 15 questions)

- A. Demonstrates basic computer skills
- B. Stocks and inventories digital supplies
- C. Understands the use of the following image acquisition equipment and properties:
  - 1 Understands the function and components of the digital camera including:
    - a. still digital camera
      - 1 color
      - 2 monochrome
    - b. digital video
    - c. CPU (central processing unit)
    - d. archiving devices and media
    - e. backup power/voltage protection
  - 2 Performs routine maintenance and equipment troubleshooting including:
    - a. electronic components
    - b. cleaning equipment including relay lenses
    - c. software maintenance
    - d. storage utilization
  - 3 Understands digital imaging properties including:
    - a. resolution
    - b. ISO rating/gain/noise

- c. dynamic range
- d. contrast
- e. exposure control
- f. color balance
- g. gamma
- h. bit depth
- D. Understands the use of image overlays
- E. Understands the use of measurement utilities
- F. Understands color management including:
  - 1 monitor calibration
  - 2 printer calibration
- G. Demonstrates image processing skills related to output:
  - 1 proofsheet production
  - 2 file format/compression
  - 3 output resolution
  - 4 contrast enhancement
  - 5 sharpening
  - 6 brightness
  - 7 color balance
  - 8 resampling
  - 9 scaling
  - 10 printing
  - 11 composite/montage
- H. Recognizes sources and corrects conditions causing digital artifacts:
  - 1 blooming
  - 2 noise
  - 3 oversaturation
  - 4 oversharpening
  - 5 interpolation
  - 6 sensor dust

#### VII. Data and Image Management

(5%; 7 questions)

- A. Has a working knowledge of image editing software
- B. Organizes archiving systems for film and digital images in accordance with state/fed regulations
- C. Coordinates network file transfers for archiving/patient data base systems
- D. Observes networking security (e.g., firewalls, patient privacy, security, access, wireless transmission)
- E. Uses technology for image review (e.g., video, projection, stereo-viewers, electronic transmissions, digital overlays)
- F. Knowledge of Picture Archiving and Communication Systems (PACS) and Electronic Medical Records (EMR)
- G. Understands Digital Imaging and Communications in Medicine (DICOM) Standards

#### VIII. Clinical Trials Imaging

(2%; 3 questions)

- A. Understands standard clinical trial processes, protocols and certification procedures
- B. Exports masked data and transfers images to reading centers

#### X. Fundus Photography

(20%; 30 questions)

- A. Performs routine maintenance and equipment troubleshooting including:
  - 1 replacing viewing bulbs and flash tubes
  - 2 replacing fuses
  - 3 cleaning equipment, including lenses
- B. Demonstrates the techniques of image production:
  - 1 set reticle for accommodative correction
  - 2 verify filter positions
  - 3 establish photographic plan
  - 4 adjust photographic plan during photography in response to unusual situations or findings
  - 5 set viewing angle
  - 6 set flash power
  - 7 set shutter/flash synchronization
  - 8 set viewing light intensity



- 9 position patient for photography
- 10 establish fixation
- 11 establish alignment and focus
- 12 recognize the need for diopter compensation
- 13 perform fundus photography:
  - a. non-stereoscopic
  - b. stereoscopic
  - c. using astigmatic correction device
- 14 uses monochromatic filters/ wavelength to produce:
  - a. red free (green filter) images
    - 1 non-stereoscopic images
    - 2 stereoscopic images
  - b. green free (red filter) images
  - c. autofluorescence images
  - d. fundus autofluorescence (FAF) images
- 15 perform anterior segment photography with a fundus camera to document:
  - a. media opacities
  - b. gross anterior pathologies

#### X. Fluorescein Angiography

(25%; 38 questions)

- A. Performs Fluorescein Angiography including:
  - 1 make preparations for IV fluorescein injection
  - 2 Identify patient demographics
  - 3 take a control photograph
  - 4 coordinate photographic sequence with the administration of dye
  - 5 start timer
  - 6 monitor and assesses patient response to the procedure
  - 7 respond to any adverse reactions
- B. Understands the theory of luminescence including:
  - 1 fluorescence
  - 2 pseudo and autofluorescence
  - 3 excitation filters/wavelengths
  - 4 barrier filters/wavelengths
- C. Performs descriptive angiographic interpretation by recognizing:
  - 1 the phases of circulation including:
    - a. early phase (filling phase)
      - 1 choroidal
      - 2 arterial
      - 3 arteriovenous
      - 4 venous
    - b. mid phase
    - c. late phase
  - 2 the mechanisms of hyperfluorescence including:
    - a. transmission
    - b. leakage
    - c. staining
    - d. pooling
  - 3 the mechanisms of hypofluorescence including:
    - a. blockage
    - b. filling defects
  - 4 anatomical location of lesions

#### XI. Indocyanine Green (ICG) Angiography

(2%; 3 questions)

- A. Performs ICG Angiography
- B. Uses exciter and barrier filters

#### XII. Optical Coherence Tomography (OCT)

(3%; 5 questions)

- A. Performs OCT imaging:
  - 1 optic nerve head
  - 2 retinal



- B. Understands and applies scanning protocols
- C. Understands and selects analysis protocols

XIII. Pharmacology

(6%; 9 questions)

- A. Understands and recognizes the properties and effects of pharmacologic agents used for ophthalmic photography:
  - 1 topically administered:
    - a. miotics
    - b. mydriatics
    - c. cycloplegics
    - d. anesthetics
    - e. lubricants
    - f. stains and dyes
  - 2 intravenously administered:
    - a. sodium fluorescein
    - b. indocyanine green (ICG)
  - 3 oral administration:
    - a. sodium fluorescein
    - b. antihistamines
    - c. anti-nausea
  - 4 significance of patient's age and weight
- B. Understands and Recognizes contraindications and adverse reactions to:
  - 1 topical agents
  - 2 intravenous agents (e.g. fluorescein, indocyanine green)
- C. Monitors for potential contaminations

## PERFORMANCE EXAMINATION CONTENT OUTLINE and SECTION PERCENTAGES

- I. Fundus Photography 40%
- Demonstrate the techniques of Fundus Photography Image Production including:
- A. Set reticle for accommodative correction
  - B. Verify filter positions
  - C. Establish photographic plan
  - D. Adjust photographic plan during photography in response to unusual situations or findings
  - E. set viewing angle
  - F. Set flash power
  - G. Set shutter/flash synchronization
  - H. Set viewing light intensity
  - I. Position patient for photography
  - J. Establish fixation
  - K. Establish alignment and focus
  - L. Recognize the need for diopter compensation
  - M. Perform fundus photography:
    - 1 non-stereoscopic
    - 2 stereoscopic
  - N. Uses monochromatic filters/ wavelength to produce red free (green filter) images:
    - 1 non-stereoscopic
    - 2 stereoscopic
  - O. Perform anterior segment photography with a fundus camera to document:
    - 1 media opacities
    - 2 gross anterior pathology
- II. Simulated Fluorescein Angiography 60%
- Demonstrate the techniques of Fluorescein Angiography Image Production including:
- A. Take a control photograph
  - B. Coordinate photographic sequence with the administration of dye
  - C. Start timer
  - D. Acquire angiographic sequence of:
    - 1 non-stereoscopic images
    - 2 stereoscopic images

## WRITTEN EXAMINATION

The CRA™ written examination consists of two sections with a total of 150 multiple choice questions. Two hours are allotted for completion of the exam. Each multiple-choice question has four answer choices listed; only one is correct. The questions are answered by selecting the correct answer from multiple choices. The written examination includes printed images in the test booklet. The images contain specific information that is clearly indicated. All images will be depictions of photographic problems, clinical entities, and conditions or situations that the applicant is likely to have encountered during the required two years of work experience.

There is only ONE correct response to each question. Read carefully and choose the single best response. A single question with multiple answers will be scored incorrect. Use your time economically. Answer those questions you are sure of first. Then, if time allows, go back and try to determine the correct answer for the more difficult questions. Try to answer all questions, including those for which you are unsure of the answer.

The written examination is scored on the basis of the total number of correct responses. Omitted responses are scored as incorrect. After the test administration and prior to the final scoring of the examinations, all test items are statistically validated. Passing or failing the examination depends on the number of correct responses, and is not related to the scores of other applicants taking the examination.

## PERFORMANCE EXAMINATION

### Fundus Photography and Simulated Fluorescein Angiography

The CRA™ performance examination will require approximately two hours to complete, dependent on the number of applicants and availability of equipment. It is designed to determine if an applicant can safely and effectively prepare a patient for fundus photography and fluorescein angiography and achieve satisfactory photographic results.

Whenever possible, fundus cameras of more than one manufacturer will be made available for the examination. Applicants may request examination on a particular manufacturer's equipment. If the desired equipment is not available, applicants will be given an opportunity to familiarize themselves with one of the cameras available. An applicant may request examination at a future site if the applicant finds the fundus cameras available for the performance examination unsatisfactory; the applicant must make this request prior to or during the camera familiarization period.

Proctors will escort applicants to the testing station. An OPS BOC examiner or monitor will read specific, scripted instructions outlining the assignment to the applicant. Interaction between applicants and examiners/monitors should be limited to those required by the scripted instructions. Two OPS BOC examiners will be present to observe and rate the applicant's performance.

## PERFORMANCE EXAMINATION OUTLINE

**Station:** PHOTOGRAPHY

*Time:* 30 minutes

*Surroundings:* Applicants will be provided with a fundus camera, a dilated patient volunteer, a model eye for the simulated fluorescein angiogram, a photographic assignment sheet and appropriate flash settings for fundus photography, red free (green filter) photography and for simulated fluorescein angiography. The BOC examiners will set up the digital system and prepare the system for each component of the exam. The applicant need only run the fundus camera itself. Applicants will be informed of any idiosyncracies of the camera and the digital imaging system.

Applicants will be given five minutes to familiarize themselves with the fundus camera. Images will be captured on a digital system and applicants will see their images as they appear on the monitor. During this period, applicants may ask any questions concerning the location of controls of the camera. The applicant may not delete any images, but may re-image as often as they are able within the allotted time.

**CRA PERFORMANCE EXAMINATION  
SAMPLE PHOTOGRAPHIC ASSIGNMENT SHEET**

Applicant: \_\_\_\_\_  
BOC #: \_\_\_\_\_  
Exam Date: \_\_\_\_\_  
Exam Site: \_\_\_\_\_  
Camera # \_\_\_\_\_

**Primary Eye:**      **OD**\_\_\_\_      **OS**\_\_\_\_  
**Angle of View:** 30 – 35 degrees  
**Color Fundus**                      **Flash Setting:** \_\_\_\_\_  
**Red Free (Green Filter)**      **Flash Setting:** \_\_\_\_\_  
**Fluorescein Angiography**      **Flash Setting:** \_\_\_\_\_

**COLOR FUNDUS PHOTOGRAPHY ASSIGNMENT:  
(PATIENT VOLUNTEER)**

**STUDY EYE**

- Name Tag (Use BOC #)
- Stereo Pair – Optic Nerve STUDY EYE
- Stereo Pair – Posterior Pole STUDY EYE
- Peripheral Photograph - \_\_\_\_\_

**FELLOW (NON-STUDY) EYE**

- Stereo Pair – Posterior Pole NON-STUDY EYE
- External Photograph NON-STUDY EYE

**MONOCHROMATIC PHOTOGRAPHY ASSIGNMENT:  
(PATIENT VOLUNTEER)**

**FELLOW (NON-STUDY) EYE**

- Red Free (Green Filter) Stereo Pair – Posterior Pole NON-STUDY EYE

**STUDY EYE**

- Red Free (Green Filter) Stereo Pair – Posterior Pole STUDY EYE

**SIMULATED FLUORESCEIN ANGIOGRAPHY ASSIGNMENT:  
(MODEL EYE)**

- Red Free (Green Filter) Stereo Pair – Posterior Pole
- Pre-injection Control Photograph
- Early Phase Photographs – Posterior Pole
- Mid Phase Photographs – Posterior Pole
- Late Phase Photographs – Posterior Pole

*Assignment:* Fundus Photography

Applicants are required to perform fundus photography on a mock patient. The patient is dilated by the proctor and is ready for imaging. The applicant will be required to position/accommodate the patient comfortably at the fundus camera. The following procedures will be observed and technique evaluated:

- Photograph of name tag
- Stereo pair of the optic nerve
- Stereo pair of the posterior pole (with both disc and macula present)
- Specified peripheral field(s)
- External photograph centered on pupil

- Simulated Fluorescein Angiogram Preparation
- Stereo Red Free (Green Filter) photographs
- Pre-injection/control photograph

*Evaluation:* Applicants will be observed preparing the camera for fundus photography and completing the photography assignment. The following procedures will be observed and technique evaluated:

- Adjusting the eyepiece
- Setting illumination controls
- Setting power levels
- Inserting filters
- Positioning the patient
- Establishing fixation

The quality of the applicant's photographs will be evaluated on whether the requested photographs are present, whether they are centered on the requested field of view, properly exposed, sharply focused, in stereo as assigned and free of artifacts (eyelashes, eyelids, crescents, flares). The red free (green filter) photographs will be assessed with the same criteria and also whether a black and white image using a green filter was taken.

*Assignment:* Simulated Fluorescein Angiography

After fundus photography, red free (green filter) photography and pre-injection/control photograph on a mock patient, applicants will perform simulated fluorescein angiography on a model eye. Appropriate flash settings will be provided on the assignment sheet. An examiner will simulate the injection of dye in response to a cue from the applicant to begin angiography. The following procedures will be observed and technique evaluated:

- Start timer (simulated beginning injection)
- Timed photography of early phase
- Mid/late phase stereo pairs

*Evaluation:* Applicants will be observed/rated on setting the camera for simulated fluorescein angiography and completion of the photographic assignment. The following procedures will be observed and technique evaluated:

- Setting illumination controls
- Setting power levels
- Inserting filters
- Positioning the patient
- Establishing fixation
- Communicating with the "injector"

The simulated angiogram should be performed in the sequence requested, and had dye been injected, would have resulted in a study of acceptable quality. The quality of the applicant's photographs will be evaluated on whether the requested photographs are present, timed appropriately, are centered on the requested field of view, in stereo as assigned, in sharp focus and free of artifacts (crescents, flares).

## REQUIREMENTS FOR CRA™ RECERTIFICATION

The OPS/BOC requires each Certified Retinal Angiographer™ (CRA™) to re-certify at three-year intervals by accumulating Continuing Education Credits in the field of Ophthalmic Photography and related curriculum. The purpose of CRA recertification is to enhance continued competence of certificants through continuing education. Approved courses encourage exposure to new approaches and technology in addition to the renewal of basic skills. The Board deems a three-year interval appropriate given the pace of changing advances in Ophthalmology and Ophthalmic Photography, the time commitment required to achieve the required CECs, and the availability of programming. It is the responsibility of the Certified Retinal Angiographer to provide proof of compliance with the recertification requirements prior to the end of the third year of each interval of certification. Failure to do so will result in the revocation of OPS certification. Once revoked, certification can only be regained by applying for and fulfilling the current requirements for CRA certification.

### The requirements for recertification are as follows:

1. Recertification requires the accrual of **15 hours** of continuing education credit (**15 CECs**) during each three-year interval following initial certification.

### CECs may be earned in the following manner:

- A. Of the fifteen required hours, **a minimum of five (5 CECs) MUST be earned by attending official OPS courses or OPS BOC pre-approved courses and workshops.** Each 1:1 OPS approved hour of lecture or workshop equals one credit hour (1 OPS CEC).
- B. Of the fifteen required hours, **a maximum of ten (10 CECs) MAY be earned by teaching official OPS or OPS approved courses or workshops.** Each hour of lecture or workshop equals one credit hour (1 CEC).
- C. Of the fifteen required hours, **a maximum of ten (10 CECs) MAY be earned by attending NON-OPS APPROVED courses or workshops.** These include courses or workshops approved by the Joint Commission of Allied Health Personnel in Ophthalmology (JCAHPO) or courses approved by the American Medical Association (AMA) for Category I Continuing Ophthalmic Medical Education. Each hour of these courses or workshops equals one half-credit hour (1/2 CEC).
- D. Of the fifteen required hours, **a maximum of ten (10 CECs) MAY be earned by first authorship or co-authorship** in the OPS Journal, ophthalmic or photographic journals or text books and other scientific publications. All submissions must be of merit and well recognized. The total value for any submission shall not exceed three (3 CECs). Submission of publications for CEC review must be made by separate application. (See *CECs for Publication* on OPS website for details)

### Responsibility and Verifications

It is the responsibility of Certified Retinal Angiographer's to keep track of their CECs and submit their application with supporting documentation verifying course teaching, course or workshop attendance or publication credits. Credits for teaching must be supported by a copy of the printed program reflecting the type and degree of involvement. A certificate of attendance or statement of attendance on official letterhead from the director of the course or workshop is required. A paid receipt is not acceptable as evidence of attendance. Credits for publications must be supported by a validation letter from the Recertification Section Chair.

2. Recertification requires the submission of a copy of a current certificate in cardiopulmonary resuscitation (**CPR**) that included both written and hands-on examinations from a recognized organization. The American Red Cross or the American Heart Association is preferred.
3. Payment of the prevailing **recertification fee**, payable in US dollars to the OPS/BOC. Payment by credit card can be made through the **OPS Membership Office (1-800-403-1677)**.

### Recertification Fees

Non-member Fee:	\$160.00
OPS Member Fee:	\$ 80.00

**Please call the OPS Membership Office (1-800-403-1677) to verify your membership status.**

Fees should be payable to the OPS BOC in US dollars.

## **Recertification Extensions and Appeals**

Recertification extensions may be issued on an individual basis due to extreme hardship. The Recertification Section Chair (Recert@opsweb.org) is authorized to give a one time 6 week extension. Letters of revocation are sent after the 6 week period. Should recertification be denied, the applicant may appeal within thirty (30) days to the Chair of the Board of Certification (BOC@opsweb.org). Appeal instructions are provided with the letter of revocation. The Board of Certification decision regarding all appeals will be final and binding. (Refer to appeals and grievances policy on **page 7** for details.)

## **Recertification Applications and Information**

The Chair of the Recertification Section annually mails, in February, applications to CRAs with an expiration date of December 31<sup>st</sup> of that con-current year. CRAs that have not received their application by March 1<sup>st</sup>, of their third year of certification, should contact the Recertification Section Chair (Recert@opsweb.org).

CRAs having difficulty completing their requirements or expect to be unable to meet the December 31<sup>st</sup> deadline should contact the Recertification Section Chair (Recert@opsweb.org) as soon as possible. The Recertification Section Chair may be able to provide assistance or a course of action for completing the requirements.

CRAs should contact the Section Chair by mail, fax or phone for current answers to any questions or concerns about recertification requirements or accrual of continuing education credits.

## **REQUIREMENTS FOR PROVISIONAL CRA RECERTIFICATION**

Provisional CRAs are required to recertify at three-year intervals following the same guidelines as CRAs. It is the responsibility of the Provisional CRA to provide proof of compliance with the recertification requirements prior to the end of the third year of each interval of certification. Failure to do so will result in the revocation of OPS certification. Once revoked, certification can only be regained by applying for and fulfilling the current requirements for CRA certification.

The three-year interval will start following certification as a Provisional CRA regardless of when the certificant's status converts to CRA. If the Provisional CRA has not completed the work experience criteria by the time recertification is due, the Provisional CRA must comply with the CRA recertification requirements to maintain the Provisional CRA.

## DISCIPLINARY POLICY

The OPS BOC may impose sanctions against applicants or individuals already awarded certification for failure to meet OPS BOC rules and standards of initial certification or recertification. The CRA™ program is a voluntary process, not required by law for employment in the field. Monitoring and evaluating actual job performance is beyond the scope of the OPS BOC.

Grounds for Action. The Board of Certification reserves the right to deny certification, void examination results, bar participation in the certification program or to revoke certification. The following are grounds for action:

- Obtaining or attempting to obtain certification or recertification for oneself or another through fraud or misrepresentation on any certification application, document, portfolio, or examination.
- Improper conduct during the examination, including, but not limited to giving or receiving answers from another applicant, attempting to remove test materials or information from any examination room, or impersonating another applicant.
- Unauthorized possession, distribution or disclosure of examination materials or content.
- Misrepresentation of certification or certification status.
- Gross or repeated negligence in providing ophthalmic photography services.
- Substance abuse to a degree, which impairs professional performance.
- Physical or mental condition which impairs competent professional performance.
- Physical or sexual abuse of a patient.
- The conviction of, plea of guilty, or plea of nolo contendere to a crime which is directly related to public health, safety, or professional performance providing ophthalmic photography services.
- Failure to cooperate reasonably with any OPS BOC investigation of a disciplinary matter.

Sanctions for violation of standards of conduct or examination procedures may include:

- Denial or suspension of eligibility
- Re-examination
- Revocation
- Censure
- Reprimand
- Suspension
- Probation
- Other corrective action as the OPS BOC deems appropriate

Sanctions may be appealed. All appeals must be submitted as directed in the sanction to the Chair of the Board of Certification.



## STUDY RESOURCES

Below is an extensive list of study resources compiled from the suggestions of CRA examiners and candidates who have taken the examination. Many of the texts and references cover some of the same material, so it is not necessary to review them all. A candidate can pick and choose from these or other appropriate references, based on availability and individual need. Some of these references may no longer be in print, but can still be found in a medical library.

### Ophthalmology

**Atlas of Clinical Ophthalmology** Spalton DJ. [2004] Elsevier - Health Sciences Division; ISBN: 0723432406

**Atlas of Indocyanine Green Angiography: Fluorescein Angiography, ICG Angiography and OCT Correlations.** Coscas, G. Elsevier, 2006.

**Clinical Eye Atlas** Gold DH, Lewis RA. [2002] AMA Press; ISBN: 1579471927

**Clinical Retina** Quillen D, Blodi B. [2002] American Medical Association; ISBN: 1579472842

**Fluorescein and ICG Angiography: Textbook and Atlas** Richard I, Soubrane G, Yannuzzi L. [2nd edition 1998] Thieme Medical Pub; ISBN: 0865777128

**Fluorescein and Indocyanine Green Angiography: Technique and Interpretation** (Ophthalmology Monographs, 5) Berkow JW. [2nd edition 1997] American Academy of Ophthalmology; ISBN: 1560550449

**Fundus Fluorescein Angiography** Chopdar A. [1996] Butterworth-Heinemann Medical; ISBN: 075061885X

**General Ophthalmology** Vaughan D, Asbury T, Riordan-Eva P. [15th Edition] McGraw-Hill Professional Publishing; ISBN: 0838531377

**Ocular Therapeutics Handbook: A Clinical Manual** Bruce E. Onofrey; Nicky R. Holdeman; Leonid Skorin, [2nd Edition 2005] Lippincott Williams & Wilkins Publishers; ISBN: 0397513925

**The Ophthalmic Assistant** Stein HA, Slatt BJ, Stein RM. [7th Edition 1999] Harcourt Brace; ISBN: 0323009131

**Ophthalmic Terminology** Speller and Vocabulary Builder Stein HA, Slatt BJ, Stein RM. [3rd Edition 2000] Mosby-Year Book; ISBN: 0801664381

**Quick Reference Dictionary of Eye Terminology** Janice K. Ledford; Joseph Hoffman; Al Lens. [5th Edition 2008] Slack, Inc.; ISBN: 1556424728

**The Retina Atlas** Yannuzzi L, Green W, Battista KM. [1995] Mosby-Year Book, Inc.; ISBN: 0815134320

**Retina** Ryan S, Ogden T, Hinton D, Schachat AP. [3rd edition 2000] Mosby-Year Book; ISBN: 0323008046

**Stereo Atlas of Fluorescein and Indocyanine Green Angiography** Stevens RA, Saine PJ, Tyler ME. [1999] Butterworth-Heinemann Medical; ISBN: 0750670010

**Stereoscopic Atlas of Macular Diseases Diagnosis and Treatment** Gass DM. [4th edition 1996] Mosby-Year Book; ISBN: 0815134169

**Wolff's Anatomy of the Eye and Orbit** Bron AJ, Tripathi I, Tripathi B. [8th edition 1998] Lippincott Williams & Wilkins Publishers; ISBN: 0412410109

### Ophthalmology (Out of Print)

**Interpretation of Fundus Fluorescein Angiography** Schatz H, Burton T, Yannuzzi L, Rabb M. [1978] C.V. Mosby Company, St. Louis, MO

## Ophthalmic Photography

**Clinical Ocular Photography (Basic Bookshelf for Eyecare Professionals)** Cunningham D.  
[1998] Slack, Inc. ISBN: 1556423772

**Ophthalmic Photography: A Textbook of Fundus Photography, Angiography & Electronic Imaging** Saine PJ, Tyler ME. [2nd Edition 2001] Elsevier - Health Sciences Division; ISBN: 0750673729

**Practical Retinal Photography and Digital Imaging Techniques** Tyler ME, Saine PJ, Bennett T.  
[2003] Butterworth-Heinemann Medical; ISBN: 0750673710

## Ophthalmic Photography (Difficult to Find/Out of Print)

**Fluorescein Angiography of the Retina** Wessing A, Mosby, [1969]

**Ophthalmic Photography** Justice JJ. Little, Brown, [1982]

**Ophthalmic Photography** Coppinger JM, Maio M, Miller K. Slack, [1987]

**Textbook of Ophthalmic Photography** Wong D, Inter-Optics Publications, Inc. [1982]

## Photography

**Langford's Advanced Photography** Langford MJ. [7th edition 2008] Focal Press; ISBN: 0240514866

**Langford's Basic Photography** Langford MJ. [8th edition 2008] Focal Press; ISBN: 0240514858

**Color Confidence: The Digital Photographer's Guide to Color Management** Grey T.  
(2006) John Wiley & Sons, Incorporated ISBN 0470113138

## Digital Imaging

**Adobe Photoshop CS3 for Photographers: Evening, M.** ISBN: 0240519426, Focal Press; Bk&Cdr edition (2008)

**Dictionary of Photography & Digital Imaging: The Essential Reference for the Modern Photographer** Ang T, [2002]  
Watson-Guptill Publications; ISBN: 0817437894

**Digital Image Processing** Gonzalez RC, Richard E, Woods RE. [3rd Edition 2007] Prentice Hall PTR.; ISBN: 021180758

**Real World Photoshop CS3:** Blatner D., [3rd Edition] ISBN: 0321334116, Pearson Education; [2007]

## Optical Coherence Tomography

**Everyday OCT:A Handbook for Clinicians and Technicians.** Schuman, J., Puliafito, and C Fujimoto, J.. Slack, Inc.;  
[2005]

**The Stratus OCT Primer: Essential OCT.** Bressler, N. and Ahmed, I. Carl Zeiss Meditech, 1 800 342 9821.

## Journal Articles

Allen L. **Ocular fundus photography. Suggestions for achieving consistently good pictures and instructions for stereoscopic photography** American Journal of Ophthalmology. 33:13-28. 1964

Ball K. **Wise GM. A modified technique of fluorescein angiography**  
Journal of Ophthalmic Photography 1980; 3(2):32

Bartlett D, Hoops S. "Is it hypoglycemia?" recognition and management of low blood sugar levels before, during

**and after fluorescein angiography in individuals with diabetes**

Journal of Ophthalmic Photography, 1989;11(2):58

**Bartlett D. The use of fluorescein angiography in pregnancy**

Journal of Ophthalmic Photography, 1989;11(2):76

Bird A. **Retinal Fundus Autofluorescence** Journal of Ophthalmic Photography Summer/2007 Vol 29:Supplement p.58

**Cain DR, McPhee TJ, George TW. Non-painful vascular staining following the**

**injection of sodium fluorescein** Journal of Ophthalmic Photography, 1987-88;10(1-2):39

Croswell M. **Fluorescein angiography survey brief** Journal of Ophthalmic Photography, 1992;14(2):61

Delori FC. Gragoudas ES. Francisco R. Pruett RC. **Monochromatic ophthalmoscopy and fundus photography** The

normal fundus. Archives of Ophthalmology. 95(5):861-8, 1977 May.

Dewhurst RR, Stanford MR. **Severe adverse reactions to sodium fluorescein dye: results of the BOPA 1998 pilot study** British Journal of Ophthalmic Photography, 1999;2:20

Ducrey NM. Delori FC. **Gragoudas ES. Monochromatic ophthalmoscopy and fundus photography II. The**

**pathological fundus** Archives of Ophthalmology. 97(2):288-93, 1979 Feb

Hamm DA. **Patient management and the ophthalmic photographer** Journal of Ophthalmic Photography, 1993;15(2):68

Jacobs J. **Fluorescein sodium-what is it?** Journal of Ophthalmic Photography, 1992;14(2):62

Justice J Jr. **Ocular fundus photography** International Ophthalmology Clinics. 16(2):23-32, 1976.

Justice J Jr. **Fluorescein angiography** International Ophthalmology Clinics. 16(2):33-9, 1976.

Justice J Jr. **Basic interpretations of fluorescein angiography** International Ophthalmology Clinics. 16(2):41 - 52, 1976.

Kelly MP. **A superior method of achieving high myopic retinal focus.** Journal of Ophthalmic Photography, 1995;17(2):6

Kwiterovitch & Maguire M, Murphy R, et al. **Frequency of adverse reactions after fluorescein angiography**

Ophthalmology 1991;98:1142.

Lucot J. **The thirty minute angiogram** Journal of Ophthalmic Photography 1981; 4(2):37

Merin LM. **Aesthetics in angiographic imagery** Journal of Ophthalmic Photography 198 1;4:22.

Merin LM, Lam BL. **Fluorescein angiogram during vasovagal syncope** Journal of Ophthalmic Photography,

1994;16(2):94

Novotny HR, Alvis DL. **A method of photographing fluorescence in circulating blood in the human retina** Circulation

1961;24:82.

Palestine AG. **Does fluorescein angiography interfere with clinical laboratory testing?**

Journal of Ophthalmic Photography, 1991;13(1):27

Picchiettino R. **Disease-specific fluorescein angiography**

Journal of Ophthalmic Photography, 1989;11(1):15

Priel E. **Photographing the challenging patient** Journal of Ophthalmic Photography 1997;19(3):98

Priel, FOPS. **Fundus Autofluorescence with a Confocal Scanning Laser Ophthalmoscope** Journal of Ophthalmic

Photography Summer/2007 Vol 29:Supplement p.62

Saine PJ, Bocino JA, Marcus DF, Nelson PT. **Timing of color fundus photographs and intravenous fluorescein angiography** Journal of Ophthalmic Photography, 1984;7(2):112

Saine PJ. **Errors in fundus photography** Journal of Ophthalmic Photography, 1984;7(2):120

Saine PJ. **Focusing the fundus camera: a clinical approach** Journal of Ophthalmic Photography, 1992;14(1):7

Schmitz-Valckenberg S, Holz F. , **Fundus Autofluorescence Imaging in Geographic Atrophy** Summer/2007 Vol 29:Supplement p.74

Sobel JA. **Oral fluorescein** Journal of Ophthalmic Photography, 1996;18(2):38

Tyler ME. **Total tonal information in fluorescein angiography** Journal of Ophthalmic Photography 1979;2(1):62

Tyler ME. **Stereo fundus photography: principles and technique** Journal of Ophthalmic Photography 1996;18(2):68

Wolfe DR. **Fluorescein angiography basic science and engineering** Ophthalmology. 93(12):1617-20, 1986 Dec

Wong D. **Fundus photography and fluorescein angiography** Journal of Ophthalmic Photography 1971;2(1):10

Wong D. **Peripheral fundus photography** Journal of Ophthalmic Photography, 1983;6(2):51

Yannuzzi LA. Fisher YL. Levy JH. **A classification of abnormal fundus fluorescence** Annals of Ophthalmology. 3(7):711-8,1971 Jul

Yannuzzi LA. Rohrer KT. Tindel LJ. Sobel RS. Costanza MA. Shields W. Zang E. **Fluorescein angiography complication survey** [Review]

## **Internet Resources**

**Journal of Ophthalmic Photography.** Search every issue from January 1978 through the present.  
<http://www.opsweb.org/Publicat/Journal/JourSrch.html>

**Fundus Photography** Saine PJ. OPS web site:  
<http://www.opsweb.org/Op-Photo/Fundus/CFundus/funphot1.htm>

**Monochromatic Fundus Photography** Bennett TJ. OPS web site:  
<http://www.opsweb.org/Op-Photo/Fundus/Mono/MonoChrm.htm>

**Fundamentals of Fluorescein Angiography** Bennett TJ.  
OPS web site: <http://www.opsweb.org/Op-Photo/Angio/FA/FA1.htm>

**Digital Imaging** Montague PR. OPS web site: <http://www.opsweb.org/Op-Photo/Digital/DigImage.htm>

**Eyeteq.net** Gallimore, G. <http://www.eyeteq.net>. TZV Publishing, 2007.

*The Board of Certification has collected this list of resources to assist applicants in preparation for the examination. The accuracy of the information within the sources is the responsibility of the authors.*

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<http://www.opsweb.org>**

**NOTES:**

## Application Submission Check List

1. Program Application completed, dated, and signed.
2. Portfolio Submission Form completed, dated, and signed.
3. Complete CRA Portfolio enclosed.
4. Examination fee paid  
( enclosed,  paid @ ops webstore or  paid @ central office)

### Mailing Address:

**CRA Portfolio Committee  
Beth Ann Benetz, CRA, FOPS  
UH Case Medical Center  
11100 Euclid Ave, Wearn 644  
Cleveland, OH 44106**

BACK OF FORM



# Ophthalmic Photographers' Society Board of Certification

## CRA™ PROGRAM APPLICATION

Name: \_\_\_\_\_  
Last First MI

Home Address:

\_\_\_\_\_  
Home Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_  
\_\_\_\_\_  
Business Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_  
\_\_\_\_\_  
Business Fax: (\_\_\_\_) \_\_\_\_ - \_\_\_\_  
\_\_\_\_\_  
E-mail: \_\_\_\_\_

Please answer the following questions: (For statistical purposes only)

Level of education or training (check all that apply): \_\_\_ High School \_\_\_ Some College \_\_\_ College Degree \_\_\_ Graduate Degree  
\_\_\_ OCT-C \_\_\_ COA \_\_\_ COT \_\_\_ COMT \_\_\_ RN \_\_\_ LPN \_\_\_ Medical Degree  
\_\_\_ Other \_\_\_\_\_

Are you planning to apply for a work experience waiver? \_\_\_ Yes \_\_\_ No

Describe your years of professional experience in the field of Ophthalmic Photography:  
\_\_\_ Less than 2 years \_\_\_ 4-6 years \_\_\_ more than 10 years  
\_\_\_ 2-3 years \_\_\_ 7-10 years

Are you a member of the Ophthalmic Photographers' Society? \_\_\_ Yes \_\_\_ No \_\_\_ Other professional groups? \_\_\_\_\_

How did you hear about the Ophthalmic Photographers' Society Certification Program?  
\_\_\_ OPS Member \_\_\_ Colleagues \_\_\_ Employer \_\_\_ OPS Website \_\_\_ Educational Meeting

Have you applied to the CRA Program in the past? \_\_\_ Yes \_\_\_ No If you applied in the past using a name different than the one on this application, please print the name here: \_\_\_\_\_

Please read and sign the following statement indicating your acceptance.

I hereby request admittance into the Certification Program of the Ophthalmic Photographers' Society Board of Certification for the designation of Certified Retinal Angiographer subject to the requirements for certification set forth in the *CRA Program Guide*.

**I understand in order to apply to sit for the Certified Retinal Angiographer examination, I must verify an employment history as a Retinal Angiographer for a minimum of two years.** (See Eligibility Requirements and Provisional CRA Requirements in the CRA Program Guide page 8)

I understand and accept that the Ophthalmic Photographers' Society Board of Certification makes the designation of Certified Retinal Angiographer alone. Its sole purpose is to recognize the attainment of a standard level of knowledge and ability in ophthalmic photography and the liability of the Board or its representatives is limited strictly to this recognition. There is no guarantee of its recognition by any other individual, group, agency or institution.

I understand and accept that the Board of Certification reserves the right to make changes in policy, procedures, fees, and examination without notification.

I understand and accept that all decisions of the Board of Certification consistent with the policies and grievances procedures of the Board of Certification are final.

\_\_\_\_\_  
SIGNATURE DATE

A COMPLETED PORTFOLIO SUBMISSION FORM, PORTFOLIO AND A CHECK PAYABLE TO THE OPS/BOC IN THE AMOUNT OF \$50.00 (NON-REFUNDABLE US DOLLARS) MUST ACCOMPANY THE COMPLETED PROGRAM APPLICATION.  
PLEASE RETAIN A COPY OF THIS APPLICATION FOR YOUR RECORDS.  
MAIL THE COMPLETED APPLICATION, PORTFOLIO, PORTFOLIO FORM AND CHECK TO THE PORTFOLIO CHAIR.

BACK OF FORM

**PORTFOLIO SUBMISSION FORM**

**Complete this form and submit it with the portfolio. Your portfolio will be reviewed within thirty days by the Portfolio Committee and returned to the address listed below.**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
Zip

\_\_\_\_\_  
Preferred Contact Phone

\_\_\_\_\_  
Email

\_\_\_\_\_  
Alternate Phone (Home/Business/Cell)

\_\_\_\_\_  
Fax

**PLEASE READ THE FOLLOWING STATEMENTS AND SIGN TO INDICATE ACCEPTANCE.**

I submit my CRA portfolio prepared in accordance with the requirements outlined in the *CRA™ Program Guide*, for review by the CRA Portfolio Committee of the Ophthalmic Photographers' Society Board of Certification.

This enclosed portfolio represents work I have personally completed. I understand and accept that the portfolio must be produced entirely by myself and that fraudulent submissions for any of the eligibility requirements may result in disqualification.

I understand and accept that the Ophthalmic Photographers' Society Board of Certification assumes no liability for any portfolio materials lost or damaged in shipping and handling.

By signing and submitting this form, I accept the terms set forth in the *CRA™ Program Guide* regarding the CRA portfolio requirements.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**Send this form with your completed portfolio, application and application fee to the address below for review.**

**CRA Portfolio Committee  
Beth Ann Benetz, CRA, FOPS  
UH Case Medical Center  
11100 Euclid Ave, Wearn 644  
Cleveland, OH 44106**

BACK OF FORM





OPHTHALMIC PHOTOGRAPHERS' SOCIETY  
EYE IMAGING EXPERTS

## BOARD OF CERTIFICATION

**Version 11e**

**January 2011**

If the date on this Program Guide is more than three months old, please check the OPS website to make sure you have the most current version.