12% in the literature. Toxic effects appear to be dose related, with cumulative doses exceeding 100 g predisposing to vortex keratopathy, lens opacities, optic neuritis, retinal pigment epithelium abnormalities, crystalline maculopathy, and CME. These findings are less commonly seen in patients receiving lower-dose therapy for breast cancer, although the advent of high-resolution spectral-domain optical coherence tomography has revealed more cases of tamoxifen-associated CME in the absence of crystals. The crystalline retinal deposits are classically confined to the nerve fiber and inner plexiform layers and are hypothesized to represent areas of axonal degeneration.

Current treatment for tamoxifen maculopathy is discontinuation of the drug. In our case, severe crystalline maculopathy and florid CME were unchanged 7 months after cessation of tamoxifen. Previous experience treating diffuse diabetic macular edema by inhibiting vascular endothelial growth factor, a potent inducer of vascular permeability, with intravitreal bevacizumab prompted us to initiate therapy for this patient. Bourla et al reported improvement of tamoxifen-induced CME with intravitreal pegaptanib sodium (Macugen), but to our knowledge this is the first case of improved tamoxifen-associated crystalline maculopathy and resolved CME with intravitreal bevacizumab therapy.

Ehsan Rahimy, MD
David Sarraf, MD

Author Affiliations: Jules Stein Eye Institute, University of California, Los Angeles (Drs Rahimy and Sarraf), and Greater Los Angeles Veterans Affairs Healthcare Center (Dr Sarraf), Los Angeles.

Correspondence: Dr Sarraf, Jules Stein Eye Institute, University of California, Los Angeles, 100 Stein Plaza, Los Angeles, CA 90095 (dsarraf@ucla.edu).

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Disclosure of Resident Involvement in Ophthalmic Surgery

An important objective of ophthalmic graduate medical education (GME) is to provide sufficient surgical training to ophthalmology residents so they are competent to enter comprehensive ophthalmic practice. This objective, however, must be balanced with a commitment to provide high-quality patient care, which includes respecting patients’ preferences to be informed about the degree of resident involvement in their eye surgery. Currently, the prevalence and details of disclosure policies regarding resident participation and barriers to their implementation in US ophthalmology GME programs are unknown. To help benchmark current practices and assist programs in formulating strategies to implement full disclosure policies, we surveyed US ophthalmology GME program directors (PDs) to determine current practices and policies regarding disclosure of resident involvement in ophthalmic surgery.

Methods. After receiving a study exemption from the Providence VA Medical Center Institutional Review Board, the FREIDA online database (http://www.ama-assn.org/go/freida) was used to identify all ophthalmology GME programs accredited by the Accreditation Council for Graduate Medical Education. Each facility was called to verify the PD’s contact information. An anonymous survey including multiple-choice and Likert-style questions (Table 1 and Table 2) was created at http://www.surveymonkey.com. The survey link was sent to all US ophthalmology GME PDs.

Table 1. Ophthalmology Graduate Medical Education Policies Regarding Disclosure of Resident Involvement in Ophthalmic Surgery

<table>
<thead>
<tr>
<th>Question No.</th>
<th>Question</th>
<th>Respondents, No. (%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>If yes, who has the primary responsibility for informing the patient about the level of resident involvement in ophthalmic surgery?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attending physician</td>
<td>7 (54)</td>
<td>39 (74)</td>
</tr>
<tr>
<td></td>
<td>Resident physician</td>
<td>7 (54)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nurse</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1 (8)</td>
<td></td>
</tr>
<tr>
<td>1b</td>
<td>If no, who should have the primary responsibility for informing the patient about the level of resident involvement in ophthalmic surgery?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attending physician</td>
<td>31 (79)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resident physician</td>
<td>9 (23)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nurse</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1 (3)</td>
<td></td>
</tr>
</tbody>
</table>

aAmong the 13 program directors, 5 selected attending physician, 5 selected resident physician, 2 selected both, and 1 selected other.
bAmong the 39 program directors, 29 selected attending physician, 7 selected resident physician, 2 selected both, and 1 selected other.

For editorial comment see page 917

Results. One hundred seventeen PDs were surveyed; results are summarized in Table 1 and Table 2. The response rate was 45.3% (53 of 117 PDs). Fourteen of the 53 PDs (26%) reported that their program had an established policy on disclosing the level of resident involvement in ophthalmic surgery. In programs with an estab-
lished policy, the PDs indicated that the primary responsibility for informing patients about the level of resident involvement in surgery belonged to attending physicians (7 of 13 PDs [54%]) or resident physicians (7 of 13 PDs [54%]); in programs without an established policy, 31 of 39 PDs (79%) indicated that the attending physician should have the primary responsibility to inform patients about resident involvement in surgery. Most PDs (30 of 47 [64%]) agreed that patients prefer to be asked permission in advance for a resident to participate in their ophthalmic surgery. More than half of the PDs (27 of 47 [57%]) also agreed that patients prefer complete disclosure regarding the level of resident involvement. About half the PDs (23 of 47 [49%]) agreed that disclosure of resident involvement reduces consent for resident involvement and decreases opportunities for resident surgical training. Medicolegal risk and insufficient time were not considered barriers to disclosure.

Comment. This study suggests that a minority of US ophthalmology GME programs have an established resident disclosure policy. Also, the presence or absence of a policy may affect who PDs believe should have the primary responsibility to inform patients about trainee involvement in their ophthalmic surgery; only half the PDs in programs with policies indicated that the attending has the primary responsibility, whereas most PDs in programs without policies believe that the attending should have the primary responsibility. In addition, the potential loss of resident surgical cases, the lack of guidance from ophthalmological societies, and perceived patient anxiety may be more important barriers to disclosure than medicolegal risk or lack of time.

The study has several limitations. First, the survey response rate of 43.3% may limit the generalizability of the results; however, this rate is comparable to the response rates of 32% and 48% in 2 recent surveys of US ophthalmology PDs. Second, the multiple-choice format of the survey may have caused bias and prevented us from uncovering other potential barriers to disclosure. Third, we did not investigate how a resident’s role in a program—eg, as a primary caregiver in a county hospital vs an assistant physician in a faculty practice—may have affected the divergence in PD attitudes on resident disclosure. This study underscores the need for further research to determine how a formal disclosure policy affects the degree to which patients at teaching hospitals are informed about resident participation in their ophthalmic surgery and how different disclosure policies affect patient consent for resident participation and resident surgical training opportunities.

Allison J. Chen
Ingrid U. Scott, MD, MPH
Paul B. Greenberg, MD

Author Affiliations: Program in Liberal Medical Education (Ms Chen) and Division of Ophthalmology, Warren Alpert Medical School (Ms Chen and Dr Greenberg), Brown University, and Section of Ophthalmology, Providence VA Medical Center (Ms Chen and Dr Greenberg), Providence, Rhode Island; and Departments of Ophthalmology and Public Health Sciences, Penn State College of Medicine, Hershey, Pennsylvania (Dr Scott).

Correspondence: Dr Greenberg, Section of Ophthalmology, Providence VA Medical Center, 830 Chalkstone Ave, Providence, RI 02908 (paul_greenberg@brown.edu).

Table 2. Program Directors’ Perspectives Regarding Resident Disclosure Policies

<table>
<thead>
<tr>
<th>Statement No.</th>
<th>Statement</th>
<th>Respondents, No.</th>
<th>Proportion of Respondents Who Agree or Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patients prefer to be asked permission in advance for a resident to participate in their ophthalmic surgery</td>
<td>30 13 47</td>
<td>.638</td>
</tr>
<tr>
<td>2</td>
<td>Patients prefer complete disclosure regarding the level of resident involvement in their ophthalmic surgery</td>
<td>27 20 47</td>
<td>.574</td>
</tr>
<tr>
<td>3</td>
<td>Disclosure of the level of resident involvement in their ophthalmic surgery increases a patient’s anxiety level</td>
<td>19 16 47</td>
<td>.404</td>
</tr>
<tr>
<td>4</td>
<td>Disclosure of the level of resident involvement in ophthalmic surgery reduces consent for resident participation and decreases opportunities for resident surgical training</td>
<td>23 9 47</td>
<td>.489</td>
</tr>
<tr>
<td>5</td>
<td>Disclosure of the level of resident involvement in ophthalmic surgery increases the attending surgeon’s medicolegal risk</td>
<td>14 12 48</td>
<td>.292</td>
</tr>
<tr>
<td>6</td>
<td>Official guidelines from a professional organization (eg, American Academy of Ophthalmology or ACGME) would assist in disclosing the level of resident involvement in ophthalmic surgery</td>
<td>20 6 46</td>
<td>.435</td>
</tr>
<tr>
<td>7</td>
<td>There is often insufficient time to talk to patients about the level of resident involvement in their ophthalmic surgery</td>
<td>7 9 47</td>
<td>.149</td>
</tr>
</tbody>
</table>

Abbreviation: ACGME, Accreditation Council for Graduate Medical Education.

*Response choices were strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree.*
Author Contributions: Dr Greenberg had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Financial Disclosure: None reported. 

Disclaimer: The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the US Department of Veterans Affairs or the US government.


Intravitreal Bevacizumab in Advanced-Stage Neovascular Age-Related Macular Degeneration With Visual Acuity Lower Than 20/200

Although intravitreal anti–vascular endothelial growth factor has greatly improved the management of subfoveal choroidal neovascularization (CNV) secondary to age-related macular degeneration,1-4 little is known regarding the effects in more advanced stages associated with low visual acuity. We designed a randomized clinical trial to address this subject.

Methods. The randomized clinical trial compared the effects of the intravitreal bevacizumab injection (1.25 mg) vs observation for age-related macular degeneration–related naïve subfoveal CNV with best-corrected visual acuity (BCVA) lower than 20/200, with follow-up for 6 months. After institutional review board approval, the study was registered at http://www.clinicaltrials.gov/(NCT01327222). Inclusion criteria were the following: naïve subfoveal CNV, BCVA lower than 20/200 on the Early Treatment Diabetic Retinopathy Study chart, and activity documented by fluorescein leakage and fluid on optical coherence tomography. We excluded patients with retinal or subretinal hemorrhage or subretinal fibrosis greater than 50% of the lesion, recent intraretinal surgery, other ocular disease, or severe cardiovascular disorders. Sequentially numbered envelopes were used to randomize patients. Each patient contributed 1 study eye and underwent a complete ophthalmologic examination, including the National Eye Institute 25-item Visual Function Questionnaire and best-corrected visual acuity at baseline and at the final visit.

Fluorescein angiography and optical coherence tomography results were independently read and intravitreal bevacizumab injection was performed by 2 masked investigators (A.P. and D.S.K.). After the loading phase with 3 monthly consecutive injections, re-treatments were administered on a pro re nata basis if monthly examinations by a masked examiner revealed subretinal or intraretinal fluid, fluorescein leakage, or new hemorrhages.

Primary outcome measures were changes in the mean BCVA and proportion of eyes improving by more than 1 and more than 3 lines at the 6-month examination. Secondary outcome measures included changes in the mean central macular thickness and National Eye Institute 25-item Visual Function Questionnaire score. We used t test for statistical analyses. P < .05 was considered statistically significant.

The study was designed to detect a 10-letter difference (SD 1 line) on the Early Treatment Diabetic Retinopathy Study chart. About 6 eyes in each arm are required to detect this difference (90% power, 2-sided 5% significance level).

Results. Twenty-one of 28 patients were recruited, with 7 excluded owing to cataract. The mean (SD) age was 71.5 (4.2) years, and 13 of the recruited patients were female. The mean (SD) symptom duration was 23.3 (4.0) months. Among the 21 patients, 11 and 10 were randomized to the treated and control groups, respectively. The treated group had significantly better mean BCVA and proportion of eyes improving by more than 1 and more than 3 lines at the 6-month examination. Secondary outcome measures included changes in the mean central macular thickness and National Eye Institute 25-item Visual Function Questionnaire score. We used t test for statistical analyses. P < .05 was considered statistically significant.

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![Figure 1. Mean best-corrected visual acuity (BCVA) values during the 6-month follow-up.](image1)

![Figure 2. Mean central macular thickness (CMT) values during the 6-month follow-up.](image2)