

Ocular Trauma and Ocular Emergencies

Instructor:

Bruce Flint, O.D.

Ken Eakland OD

Section:

Pharmacology

COPE Course ID:

Expiration Date:

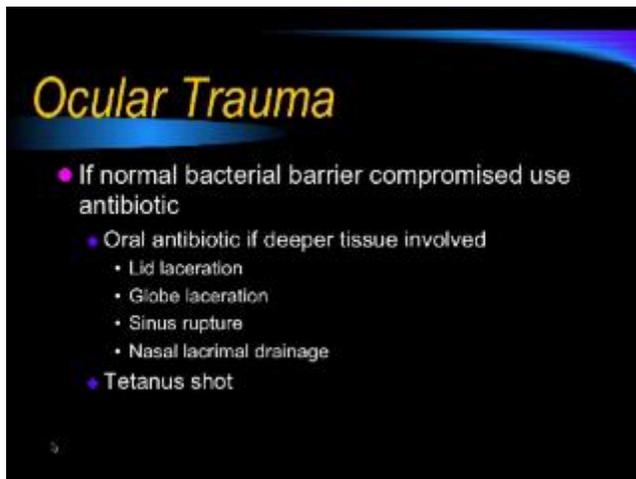
February 28, 2019

Qualified Credits:

23.00 credits - \$1800.00

COURSE DESCRIPTION:

The Advanced Ocular Therapeutics (AOT) course is a 23-hour certificate course on systemic and injectable medications used in eye care. This course currently meets the didactic requirements for optometrists in Oregon, Washington and Alaska. After viewing all 18 segments of the course, the doctor will take a written exam over the course materials. This exam will be administered through an approved proctor site (state board offices, university, or at Pacific University College of Optometry). Doctors will have 30 days to view the 18 segments of the course from the time their registrations have been processed. To register for Advanced Ocular Therapeutics (AOT), please complete the registration form and email to Jeanne Oliver at jeanne@pacificu.edu or by fax at 503-352-2929. Online registration is also available (below). Upon receipt of your completed registration form and 50 percent deposit (\$900), you will receive a password to access the video courses. After you've completed the 18 segments, the balance of the registration (\$900) will be due and the written exam will be sent to your designated proctor. The exam will consist of 50 multiple choice questions. The exam is returned to Pacific University College of Optometry for scoring. A passing score is 75 percent. Course materials were recorded August 16 – 18, 2010, during the PUCO/OOPA AOT course at Pacific University in Forest Grove, Oregon. The instructors are: Ken Eakland, OD (Course Master), Bruce Flint, OD, Blair Lonsberry, MS, OD, MEd, Dennis Smith, OD, MS, Jeffrey Urness, OD, Lesley Walls, OD, MD. Washington requires an additional eight hours of supervised clinical workshop and four hours of injections workshop for licensure. Please contact Optometric Physicians of Washington for information on upcoming workshops. Alaska requires an additional 7 hour injections workshop.



Ocular trauma and ocular emergencies; these are things that we absolutely use in our office. Again things seem to come in waves, twos and threes, so when you get one expect more. If the bacteria barrier gets compromised use an antibiotic. Already mentioned that, didn't we? If the epithelium is not intact then we can get an infection, so we need something to help out. If there's deeper vessel involvement, we're not talking corneal scrape, you know some abrasion to the conjunctiva, lid, cornea. If you have deeper tissue involved, such as with a laceration with the lid, globe, sinus ruptures,

we need to worry about oral antibiotics because topical doesn't get deep enough. It doesn't penetrate deep into tissue. Of course when you have that type of thing [deep tissue involvement], you have to worry about tetanus, so then you need a tetanus shot.

Nice laceration here. [Picture 1] Now the lids should heal fairly nicely there, but we don't know if it went all the way through the globe. So you do have to worry about that. It will interfere with some of the meibomian glands, and their production, but being able to sew will actually be able to turn out fairly well there. [Picture 2] This one, how do you think that eye's going to turn out? Does that look like it went through the globe? Yeah. You got that tissue right there, that's going right up through. You've got this oval pupil. That looks like it's neovascularization, but it may be just hemorrhagic vessels and just inflamed there.



Audience: How old is this? You mean how long ago did it take place, or how long ago did I take the picture? This is pretty recent. This is same day. So both these are same day, ok?

Do you remember the vitals lecture? Check the vitals. A person with this type of trauma can go into shock. If their blood pressure starts dropping, we may need an IV for them. We might not have the fluid to give them in the office, but certainly we're going to have some blankets. We're going to be able to have a place for them to lay down, even if it's on the floor. We're going to elevate those feet, don't forget the basic first aid. As you're talking to the patient, you know it doesn't really do the patient a lot of good to say "Wow, I've never seen an eye like this before!" It doesn't really help to say "Man, you lost that eye." Again, I think it's fine to go ahead and be serious with the patients. "That's some serious trauma to your eye. We're going to do everything

Monitor/Treat for Shock

- Check vitals
- Reassurance extremely important

we can to stabilize it. We're going to treat you for shock as well. You're going to be just fine. We're going to get you through this." And you keep talking to them. You ever notice when MDs come up and they start talking in the emergency room. They've already got stories. Some of the stories they come in, but as they come in the first thing they'll say to the patient they'll start asking questions. What's your name? Where are you from? Well, they're trying to figure out if you have amnesia, how panicky you are and they're trying to calm you down. They have to do that. Check the pupils, you know that.

When there's trauma to the eyes, check the pupils. Patient responsiveness, vitals, that's all part of the central nervous system. It's a great assessment place for us to be able to find out how serious is this.

The pain. We had an excellent lecture earlier by Dr. Ernest who went through all of these I believe. I like Tylenol #3. I like ibuprofen. Vicodin, I gotta tell you from somebody that had to have back surgery, vicodin worked better than these other two. And I cannot understand what people got hooked on because I didn't like Vicodin, it didn't stay as long, Percocet lasts longer for me and I got no buzz from it. I think there is an important thing here; when I was taking the drugs, I didn't want to take the drugs. And I wasn't trying to eliminate pain, I wanted bearable pain. I think as long as we're doing it that way, rarely will the patients get hooked on it. Now that being said, a good friend of mine that practices in Salt Lake, Utah. He got hooked. And as you heard Les tell you, they're not your friend. They're not the person they normally are, they're an addict. Well Greg got caught writing scripts, and it only took a few of them and all the friends start coming. He said, "Alright I'll write this script for you but you gotta give me half." Now he should have gone to prison. He got out of going to prison, but he can't practice. He'll never

Pain Control

- NSAIDS
- Tylenol #3
- Vicodin

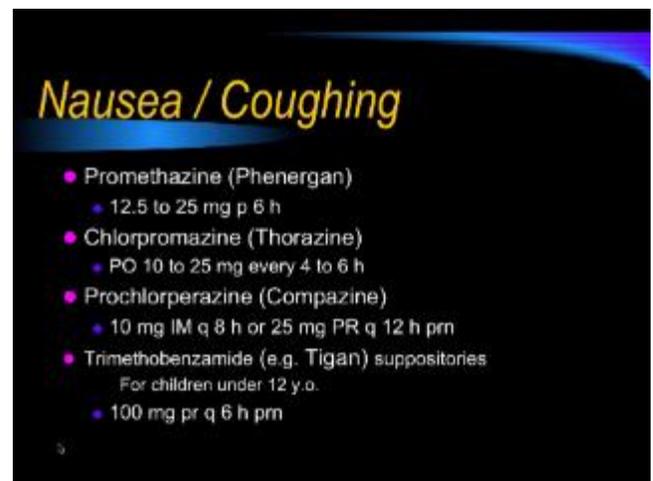
practice optometry. He was a good OD and a good person, but got hooked. It can happen, and it can happen to you. Don't let it happen to you or your patients.

Sedation

- For children (may need securing of hands)
- For anxiety

Sedation. You know there's papooses and things like that for securing the hands. I've found that you can force things on kids, but you really traumatize them. I don't like doing that. The high majority of time if I spend a little bit of time discussing with the patient, maybe even leaving the room and let the parent talk to the child. There's no reason to cause tremendous traumatic effect for the children. If you can't do it reasonably, you may want to call up their pediatrician. Say "I would like to be able to help out this child, but it's terrible, would you like to come and sedate him." Now if it's not an ocular emergency a lot of time they will prescribe something for the child for the next time they come in. Now this gets into a little bit of the gray area of the law, because you can probably give the sedation for an ocular emergency because you're treating an ocular emergency. That's a little bit of the gray area and I don't want to go there, but it certainly seems reasonable to me. Same thing for anxiety. I mean, sometimes you have to do those things. Securing the hands, I've had many a mother hold the child on their lap and hold their hands in while you're doing an exam.

Nausea and coughing. We went through this before. Here we are with Phenergan, Thorazine, Compazine. I put down these different ones and their dosage with it. Tigan for children, emergency for me. I used to love waterskiing, and I used to live in Idaho, and that's where I practiced for a number of years. I lived off the Snake River there and went off waterskiing, and I was trying a few things that I probably shouldn't have been, trying to see how far out I could go with this new ski. Anyway, I had a nice fall and I knew when I hit I was dazed. My ear was feeling rather funny, and they came and they said "Are you ok?", I said "You know I think I might have ruptured my eardrum, I better call it a day." About an hour later, I was getting kind of dizzy and nauseous. So I called up my neighbor who was an MD, and I said "Glen, I think I might have ruptured my eardrum, you want to come take a look?" He comes and takes a look at it, and by this time I had already puked up once. He takes a look and he says "Yeah, you didn't just tear it you blew it out." He says "Ok, you're pretty nauseous," so he gave me a suppository of Compazine. Even though I was hurting, I couldn't not be in good humor. I said "Glen, now I wonder if you know the head from the other end." The fact is I could have taken some orally, but there's a good chance that I could have thrown that back up. Taken rectally it gets absorbed really quickly, and within half an hour I was feeling pretty good. So don't forget suppositories.



Nausea / Coughing

- Promethazine (Phenergan)
 - 12.5 to 25 mg p 6 h
- Chlorpromazine (Thorazine)
 - PO 10 to 25 mg every 4 to 6 h
- Prochlorperazine (Compazine)
 - 10 mg IM q 8 h or 25 mg PR q 12 h prn
- Trimethobenzamide (e.g. Tigan) suppositories
 - For children under 12 y.o.
 - 100 mg pr q 6 h prn

Diamox, carbonic anhydrase inhibitors, 500mg twice a day. Well that's for hypertension. If you have too much pressure in the eye, Diamox is going to help that better than any other single medication. Now, I ought to emphasize this right here because I think some people use Sequels because you don't have to take them as often. Well, the Sequels are a slow release, so you don't want to start with Sequel. You may want to start with two pills of Diamox off the bat, then one pill twice a day of Diamox. But you can't use the Sequel to begin with. Sulfa Allergies. I was

Reactive Hypertension

- CAI
 - Diamox
 - Normal dosage 500 mg bid
 - Not Sequel to start
 - Sulfa Allergies

pretty cavalier about using Diamox, even when there's sulfa allergies because I found that there were certain patients that had tremendously high spike ocular pressure that we couldn't get down. And they had sulfa allergies, and we put them on the Diamox and they did fine. Then we had a new corneal specialist come to the clinic and he says "I won't do that." And I says, "Why?," and he says "Because I had a friend that got on Diamox and now has Steven Johnson's Syndrome, and you only take one patient to change how you practice." Now the other corneal specialist had been in practice a lot

more years, he was head of Corneal at Loma Linda for a number of years. He had no problem prescribing it because he never had the reaction, but once you have one patient you go "I'm guilty of that." Now you may do a whole bunch of good for a lot of people, but it will haunt you the ones you did something wrong for. So I'm not as cavalier in using Diamox for anybody that has a Sulfa allergy anymore. Doesn't mean I won't, I'm just not as cavalier about it anymore.

So what about another ocular emergency- hyphema? If you have blood in the anterior chamber that's an ocular emergency. Well, we have to rule out other injuries. Of course we want to make sure it's not a penetrating injury. What are some of the other things we want to rule out? If there's a hyphema, what else are you worried about? Let's imagine a problem. So they got erupted, so they're leaking. So if it's an injury from trauma from hitting the eye, what do we have to worry about? Pressure could go up, not necessarily from angle closure, however you can fill up the trabecular meshwork with blood cells. If you have an iritis can it cause synechiae? Yes, you can have blood clotting. What about the retina? We could have a retinal tear. Undoubtedly we could've had a shockwave going back there. Anything else? Blowout fracture! That's really what I was looking for. You get that much pressure hitting against a soft ball and it wants to expand, that's a cavity that's pretty well contained and there's so much pressure going in, a lot of time you get that blowout fracture. So you really have to rule that out. So you want to do the [eye movement] rotations, make sure that it's not entrapped. They blow their nose you want to make sure there's not a big blow up of the conjunctiva. Remember when you have that big power hitting against there, it can cause a shockwave and it can actually tug on that optic nerve too, so you can have optic nerve damage. Tearing of the iris and ciliary body. So we ruled out these other injuries and all see is a hyphema. Well because it is bleeding, we probably want to stay away from a blood thinner for at least a day. I've seen these hyphemas come back the

Hyphema

- Rule out other injuries
- Avoid ASA/NSAID
- Homatropine 5%
- Bed Rest (head elevated)
- Antifibrinolytics ?
 - E-aminocaproic acid (Amicar)
 - Tranexamic acid
 - Prednisilone

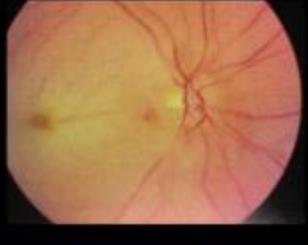
next day. Pushing on the eye a little bit and all of a sudden they start bleeding again. So it's a good thing to stay off from the blood thinners for at least twenty four to forty-eight hours. Bed rest. Why is bed rest good? Well your body heals good when you're sleeping, but why else? We want the blood cells to settle. And if you're like me, and you can't stand still even when you're lecturing, you're moving and your head's moving. It's always getting floated around and they can't see through that. That's like mud, you want the muddy water to settle out the dirt, you want the RBC's to settle down. It's always funny to me, I'll see the patients maybe first thing next morning and I say, "You must sleep on your right side." They say "How do you know that?" Well, because the hyphema's layered off to the right side. So a good thing to make sure to tell them with the bed rest is you do the head elevated. I just tell them use two pillows. In fact, if you want to sleep in the lazy chair tonight, go ahead. So the lazy boy will keep the head up fairly good, but I want them sedentary. The other thing you can do is these anti-fibrin drugs. One of the biggest ones is Amicar. It works. A lot of times it will be used for vitreal problems or retinal hemorrhages, but it's kind of questionable just how much good it does and it's fairly expensive. So even the retinal specialists don't really push that a lot, but all three of these have been used. Prednisilone, you can use, but I don't know too many that do.

Another ocular emergency, CRAO.

Why is that such an emergency? Is that more, or less, a risk than central vein occlusion? Why is [CRAO] more of a risk than CRVO? Because you're going to have necrosis of the tissue if no blood flows to it. So this is an acute infarct of whatever tissue. So you're going to lose vision. How do we get the blood flowing back through there? Well, mashing on the eye with the thumb. That's trying to get that pulse to get any embolus to go on past. Is that going to make it dislodge and return to the heart? No, if it's lodged clear back here, and we keep dividing smaller and smaller, we're wanting it to get out to where it just affects a smaller section. So we're trying to get it to move, let blood get on through there. Why do we want to use Diamox? We're low on ocular pressure because there is less pressure in the eye, there is less pressure on the blood vessels, so there is more pressure that can push emboli on out. So we want to lower that, this is one of those we want an IV on because the pill takes a while. And we want it to work immediately. This is one thing that I wish we could do as optometrists, as a paracentesis. I'm sure you've all watched countless surgeries of a corneal incision for cataracts. If you have a diamond blade and you go at an angle you can create a self-sealing incision and you can drop the pressure in that eye tremendously. That is the very best thing to help out with the CRAO. If you are in a state where you can do that, that's great. You could probably take a needle and stick it in at an angle, not straight on, but angled at the side. Try not to get into the iris, try not to scrape the endothelium, and you go in there that would allow pressure to shoot out through it and when you withdraw it should seal back up. It's probably not legal to do it, but I wish it were. You know I don't like always telling stories on myself, but there's been a few patients that I've been up doing things on. Maybe with a knife, maybe with forceps, or a needle. You ever have anybody just move their head, or they start drifting back in the slit lamp just a little, and you didn't catch it and they move their head forward? Has anyone had that experience with something sharp next to the eye? How many went through the eyeball? It's really hard to get through, isn't it? Remember Wayne Woods made a comment about that same thing. He's up there just coming in [towards the eye with something sharp], and the patient just moved their head that way and he says, "It was amazing, the needle just moved on over it, it was kind of hard to penetrate." We are so gentle

CRAO

- Massage
- I.V. acetazolamide
- Paracentesis



Ocular Emergencies

- GCA
 - IV Methylprednisolone
 - Dosage 250mg IV q 6 h for 12 doses
 - Switch to 80-100 mg po daily
 - Obtain artery biopsy while in hospital
 - Anti-ulcer medication

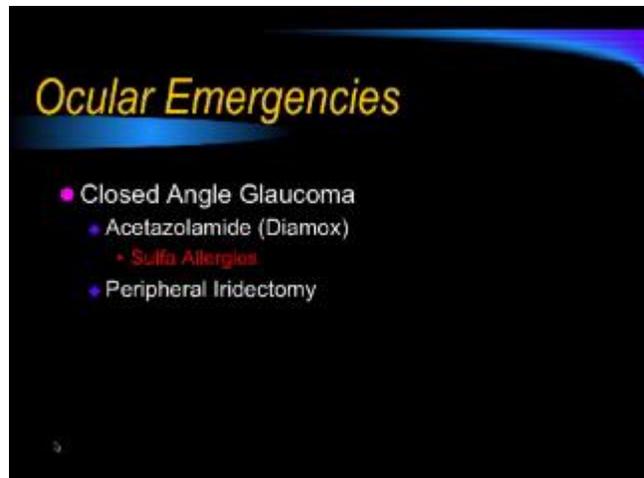
Without steroids the contralateral eye can become involved within 24 hours

when go up, we don't want to disturb any of the surrounding tissue, we really do a great job of removing foreign bodies. But the cornea is pretty tough and hard to go through, but that is the best way to be able to care of a CRAO. A lot of people say let them breathe into a paper bag. Why is that? To calm them down? Carbon dioxide will make the blood vessel enlarge, and we want them enlarged and we want as much blood to flow through and try and dislodge that [emboli].

Giant cell arteritis. I think we're a little nervous with that one, but you know with expanded licensure comes with expanded responsibilities. Giant cell arteritis is probably one of the biggest challenges we're going to have in our practices. Why? Without steroids the contralateral eye can become involved within twenty-four hours. All of a sudden you went from legal blindness in one eye, to legal blindness in both eyes within twenty-four hours. This is a true emergency. We think of ocular emergencies as "Oh, there's a retinal tear this needs to be taken care of today." You

know what most retinal surgeons will say? "Is the macula on, or is it off?" If it's on, "Eh, I'll try to get them in tomorrow." If it's the weekend, "Maybe I'll get them in on Monday." They want to know how close the macula it is, if the macula is off how long has it been off. All of a sudden it's more of an emergency, because it can't be off for very long and still have vision return. This [GCA] is an ocular emergency, but if you don't react to it it's malpractice. It's that cut and simple. You may not be able to prescribe it [IV Methylprednisolone], I think most of us are in states that can. IV Methylprednisolone-you're giving a bunch, 250mg IV every six hours for three days! That's a lot. Then you can switch to the oral. Somewhere in here different people do different things. Certainly if they're heavier you may want to go up to 120mg, but 80-100 is typical. I've seen this work very quick and work very well. Remember basic things are lectured on, time and time again. You've got to have that artery biopsy while they're in the hospital. You can't wait five days and have it done because the steroid's done its affect, and we gotta prove that this is what this was. So you got to have the biopsy within the first few days. Any time you're on a steroid like that, the oral, IVs, either one you need an anti-ulcer medication. Now the first one I did was in Ohio, and I forgot to give them anti-ulcer and their stomach got really sore within two days. Don't forget.

Ok, we mentioned earlier about angle closure glaucoma. If the angle closed, you can hit up in that 60-70mm of mercury range and the eye's going to have damage. It doesn't take very long at that high pressure, you know in the upper twenties low thirties, it's going to take a while before they go blind. You start getting over 60, it doesn't take very long to lose nerve fibers, a lot of them. So again, we want to drop that down with acetazolamide. That should be in your office. Somebody at the VA in Idaho said their Diamox bottle they wrote in red Sulfa. So any time they went to reach for it it just reminded them "Oh yeah, if somebody is allergic to Sulfa I may not want to use it." Not a bad idea. Most of us probably aren't using it a lot. When you hear Jeff and I talk, we've had the option of being at a referral center so we get to see these things more often. So it's like removing that corneal foreign body, it becomes more routine. But if you're not doing it routinely then it's great to have little cheat sheets. As Rebecca was saying at our lab, that whenever you go into an ER room there are posters everywhere of how to do CPR. Well, shouldn't they know? Well, yeah, that's their specialty. For closed angle, this is definitive treatment. You have to do a hole through the iris to allow [flow], we have to correct the problem. This appears to stabilize til where we can do the iridectomy.



Couple lessons to be learned here. Number one, don't fall asleep on the job. The second part, is don't leave yourself exposed. While you're treating patients, don't just "Oh, this is routine, oh, this is something else". Stay alert and make sure you are treating your patient right. Use as many specialists as you can. You know one way of being able to get this nice interchange with other professionals is to call them up and say "I have your patient here, we have a serious problem with this, I was wondering what you think." You start doing that or you write them a letter, all of a sudden you get a dialogue and

you have somebody refer patients to you. If you never start that dialogue, they're probably not going to refer to you. It's a wonderful profession we're in. This is such marvelous things that we're able to do now that we were never able to do before. We want our profession to continue to grow, we want to take care of our patients. We want to be at the forefront of primary care for ocular diseases, trauma, and just regular care. If we do that we will continue to lead. We do a marvelous job, and I just thank you. Any questions?