

CONTINUING MEDICAL EDUCATION

# Changing the NSAID Paradigm



New formulations and improved safety profiles are helping surgeons overcome their reservations about these important anti-inflammatory agents.

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The estimated time to complete this activity is 1 hour.

**TARGET AUDIENCE**

This CME is intended for all ophthalmologists.

**TITLE**

Changing the NSAID Paradigm

**EDUCATIONAL OBJECTIVES**

Upon completion of this activity, you should be able to:

1. Discuss the rationale for using topical nonsteroidal anti-inflammatory drugs (NSAIDs).
2. Discuss the importance of pre-treating cataract surgery patients with NSAIDs.
3. Discuss the safety and efficacy of bromfenac ophthalmic solution 0.9% (Xibrom) for preventing complications after cataract surgery.

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# Revisiting NSAIDs

After some early problems, topical NSAIDs are making a comeback. The panelists explain why they like these agents.

Nonsteroidal anti-inflammatory drugs (NSAIDs) are potentially powerful weapons that can help surgeons prevent postoperative pain and inflammation after ocular surgery. However, anecdotal evidence suggests 50% of ophthalmic surgeons in the United States use these drugs routinely after cataract removal. Recently, several surgeons discussed why they're among this 50%.

## First Impressions

When pharmaceutical companies introduced topical NSAIDs, many ophthalmic surgeons immediately began using them to alleviate postoperative pain and inflammation, to treat ocular allergies and to prevent miosis during cataract surgery. However, many of these same surgeons curtailed NSAID use when adverse effects, such as corneal melt and superficial punctate keratitis, became apparent.

Francis S. Mah, M.D., assistant professor of ophthalmology at the University of Pittsburgh, was among the early adopters.

"We used NSAIDs routinely until we realized they could harm the corneal surface," he says. "But when we decreased our NSAID use, we noticed our postoperative patients were less comfortable than before. Once researchers identified generic diclofenac sodium as the primary culprit behind these adverse effects, we restarted routine NSAID use, this time with preservative-free ketorolac tromethamine (Acular)."

Another panelist who noticed the positive effects of topical NSAIDs was R. Bruce Wallace III, M.D., clinical professor of ophthalmology at the Louisiana State University School of Medicine in Baton Rouge.

"The eyes of patients treated with NSAIDs after cataract surgery with limbal relaxing incisions looked quieter than those of untreated patients," he says. "We decided this approach may work for other procedures and began

prescribing NSAIDs and prednisolone acetate (Pred Forte) to all our postoperative patients. Overall, patients treated with NSAIDs experienced less pain, had less inflammation and developed fewer cases of uveitis. Now, we use topical NSAIDs routinely, and everybody in the office has noticed the patients are happier."

Postoperative patients  
treated with NSAIDs had  
less pain and inflammation  
than untreated patients.

## Why Use NSAIDs?

Y. Ralph Chu, M.D., clinical professor of ophthalmology at the University of Minnesota School of Medicine in Minneapolis, believes ophthalmologists should use NSAIDs not only to treat but also to prevent postoperative complications, such as cystoid macular edema (CME). "NSAIDs can be valuable tools, especially if you're working with a large population that has undiagnosed risk factors like diabetes," he says.

Terrence P. O'Brien, M.D., director of refractive surgery at the Wilmer Eye Institute, Johns Hopkins University School of Medicine in Baltimore, agrees: "Surgeons who rationalize they don't need ophthalmic NSAIDs are potentially compromising the quality of care they offer patients," he says. "Widespread adoption of NSAIDs will help us meet our patients' high expectations. I think we'll see an evolving preference for NSAID use as more surgeons recognize the many advantages these agents offer safely." **OM**

# Minimizing Complications Of Cataract Surgery

As surgeons learn more about the long-term effects of CME, they're finding a new role for pre- and postoperative NSAIDs.

Ophthalmic surgeons use topical nonsteroidal anti-inflammatory drugs (NSAIDs) to treat a wide range of conditions, but the primary application is to prevent postoperative complications in cataract surgery patients. These agents:

- ▶ Prevent intraoperative miosis
- ▶ Reduce postoperative pain
- ▶ Minimize postoperative inflammation
- ▶ Prevent cystoid macular edema (CME).

In this article, panelists discuss how NSAIDs have helped them reduce complications, increase patient satisfaction and improve clinical outcomes.

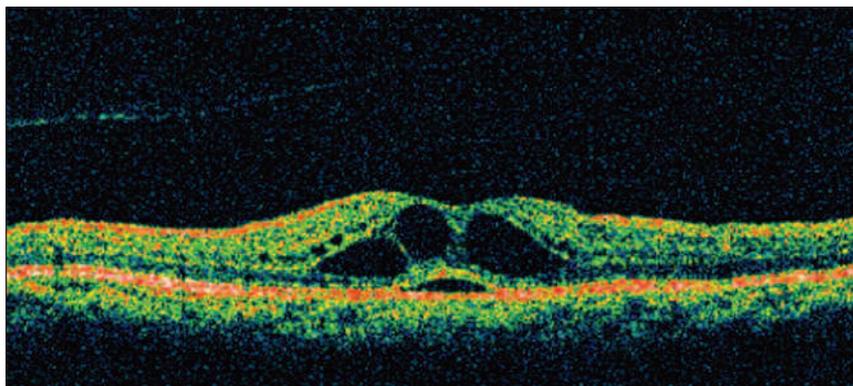
## Meeting High Standards

Today, cataract and refractive surgeons face an extra challenge. In addition to achieving good outcomes, they also have to meet their patients' high expectations. "In this new era of refractive surgery, patients expect immediate results without pain, sutures or down time," Dr. O'Brien says. "From the patient's perspective, even mild complications are considered a failure to achieve the goals of modern refractive and cataract surgery. NSAIDs are potent pharmacologic tools that can help us provide consistently perfect outcomes. These drugs are necessary before, during and after refractive and cataract surgery."

Dr. Wallace agrees. "It took me a while to come around to NSAIDs, but now I'm very comfortable with them," he says. "I wouldn't want to perform refractive or cataract surgery without an NSAID safety net."

## Redefining CME

When used correctly, NSAIDs can prevent or reduce the incidence of CME, a relatively rare complication of cataract surgery. However, as diagnostic imaging technology becomes more sophisticated, ophthalmologists are redefining CME, Dr. O'Brien says. "Our retinal colleagues are using optical coherence tomography (OCT) and other imaging modalities to capture precise macular images, including very subtle subclinical swelling, which suggest that CME occurs more often than we previously thought," he says.



Courtesy of Francis S. Mah, M.D.

New imaging technologies, such as optical coherence tomography (OCT) may help surgeons detect subtle cystoid macular edema.

Dr. O'Brien believes preventing CME after refractive and cataract surgery is important because this complication can affect long-term visual function. "Sometimes, differences in Snellen acuity may help us discriminate between normal patients and those with subtle CME," he says. "Patients with CME usually struggle to read the small letters at the bottom line of the chart, whereas those without complications can read the same letters quickly

and easily. If we can use NSAIDs to prevent subtle CME, we'll meet patients' expectations of rapid return of visual function after cataract surgery."

Dr. Wallace proposes changing how surgeons test for CME. "I suspect contrast sensitivity tests and OCT will show differences in vision quality between patients who have CME and those who don't," he says. Dr. O'Brien agrees: "We may be able to combine contrast sensitivity measures with wavefront analysis to assess the point spread function in a variety of ways to better quantify quality of vision."

### Preventing CME

The availability of safe and effective NSAIDs is prompting the panelists to shift their focus from treating to preventing CME. "If we choose to treat instead of prevent CME, affected patients may lose some macular function, ultimately affecting quality of vision, even if they return to Snellen 20/20," says Kerry D. Solomon, professor of ophthalmology at the Medical University of South Carolina in Charleston. "Prevention is key, which is why preoperative NSAIDs make sense to me."

"I wouldn't want to  
perform ... surgery without  
an NSAID safety net."

*R. Bruce Wallace III, M.D.*

Dr. O'Brien compares preoperative dosing of NSAIDs to using anti-infectives to prevent endophthalmitis. "Topical antibiotics aren't effective by the time patients develop endophthalmitis," he says. We can apply the same reasoning to preventing CME. If we wait to use NSAIDs until we see evidence of CME, the retinal pigment epithelium and photoreceptors may already be damaged. Once this damage has occurred, the patient's retina may never regain normal function."

### Dosing NSAIDs

Surgeons who use NSAIDs typically begin prophylactic dosing peri- or preoperatively to stabilize the blood-

aqueous barrier. Continuing NSAID therapy for 4 to 6 weeks after surgery helps control postoperative inflammation and prevent CME. When the panelists compared their prophylactic strategies, they found they followed similar regimens, with a few minor differences.

"I pre-treat every cataract patient with NSAIDs and topical fluoroquinolones 3 days before surgery," Dr. Solomon says. "Patients continue to use both drops, plus a topical steroid, four times a day for 1 week after surgery, after which time they discontinue the antibiotic. They continue to use the NSAID until they use the whole prescription."

Dr. O'Brien agrees with Dr. Solomon's approach. "A growing body of evidence<sup>1,2</sup> supports using NSAIDs 2 to 3 days before and for 4 to 6 weeks after cataract surgery," he says. "These agents not only prevent postoperative complications, but also enhance visual performance and function. In addition, the combination of NSAIDs and topical anesthesia reduces postoperative pain, meeting yet another of patients' expectations for surgical outcomes."

Unlike Dr. Solomon, who starts patients on antibiotics 3 days before surgery, Dr. O'Brien uses newer, expanded-spectrum fluoroquinolone agents only on the day of surgery. "Based on the results of a recent study<sup>3</sup> and personal experience, I believe same-day pretreatment with fourth generation fluoroquinolones can prevent infection without pretreatment," he says.

### Seeing the Future

All the panelists agree topical NSAIDs are helping them meet the high expectations of refractive and cataract surgery patients. A better understanding of CME and a new emphasis on prevention are helping them incorporate these agents into their surgical routine. **OM**

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# Exploring the Range Of NSAID Utility

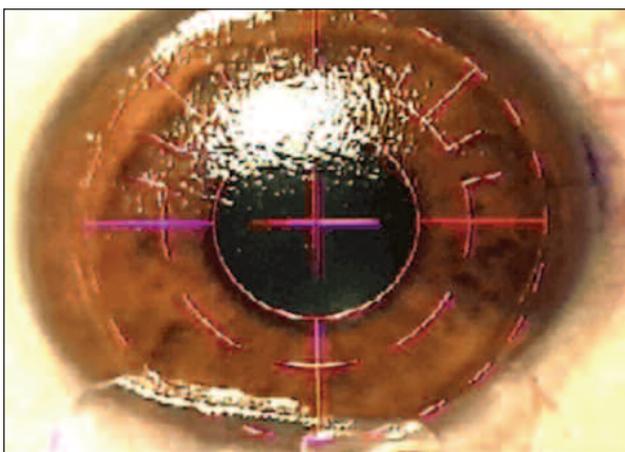
Topical NSAIDs prove their efficacy extends beyond cataract surgery.

Clinical experience has shown NSAIDs can prevent complications in cataract surgery patients, but does their utility end there? Panelists discuss other uses of NSAIDs.

## Relief After Refractive Surgery

In the early 1990s, LASIK replaced surface ablation procedures as the refractive surgery of choice because this procedure offered quicker, less painful recovery. Now, the availability of safer, more effective NSAIDs is contributing to the return of surface ablation.

“Topical NSAIDs reduce pain and decrease discomfort after refractive surgery and other corneal procedures,” Dr. Solomon says. “This includes refractive lens exchange, radial keratotomy, astigmatic keratotomy, photorefractive keratectomy and epi-K.”



Courtesy of Francis S. Mah, M.D.

Applying one drop of topical NSAIDs after LASIK surgery can minimize patient discomfort on the first postoperative day.

Dr. O'Brien also believes NSAIDs have a role in refractive surgery. “NSAIDs are synergistic with topical anesthetics, such as proparacaine, tetracaine and lidocaine,” he says.

“This combined approach provides immediate and later anesthesia until corneal re-epithelialization covers the sub-basal plexus of corneal nerves exposed during surface ablation. The goal of surface procedures is to avoid creating stromal incisions that alter the biomechanical stability of the cornea and induce higher-order aberrations. Any agent that can keep surface ablation patients more comfortable without causing toxicity would be useful. I think we'll see more topical NSAID use after corneal surgery, especially as we begin to perform more surface procedures.”

Dr. O'Brien also uses a combination of NSAIDs and topical anesthesia to prevent pain while removing corneal sutures from grafts or after other corneal surgery. “This combination provides sustained analgesia,” he says. “Patients don't call an hour after they leave the clinic complaining of severe pain.”

## LASIK-related Pain

Although more refractive surgeons are performing surface ablations, LASIK remains the most popular type of laser vision correction. According to Dr. Mah, many surgeons rely on topical NSAIDs to minimize pain after LASIK. “Price and colleagues<sup>1</sup> found a statistical difference in pain levels when LASIK patients used postoperative NSAIDs,” he says.

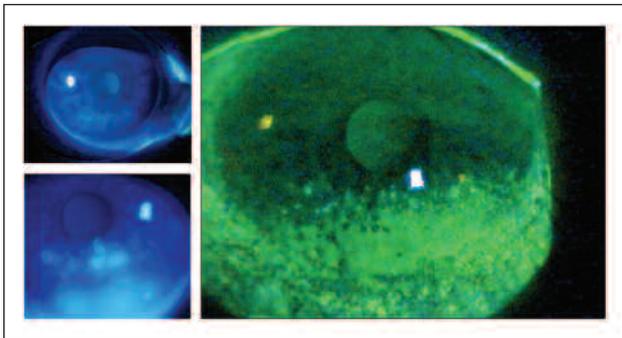
The panelists agree that instilling one drop of an NSAID into patients' eyes immediately after surgery reduces postoperative pain, but some take this approach to another level. “My patients use one drop of a preservative-free NSAID twice a day for 48 hours after LASIK,” Dr. O'Brien says. “This extended regimen provides pharmacologic support and keeps patients exceptionally comfortable after lamellar refractive procedures.”

NSAID use also may increase as more surgeons use

lasers to create LASIK flaps. “Lasers tend to release more prostaglandin E<sub>2</sub> and other pain mediators than microkeratomes,” Dr. Mah says. “NSAIDs can counteract these mediators and keep patients more comfortable.”

### Mediating Adverse Effects

The analgesic properties of topical NSAIDs suggest these agents can help relieve pain caused by nonsurgical ocular conditions. Dr. Chu uses NSAIDs to alleviate burning and stinging associated with initial cyclosporine ophthalmic emulsion 0.05% (Restasis) therapy. “Some patients who use cyclosporine for dry eye experience mild burning and stinging when they instill these drops,” he says. “Research<sup>2</sup> shows NSAIDs reduce burning and stinging just as well as steroids, but are safer than steroids during the first 2 weeks of topical cyclosporine therapy.”



Courtesy of Francis S. Mah, M.D.

Topical NSAIDs reduce pain caused by dry-eye related superficial punctate keratitis.

According to Dr. Wallace, safety is important, especially for chronic dry eye patients. “NSAIDs can reduce pain caused by superficial punctate keratitis without further compromising corneas already damaged by dry eye,” he says.

Dr. Chu adds that NSAIDs offer additional safety to patients with other chronic eye conditions. “NSAIDs don’t elevate IOP like steroids do, which is very important for cataract and glaucoma patients,” he says. “Given a choice, I’d use NSAIDs over steroids to treat intermittent ocular surface allergies or allergic conjunctivitis in glaucoma and cataract patients.”

### Joining Forces Against Infection

In addition to preventing pain, adjunctive NSAIDs may help fight sequelae of ocular infections. “For some time, I’ve advocated off-label use of topical NSAIDs to help treat stage 4 adenoviral keratoconjunctivitis with persistent infil-

trates,” Dr. O’Brien says. “Infiltrates usually respond to topical corticosteroid therapy, but they often recur as we taper and discontinue steroids. To prevent this, I initially treat patients with adjunctive corticosteroids and NSAIDs. As I taper the steroid, I continue the topical NSAID. This regimen allows me to suppress subepithelial infiltrates while protecting the patient from cumulative deleterious side effects of the steroidal agent.”

Dr. Mah also uses NSAIDs to treat ocular infections. “We tried treating active adenoviral infections with NSAIDs,” he says. “Steroids can prolong shedding, which can cause re-infection or facilitate viral spreading. NSAIDs don’t have the same effects, so we can use them to treat active adenoviral infections without prolonging infection.”

### Soothing Corneal Abrasions

NSAIDs are becoming an important tool for ophthalmic surgeons, but general ophthalmologists also can use these agents to treat less serious ocular conditions.

“We’ve been using NSAIDs to treat corneal abrasions,” Dr. Wallace says. “Patients need to drive, and they can’t do this while wearing a protective eye patch. Instead, patients with small abrasions use topical antibiotics and NSAIDs for 3 days. Sometimes we treat patients with larger abrasions with the same drug combination, but add a therapeutic soft contact lens.” Dr. Wallace has achieved good results with this regimen. “Since we started using NSAIDs, patients have been more comfortable than with protective patching or other treatment methods.” he says.

### Spreading Innovation

Clinical experience suggests NSAIDs, used alone or in combination with other agents, can treat a broad range of ocular conditions effectively and safely. **OM**

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# Weighing in on a New NSAID

Read about how panelists are using bromfenac to improve efficacy, safety and compliance after cataract surgery.

In March 2005, the FDA approved bromfenac ophthalmic solution 0.09% (Xibrom) for the treatment of postoperative inflammation in cataract patients. How does this agent differ from older NSAIDs?

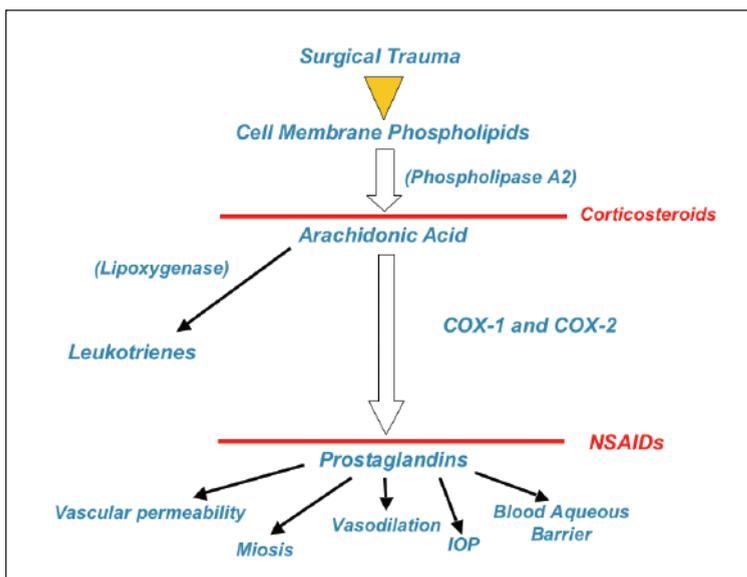
## NSAID Wish List

With the success of fourth generation fluoroquinolones, some ophthalmologists have wondered if they can expect similar advances in NSAIDs. “Increased potency and less-frequent dosing over a 4- to 6-week period certainly will improve patient compliance after cataract surgery,” Dr. O’Brien says. Other panelists agree, but recommend proceeding with caution. “Before I adopt a new NSAID, I want to see data that it effectively treats postoperative inflammation,” Dr. Chu says. So far, the evidence seems favorable.

“Several in vitro studies<sup>1</sup> have shown bromfenac has excellent potency, especially compared with other currently available NSAIDs,” Dr. Mah says. For more information about clinical trials, see “Building Confidence in Bromfenac” on page S-9.

“In my experience, patients are more comfortable using bromfenac.”

*Y. Ralph Chu, M.D.*



NSAIDs prevent postoperative inflammation by inhibiting enzymes that catalyze arachidonic acid to prostaglandins and leukotrienes.

Dr. O’Brien adds: “This agent’s improved pharmacodynamics may inhibit cyclooxygenase and prevent inflammation better than previous NSAIDs.”<sup>1</sup>

## Boosting Patient Compliance

In addition to increased potency, bromfenac seems to meet a second criterion for a better NSAID. “The less frequently patients have to use medication, the more likely they’ll adhere to the recommended dosing schedule,” Dr. Solomon says. “I tell my patients to use NSAIDs three times a day after surgery, but most of them use them only twice a day after the first week.”

Dr. O’Brien has noticed a similar trend among his patients. “What we ask our patients to do and what they actually do are sometimes very different, especially if what we recommend is inconvenient,” he says. “Patients needed to

## Building Confidence in Bromfenac

Bromfenac ophthalmic solution 0.9% (Xibrom), a new topical NSAID, was approved in 2000 for use in Japan to treat postoperative inflammation, external and anterior ocular disease and allergic conjunctivitis. In preparation for FDA review, researchers in the United States investigated the efficacy and safety of this agent.

"Phase III trials' show bromfenac effectively treats inflammation — defined by the presence of anterior chamber cells and flare — after cataract surgery," says Eric D. Donnenfeld, M.D., assistant clinical professor of ophthalmology at New York University Medical Center. "Summed ocular inflammation scores (SOIS) in 356 patients treated with one drop of bromfenac twice a day showed that 81% of them achieved marked improvements in inflammation on or before the 15th postoperative day vs. only 52.6% of 171 patients who received placebo under the same protocol ( $P < 0.0001$ )."

Investigators also found that bromfenac relieved postoperative pain better than placebo in the same study population. "Currently, bromfenac isn't indicated for relief of ocular pain," Dr. Donnenfeld says. "However, we found that 98.4% of patients reporting pain in the treatment group were pain-free by the sixth postoperative day, compared with only 57.7% of patients reporting pain in the placebo group. By the 15th postoperative day, all the patients in the bromfenac group were pain-free."

### Ruling Out Toxicity

After nearly six million doses, topical bromfenac has a robust safety record in Japan, but U.S. researchers independently confirmed this agent's safety during Phase III trials. "When taken orally, two NSAIDs — diclofenac sodium (Voltaren) and ketorolac tromethamine (Toradol) — are associated with gastrointestinal perforations and ulcerations,"<sup>2</sup> Dr. Donnenfeld says. "At least one study<sup>3</sup> suggested a link between oral bromfenac (Durac) and liver toxicity. However, one drop of topical bromfenac has almost 900 times less active ingredient than a 50-mg oral dose."

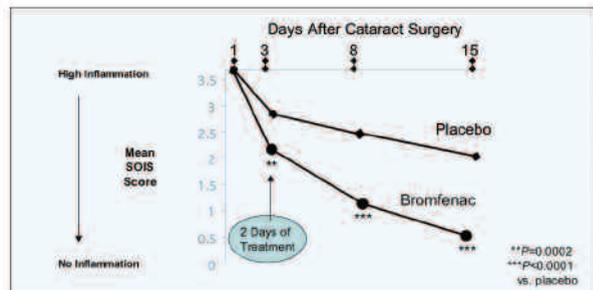
Dr. Donnenfeld and colleagues<sup>4</sup> measured liver function in the same Phase III study population. Twenty-nine days after cataract surgery, they compared pre- and postoperative liver function tests of patients in the bromfenac and placebo groups.

"A board-certified gastroenterologist detected no difference in liver function between the two study groups," Dr. Donnenfeld says. "He also saw no evidence of liver function problems. At the end of the study, liver function tests were

within normal limits for all test subjects."

Further investigation showed bromfenac did not reach detectable serum concentration levels of 50 ng/mL in both groups.

### US Phase III Trials: Inflammation Reduction: Mean Summed Ocular Inflammation Score



- Bromfenac achieved statistical significance on Day 3 — 1<sup>st</sup> treatment evaluation
  - Bromfenac achieved statistically significant reduction from baseline at all study visits
- Data represent results from patients on bromfenac or placebo, only. No rescue medications.

"Based on these findings, we can conclude bromfenac safely and effectively reduces inflammation after cataract surgery," Dr. Donnenfeld says. "Furthermore, we anticipate bromfenac will receive approval for broader applications as we complete Phase IV trials."

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use earlier generation NSAIDs at least four times a day, but we were lucky if they used them twice a day. Newer generation NSAIDs, like bromfenac, are more potent, so we can get the same benefit with two applications a day. Fewer daily applications also reduce the likelihood of cytotoxic effects, and may improve patient compliance.”

Historically, ocular discomfort associated with NSAID use has contributed to poor patient compliance with older NSAIDs. In fact, some surgeons may hesitate to prescribe these drugs because they know patients will object. Stinging and burning on instillation occurred in:

- ▶ Forty percent of patients treated with ketorolac tromethamine ophthalmic solution 0.5% (Acular)<sup>2</sup>
- ▶ Twenty percent of patients treated with ketorolac tromethamine 0.4% (Acular LS)<sup>2</sup>
- ▶ Five to 15% of patients treated with diclofenac sodium ophthalmic solution (Voltaren).<sup>3</sup>

“All NSAIDs cause some degree of irritation, but newer generation drugs sting less,” Dr. Chu says. “In my experience, patients are more comfortable using bromfenac, and patients who are more comfortable are more compliant.”

Dr. Chu’s clinical observations are supported by data from Phase III trials,<sup>1</sup> which show that only 1.4% of patients treated with bromfenac reported burning and stinging.

**US Phase III Trials: Treatment-Emergent Adverse Ocular Events ( $\geq 2\%$  incidence rate)**

| Adverse Event             | n (% of Subjects)   |                   |
|---------------------------|---------------------|-------------------|
|                           | Bromfenac (n = 356) | Placebo (n = 171) |
| Iritis                    | 25 (7.0%)           | 31 (18.1%)        |
| Ocular pain               | 15 (4.2%)           | 20 (11.7%)        |
| Abnormal sensation in eye | 23 (6.5%)           | 14 (8.2%)         |
| Eye pruritus              | 14 (3.9%)           | 5 (2.9%)          |
| Eye irritation            | 9 (2.5%)            | 8 (4.7%)          |
| Eye redness               | 8 (2.2%)            | 13 (7.6%)         |
| Photophobia*              | 7 (2.0%)            | 19 (11.1%)        |

*Other reported adverse events:*

- 1.4% incidence of burning and stinging in bromfenac patients
- CME\* reported: Bromfenac 1.4% : Placebo 4.7% ( $P < 0.05$ )

\*Bromfenac is not indicated for the treatment of CME or photophobia

Phase III studies<sup>1</sup> showed minimal adverse events with bromfenac.

## Safety Check

One reason Dr. Mah is comfortable prescribing bromfenac to his patients is its long safety record in Japan and

the United States. “This topical product has been used in Japan 6 million times over the last 5 years without any adverse incidents,” he says. “Early concerns about liver toxicity were dispelled by a study<sup>4</sup> that showed topical bromfenac isn’t associated with systemic adverse effects.”

“Fewer daily applications [of NSAIDs] ... reduce the likelihood of cytotoxic effects and may improve patient compliance.”

*Terrence P. O’Brien, M.D.*

Some ophthalmologists still may be reluctant to use bromfenac because of its short history in the United States, but Dr. O’Brien is reassured by the Japanese data. “In some ways, the Japanese Health Ministry has more stringent requirements than the FDA,” he says. “I’m satisfied bromfenac is safe because it hasn’t caused significant problems, even after millions of uses and compulsory post-approval surveillance and monitoring.”

Dr. Wallace also believes bromfenac is safe. “It has a good profile,” he says, predicting more surgeons will begin using this drug as they learn more about it. “Surgeons in the United States haven’t had much exposure to bromfenac. Given its track record in Japan, it makes sense for us to give it a try.” **OM**

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## Changing the NSAID Paradigm

Please select the single best answer and indicate your choice on the Evaluation Form on the next page.

1. According to anecdotal reports, what percentage of ophthalmic surgeons in the United States routinely prescribe NSAIDs to their patients after cataract surgery?

- a. 10%
- b. 50%
- c. 75%
- d. 95%

2. Which of the following is a potential adverse effect of generic diclofenac sodium?

- a. Miosis
- b. Ocular allergies
- c. Corneal melt
- d. Inflammation

3. What is the *primary* application of topical NSAIDs?

- a. To prevent postoperative complications in cataract surgery patients
- b. To reduce postoperative pain
- c. To minimize postoperative inflammation
- d. To increase patient satisfaction

4. Which of the following is a postoperative expectation shared by refractive surgery and cataract patients?

- a. They expect to experience pain after surgery.
- b. They expect to have sutures in their eyes.
- c. They're willing to accept a short period of down time.
- d. They expect immediate results.

5. What kind of technology is helping ophthalmologists redefine cystoid macular edema (CME)?

- a. Refractive
- b. Surgical
- c. Pharmacologic
- d. Diagnostic imaging

6. According to R. Bruce Wallace III, M.D., what *functional* test may help ophthalmologists detect differences in vision quality between patients who had CME and those who didn't?

- a. Snellen acuity
- b. Optical coherence tomography (OCT)
- c. Contrast sensitivity testing
- d. Corneal topography

7. Why do the panelists think it's more effective to use NSAIDs to prevent CME than to treat CME?

- a. They don't — NSAIDs work equally well in both situations.
- b. Because patients' vision may never return to normal, especially if CME damages the retinal pigment epithelium or photoreceptors
- c. Because patients can return to work quicker
- d. Because patients don't like to use eye drops after surgery

8. Why do Dr. O'Brien and other panelists pre-treat cataract surgery patients with NSAIDs?

- a. To stabilize the blood-aqueous barrier
- b. To facilitate miosis
- c. To prevent endophthalmitis
- d. To reduce healing time

9. How long does Dr. O'Brien ask his patients to use NSAIDs after cataract surgery?

- a. 3 days
- b. 1 week
- c. 4 to 6 weeks
- d. 2 months

10. Why does Dr. O'Brien apply topical anesthesia and topical NSAIDs to patients' eyes before removing corneal sutures?

- a. To prevent inflammation
- b. To prevent pain
- c. To reduce the risk of endophthalmitis
- d. To avoid inducing higher-order aberrations

11. Why does Y. Ralph Chu, M.D., treat dry eye patients with NSAIDs?

- a. To alleviate burning and stinging associated with initial cyclosporine ophthalmic 0.05% (Restasis) therapy
- b. To suppress subepithelial infiltrates
- c. To prevent adenoviral infections
- d. To reduce inflammation caused by ocular allergies

12. What is Dr. Chu's agent of choice for treating intermittent ocular surface allergies or allergic conjunctivitis in glaucoma and cataract patients?

- a. Prednisolone acetate (Pred Forte) and other steroidal agents
- b. Cyclosporine ophthalmic emulsion 0.05%
- c. Topical antibiotics
- d. NSAIDs

13. Ophthalmologists use NSAIDs to treat what non-surgical ocular condition?

- a. Transient corneal infiltrates
- b. Quiescent adenoviral infections
- c. Corneal abrasions
- d. Elevated IOP

14. How do NSAIDs prevent inflammation?

- a. By inhibiting arachidonic acid
- b. By inhibiting leukotrienes
- c. By inhibiting cyclooxygenase
- d. By inhibiting prostaglandins

15. Why do the panelists think prescribing bromfenac ophthalmic solution 0.09% (Xibrom) after cataract surgery will improve adherence to the recommended dosing schedule?

- a. Because patients have to use bromfenac only once a day instead of four times a day.
- b. Because patients have to use bromfenac only twice a day instead of four times a day.
- c. Because bromfenac is less potent than older NSAIDs.
- d. They don't — patients will continue to be noncompliant.

16. In Phase III trials, what percentage of patients treated with one drop of bromfenac twice a day achieved marked improvements in inflammation on or before the 15th postoperative day?

- a. 81.0%
- b. 52.6%
- c. 98.4%
- d. 57.7%

17. In Phase III trials, what percentage of patients treated with one drop of bromfenac twice a day were pain-free by the 6th postoperative day?

- a. 81.0%
- b. 52.6%
- c. 98.4%
- d. 57.7%

18. Bromfenac is indicated for relief of postoperative pain in the United States.

- a. True
- b. False

19. What adverse effect is most commonly associated with *topical* NSAID use?

- a. Elevated IOP
- b. Gastrointestinal ulcers
- c. Liver toxicity
- d. Burning and stinging on application

20. In Phase III trials, what percentage of patients treated with topical bromfenac reported burning and stinging on application?

- a. 40%
- b. 20%
- c. 15%
- d. 2%

## EVALUATION FORM

## Changing the NSAID Paradigm

October 2005

To successfully complete this activity, you must read the entire publication, then complete and submit the Evaluation Form by Oct. 31, 2006. You must score at least 70% on the post-test to receive credit. Mail the completed Evaluation Form to: NACCME, 83 General Warren blvd., Suite 100, Malvern, PA 19355; or fax the form to (610) 560-0501. You also may complete this activity online at [visioncarecme.com](http://visioncarecme.com). Certificates will be mailed within 8 weeks of receipt to those who successfully complete the post-test. There is no fee to participate in this program.

**Answers (Refer to questions on previous page.) Circle one letter for each answer.**

- |                   |                    |                    |                    |
|-------------------|--------------------|--------------------|--------------------|
| <b>1.</b> A B C D | <b>6.</b> A B C D  | <b>11.</b> A B C D | <b>16.</b> A B C D |
| <b>2.</b> A B C D | <b>7.</b> A B C D  | <b>12.</b> A B C D | <b>17.</b> A B C D |
| <b>3.</b> A B C D | <b>8.</b> A B C D  | <b>13.</b> A B C D | <b>18.</b> A B C D |
| <b>4.</b> A B C D | <b>9.</b> A B C D  | <b>14.</b> A B C D | <b>19.</b> A B     |
| <b>5.</b> A B C D | <b>10.</b> A B C D | <b>15.</b> A B C D | <b>20.</b> A B C D |

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| Now that you have read this article, can you   |           |      |              |      |
| 1. Discuss the rationale for using topical nonsteroidal anti-inflammatory drugs (NSAIDs)?  |           |      | YES          | NO   |
| 2. Discuss the importance of pre-treating cataract surgery patients with NSAIDs?   |           |      | YES          | NO   |
| 3. Discuss the safety and efficacy of bromfenac ophthalmic solution 0.9% (Xibrom) for preventing complications after cataract surgery? |           |      | YES          | NO   |

What questions do you still have?

How will you use what you have learned from this activity? \_\_\_\_\_

**Please print clearly:**

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