FY 2016 Houston EMA/HSDA Ryan White Part A/MAI Service Definition **Vision Care** (Revision Date: 03/03/14)	
HRSA Service Category Title: **RWGA Only**	**Ambulatory/Outpatient Medical Care**
Local Service Category Title:	**Vision Care**
Budget Type: **RWGA Only**	**Fee for Service**
Budget Requirements or Restrictions: **RWGA Only**	Corrective lenses are not allowable under this category. Corrective lenses may be provided under Health Insurance Assistance and/or Emergency Financial Assistance as applicable/available.
HRSA Service Category Definition: **RWGA Only**	***Outpatient/Ambulatory medical care*** is the provision of professional diagnostic and therapeutic services rendered by a physician, physician's assistant, clinical nurse specialist, or nurse practitioner in an outpatient setting. Settings include clinics, medical offices, and mobile vans where clients generally do not stay overnight. Emergency room services are not outpatient settings. Services includes diagnostic testing, early intervention and risk assessment, preventive care and screening, practitioner examination, medical history taking, diagnosis and treatment of common physical and mental conditions, prescribing and managing medication therapy, education and counseling on health issues, well-baby care, continuing care and management of chronic conditions, and referral to and provision of specialty care (includes all medical subspecialties). Primary medical care for the treatment of HIV infection includes the provision of care that is consistent with the Public Health Service's guidelines. Such care must include access to antiretroviral and other drug therapies, including prophylaxis and treatment of opportunistic infections and combination antiretroviral therapies. HRSA policy notice 10-02 states funds awarded under Part A or Part B of the Ryan White CARE Act (Program) may be used for optometric or ophthalmic services under Primary Medical Care. Funds may also be used to purchase corrective lenses for conditions related to HIV infection, through either the Health Insurance Premium Assistance or Emergency Financial Assistance service categories as applicable.
Local Service Category Definition:	**Primary Care Office/Clinic Vision Care** is defined as a comprehensive examination by a qualified Optometrist or Ophthalmologist, including Eligibility Screening as necessary. A visit with a credentialed Ophthalmic Medical Assistant for any of the following is an allowable visit: • Routine and preliminary tests including Cover tests, Ishihara Color Test, NPC (Near Point of Conversion), Vision Acuity Testing, Lensometry. • Visual field testing

	• Glasses dispensing including fittings of glasses, visual acuity testing, measurement, segment height. • Fitting of contact lenses is not an allowable follow-up visit.
Target Population (age, gender, geographic, race, ethnicity, etc.):	HIV-infected individuals residing in the Houston EMA/HSDA.
Services to be Provided:	Services must be provided at an eye care clinic or Optometrist's office. Services must include but are not limited to external/internal eye health evaluations; refractions; dilation of the pupils; glaucoma and cataract evaluations; CMV screenings; prescriptions for eyeglasses and over the counter medications; provision of eyeglasses (contact lenses are not allowable); and referrals to other service providers (i.e. Primary Care Physicians, Ophthalmologists, etc.) for treatment of CMV, glaucoma, cataracts, etc. Agency must provide a written plan for ensuring that collaboration occurs with other providers (Primary Care Physicians, Ophthalmologists, etc.) to ensure that patients receive appropriate treatment for CMV, glaucoma, cataracts, etc.
Service Unit Definition(s): **RWGA Only**	One (1) unit of service = One (1) patient visit to the Optometrist, Ophthalmologist or Ophthalmic Assistant.
Financial Eligibility:	Refer to the RWPC's approved *FY 2014 Financial Eligibility for Houston EMA Services.*
Client Eligibility:	HIV-infected resident of the Houston EMA/HSDA.
Agency Requirements:	Providers and system must be Medicaid/Medicare certified to ensure that Ryan White Program funds are the payer of last resort to the extent examinations and eyewear are covered by the State Medicaid program.
Staff Requirements:	Vendor must have on staff a Doctorate of Optometry licensed by the Texas Optometry Board as a Therapeutic Optometrist.
Special Requirements: **RWGA Only**	Vision care services must meet or exceed current U.S. Dept. of Health and Human Services (HHS) guidelines for the treatment and management of HIV disease as applicable to vision care

FY 2016 RWPC "How to Best Meet the Need" Decision Process

Step in Process: **Council**		Date: **06/09/2016**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **Steering Committee**		Date: **06/02/2016**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **Quality Improvement Committee**		Date: **05/19/2016**
Recommendations:	Approved: Y:_____ No: _____ Approved With Changes:_____	If approved with changes list changes below:
1.		
2.		
3.		

Step in Process: **HTBMTN Workgroup**	Date: **04/26/2016**
Recommendations:	Financial Eligibility:
1.	
2.	
3.	

Ryan White Part A Quality Management Program–Houston EMA

Vision Care Chart Review FY 2014

Harris County Public Health & Environmental Services –
Ryan White Grant Administration

November 2015

CONTACT:

Heather Keizman, RN, MSN, WHNP-BC
Project Coordinator–Clinical Quality Improvement
Harris County Public Health & Environmental Services
Ryan White Grant Administration
2223 West Loop South, RM 417
Houston, TX 77027
713-439-6037
hkeizman@hcphes.org

Introduction

Part A funds of the Ryan White Care Act are administered in the Houston Eligible Metropolitan Area (EMA) by the Ryan White Grant Administration of Harris County Public Health & Environmental Services. During FY 14, a comprehensive review of client vision records was conducted for services provided between 3/1/14 to 2/28/15.

The primary purpose of this annual review process is to assess Part A vision care provided to persons living with HIV and AIDS in the Houston EMA. Unlike primary care, there are no federal guidelines published by the U.S Public Health Service for general vision care targeting individuals with HIV/AIDS. Therefore, Ryan White Grant Administration has adopted general guidelines published by the American Optometric Association, as well as internal standards determined by the clinic, to measure the quality of Part A funded vision care. The Ryan White Grant Administration Project Coordinator for Clinical Quality Improvement (PC/CQI) performed the chart review.

Scope of This Report

This report provides background on the project, supplemental information on the design of the data collection tool, and presents the pertinent findings of the FY 14 vision care chart review. Also, any additional data analysis of items or information not included in this report can likely be provided after a request is submitted to Ryan White Grant Administration.

The Data Collection Tool

The data collection tool employed in the review was developed through a period of in-depth research conducted by the Ryan White Grant Administration. By researching the most recent vision practice guidelines, a listing of potential data collection items was developed. Further research provided for the editing of this list to yield what is believed to represent the most pertinent data elements for vision care in the Houston EMA. Topics covered by the data collection tool include, but are not limited to the following: completeness of the Client Intake Form (CIF), CD4 and VL measures, eye exams, and prescriptions for lenses. See Appendix A for a copy of the tool.

The Chart Review Process

All charts were reviewed by the PC/CQI, a Master's-level registered nurse experienced in identifying documentation issues and assessing adherence to published guidelines. The collected data for each site was recorded directly into a preformatted database. Once all data collection was completed, the database was queried for analysis. The data collected during this process is intended to be used for the purpose of service improvement.

The specific parameters established for the data collection process were developed from vision care guidelines and the professional experience of the reviewer on standard record documentation practices. Table 1 summarizes the various documentation criteria employed during the review.

Table 1. Data Collection Parameters	
Review Area	**Documentation Criteria**
Laboratory Tests	Current CD4 and Viral Load Measures
Client Intake Form (CIF)	Completeness of the CIF: includes but not limited to documentation of primary care provider, medication allergies, Hx of medical problems, Ocular Hx, and current medications
Complete Eye Exam (CEE)	Documentation of annual eye exam; completeness of eye exam form; comprehensiveness of eye exam (visual acuity, refraction test, binocular vision assessment, fundus/retina exam, and glaucoma test)
Ophthalmology Consult (DFE)	Performed/Not performed
Lens Prescriptions	Documentation of the Plan of Care (POC) and completeness of the dispensing form

The Sample Selection Process

The sample population was selected from a pool of 2,099 unduplicated clients who accessed Part A vision care between 3/1/14 and 2/28/15. The medical charts of 151 of these clients were used in the review, representing 7.2% of the pool of unduplicated clients.

In an effort to make the sample population as representative of the actual Part A vision care population as possible, the EMA's Centralized Patient Care Data Management System (CPCDMS) was used to generate the lists of client codes. The demographic make-up (race/ethnicity, gender, age) of clients accessing vision care services between 3/1/14 and 2/28/15 was determined by CPCDMS, which in turn allowed Ryan White Grant Administration to generate a sample of specified size that closely mirrors that same demographic make-up.

Characteristics of the Sample Population

The review sample population was generally comparable to the Part A population receiving vision care in terms of race/ethnicity, gender, and age. It is important to note that the chart review findings in this report apply only to those who receive vision care from a Part A provider and cannot be generalized to all Ryan White clients or to the broader population of persons with HIV or AIDS. Table 2 compares the review sample population with the Ryan White Part A vision care population as a whole.

Table 2. Demographic Characteristics of FY 14 Houston EMA Ryan White Part A Vision Care Clients				
	Sample		**Ryan White Part A EMA**	
Race/Ethnicity	Number	Percent	Number	Percent
African American	82	54%	1,031	49%
White	69	46%	1,007	48%
Asian	0	0%	29	1%
Native Hawaiian/Pacific Islander	0	0%	4	<1%
American Indian/Alaska Native	0	0%	7	<1%
Multi-Race	0	0%	21	<1%
TOTAL	**151**		**2,099**	**100%**
Hispanic Status				
Hispanic	46	30%	686	33%
Non-Hispanic	105	70%	1,413	67%
TOTAL	**151**		**2,099**	**100%**
Gender				
Male	121	81%	1,605	76%
Female	29	19%	482	23%
Transgender Male to Female	1	<1%	12	<1%
Transgender Female to Male	0	0%	0	0
TOTAL	**151**		**2,099**	**100%**
Age				
<= 24	10	7%	145	7%
25 – 34	36	24%	472	22%
35 – 44	37	25%	530	25%
45 – 54	47	31%	605	29%
55 – 64	18	12%	290	14%
65+	3	2%	57	3%
TOTAL	**151**		**2,099**	**100%**

Findings

Laboratory Tests

Having up-to-date lab measurements for CD4 and viral load (VL) levels enhances the ability of vision providers to ensure that the care provided is appropriate for each patient. CD4 and VL measures indicate stage of disease, so in cases where individuals are in the late stage of HIV disease, special considerations may be required.

Patient chart records should provide documentation of the most recent CD4 and VL information. Ideally this information should be updated in coordination with an annual complete eye exam. As noted in the table below, significant decreases were noted in lab documentation compared to previous years.

	2011	2012	2013	2014
CD4	93%	90%	49%	48%
VL	94%	89%	49%	48%

Client Intake Form (CIF)

A complete and thorough assessment of a patient's health history is essential when caring for individuals infected with HIV or anyone who is medically compromised. The agency assesses this information by having patients complete the CIF. Information provided on the CIF, such as ocular history or medical history, guides clinic providers in determining the appropriateness of diagnostic procedures, prescriptions, and treatments. The CIF that is used by the agency to assess patient's health history captures a wide range of information; however, for the purposes of this review, this report will highlight findings for only some of the data collected on the form.

Below are highlights of the findings measuring completeness of the CIF.

	2011	2012	2013	2014
Primary Care Provider	100%	99%	51%	52%
Medication Allergies	100%	100%	93%	100%
Medical History	100%	100%	99%	100%
Current Medications	100%	99%	96%	100%
Reason for Visit	100%	100%	99%	100%
Ocular History	96%	97%	99%	100%

Eye Examinations (Including CEE/DFE) and Exam Findings

Complete and thorough examination of the eye performed on a routine basis is essential for the prevention, detection, and treatment of eye and vision disorders. When providing care to individuals with HIV/AIDS, routine eye exams become even more important because there are a number of ocular manifestations of HIV disease, such as CMV retinitis.

CMV retinitis is usually diagnosed based on characteristic retinal changes observed through a DFE. Current standards of care recommend yearly DFE performed by an ophthalmologist for clients with CD4 counts <50 cells/mm3 (2). Zero clients in this sample had CD4 counts <50 cells/mm3.

	2011	2012	2013	2014
Complete Eye Exam	96%	96%	100%	99%
Dilated Fundus Exam	80%	76%	53%	94%
Internal Eye Exam	100%	100%	100%	100%
Documentation of Diagnosis	100%	100%	100%	99%
Documentation of Treatment Plan	100%	100%	100%	99%
Visual Acuity	99%	100%	100%	100%
Refraction Test	96%	96%	99%	98%
Observation of External Structures	96%	97%	56%	100%
Glaucoma Test	95%	100%	99%	100%
Cytomegalovirus (CMV) screening	80%	78%	55%	94%

Ocular Disease

Sixteen clients (10.6%) demonstrated ocular disease, including optic nerve hypoplasia, cataracts, glaucoma, blindness, post vitreous detachment, and macular degeneration. Three clients received treatment for ocular disease, 2 clients were referred to a specialty eye clinic, and 11 clients did not need treatment at the time of visit.

Prescriptions

Of records reviewed, 95% (97%-FY13, 94%-FY 12 reviews) documented new prescriptions for lenses at the agency within the year.

Conclusions

Findings from the FY 14 Vision Care Chart Review indicate that the vision care providers perform comprehensive vision examinations for the prevention, detection, and treatment of eye and vision disorders. Performance rates are very high overall, and are consistent with quality vision care. Significant improvements have been noted for a few measures, including CMV screening, Dilated Fundus Exam, and Observation of External Structures.

Appendix A—FY 14-Vision Chart Review Data Collection Tool

Mar 1, 14 to Feb 28, 15

Pt. ID # _____ Site Code:_____

CLIENT INTAKE FORM (CIF)

1. PRIMARY CARE PROVIDER documented: Y - Yes N - No
2. MEDICATION ALLERGIES documented: Y - Yes N - No
3. MEDICAL HISTORY documented: Y - Yes N - No
4. CURRENT MEDS are listed: Y - Yes N - No
5. REASON for TODAY's VISIT is documented: Y - Yes N - No
6. OCULAR HISTORY is documented: Y - Yes N - No

CD4 & VL

7. Most recently documented CD4 count is within past 12 months: Y - Yes N - No
8. CD4 count is < 50: Y - Yes N - No
9. Most recently documented VL count is within past 12 months: Y - Yes N – No

EYE CARE:

10. COMPLETE EYE EXAM (CEE) performed: Y - Yes N - No
11. Eye Exam included ASSESSMENT OF VISUAL ACUITY: Y - Yes N - No
12. Eye Exam included REFRACTION TEST: Y - Yes N - No
13. Eye Exam included OBSERVATION OF EXTERNAL STRUCTURES: Y - Yes N - No
14. Eye Exam included GLAUCOMA TEST (IOP): Y - Yes N - No
15. Internal Eye Exam findings are documented: Y - Yes N - No
16. Dilated Fundus Exam (DFE) done within year: Y - Yes N - No
17. Eye Exam included CYTOMEGALOVIRUS (CMV) SCREENING: Y - Yes N – No
18. New prescription lenses were prescribed: Y - Yes N - No
19. Eye Exam written diagnoses are documented: Y - Yes N - No
20. Eye Exam written treatment plan is documented: Y - Yes N - No
21. Ocular disease identified? Y - Yes N – No
22. Ocular disease treated appropriately? Y - Yes N - No
23. Total # of visits to eye clinic within year:_____

Revised March, 2013

Appendix B – Resources

1. Casser, L., Carmiencke, K.., Goss, D.A., Knieb, B.A., Morrow, D., & Musick, J.E. (2005). Optometric Clinical Practice Guideline—Comprehensive Adult Eye and Vision Examination. *American Optometric Association*. Retrieved from http://www.aoa.org/Documents/CPG-1.pdf on April 15, 2012.

2. Heiden D., Ford N., Wilson D., Rodriguez W.R., Margolis T., et al. (2007). Cytomegalovirus Retinitis: The Neglected Disease of the AIDS Pandemic. *PLoS Med* 4(12): e334. Retrieved from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2100142/ on April 15, 2012.

3. International Council of Ophthalmology. (2011). *ICO International Clinical Guideline, Ocular HIV/AIDS Related Diseases.* Retrieved from http://www.icoph.org/resources/88/ICO-International-Clinical-Guideline-Ocular-HIVAIDS-Related-Diseases-.html on December 15, 2012.

4. Panel on Opportunistic Infections in HIV-Infected Adults and Adolescents. Guidelines for the prevention and treatment of opportunistic infections in HIV-infected adults and adolescents: recommendations from the Centers for Disease Control and Prevention, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America. Available at http://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf. Accessed July 25, 2013.

With the 25th anniversary of the groundbreaking Studies of Ocular Complications of AIDS, four experts reflect on the achievements of the past —and the challenges of the future—I n treating HIV-related eye disease.

The acquired immunodeficiency syndrome (AIDS) epidemic has had a profound impact on ophthalmology. Ocular complications of infection with the human immunodeficiency virus (HIV) were first described in 1982 by Gary N. Holland, MD, at the University of California, Los Angeles.[1] Seven years later, the Studies of Ocular Complications of AIDS (SOCA) was initiated as a multicenter research effort funded by the National Eye Institute. No one could have predicted how the AIDS epidemic and its effects on the eye would be transformed over the next 25 years. “The value of SOCA is that its focus changed as the AIDS epidemic evolved," said Dr. Holland.

"Because we're no longer seeing devastating vision loss very frequently in the United States, many ophthalmologists have the feeling that people living with HIV are no longer at high risk for ocular complications,” said Dr. Holland, “but there are also chronic changes occurring in the eye that can affect a patient's quality of life, and those changes can occur despite immune recovery. Many of the things going on systemically in an HIV positive person can affect the eye as well."

Since 1998, the Longitudinal Study of Ocular Complications of AIDS (LSOCA)—a sub study within SOCA—has been examining the risk of ocular complications over time and the effects of long-term treatment on visual function, quality of life, and survival. Understanding the ocular changes associated with HIV may have important implications for other eye diseases, such as macular degeneration, as well as many systemic diseases.[2,3] Here is an update on key research findings for clinicians.

BY GABRIELLE WEINER, CONTRIBUTING WRITER

Before HAART: Blinding Infections

"The biggest problem we had when SOCA was first funded was opportunistic ocular infections," said SOCA chairman Douglas A. Jabs, MD, MBA, at the Icahn School of Medicine at Mount Sinai in New York City. "Cytomegalovirus [CMV] retinitis accounted for about 90 percent of the AIDS-related eye infections. By the early 1990s, it had become the most common intraocular infection in urban centers."[4]

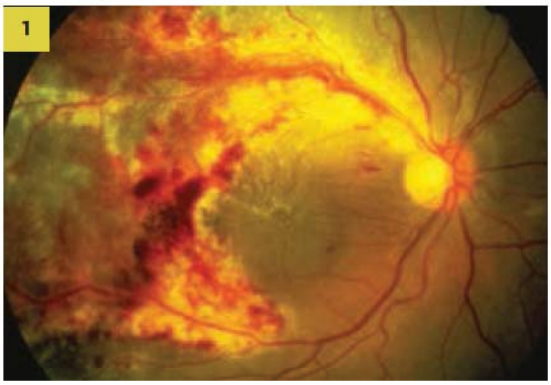
CMV retinitis. About a third of AIDS patients contracted CMV retinitis (Fig. 1), which progressively destroys retinal tissue, causing irreversible vision loss. "AIDS patients feared blindness more than anything else," said David Heiden, MD, at Pacific Eye Associates in San Francisco. "Many knew they were going to die and just didn't want to go blind first." CMV-associated diseases are late-stage opportunistic infections that make people sick only when their immune system crumbles significantly ($CD4^+$ T cells less than 50 cells/μL). In the 1980s, when patients got CMV retinitis, their life expectancy was about three months, according to Dr. Heiden.

The introduction of highly active antiretroviral therapy (HAART) in 1996 was a watershed event in the history of the AIDS epidemic—"a revelation," said Dr. Heiden. "Immune recovery became a reality, and new cases of CMV retinitis largely disappeared over the next year or two."

The HAART Transition

Immune recovery induced by HAART brought profound benefits—but also new difficulties—to people with AIDS-related CMV retinitis.

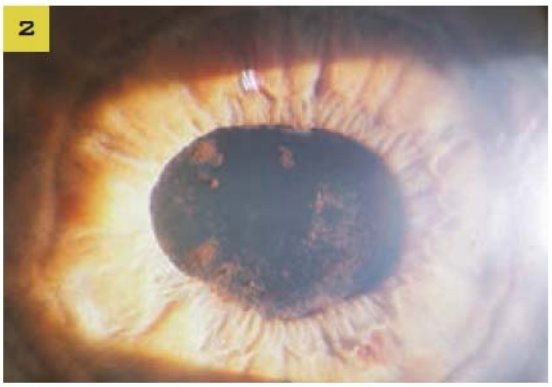
Immune recovery uveitis. With immune recovery, patients' own immune defenses were able to suppress CMV, allowing CMV retinitis lesions to become inactive without the need for antiviral drugs. However, as a consequence, a new condition emerged among treated patients: immune recovery uveitis (IRU). With immune reconstitution, some patients develop heightened immunological reactions against CMV or other intraocular pathogens, resulting in ocular inflammation. The inflammation is most prominent in the vitreous cavity but can also involve the anterior segment (Fig. 2). IRU may become severe enough to cause hypopyon and lead to vision-threatening complications such as synechiae formation, inflammatory membranes, cataract, and macular edema.



UNTREATED CMV. The appearance of untreated cytomegalovirus (CMV) retinitis in a severely immunodeficient patient, early in the AIDS epidemic, before the availability of anti-CMV drugs or antiretroviral drugs.

Evolving treatment strategies. These developments necessitated a new approach to the management of CMV retinitis. "When HAART became available, we needed appropriate strategies for controlling infectious retinopathies while preventing the inflammatory damage that comes with IRU. Our focus was getting patients through the period of immune recovery without added ocular complications secondary to IRU," said Jennifer E. Thorne, MD, PhD, deputy director of the Coordinating Center of SOCA.

"We were adapting the treatments we used when life expectancy was short to a more prolonged period of CMV disease," Dr. Holland said. "We had to figure out when it was safe to discontinue anti-CMV drug treatment in patients



IRU EFFECTS. Anterior segment of a patient with IRU in 1997, soon after the introduction of HAART. The patient had a history of CMV retinitis and was treated with the anti-CMV agent cidofovir, a drug later shown to be a risk factor for IRU. Improvement in immune function as a result of antiretroviral therapy led to an inflammatory response against CMV antigens in the eye, causing anterior uveitis. Pigment clumps seen on the anterior lens capsule are remnants of posterior synechiae that were successfully broken with dilation.

[1,2] Gary N. Holland, MD

who achieved immune recovery." In general, anti-CMV therapy should be maintained until the retinitis is inactive and $CD4^+$ T cell counts greater than 100 to 150 cells/μL have been documented for at least six months.[5]

Ongoing vigilance needed. Although AIDS has converted to a chronic disease, long-term monitoring for CMV remains important. CMV reactivation is possible (albeit at a much lower rate), even if immune recovery is maintained; and complications from prior CMV retinitis, such as retinal detachment, may require treatment.[3] Further, despite the widespread availability of HAART, clinicians should be aware that, though infrequent, new cases of CMV retinitis may occur.

Current Focus: Chronic Conditions

"If you look back at the medical issues related to managing the AIDS epidemic, it went from being primarily concerned with treating opportunistic infections to managing immune recovery and immune recovery complications to managing a chronic disease and now to managing age-related diseases in HAART-treated, immunorestored patients," said Dr. Jabs.

Age-related diseases. Compared with individuals without HIV infection, said Dr. Jabs, these patients "have more cardiovascular disease, diabetes, osteoporosis, and dyslipidemia, at a younger age. They have immune systems that look like people much older than they are."

"There also is a concern that there may be a greater rate of age-related ocular changes, such as cataract, at a younger age than we might expect in the HIV-uninfected population," said Dr. Thorne. "It's not completely clear yet whether there are more age-related eye diseases," she said, "but it's definitely SOCA's area of current interest." Dr. Jabs added, "We hope to learn more about the question of accelerated aging in the eye of HIV-infected persons over the next five years of LSOCA."

Microvasculopathy: ocular and systemic. Even without infectious retinopathies, HIV-infected patients may have subtle visual disturbances with functional consequences, such as visual field loss and abnormalities in contrast sensitivity and color vision. Although the prevalence of these problems is relatively low, they are still three or four times more common than in the general population. They are thought to be caused by abnormalities of the retinal vasculature at the microscopic level, which may be analogous to the systemic microvasculopathy known to occur in HIV disease.[3]

"We know that some of the presumed contributors to HIV-associated microvasculopathy—such as activation of white blood cells and abnormal blood flow—are ongoing despite HAART, and we anticipate that patients may, therefore, develop more eye problems in the future," said Dr. Holland.

"In medical school, you always hear that

CMV Retinitis: Disease Is Down, but Far From Out

The incidence of CMV retinitis declined in the United States by more than 95 percent after HAART was introduced, according to Dr. Jabs. But the incidence is not zero. "The leading cause of visual loss in people with AIDS is still CMV retinitis," he said.

According to Dr. Holland, the increasing longevity of HIV-infected people means that the cumulative numbers of patients with the sequelae of infectious retinopathies will likely grow. In addition, it is feared that as HIV resistance to antiretroviral drugs increases, there may also be a rise in new cases of CMV retinitis.

"SOCA's recent data suggest that, despite HAART, developing CMV retinitis is a risk factor for AIDS-related death," said Dr. Thorne. Early diagnosis is the best way to reduce the complications of CMV, making regular screening in HIV-positive patients essential. (See "Advice for Comprehensive Ophthalmologists.")

"SOCA was incredibly valuable in describing treatment outcomes for CMV retinitis in the earliest parts of its history," said Dr. Thorne. Its legacy is that we have very well established treatment guidelines and regimens to control CMV, she explained.

"Because we have so much experience treating CMV retinitis in AIDS patients, the means to treat CMV infection have become available to other groups that develop viral infections to the retina, such as newborns or immunocompromised patients, including organ transplant recipients," said Dr. Holland.

The same is true for the emerging epidemic of CMV retinitis in developing countries. "CMV retinitis is the neglected disease of the AIDS pandemic in the developing world," said Dr. Heiden. "People in resource-limited areas need the type of eye care that we learned to do very well in the pre-HAART era. We need to extend that care to them."

Watch for next month's Clinical Update focusing on international aspects of HIV eye disease.

what's going on in the eye is a reflection of what's going on elsewhere in the body," he continued. Retinal vascular damage (Fig. 3) seems to be related to systemic vascular damage and does correlate with mortality.[6]

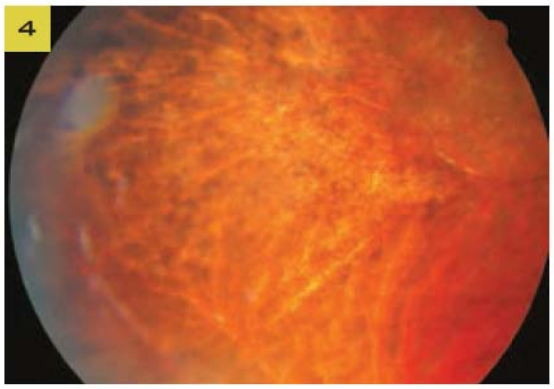
"Retinal microvasculopathy could serve as a marker to help establish the severity of vessel-associated diseases throughout the body," said Dr. Holland. "It may be like diabetic retinopathy, where we know that similar microvascular changes are occurring systemically. With many years of living with HIV, is the retinal damage going to progress the way it does with diabetic retinopathy? If so, are there implications for understanding HIV disease in other organs?" These questions, too, are under investigation in LSOCA.

Advice for Comprehensive Ophthalmologists

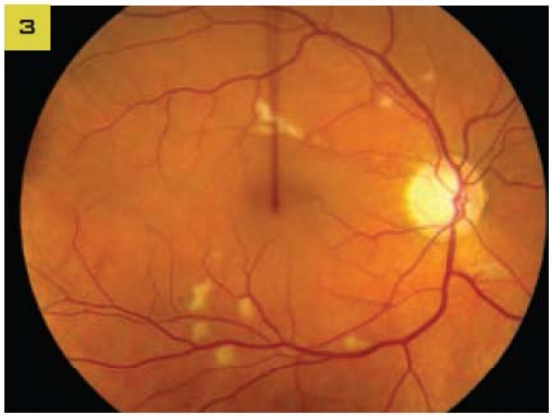
Most of the risk to the eye in people living with HIV relates directly to their level of immune deficiency. "For anyone who is immunorestored and has no AIDS-related ocular problems, a comprehensive ophthalmologist probably can follow that patient as well as any specialist," said Dr. Jabs.

The typical HIV-positive patient seen in a general ophthalmology practice is on a stable antiretroviral regimen, has good laboratory parameters, and has no history of eye disease. Once-a-year routine care is fine for these patients, according to all the physicians interviewed for this article. Following are some considerations for clinicians caring for people with HIV.

Be aware that CMV may still occur. CMV retinitis remains the most frequent ocular opportunistic infection, although it occurs almost exclusively in people with $CD4^+$ T cell counts of less than 50 cells/μL; and even among these patients, the risk has decreased from the pre-HAART era.[7] The risks of non-CMV infections (e.g., herpetic retinitis, toxoplasmic retinitis, and fungal or mycobacterial choroiditis) in the HAART era are very low,[8] but for those who do get them, the results can be devastating, Dr. Jabs said.



PERIPHERAL FINDINGS. The peripheral fundus of an eye with CMV retinitis. This patient was being treated with the anti-CMV drug ganciclovir but had not yet started HAART. The patient later began antiretroviral therapy and experienced immune recovery, after which ganciclovir treatment was stopped. No subsequent reactivation has occurred at the border of the scarred region.



RETINOPATHY. Fundus of patient with HIV retinopathy shows characteristic cotton-wool spots.

Today, most patients presenting with active CMV retinitis fall into three categories: 1) people infected with HIV who have not yet been diagnosed and are HAART naive; 2) patients who've become resistant to their HAART or are intolerant of the regimen; and 3) patients who are nonadherent to their prescribed therapy.[2]

Screen for HIV complications. Screening patients for CMV retinitis and other complications of HIV requires a dilated exam to evaluate the entire retina, as CMV retinitis often presents as a peripheral retinitis (Fig. 4). "Patients who develop CMV retinitis with lesions in the peripheral retina may have no ocular symptoms to alert them to an eye problem,"[9] said Dr. Thorne. Evidence of immune suppression in lab results (low $CD4^+$ T cell count and high HIV load) should raise red flags for the ophthalmologist. "We can't depend on symptoms alone," she cautioned.

Watch for long-term sequelae. Rather than seeing new cases, ophthalmologists are more likely to encounter long-term survivors who have inactive CMV retinitis but who may still have visual problems caused by the previously active infection. Challenges in this group include IRU, cataracts, possible reactivation (even with good immune function, in rare cases), risk of retinal detachment, and presence of silicone oil from

[3] David Heiden, MD [4] Gary N. Holland, MD

prior retinal repair. Some patients will benefit from interventions such as cataract surgery or removal of silicone oil from the eye.[10]

When to refer. "Should a patient develop a severe HIV-related problem, the general ophthalmologist may be more comfortable referring the patient to someone with experience managing that particular eye disease," said Dr. Holland. "This is particularly true for the new generation of ophthalmologists, many of whom may never have seen a case of CMV retinitis during their training."

Follow-up schedules. Some patients require more frequent follow-up. "Patients who've had eye problems in the past, like CMV retinitis or IRU, I see more frequently," said Dr. Holland. Dr. Thorne sees her HIV-positive patients with a $CD4^+$ T cell count over 200 cells/μL annually; a $CD4^+$ T cell count between 50 and 200 cells/μL, every six months; and a $CD4^+$ T cell count under 50 cells/μL, every three months.

Dr. Holland added, "It's very important for patients to be educated about what signs and symptoms should alert them to call their ophthalmologist immediately. If their CD4 count falls or they have viremia and/or eye symptoms—any changes in vision, but especially floaters, blind spots, and blurriness—they need to know to come in right away for an evaluation."

Looking Back, Moving Forward

"Though we're learning more from LSOCA about what to expect in long-term survivors, I tell my patients we're stepping into the unknown," said Dr. Heiden, to encourage his patients to return regularly for evaluation.

In summary, Dr. Jabs said, "If you look back at the AIDS epidemic, we went from being primarily concerned with opportunistic infections to managing immune recovery and immune recovery complications to managing a chronic disease and now to managing age-related diseases. SOCA has enhanced our understanding of the eye problems that people living with HIV and AIDS are going to have and how to manage them. The AIDS epidemic will continue to evolve, and we want to be able to tell patients what to expect and how to plan ahead." ■

1 Holland GN et al. *Am J Ophthalmol.* 1982;93(4):393-402.
2 *Studies of Ocular Complications of AIDS (SOCA): Curriculum Vitae.* January 2012. Prepared by SOCA Coordinating Center, Baltimore. https://jhuccs1.us/soca/lsoca/open/SOCA_CV/CV2012.pdf. Accessed Oct. 23, 2013.
3 Holland GN. *Am J Ophthalmol.* 2008;145(3):397-408.
4 McCannel CA et al. *Am J Ophthalmol.* 1996;121(1):35-46.
5 *Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons,* 2002. Recommendations of the U.S. Public Health Service and the Infectious Diseases Society of America. www.cdc.gov/mmwr/preview/mmwrhtml/rr5108a1.htm. Accessed November 27, 2013.
6 Holland GN et al. *Am J Ophthalmol.* 2010;149(5):807-816.
7 Sugar EA et al. *Am J Ophthalmol.* 2012;153(6):1016-1024.e5.
8 Gangaputra S et al. *Am J Ophthalmol.* 2013;155(2):206-212.e5.
9 Jeng BH et al. *Surv Ophthalmol.* 2007;52(4):329-368.
10 Holland GN et al. *Am J Ophthalmol.* 2008;145(1):12-22.

MEET THE EXPERTS

David Heiden, MD Uveitis consultant and general ophthalmologist at Pacific Eye Associates, San Francisco; director of international ophthalmology, California Pacific Medical Center; and medical director, AIDS Eye Initiative, Seva Foundation. *Financial disclosure: None.*

Gary N. Holland, MD Jack H. Skirball Professor of Ocular Inflammatory Diseases, David Geffen School of Medicine at University of California, Los Angeles; and a member of the SOCA Steering Committee. *Financial disclosure: Is a member of the medical advisory board of Novartis and XOMA.*

Douglas A. Jabs, MD, MBA Professor and chair, department of ophthalmology and professor of medicine, at Icahn School of Medicine at Mount Sinai, the Mount Sinai Health System, and the New York Eye and Infirmary, New York; and chairman of SOCA. *Financial disclosure: Has consulted for Abbott, Alcon, Allergan, Corcept Therapeutics, Genentech, Genzyme, GlaxoSmithKline, and Roche, and serves on the data and safety monitoring committees for Applied Genetic Technologies and Novartis.*

Jennifer E. Thorne, MD, PhD Professor of ophthalmology and epidemiology and the director of the Division of Ocular Immunology at the Wilmer Eye Institute, Johns Hopkins University School of Medicine, Baltimore; and deputy director of the Coordinating Center of SOCA. *Financial disclosure: Receives research funding from the NEI, NIAID, Research to Prevent Blindness, and Allergan; consults for AbbVie, Gilead, and XOMA.*