A Review of Best Evidence for Dry Eye

Tissue Glue vs. Suture

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Eileen T. Beltramba, RN, COT, CRNO
New Orleans, LA

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New Orleans, LA
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Did you ever want to perform evidence based clinical research but didn't know where to start? Enjoy this month's CE which shows the process of evidence based research using dry eye syndrome as a clinical problem.
Losing Our Focus

AM I THE ONLY ONE who thinks that we are spending more time interacting with our devices than we are with other people? Look around you, if you can take your eyes off your smart phone for a minute, and what do you see? Everyone else engrossed in their own smart phone or tablet.

Have you been in the gate area at an airport or some other waiting room recently? No one is carrying on a conversation. They’re all too busy answering emails or texting or watching something. “All heads bowed” said one of my friends. By doing this we are not only isolating ourselves, we’re not paying attention to what is going on around us.

My husband looks at some crime blogs online and showed me a video taken on a subway train. An armed gunman made his way down the full length of the car without anyone noticing him. It wasn’t until he stuck his gun in the face of a man looking at his phone that he got any attention. That’s not just isolationist, it’s dangerous.

And technology can be frustrating, too. Have you called a “help” line lately? Instead of being able to talk with someone to whom you can explain your problem you wind up on a hamster wheel of touch tone options. “Just give me a real person” I want to scream into the phone. “Everything is impersonal now” said another friend.

Now don’t get me wrong, there are lots of positive things about technology. Recently I had a conversation with Caitlin Nimmo, ASORN’s Client Services Manager, about how far ASORN has come, technologically, in the past few years. We now have a fully online way to become a new member. Everything happens online: enter your information, pay by credit card, and receive notification that you are now a proud member of ASORN, with no staff involved.

We have lots of other things online, too. Forms for submitting a manuscript to Insight, as well as all the paperwork speakers need to submit for a presentation at one of our meetings. We even plan to offer Insight in an online format. (Depending on how quickly things move you may be reading it that way now!) These are great advances that make things more efficient for everyone.

So technology is good, right? Well, yes and no. I’m all for “good” tech that makes our lives easier, but I’m not for “bad” tech that takes our focus off of a person and puts it on a device, be it a smart phone, computer, or monitor. It seems that the more tech we use, the less we interact with people.

These days we have more tech in the clinic. With the requirements of electronic medical records doctors and nurses are spending more time on the computer and less time actually talking and listening to the patient.

Nurses in the OR are so busy doing computer charting they don’t have time to communicate with the patient, either. It’s like the patient gets lost in the shuffle. And should you even have your phone in the OR? If you are using it to access information about something related to the procedure, a medication, for example, it’s appropriate. Using it to play games instead of keeping your eyes on things in the room is not. And let’s not forget the anesthesiologist who had the sound turned down on his monitors and was so busy texting and sending emails on his phone he failed to realize that his patient had stopped breathing until it was too late.

So how do we balance “good” tech that makes our lives easier and more efficient with “bad” tech habits that keep us from interacting with other people?

First, we need to stop looking at devices and start looking at people. I mean, really look at them. Make eye contact and pay attention when they are talking. You might hear something that’s important, especially if they are your patient.

We also need to put the patient ahead of the “paperwork”. What’s really more important, holding the hand of a patient who is anxious or finishing the chart?

We need to care and to let people know that we care. Babies who aren’t touched or don’t have human interaction fail to thrive . . . and so does everyone else.

So let’s do what nurses are meant to do. Make it personal. Reach out and touch someone.
ASORN . . . A Melting Pot of Ophthalmic Success

WHILE OUR NAME INFERS A SOCIETY with only domestic ties, you may be surprised to know that our membership spans the globe. Our membership represents 14 countries beyond the United States:

<table>
<thead>
<tr>
<th>Country</th>
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ASORNs exceptional reputation and commitment to ophthalmic excellence resulted in myself and fellow member and board of director member Robert Welch as selected faculty to travel to Hong Kong to teach ophthalmology to nurses. The University of California at Los Angeles School of Nursing and Hong Kong Sanatorium and Hospital (HKSH) has collaborated to provide high quality continuing education programs to the nurses who work at HKSH. This year the hospital requested a program that focused on Ophthalmology. Adeline Nyamathi, PhD, ANP, FAAN, Distinguished Professor and Associate Dean for International Research and Scholarly Activities, is responsible for selecting faculty and guiding curriculum for these programs, which occur a few times per year on ever changing selected nursing topics. In six short weeks Rob and I developed a curriculum based on an outline of provided topics, which included:

- Anatomy and Physiology of the Eye and Ocular Adnexa
- Nursing Assessment of the Patient with a Visual Complaint
- Ocular Manifestations of Systemic Chronic and Autoimmune Disease
- Retinal Surgery Update
- Pediatric Eye Diseases
- Eyelid Disorders
- Common Cornea Pathology
- Orbital Surgery
- Ocular Emergencies

Over the course of a week the program was delivered to two groups, the first of which were nurses and optometrists from the Ophthalmology department, and the second group were medical floor nurses. Rob and I were spoiled by the hospitality of the nurses and administration at HKSH. From gourmet lunches prepared by the hospital chef, to VIP tours of the facilities, the attentive staff and eager students, and a special night of Peking duck at Peking Gardens restaurant to end our stay. It was a wonderful experience! But above all, it highlights the connectedness of ASORNs missions and goals for ophthalmic excellence from a global perspective. A true melting pot of ophthalmic success . . . a harmonious blend of ideas, education, and innovation to support the growth of the art of Ophthalmology.
A Review of Best Evidence for Dry Eye

Susan B. Fowler, PhD, RN, CNRN, FAHA

What is the best practice for managing dry eye? To answer this question, nurses need to be knowledgeable about evidence-based practice. Definitions of evidence-based practice (EBP) in nursing vary in the literature. After reviewing and synthesizing the literature, Scott and McSherry (2009) defined EBP as an ongoing process by which evidence, nursing theory, and practitioners’ clinical expertise are critically evaluated and considered, along with patient involvement, to provide optimum nursing care. Although there are many EBP models, such as the Iowa, Ace Star, and John Hopkins models, they share common key steps, including (1) creating a climate of inquiry, (2) identifying a problem and asking a “problem, intervention, comparison, and outcome” (PICO) question, (3) searching for the best evidence, (4) appraising the evidence, (5) integrating the evidence with clinical expertise and client values and preferences, (6) evaluating the practice change outcome, and (7) disseminating the EBP results and sustaining the change (Melnyk, Fineout-Overholt, Stillwell, & Williamson, 2010).

continued on the next page
Step 1: Create a Climate of Inquiry
According to an online dictionary, “to inquire” means “to seek truth, information, or knowledge.” But first, you have to be curious, much like the monkey, Curious George, in the children’s books. Inquiry addresses practice—the realities and complexities of everyday practice focusing on a population, system, and/or policy or procedure. In the American Association of Critical Care Nurses’ synergy model (American Association of Critical Care Nurses, n.d.), nurses who demonstrate clinical inquiry are innovators and evaluators who engage in an ongoing process of questioning and evaluating practice and who subsequently create practice changes through research utilization and experiential learning.

Stanley, Sitterding, Broome, and McCaskey (2011) describe four levels of competency in clinical inquiry: (1) learning to learn, (2) engagement, (3) skill building, and (4) self-critique. Building resources and providing education address the first step of learning. Strategies targeting the second step, engagement, might involve thinking exercises or ‘real-time’ questioning of practice during patient care. Skills for clinical inquiry include searching for and appraising evidence. Nurses can self-critique their inquiry and findings by sharing this information with others in a collaborative forum.

Leadership also needs to empower nurses to question their practice. Strategies that foster a climate of clinical inquiry include best practice champions, evidence-based practice champions, journal clubs, nursing grand rounds, question boxes, adoption and use of evidence-based practice models, research and evidence-based practice councils, and development of a clinical nurse research program (Laibhen-Parkes, 2014). Once a nurse inquires about best practices, a problem is identified and a question can be asked.

Step 2: Identify a Problem and Ask a PICO Question
The focus of this article is the critical evaluation and consideration of evidence to guide ophthalmology nursing practice. The PICO question is: In patients with dry eye, does the use of one intervention, such as over-the-counter eye drops, result in greater subjective improvement of symptoms than the use of other interventions?

Step 3: Search for Best Evidence
Often evidence for evidence-based practice is referred to as “best” evidence. Best evidence includes empirical evidence from (1) randomized controlled trials (RCTs), (2) other scientific methods such as descriptive and qualitative research, and (3) information from case reports, scientific principles, and expert opinion (Titler, 2008).

There are different levels of evidence. Glover, Izzo, Odato, and Wang (2006) identify seven levels, from highest to lowest:
- **Level 1**: Systematic reviews and meta-analyses
- **Level 2**: Critically appraised topics
- **Level 3**: Critically appraised individual articles
- **Level 4**: RCTs
- **Level 5**: Cohort studies
- **Level 6**: Case-controlled studies
- **Level 7**: Expert opinion

According to Glover et al. (2006), the top three levels of the pyramid represent “filtered information.” Filtered resources appraise the quality of studies and make recommendations for practice (systematic reviews/meta-analyses, critically appraised topics, and critically appraised individual articles).

A systematic review is a structured, comprehensive synthesis of quantitative studies done to determine best evidence for clinicians to use to promote EBP (Burns & Grove, 2009). A meta-analysis statistically pools results from similar studies into one single quantitative analysis to determine the efficacy of an intervention (Burns & Grove, 2009).

The Cochrane Database of Systematic Reviews is an electronic database where researchers can obtain Level 1 evidence. The author queried the Cochrane website in response to the following research question: What are best practice recommendations for treating dry eye?

Step 4: Appraise the Evidence on Dry Eye
A query into the Cochrane Database resulted in four reviews, the first of which focused on punctal occlusion (Ervin, Wojciechowski, & Schein, 2010). There are many tools used to critically appraisal research articles. The following questions from a tool from Dartmouth University (n.d.) were answered in an attempt to critically appraise this systematic review and meta-analysis.
1. What question did the review address?

**Answer:** The purpose of the review was to assess the safety and efficacy of punctal plugs for management of dry eye. The review focused on both safety and efficacy, which included a primary outcome of subjective reports of symptom improvement, one day through two weeks post-treatment, and secondary outcomes (e.g., adverse outcomes).

2. Is it likely that important, relevant studies were identified?

**Answer:** Yes. Three major databases and ClinicalTrials.gov were searched for past and present evidence, ending in 2010.

3. Were the criteria to select articles for inclusion predetermined, clearly stated, and appropriate?

**Answer:** Yes. The criteria were RCTs and quasiexperimental designs that compared punctal occlusion to each other or to other treatments or placebo/sham. After the author reviewed 115 titles and abstracts, six studies were chosen that addressed primary and secondary outcomes, and an additional study that looked at secondary outcomes only (total of 7).

4. Were the included studies sufficiently valid for the type of question asked?

**Answer:** Yes. The studies met the inclusion criteria and focused on punctal occlusion. Additionally, independent reviewers assessed the studies, including the risk for bias.

5. Were the results similar from study to study?

**Answer:** No. Three studies compared collagen plugs. Only one study showed statistically significant differences in symptoms at 12 weeks \( (p < .05) \). The other two demonstrated a decrease in symptoms, especially when compared to sham. Two studies investigated silicone plugs, and results did not show statistical differences, although at six weeks there were fewer symptoms in the plugged eye. One study compared plugs, both collagen and silicone plugs with no occlusion, and results indicated significant decrease in symptoms at two \( (p < .03) \), four \( (p < .01) \), and 12 \( (p < .01) \) weeks when compared to no occlusion. There was also a significant difference in the frequency of symptoms.

Due to the variability in interventions and follow-up, a meta-analysis pooling the studies could not be conducted to determine treatment effect.

6. Clinical importance Are the study results clinically important?

**Answer:** Punctal occlusion is useful, but there is lack of strong evidence and a scarcity of RCTs. The adverse outcomes were minimal and included plug loss, epiphoria, irritation or foreign body sensation, and local inflammation. Any serious adverse events were not related to punctal occlusion/plug.

7. How were results presented?

**Answer:** Bias was presented in a table. Individual studies were summarized regarding methods, participants, interventions, outcomes, additional notes, and risk of bias.

Based on this systematic Cochrane Database review, ophthalmic registered nurses can advise patients who inquire about punctal occlusion that, although evidence is limited, it is useful and safe.

Three other documents derived from the Cochrane Database examined over-the-counter (OTC) artificial tears (Pucker, Marrone, & Nichols, 2012), topical cyclosporine (De Paiva, Pflugfelder, & Akpek, 2012), and autologous serum eye drops (Pan et al., 2013). A critical appraisal of the Cochrane review of OTC artificial tears could not be completed since the review is still in its protocol phase. According to the Cochrane Library, a protocol is a predefined plan. Cochrane researchers use the protocol to describe their proposed approach and include the question being addressed, delineating criteria for study inclusion, and describing how the review process will be managed. The protocol also outlines the process for identifying, assessing, and summarizing reviewed studies (Cochrane Library, n.d.).

The following questions were answered in an attempt to at least partially appraise this review:

1. What question will the systematic review address?

**Answer:** The purpose of the review is to compare OTC artificial tear drops to other OTC drops, no treatment, or placebo in adults with dry eye. The primary outcome is subjective patient reports of changes in the severity and frequency of dry eye symptoms two to four weeks following treatment. Secondary outcomes are objective measurements and adverse events.

2. Is it likely that important, relevant studies will be identified?

**Answer:** Yes, since numerous databases were explored, including the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, LILACS, the metaRegister of Controlled Trials (mRCT), clinicaltrial.gov, the International Clinical Trials Registry Platform (ICTRP), and the FDA.
Were the results similar from study to study?
Answer: No. The lack of descriptive statistics reported in the studies made analysis difficult, and consequently, a meta-analysis could not be conducted. Participant-reported symptom improvement showed limited differences between the AS groups and the control groups. Additionally, a variety of methods were used to evaluate participant-reported symptoms at different time periods. Only one study reported a clinically meaningful difference between groups for tear film stability.

Clinical importance: Are the study results clinically important?
• AS eye drops may offer some short-term (two week) benefit in participant-reported dry eye-related symptoms. Large-scale RCTs that blind both patients and investigators to treatment groups, use standardized questionnaires at short- and long-term intervals, and randomize with stratification for age and severity of illness are needed.
• Health-care providers need to advocate for the safe, standard manufacturing of AS for dry eye and proper patient handling and storage to ensure strict asepsis.

How were the results presented?
Answer: Bias was presented in a table. Individual studies were summarized regarding methods, participants, interventions, outcomes, additional notes, and risk of bias.

Step 5: Integration in Clinical Practice
Based on this systematic Cochrane Database review, ophthalmic registered nurses can inform patients who inquire about the use of AS eye drops for dry eye that more evidence is needed to determine their efficacy. Nurses can tell patients that the limited evidence we have might suggest some efficacy for the drops for patient-reported symptoms.

Steps 6 and 7: Evaluate, Disseminate, and Sustain Practice Change
Since the results of this inquiry and appraisal of evidence do not support a practice change, ophthalmic nurses are challenged to promote and participate in research investigations that can provide answers to clinically relevant questions. Curious George was curious about so many things in life, such as fishing, doing puzzles, and making boats out of newspaper and watching them float. What are you curious about in your practice?
Summary
As practice continues to be guided by evidence, best evidence from systematic reviews and meta-analyses of RCTs can be limited. Four Cochrane documents addressing treatments for dry eye were obtained from the Cochran Database, but two are still in the protocol phase and two reviews offer limited evidence for the efficacy and safety for punctal occlusion and AS serum eye drops.

References


2014 EyeQ Webinar Series:
Bridging the Gap from Office to Surgery: 2014

10 is the New 9: ICDs and Their New Look
Barbara Ann Harmer, RN, BSN, MHA
1 Nurse Contact Hour
Recording still available for CE.

Bridging the Infection Control Gap in Ophthalmology
Elethia Dean, RN, BSN, MBA, PhD
1 Nurse Contact Hour
Recording still available for CE.

H&P for your ASC: Considerations for the Ophthalmic Patient
Robert Welch, MSN, NP
Tuesday, July 29, 2014 at 4:30pm PT / 7:30pm ET
1 Nurse Contact Hour
Registration now open!

Identifying and Managing Unhappy Patients
Anne M. Menke, RN, PhD
Tuesday, November 4, 2014 at 4:30pm PT / 7:30pm ET
1 Nurse Contact Hour

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Susan B. Fowler, PhD, RN, CNRN, FAHA, Director of Evidence-Based Practice Development and Patient Safety, Children’s Specialized Hospital, New Brunswick, NJ, Contributing Faculty, Walden University, NFLlowers761@msn.com
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1. Which is not a recognized model of EBP?
   A. Iowa
   B. Ace Star
   C. Michigan
   D. John Hopkins

2. Nurses who demonstrate clinical inquiry are which of the following?
   A. Innovators
   B. Evaluators
   C. Master’s prepared in nursing
   D. Both A & B

3. To inquire means to seek
   A. Justice
   B. Truth
   C. Honestly
   D. Faith

4. The author makes a reference to which of the following?
   A. Curious George
   B. Mickey Mouse
   C. Buzz Lightyear
   D. Cinderella

5. Nurses can self critique findings by
   A. Literary references
   B. Sharing with others
   C. Reviewing meta-analysis studies
   D. Checking National Eye Institute studies

6. Levels of evidence include
   A. Systematic reviews
   B. Cohort studies
   C. Expert opinion
   D. All of the above

7. The purpose of the review process was to assess dry eye treatment with
   A. Artificial tears
   B. Punctal plugs
   C. Punctal cautery
   D. Atologous serum drops

8. The Cochrane data base is a source for this type of data
   A. Level II
   B. Level I
   C. Level IV
   D. Level VI

9. The purpose of the review was to assess
   A. Safety
   B. Efficacy
   C. Comparison
   D. Both A & B

10. Based on the systematic Cochrane review ophthalmic nurses can advise patients that inquire about punctual plugs that they are
    A. Useful
    B. Unsafe
    C. The best treatment for dry eye
    D. No better than other treatments for dry eye

*If you are an ASORN member but do not have an email address on file with ASORN you will not have an EyeCareCE login. Please contact ASORN.

ASORN members and other eye care professionals now have an online source for continuing education and training: EyeCareCE. The site is the collaborative effort of five organizations. Together, the Joint Commission on Allied Health Personnel in Ophthalmology (JCAHPO®), the American Society of Ophthalmic Registered Nurses (ASORN), the Association of Technical Personnel in Ophthalmology (ATPO), the Canadian Society of Ophthalmic Medical Personnel (CSOMP), and the Ophthalmic Photographer’s Society (OPS), teamed to produce a comprehensive online training resource for eye care professionals. ASORN is proud to participate in this online educational partnership.
Closure of wounds to produce an “invisible scar” is the ultimate goal of any laceration or incision closure (Shivamurthy, Singh, & Reddy, 2010). The method chosen by the healthcare provider to close a wound, therefore, not only needs to be safe, effective, low cost and as painless as possible, but also must produce the best cosmetic outcome possible. This becomes even more important when considering wounds of the face and neck, and the resulting social and self-esteem implications for the patient. The goal of this article is to compare the cosmetic outcome of facial and neck wounds closed with tissue glue to those of wounds closed with traditional sutures in order to provide a recommendation for best practice.

PICOT Question
In patients undergoing repair of wounds of the face or neck, are tissue sealants any less effective than sutures for wound closure? The population considered in response to this question includes all ages, races and sexes from the infant girl requiring a cleft lip repair to the elderly individual with a malignant melanoma above his eyebrow.

Significance of the Problem
Traumatic facial wounds are a common reason for Emergency Department visits. Not treating and closing a wound properly leaves the patient at risk for infection, wound dehiscence or excess scar formation. “The final appearance of the scar is the primary concern of the patients, making this the most important clinical outcome” (Holger, Wandersee, & Hale, 2004, p. 254). Patients undergoing elective plastic surgery, such as blepharoplasties and face lifts, may have unrealistically high expectations for an improved cosmetic appearance very soon after their procedure. A poor cosmetic outcome, whether related to scarring, infection or wound dehiscence can be costly to the provider in terms of additional office visits, additional procedures such as wound revisions, and possibly legal fees for malpractice defense. For the patient, a poor cosmetic outcome can have life-long negative effects.

Several studies have evaluated the negative effects of scars on the patient’s quality of life. Brown, McKenna, Siddhi, McGrouther and Bayat (2008), identified “five main areas of impact: physical comfort and functioning; acceptability to self and others; social functioning; confidence in the nature and management of the condition; emotional well-being” (p. 1049). Levine, Degutis, Pnzinsky, Shin and Persing (2005) found that patients with facial scarring report “significantly higher levels of marital conflict. Behaviorally, they are reporting significantly greater problems with alcohol consumption, as well as significantly higher rates of legal problems and deficits in occupational functioning” (p. 509). The health care provider is not only caring for the physical and emotional trauma that the patient has already suffered, but also has an obligation to minimize or prevent damage to the patient from the detrimental effects that visible scars would have on self-esteem and social and financial wellbeing.

Search Strategy and Results
The search terms “skin glue,” “tissue glue,” “surgical glue,” “tissue sealant,” “fibrin sealant,” “cyanoacrylate,” “ECA,” “tissue adhesive,” “sutures,” “plastic surgery,” “dermatologic” and “superficial skin” were combined with Boolean terms in a variety of search engines outlined in Table 1. Using the same search terms in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) Database produced no usable results. Google Scholar article titles and abstracts were then reviewed, and quantitative studies that were relevant to the PICOT question were sorted and selected. Articles that were not written in English, were not available in full text, were not related to humans or were written before 2003 were excluded. Additional articles were discovered by performing an ancestry search. This was continued on the next page
TABLE 1

<table>
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<th>Search Terms</th>
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<td></td>
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<td>61</td>
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<td>#6 limit to (English language, full text, humans and 2003-current)</td>
<td>6</td>
</tr>
<tr>
<td>Google Scholar</td>
<td>Suture versus glue in the epidermal closure (limit 2003–2013) and sort by “most relevant”</td>
<td>2,870</td>
</tr>
</tbody>
</table>

accomplished by using the articles found in the above-described literature search, and then searching for references cited in those articles using Google Scholar. No articles that met the search criteria described in the Ovid and Embase searches were excluded. One meta-analysis and 10 quantitative studies were included in the literature review.

Summary Statement Regarding Strength of the Evidence

One meta-analysis and 10 quantitative studies were included in the literature review. All studies in the literature review were relevant to the PICOT question, all compared tissue glue to suture, and all involved wounds of the face or neck. The majority of the studies used blinded physician observers grading cosmetic outcomes on a visual analog scale via standardized photographs. All but one of the studies evaluated concluded that tissue glue is equal to or better than suture for wounds of the face. Several studies stated that they found clinical significance that glue is preferred over suture, but that they were unable to prove statistical significance, in part due to small samples. Small sample sizes were a factor in most of the studies, but this was due to the limited number of the types of procedures performed. After reviewing strength of recommendation taxonomy (SORT) scores (Ebell, et al., 2004), the limitations of the studies, the clinical and statistical results and study recommendations, it is concluded with a strength of recommendation grade of “B” that tissue glue does indeed have comparable or better cosmetic outcomes when compared to suture used for the purpose of closing linear lacerations or incisions of the face or neck.

Clinical Recommendations

Tissue glue can be used safely and effectively in lower-tension wounds that could be closed with a 5-0 suture or thinner. Good hemostasis is a necessity, so tissue glue may not be a good option for patients taking aspirin or other blood thinners. Wounds should be free from contamination or infection, and they should not be the result of a bite, puncture, ulcer or crushing injury (Shivamurthy, Singh and Reddy, 2010). Based on the findings of Handschel, et al., 2006 Dermabond may be better suited for older patients than for those with younger, smoother skin.

Conclusion

Tissue glue is safe, effective, as painless as possible, and it produces cosmetic outcomes comparable to those of suture. Until science can give healthcare providers a wound closure method that will be effective for every wound and every patient, and one that can be used proficiently by every provider, decisions will have to continue to be based on the provider’s experience, knowledge and expertise. The information presented here may assist the well-informed provider in making this critical decision. Anecdotally, cost-effectiveness may be another determining factor in the health-care provider’s decision making. Tissue glue is more expensive when we consider the material cost alone, but several of the previously mentioned studies referred to its overall cost savings when taking into account its faster closure times and less need for follow-up care.

The Dermabond method appeared to be favored by patients owing to its lower overall charges to them, shorter procedure duration, less frequent follow-up visit, and better patient satisfaction. If a societal viewpoint was taken, which included patient costs and indirect costs such as the value of time taken from work, Dermabond appeared to be more cost-effective. (Wong, Rainer, Ng, Chan, & Lopez, 2011, p.8)
Tissue glue may also be favored by health-care providers due to its ease of use, its shorter learning curve, and the fact that it doesn’t require an anesthetic.

References and Selected Readings


Ophthalmic nursing is one of those “Cinderella” specialties in nursing where it seems that very few clinicians or managers outside it understand what it is all about! With the rise of the general manager, ophthalmic nursing is poorly understood even inside the specialty, and the skills and competences of ophthalmic nurses are under-recognized and undervalued. “Eye nurses just put eye drops in, don’t they?”

This article describes how ophthalmic nurses in the United Kingdom of Great Britain and Northern Ireland (the UK) have articulated their thoughts about the specialty and their values in order to promote the specialty, both to those within the UK and to the outside world.

A Short History
In 1951, managers, teachers, and practitioners for the major ophthalmic institutions in the UK formed the Ophthalmic Nursing Board in response to concerns about variable standards for training and the lack of a national register of qualification. The board approved training institutions, organized national examinations, and maintained the register of trained ophthalmic nurses. Under its auspices, ophthalmic training might be undertaken as either a preregistration or a postregistration qualification. The preregistration training took 18 months, with the qualification validated on completion of general training. Those nurses could start training at age 17, and this was one of a number of preregistration education pathways, along with fever nursing, infectious disease nursing, and orthopedic nursing.

In the 1980s, responsibility for education moved to the national boards for England, Scotland, Wales, and Northern Ireland, and ophthalmic nursing education began to fragment. Before the Ophthalmic Nursing Board disbanded, its members discussed the need for a nationally recognized membership group affiliated with the Royal College of Nursing (RCN) in the UK, and as a result, the Ophthalmic Nurses Interest Group, now the Ophthalmic Nursing Forum, was formed.

Fairly early on in the life of the interest group, it was decided that a statement of values and beliefs for ophthalmic nurses should be formulated. A large group of UK ophthalmic nurses came together to articulate what it is about ophthalmic nursing that makes it unique, formulating a Statement of Values and Beliefs:

An Ophthalmic Nurse is a competent nurse practitioner within a team, caring for individuals with ophthalmic conditions and needs, utilizing specialist knowledge and skills to identify and meet those needs:

In achieving the role, the Ophthalmic Nurse:
- Assesses, plans, delivers and evaluates the specialised nursing care to meet the needs of the patients with ophthalmic conditions
- Works in partnership with patients and their careers
- Works in a variety of hospital and community settings with differing client groups
- Provides health education in the maintenance of ocular health
- Acts as a specialist resource in ophthalmic care
- Ensures the maintenance of a safe environment relevant to the needs of the visually impaired
- Acts as an educator in utilising existing knowledge and research findings
- Acts as an innovator by instigating and facilitating research within ophthalmic nursing

In the early 1990s, the Ophthalmic Nursing Forum of the RCN decided to go further and publish documents that could be used both internally, by ophthalmic nurses in their workplaces, and externally, to advertise and promote the specialty to those outside it. This was partly in response to changes in UK policy that began to split the purchaser of health care from providers, and the first documents
were designed to educate purchasers about the scope and value of ophthalmic nursing. These publications, resulting from wide-ranging collaboration, of ophthalmic nurses across the UK were published around 1994.

**The First Editions**
The Ophthalmic Nurses Interest Group’s Statement of Values and Beliefs was rewritten and explained in a booklet called “The Nature and Scope of Ophthalmic Nursing.” This document expanded on the previous document and, very importantly, also formulated standards of practice that could be easily audited in any ophthalmic system. By creating national standards and an audit tool using a structure / process / outcome system, called the RCN Dynamic Standard Setting System (DYSSSy), the forum hoped that any ophthalmic unit could audit its facilities and standards of care and could then argue for resources to maintain a nationally set standard.

The standards formulated included the following:
- Client-centered care
- Assessment of needs
- Implementation of care
- Partnership with clients and carers
- Acting as provision of a specialist resources for ophthalmic care
- Acting as an provision of education or for clients and carers
- Acting as an innovator within ophthalmic nursing
- Health education in the maintenance of ocular health
- Expertise to ensure the maintenance of a safe environment relevant to the needs of visually impaired people

The other resource published at this time, “The Value of Ophthalmic Nursing,” was intended to be an outward-facing document that promoted the value of the specialty to purchasers of care, to chief executives of health-care organizations, and to areas outside ophthalmology. It contained available research that demonstrated the quality of care that ophthalmic nurses were able to deliver and the financial advantages of employing specialist nurses. It demonstrated “Value for Money” and cost-effectiveness and was used as a lobbying document.

**The Second Edition**
In the late 1990s, it was decided that the documents needed revisiting. Health services had changed, and the world of nursing was a different place. Priorities and targets were in place, and the role of the specialist nurse was yet again becoming undermined by the perception that these nurses were an expense that could be cut without compromising care – a fallacy that we are now revisiting once again in the UK. What hadn’t changed was patient need and the significance of the roles undertaken by ophthalmic nurses.

This second edition, “The Nature, Scope and Value of Ophthalmic Nursing,” merged the two previous booklets and was introduced as follows: “[T]his booklet reflects our ideals. However, we recognise the limitations and the stresses and strains of our world environments within changing health care systems. We hope that this booklet will help and motivate ophthalmic nurses in our goals and in our continuing strive for excellence.”
“The Nature, Scope and Value of Ophthalmic Nursing”

Continued from page 15

The booklet also highlighted published research on ophthalmic nurses’ new roles—undertaking nurse-led clinics and nurse-led surgery and acting as resources inside and outside the specialty. Due to the climate of care, which persists, its sections on the value of ophthalmic nursing, both in terms of economic and nursing benefits, now became the first part of the document! This was followed by “Values and Beliefs” and, again, “Standards for Practice” and a very explicitly designed audit tool. The forum had become aware that although audit was implicit, it needed to be explicit in order that it be undertaken! The audit tool in the second edition was based, as before, on structure, process, and outcome, but this time, it showed what to measure, who was to measure it, and what criteria constituted achievement of the standards. It was designed to be very straightforward to carry out, with the auditor observing (the environment, the nurse, the interaction . . .) or asking (the nurse, the patient or client, the carer . . .).

A copy of this document was sent to every chief executive of every health organization in the UK, resulting in some interesting and productive conversations, both locally and nationally, and ultimately resulting in the inclusion of ophthalmic nurses within the policy-making agenda. As chair of the forum, I sat on the Department of Health, (the government department who direct, devise and carry out UK health policy) Eye Services, steering group for a number of years, looking generally at ophthalmic services but able to promote specifically the value of ophthalmic nursing.

The Third Edition

The third edition, finalized in 2009 and bearing the same title as its predecessor, was intended to reflect the nature, scope, and value of ophthalmic nursing into the 21st century and to meet the following goals:

- Publicize our practice and inform it
- Promote a strategic vision of ophthalmic nursing
- Articulate the nature, scope, and values of ophthalmic nursing in the delivery of evidence-based clinical outcomes for everyone involved in the delivery of ophthalmic services
- Lead national developments in ophthalmic care and inform those in Europe and internationally

Two sections of this edition, “The Fundamental Nature of Ophthalmic Nursing” and “The Scope of Ophthalmic Nursing,” are shown in boxes 1 and 2. The values held by ophthalmic nurses are very much incorporated into the “Fundamental Nature” section, while the value of training and hiring ophthalmic nurses is evidenced by more research, showing how ophthalmic nurses contribute to health care overall. Day surgery for ophthalmic conditions, for example, has increased from 60% in 1996 to over 95% in some areas, and this is often in direct response to the proactivity, flexibility, and skills of ophthalmic nurses. Such an increase would not have happened without the ability of our colleagues to undertake investigations, treatments, extracocular surgery, and intravitreal injections and to run their own clinics, freeing up our medical colleagues to undertake intraocular surgery and look after those of our patients with very complex disease.

By including an easy audit tool and incorporating slight changes that reflected the reality of working in the specialty in the 21st century, the third edition promoted standards in the following areas:

- Expertise to ensure the maintenance of an appropriate and safe environment relevant to needs of visually impaired people
- Patient-centered care
- Assessment of needs
- Implementation of care
- Working in partnership with service users
- Acting as an education for service users
- Health education in the maintenance of ocular health
- Provision of acting as specialist resources
- Promotion, development, and delivery of evidence-based practice in ophthalmic nursing
- Acting as an innovator within ophthalmic nursing

The Future

We are actively looking at a fourth edition, bearing in mind the economic situation and its bearing on health care, which is probably the worst we have ever experienced in the UK. As services fragment, it is important to us that ophthalmic nurses value themselves and are valued by managers, strategists, and policy developers in the same way that they are valued by their patients. If we are not there, the
people who will notice will be the patients. Their care will suffer, and outcomes will change for the worse. We value contributions from ophthalmic nurses everywhere in this process.

Conclusion
This article has described an iterative process by which the design and content of a document has responded to health pressure, has been used as a lobbying document, and has built up a currency that remains, twenty years after it was launched in its initial format. The need to explicitly articulate the values and beliefs of nurses both within our specialty and in others is crucial in developing a national and international vision: not only of what the specialist nurse does but also of what specialist nurses can achieve. This document is a resource to be used, not an artifact to sit on a shelf. It publicizes and promotes our Cinderella specialty and provides a tool for auditing our practice and practice environments. Finally, and most importantly, it aims to help to achieve good practice and excellence in care, everywhere.

Reference

Janet Marsden, PhD, MSc, BSc, RGN, OND, FRCN, FFEN, FRSM, professor of ophthalmology and emergency care, Manchester Metropolitan University, Manchester, UK. j.marsden@mmu.ac.uk

BOX 1

The Fundamental Nature of Ophthalmic Nursing

We believe that:

✦ our prime purpose is to promote and maintain ocular health. We believe this is achieved through developing a close and caring relationship with our service users; through actively sharing our knowledge and expertise with colleagues working in other settings; and, through providing health education to the community and society.

✦ the nurse-patient relationship is therapeutic and fundamental to nursing. It is the central focus of our actions and every relationship is unique. Through developing close and caring relationships with service users, we believe we will be better able to understand and meet the needs of our patients, helping and supporting them towards independence and self-care.

✦ the care we give requires the use of specialist skills. It must be of the highest standard yet have regard for cost effectiveness. We believe that we should promote the patient as a person, not a condition, and that the relationship we share with all service users is an equal partnership, two-way and interactive. Such a relationship should provide continuity, maintain confidentiality and provide clarity in mutual expectations and goals.

✦ ophthalmic nurses have an important role as teachers and advisors; in educating service users and carers; in providing health education in society; and by facilitating the development of other multidisciplinary team members’ knowledge and understanding of ocular health.

✦ it is the role of the ophthalmic nurse to work with other organizations in a collaborative manner, to obtain better resources for ophthalmic service users; to draw on resources which will benefit care and use the resources that other professionals can provide, being prepared to accept their different knowledge, advice and skills. It is important that we acknowledge and respond to external influences which can influence care.

✦ patients appreciate being treated as someone who really matters, deserving to be treated always with politeness and courtesy, accepted and understood for who they are and recognised as a person rather than an eye problem.

✦ patients should be ensured privacy and dignity. They should be given access to appropriate, honest and sensitive information. Each patient deserves time and commitment from the nurse, so that they feel comfortable in being able to ask anything.

✦ a patient’s right to participate in decision-making should be actively promoted. We must always remember that the patient’s wishes are paramount in respect of information given to others and this duty of confidentiality must be respected.

✦ ophthalmic nurses have a contribution to make in situations wherever there are people with associated eye conditions or the potential for ocular damage. Ophthalmic nurses are competent to provide ophthalmic care in a diverse range of hospital and community settings. Ophthalmic nurses act as consultants and provide ophthalmic nursing expertise to other health care professionals.

✦ the environment for patients with ophthalmic conditions should always be safe for both patients and staff and that current standards with regard to, for example, contrast and lighting are adhered to. The environment should be adapted to the needs of visually impaired patients and in its design and structure, consider patients’ activity. Where the environment is the patient’s own home, it is acknowledged that this is under the control of the patient and may be influenced by outside factors.

✦ for ophthalmic nurses to fulfill their role, they need a knowledge base in physiology, psychology, sociology, education methods, interpersonal skills and research appreciation. Self awareness and reflection are important, as well as the ability to access resources in terms of service users, colleagues and other members of the multidisciplinary team.

✦ nurses learn best about ophthalmic nursing by working in the specialty. Here they can acquire varied and appropriate experience, facilitated by experienced practitioners who help them to explore and understand the experience of the person with ophthalmic problems.

✦ individuals learn best when their individuality is acknowledged and respected and previous knowledge is built upon, within an environment that supports, develops and motivates learners and facilitators, working in partnership (RCN Ophthalmic Nursing Forum, 2009, pp. 2–3).

BOX 2

The Scope of Ophthalmic Nursing

How can ophthalmic nurses contribute to ophthalmic health care?

Effective ophthalmic care aims to optimise the level of wellbeing in patients and promote their independence.

Ophthalmic nurses are able to utilise their skills to provide this care by:

✦ leading service development, working in partnership with the multidisciplinary team, proactively and in response to policy change.

✦ proactively initiating nurse-led clinics in diverse settings facilitating, for example, early detection and monitoring of eye conditions such as glaucoma.

✦ assessing, diagnosing and treating a range of acute and chronic conditions autonomously, managing their own caseload.

✦ managing and delivering the total care pathway, such as in the facilitation of cataract and age-related macular degeneration (AMD) pathways in order to achieve both clinical and national targets.

✦ acting as a primary and secondary resource to patients, carers, health care professionals and others.

✦ liaising with and referring to other agencies, for example the social and voluntary care sectors.

✦ referring to other health care specialists, such as diabetes specialist nurses, rheumatology and sexual health and other medical specialists.

✦ acting as advisers and promoters of ocular health in areas like sports injuries, occupational injuries and infection prevention.

✦ formal and informal networking within the specialty to facilitate the dissemination of new ideas and the rapid development and implementation of new services and evidence based practice (RCN Ophthalmic Nursing Forum, 2009, pp. 3–4).
Focus

Ocular Emergencies in an Ophthalmic Emergency Room

Patients who seek care for ophthalmic problems can present in emergency rooms with a range of complaints, from simple irritation to complete vision loss. The importance of accurate triage to facilitate timely care by ophthalmologists is crucial to prevent vision loss. The triage nurse’s role in ocular emergencies can determine treatment and at times can influence the visual outcome (Bickerton, 2000). Few studies, however, have examined the types of complaints seen in dedicated ophthalmic emergency rooms (OERs) and how registered nurses manage these problems.

Background

Most ophthalmic emergency research focuses on specific eye emergencies, such as penetrating trauma, eye irrigation, and corneal injuries (Aslam, Sheth, & Vaughan, 2007; Chau, Lee, & Lo, 2012; Lindfield & Das-Bhaumik, 2009). One large Australian study (Kumar, Black, & McClellan, 2005) determined that ocular surface and anterior segment diagnoses dominated cases seen during daytime hours in a busy OER. Conjunctivitis, keratitis, cataract, corneal abrasion, and iridocyclitis were the most common diagnoses in patients seeking care. Most patients were treated and discharged, with fewer than 4% admitted to the hospital, leading investigators to conclude that the OER predominately served as a primary care facility for common eye problems. Another study of ophthalmic referrals and emergency presentations in an urban tertiary academic medical center examined 504 patients seen in an acute eye clinic during one month (Perumal, Niederer, Raynel, & McGhee, 2011). Roughly 40% of cases were routine clinic follow-up visits. Of the other 60%, 33 patients came from the emergency clinic and nearly 100 were self-referred. The most common symptoms on presentation were red eye, pain and decreased vision, and major diagnoses (including trauma, uveitis and adenoviral keratoconjunctivitis. Other studies speculate that corneal abrasions, conjunctivitis, dry eye, blepharitis, and conjunctival or corneal foreign bodies comprise the bulk of OER visits (Khare, Symons, & Do, 2008; Magauran, 2008). The overall consensus is that most OER visits do not pose sudden threats to loss of vision and are for relatively minor conditions that could be handled in primary care offices. However, there are instances where immediate ophthalmology consultation is necessary to prevent permanent loss of vision, yet studies of these emergent conditions vary widely in the number of cases presenting to OERs (Khare et al., 2008).

The role of the ophthalmic nurse practitioner (ONP) in evaluating, diagnosing, and treating ophthalmic patients in the general emergency room has been examined. One study with five years of follow-up demonstrated that ONP care could be safe and effective in triaging, diagnosing, and treating eye emergencies (Buchan et al., 2009). In this study, which began in 1999, ONPs followed 22% of the nearly 2,000 OER patients and followed this caseload for a three-month period without referral to an ophthalmologist. No patients returned to the clinic due to incorrect diagnosis or mismanagement. At the end of five years, care was re-evaluated. The number of patients followed by ONPs declined to 17%, and three of these patients returned to clinic for possible misdiagnosis or subpar management. This study suggests that ONPs can manage nonurgent eye problems; however, continuing education and skill competencies should be required for nurse practitioners practicing in ophthalmology clinics. A related study also examined nurse triage in the same emergency room (Buchan, Saihan, & Reynolds, 2003) and found that staff nurses could be trained to safely and effectively manage uncomplicated ophthalmic presentations. Other literature regarding staff nurse triage, assessment, and management of ocular emergencies consists mainly of reviews and management of specific ocular emergencies (Focusing on eye emergencies, 2007; Bickerton, 2000; Chau et al., 2012; Watkinson & Seewoodhary, 2007). The purpose of this descriptive study was to characterize ophthalmic emergencies, nurse triage,
and emergency treatment for patients seeking care in a dedicated OER.

**Methods**

Following institutional review board approval, a retrospective chart review was completed for a convenience sample of patients presenting to the OER of a busy inner city academic medical center in the mid-Atlantic region during one month. Ophthalmic triage was conducted by registered nurses (RNs) using presenting ocular signs and symptoms, medical history, and their objective assessments.

Each patient who presented to this OER was evaluated by an RN and assigned a triage status of immediate, urgent, or routine. Patients who are flagged “immediate” were seen by ophthalmic physicians within five minutes of presentation, while those who were assigned “urgent” status were seen by a physician within 30 minutes of arrival. Patients who were assessed as “routine” were seen within 30–88 minutes. All patients received care from RNs until physician evaluation.

Data collected included time metrics (patient arrival, nurse triage), patient age, chief complaint, physician diagnosis, treatment / discharge planning, and follow-up care recommendations. For analyses, chief complaints were collapsed into the following categories: blurry/decreased vision, sudden vision loss, chemical, unequal pupils, diplopia, infection/inflammation/irritation, lesions and drainage, pain, redness/tearing/crusted/rash/swelling, trauma, and visual disturbances. Similarly, treatments were collapsed into the following categories: antibiotics alone or in combination with lubricants, high-dose steroids or cycloplegics, lubricants alone, high-dose steroids alone or in combination with antibiotics, cycloplegics, ASA 81 mg, intraocular pressure-controlling medications, mydriatics and cycloplegics, repaired laceration and antibiotics, none, and other.

**Results**

Of the 1165 patients seen in the OER in June 2012, a convenience sample consisting of 605 charts was reviewed. Ages of patients ranged from 5 months to >89 years. The majority of patients were between 18 and 69 years of age (see Table 1). Both geriatric and pediatric patients constituted approximately 10% of patients seen.

The most common chief complaints were pain or infection/inflammation/irritation, each group comprising approximately 25% of total patients. The other common complaints included trauma, visual disturbances, and redness/tearing/crusted/rash/swelling (see Figure 1). Altogether, these top five categories of chief complaint included 554 of the 608 patients, or 91% of cases. Nearly half of both adult (49.28%, n = 239) and geriatric patients (53.84%, n = 35) presented for pain or infection/inflammation/irritation. However, among pediatric patients approximately 40% (n = 23) presented for trauma.

In terms of triage, only three cases were assigned immediate priority: one patient for trauma and two patients for chemical

**Table 1**

<table>
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</table>

**Figure 1**

Chief Complaint Upon Presentation in ED (n = 608)
Ocular Emergencies in an Ophthalmic Emergency Room

Continued from page 21

injury (see Figure 2). The bulk of cases were triaged as routine (85%, \(n = 518\)), and by age, these routine cases still made up the majority of cases: adult, 86.19%; geriatric, 78.46%; and pediatric, 84.48%. The most common age group to be triaged as urgent was geriatric cases, with 21.54% flagged as immediate.

Treatment data were recorded for 576 cases. Antibiotics alone or in combination with lubricants, anti-inflammatory drugs, or cycloplegics were the most frequently prescribed treatment (30.21%, \(n = 174\)), followed by other treatments (23.61%, \(n = 136\)) (see Figure 3).

**Conclusion**

Ophthalmic nurses’ knowledge needs to extend beyond symptoms and signs of ocular diseases or injuries and should include the knowledge of neurological disorders and medical and hypertensive crises. An ophthalmic nurse could be the first clinician encountered by a patient with a potential visual loss or life-threatening condition, such as disc swelling and transient vision loss (e.g., amaurosis fugax), which can be medical emergencies, and so the ophthalmic nurse should always be ready to evaluate these emergent cases. The eye emergency nurse’s role is of utmost importance in expediting care for life- and vision-threatening conditions and to provide excellent and appropriate care to all type of patients. As nurses care for all ages in the eye emergency room, nurses must have BLS, ACLS, PALS, and preferably CRNO certification.

In this study of OER patients, patients presented with symptoms ranging from innocuous complaints, such as red eyes or itching, to lacerations or trauma, chemical injuries, and loss of vision. Visual acuity ranged from 20/20 to NLP. The nurses triaged many eye emergencies, such as...
infections, inflammations, eye injuries, visual disturbances, and ocular pain. Any of those conditions could potentially lead to a loss of vision and have potential systemic sequelae.

Discussion
Some of the nonurgent cases presenting to the OER in this study, such as dry eye syndrome, chalazion or sty, blepharitis, or refractive error, could all have been cared for in a clinic setting. This finding is consistent with previous research studies that demonstrated that a significant number of OER patients could have been cared for in the general ophthalmology clinic. In a study in New Zealand, the authors found 41.5% of their OER visits could have been managed at the general physician or ophthalmologist office (Perumal et al., 2011).

Future research should examine best practices in reducing patient length of stay in the OER. Other studies could evaluate practices successful in traditional emergency departments, such as incorporating Ophthalmology Nurse Practitioners to provide care to nonurgent care cases or using fast track concepts for routine ophthalmic patient problems to decrease inefficiencies and improve care for patients seeking treatment in OERs.

References


Elham Bshouti, BSN, RN, CRNO; Kimberly Hoban, BSN, RN; Meg Bourbonniere, PhD; RN, and Cynthia Line, PhD, are affiliated with Thomas Jefferson University Hospital, Philadelphia, PA. Elizabeth Affel, MS, MT, OCT-C, and Ann P. Murchison, MD, MPH, are with the Wills Eye Institute, Philadelphia, PA. The corresponding author is Elham Bshouti, BSN, RN, CRNO: Elham.Bshouti@jeffersonhospital.org.
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Chicago 2014
Why and How to Improve Certification Rate

Certification is very important to recognize achievement, expertise and clinical judgment in any profession. In today’s health system, this is even more important since patients have the opportunity to choose between multiple options to improve their health. Many studies demonstrate that there is a positive correlation between certification and nurse knowledge, techniques, and judgment that affect patient safety and positive outcomes. Hospitals acknowledge that certified nurses demonstrate competency in today’s complex health system and ensure consumers they have met standards of practice with certain knowledge and skills to protect patients. Certification provides employers a level of confidence beyond an RN license and is a measure of distinctive nursing practice.

Certification also helps health organizations achieve Joint Commission on Accreditation of Healthcare Organizations accreditation and grant funding. Healthcare Organizations acknowledge that certified individuals are more flexible while maintaining a substantial advantage in dynamic health systems. They are considered as a key component of excellence that enhances the quality of care.

In today’s health system, patients and families demand expert caregivers at the bedside and certification offers them reassurance of their nurses’ competence. It is an important indicator to patients that their nurses are qualified and have met rigorous requirements to achieve the additional credential of a specialty certification. It is well known that certified nurses remain up to date with recent literature and changes in the health system in their specialized areas. They feel that certification validates their specialized knowledge, increases professional credibility, and indicates a level of clinical competence.

Certified Nurses also have more recognition and respect from their coworkers and advance faster in the workplace. It is documented that hospital administrators prefer to hire nurses with certification over non-certified nurses if all other qualifications are equal. They are invited to annual meetings as presenters, participate in professional workshops, and contribute their expertise to write book chapters or review items.

What can we do to increase the CRNO rate?

Encouragement can be offered in both financial and non-financial ways. Here are some suggestions for administrators and CRNOs to promote certification in ophthalmic nursing:

- Distribute information about ophthalmic nursing certification in your department
- Create posters or bulletin boards featuring information about certification
- Help nurses to study for the certification exams, e.g. by providing study materials/textbooks, etc
- Post ASORN website links in your organization’s website/newsletter
- Send e-mail notices to nurses regarding local chapter/annual meetings
- Communicate with administration to incorporate certification into the career ladder and require certification
- Publish stories about certified nurses in your institution’s newsletter
- Give preference to certified nurses to attend continuing education conferences
- Award a monetary bonus to nurses who attain or renew certification
- Provide a pay increase for certified nurses
- Offer shift or schedule preferences for certified nurses
- Present certified nurses with a credential pin
- Add credentials to certified nurses’ name badges
- Send a congratulatory letter from the director of nursing to each certified nurse
- Publish the names and photos of certified nurses in hospital’s board. Host a luncheon, dinner, or other social event to honor certified nurses
- Provide opportunities for certified nurses to participate in teaching or become a preceptor

Since certification is an important component to elevate the level of nursing care in ophthalmology, implementation of some of the proposed suggestions may be successful to improve certification rates in our organizations.

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Boston Veterans Health Care, Boston, MA
Latisse™ (Bimatoprost) for Enhancement of Eyelashes

Introduction
Across cultures and around the world, eyes have always played a central role in defining beauty and allure (Synnott, 2006). In fact, for centuries people have sought to enhance the appearance of the eye through use of various pigments and colors (Draelos, 2001).

Until five years ago, over-the-counter makeup, such as eyeliner, mascara, and eye shadow, were the only products available to enhance the look of the eye. Latisse (bimatoprost) is the first and only product approved by the FDA to treat hypotrichosis, or inadequate or not enough eyelashes (Latisse package insert, 2013). While there are other eyelash enhancement products, called “serums,” “peptides,” “stimulators,” or “conditioners,” these products are considered cosmetics. The regulatory environment for cosmetics is different than for prescription drugs, and cosmetic products do not have documented evidence of efficacy in the form of well-controlled clinical trials endorsed by the FDA, like prescription drugs. As a result, only Latisse has been proven to be safe and effective in the treatment hypotrichosis.

Discovery of Bimatoprost’s Effect on Eyelashes
Bimatoprost is a prostaglandin analog that was originally developed to treat elevated intraocular pressure. Bimatoprost ophthalmic solution 0.03% (Lumigan) was approved by the FDA in 2001 for the reduction of intraocular pressure (IOP) in patients with open-angle glaucoma or ocular hypertension (Lumigan package insert, 2012). Bimatoprost is thought to reduce IOP by increasing aqueous humor flow through the trabecular meshwork and uveoscleral pathways (Lumigen package insert, 2012; Woodward et al., 2001). The drug is a mainstay of treatment for glaucoma and ocular hypertension.

The discovery that bimatoprost increased eyelash growth was made during the ocular hypertension trials, where patients reported eyelash changes. In a safety evaluation of data from six pooled double-blind, long-term glaucoma clinical trials, the cumulative incidence of “eyelash growth” and “hypertrichosis” were reported in approximately 36% and 9% of patients, respectively, receiving bimatoprost once daily for up to 48 months and in approximately 46% and 9%, respectively, in patients receiving the dose twice daily for up to 24 months (Wirta et al., 2011). A number of patients discontinued the bimatoprost eyedrops during the studies because of eyelash growth. While eyelash growth is desirable in some patients, it may not be for all, and if unilateral glaucoma was being treated it could have resulted in only one eye with longer, thicker lashes.

The serendipitous discovery of bimatoprost’s effect on lashes during the glaucoma trials led to a development program using the same formulation of bimatoprost ophthalmic solution 0.03% administered topically for hypotrichosis. Only approximately 5%, by weight, of the glaucoma dose was administered using the topical route (Cohen, 2010).

Pathophysiology of the Eyelash
Like other hair on our bodies, eyelashes serve a protective function. They trigger blinking when touched and prevent debris from entering the eye. Eyelashes are similar to other hair in that they are associated with follicles connected to sebaceous glands (Johnstone & Albert, 2002). Because hair follicles are developed during embryogenesis, the number of follicles does not increase after birth (Habif, 2010). Individuals can lose eyelashes for a number of reasons, which may or may not be associated with the destruction of the hair follicle. As long as the follicle is intact, the eyelash can grow.

Eyelashes are often darker than scalp hair and retain their pigment with aging, unlike scalp hair, which often turns grey. Eyelashes are also the thickest hairs on our body (Johnstone & Albert, 2002). The upper eyelashes are arranged in two or three
rows, with approximately 100 to 150 lashes per eye, whereas lower eyelid lashes are shorter and fewer in number (Moses, 1970; Khong, Casson, Huilgol, & Selva, 2006).

The entire eyelash growth cycle is thought to last approximately five to 12 months. It is broken down into three phases, including anagen (the growth phase), catagen (a shorter transition phase), and telogen (the resting phase) (Johnstone & Albert, 2002). At any given time, different follicles are in one of the three phases so that eyelash growth is cyclical and always occurring. The anagen phase determines the length of the eyelash (Randall, 2008) and engages in the transfer of pigment (melanin) to the follicle cells (Johnstone & Albert, 2002).

**Mechanism of Action of Prostaglandin Analogs and Eyelash Growth**

While other prostaglandin analogs have been reported to have effects on eyelash growth, studies to evaluate the topical route of administration on eyelash growth have been performed only with bimatoprost. Bimatoprost is proposed to prolong the anagen phase and to increase the percentage of eyelashes in anagen. (Data on file at Allergan, Inc.; Cohen, 2010). The drug does not increase the number of eyelash follicles, but the increase in eyelash thickness may be a result of increases in the bulb diameter and an increased speed in eyelash replacement. Bimatoprost also causes an increase in melanin production, resulting in finer, lighter eyelashes becoming thicker and darker (Hart & Shafranov, 2004).

**Use of Latisse**

Latisse should be applied daily after removing makeup. Patients should place one drop of Latisse directly on the single-use sterile disposable applicator and apply evenly to the upper eyelid margin at the base of the eyelashes. Excess solution beyond the eyelid margin should be blotted with a tissue. Contact lenses should be removed before applying, due to the presence of benzalkonium chloride in the product, and they should not be reinserted when administering Latisse in patients with active intraocular inflammation (uveitis) and patients with a risk factor for macular edema, including aphakic or pseudophakic patients with a torn posterior lens capsule.

Latisse can induce hair growth when the solution is applied repeatedly to areas other than the lid margin. For example, patients with thin eyebrows have used the product to enhance and darken brow hair.

**Conclusions**

Many people desire longer and thicker eyelashes. Bimatoprost ophthalmic solution 0.03% (Latisse) has been proven safe and effective in increasing the length, darkness, and fullness of eyelashes in controlled clinical trials over 16 weeks.

The discovery of bimatoprost as an eyelash-enhancing product was discovered as a side effect during clinical trials of bimatoprost ophthalmic solution 0.03% instilled as an eye drop for the treatment of glaucoma. Topical administration of the drug results in lower exposure compared to the ocular administration, which is consistent with a better safety profile of the cutaneous route of administration. Side effects are well known, including pruritis, ocular hyperemia, and skin discoloration and are considered minimal.

**References**


continued on the next page
Latisse (Bimatoprost) for Enhancement of Eyelashes

Continued from page 25


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Manuscript Submission. Manuscripts should be submitted via email to the Editor in either a .doc or .docx file format.

Manuscript Preparation. Manuscripts should be typewritten using a 12-point Times New Roman font, double-spaced for 8½-by-11-inch paper, with one-inch margins. All pages should be double-spaced, including references and figure captions. A checklist for manuscript format is included below. Insight follows the style of the Publication Manual of the American Psychological Association (APA), 6th edition.

Manuscript Format.

1. Title page: Title of manuscript, authors’ name, degree(s), certifications, institutional affiliation, and professional positions. Give one complete mailing address, business phone number, home phone number, fax number, and email address. You may include a brief acknowledgment of grants or other assistance, if applicable. The title page must also include disclosure of funding received for this work from any organizations.

2. Abstract: This page should show the manuscript’s title, but omit the authors’ names. The abstract may have up to 200 words, and it should summarize the purpose, relevance, and essential points of the manuscript. Research abstracts should summarize the research process and findings. No abbreviations, acronyms, footnotes, or references should be used.

3. Text: The first page of the text should use double space format and one-inch margins. Omit all authors’ names on text pages.

4. Headings/subheadings: Organize information under headings and subheadings. Check the APA manual for heading and subheading format.

5. References: Begin the list of references on a new page. The style of references is found in the 6th edition of the APA. References used in the text are cited by author’s name and date of publication in parentheses: for instance: (Smith, 2000), with page numbers cited for direct quotations. All references cited in the text must be included on the reference list.

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7. Tables: Tables should be created double-spaced on a separate page.

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Authors are responsible for bibliographic accuracy and must check every reference in the manuscript and proofread again in page proofs.

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Quick as a Wink

**Board Highlights**

- Welcome to Brooke Lyon, our new ASORN Coordinator
- Welcome to Cheryl Crouse, RN, MSN as Co-Nurse Provider for the San Antonio Regional Meeting and to Mary Lou Blacharski, RN, MSN as the Nurse Planner for the Webinar Committee.
- Our new monthly e-newsletter, EYE kNOW, has launched.
- All educational materials, including our Webinars, will be posted on EyeCareCE, one site for all our offerings.
- The Fort Worth Regional Meeting was a huge success with 146 attendees! Don’t forget to sign up for the San Antonio Regional Meeting and reserve your spot.
- The preliminary program for the Annual Meeting has been submitted.
- The Essentials of Ophthalmic Nursing, Book 1, is now available.
- As of June 2nd, we have 764 members! Encourage your colleagues and friends to join, keep us strong.

*Nancy Haskell, RN, ASORN Secretary-Treasurer, nhaskell@capcityasc.com*

**Did You Know?**

This summer the Foundation for Fighting Blindness is launching a Summer Challenge to END BLINDNESS. Go to their website to see five easy ways that you can take the challenge! Every monetary gift raised will be matched $2 to $1 . . . and if a monetary donation is not possible alternatives such as taking a pledge and sending a message to congress are available. Go to www.fightblindness.org for more details on how you can join the challenge!

**On the Horizon**

**Upcoming 2014 Webinars**

**July 29, 2014, 4:30pm PT/7:30pm ET**

H&P for Your ASC: Considerations for the Ophthalmic Patient with Robert Welch, MSN, NP

**November 4, 2014, 4:30pm PT/7:30pm ET**

Identifying and Managing Unhappy Patients with Anne M. Menke, RN, PhD

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**10 is the New 9, ICDs and their New Look**

with Barbara Harmer, RN, BSN, MHA

Recorded February 25, 2014

**Bridging the Infection Control Gap in Ophthalmology**

with Elethia C. Dean, RN, BSN, MBA, PhD

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Subconjunctival Injection of Liposomal Latanoprost Reduced Intraocular Pressure Over Three Months

According to a paper presented at the American Glaucoma Society Annual Meeting in February 2014 in Washington, D.C., liposomal latanoprost (Lipolat, Peregrine Ophthalmic, Singapore) produced a sustained reduction in intraocular pressure (IOP) over three months. Patients in the pilot study received a single subconjunctival injection of 100 μL Lipolat (100 μg latanoprost) in the study eye. The investigators observed the patients at regular intervals for three months, including diurnal IOP at months 1 and 3. At baseline, untreated IOP ranged between 25 to 33 mm Hg. All study participants experienced at least 5 mm Hg; half of them experienced 10 mm Hg or more IOP reduction. IOP reductions were observed within one hour of the injection and remained substantially decreased during the three months of observation. Treatment was tolerated well by all patients, without any ocular inflammation. Study investigators have planned to start a larger controlled study.


A New Cornea Layer May Link to Glaucoma

A study published in the British Journal of Ophthalmology showed that a newly identified corneal layer, called the Dua layer, makes an important contribution to the trabecular meshwork (TM) in the periphery of the cornea. The Dua layer is 15 μm thick but incredibly tough. Composed of thin plates of collagen, it sits at the back of the cornea between the corneal stroma and Descemet membrane. The wedge-shaped band of tissue that extends along the circumference of the angle of the anterior chamber of the eye is made of beams of collagen wrapped in a basement membrane to which trabecular cells and endothelial cells attach.

The investigators discovered that the collagen fibers of the layer also branch out to form a meshwork and that the core of TM is in fact an extension of the Dua layer. Researchers hope that the discovery will provide new clues regarding the drainage system malfunctions in individuals who have elevated intraocular pressure.


Exercise May Delay Age-Related Macular Degeneration

Researchers at the Emory Eye Center demonstrated on an animal model that moderate aerobic exercise helps to preserve the structure and function of nerve cells in the retina following any damage. The findings, from a study of an animal model of age-related macular degeneration, suggested that aerobic exercise could have a direct effect on retinal health and vision.

Researchers trained mice to run on a treadmill for an hour daily five times a week, for two weeks. After the animals were exposed to toxic bright light to cause retinal degeneration, they exercised another two weeks. The exercised animals had nearly twice the number of photoreceptor cells of animals that spent the equivalent amount of time on a stationary treadmill, and their retinal cells were more responsive to light. Researchers demonstrated that treadmill training preserved photoreceptors and retinal cell function in the mice model.

The researchers were able to show that the effects of exercise come partly from a growth factor called BDNF, which was thought to be involved in the beneficial effects of exercise in other studies. Exercised mice had higher levels of BDNF in the blood, brain, and retina, while chemically blocking BDNF receptors effectively eliminated the protective effects of aerobic exercise, they demonstrated.

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Maureen Martinez, RN, MS

At the age of 17, Maureen Martinez was a volunteer at Boston Children’s Hospital. It was this positive experience that launched her career as a registered nurse. She has had a gratifying nursing career in pediatrics, emergency nursing, education, and nursing management. Her 30-year career has also afforded her the flexibility to raise a beautiful family.

Four years ago, Maureen’s husband went to the Massachusetts Eye and Ear Infirmary for a routine eye appointment. The ophthalmologist discovered a rare tumor in both eyes. He underwent emergency surgery and was followed by a specialist who saved his eyesight. Maureen was so impressed by the dedicated, compassionate, and expert care he received that she wanted to join the nursing team at Mass. Eye and Ear. She quickly accepted a nurse manager position.

Maureen is currently the nurse manager of the Emergency Department and Nurse Education at Mass Eye and Ear. The Emergency Department at Mass. Eye and Ear provides New England’s only 24-hour, seven-days-a-week specialized care for many different types of urgent and emergent eye problems. Provided specialties include eye trauma, retina, cornea, glaucoma, oculoplastics, and neuro-ophthalmology. The operating rooms at Mass. Eye and Ear are always available for urgent surgical repairs. The Nursing Education Department provides specialized education to meet the nursing competencies, standards, and practice for ophthalmology care.

Maureen is able to work every day with patients and nursing staff in providing quality and state-of-the-art care to a unique specialty. Maureen states, “It is rewarding and an honor to work with a dedicated team specializing in ophthalmology. I believe that my nursing career has come full circle; I am privileged to bring my years of nursing experience to this specialty.”

Maureen received her bachelor of science in nursing from Salem State College in Salem, Massachusetts, and her master of science in organizational communication from Regis College in Westin, Massachusetts. She is certified in Advanced Cardiac Life Support and Pediatric Advanced Life Support. This year she received the Massachusetts Eye and Ear Norman Knight Nursing Leadership Award. She is also a member of the American Society of Ophthalmic Nursing (ASORN) and presented a poster presentation, “Hardwiring Patient Rounding in the Emergency Department” at the 2013 ASORN Annual Meeting in New Orleans.

Outside of work, Maureen loves her time with family and friends. Last year, she vacationed with her husband for two weeks in California; this spring, she is looking forward to a trip to France.

Lorrie J. Durbin, RN, BSN, COMT, Registered Nurse/Ophthalmic Medical Technologist, ASORN Insight Editorial Board, Decatur, IL, ljdurbin@aol.com
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BRIEF SUMMARY: Please consult package insert for full prescribing information

INDICATIONS AND USAGE: Mitosol® is an antimetabolite indicated for use as an adjunct to ab externo glaucoma surgery. Coagulation of tissues may be improved by the use of mitomycin. Mitosol® may be used as a direct injection into the anterior chamber, conjunctival incision, or the incision in the cornea after keratoplasty for the purpose of improving tissue coagulation and hemostasis. Mitosol® is indicated for use as an adjunct to ab externo glaucoma surgery. Mitosol® is contraindicated in patients that have demonstrated a hypersensitivity to mitomycin in the past. Pregnant women: Mitosol® may cause fetal harm when administered to a pregnant woman. Mitomycin administered parenterally has been shown to be teratogenic in mice and rats when given at doses equivalent to the usual human intravenous dose. Mitosol® is contraindicated in women who are or may become pregnant during therapy. If this drug is used during pregnancy, or if the patient becomes pregnant while taking this drug, the patient should be apprised of the potential hazard to the fetus.

WARNINGS AND PRECAUTIONS: Cell Death: Mitomycin is cytotoxic. Use of mitomycin in concentrations higher than 0.2 mg/mL or use for longer than 2 minutes may lead to unintended corneal and/or scleral damage including thinning or perforation. Direct contact with the corneal endothelium will result in cell death. Hypotony: The use of mitomycin has been associated with an increased instance of post-operative hypotony. Cataract Formation: Use in phakic patients has been correlated to a higher instance of lenticular change and cataract formation.

ADVERSE REACTIONS: Ophthalmic Adverse Reactions: The most frequent adverse reactions to Mitosol® occur locally, as an extension of the pharmacological activity of the drug. These reactions include: Blebitis: bleb ulceration, chronic bleb leak, encapsulated/cystic bleb, bleb-related infection, wound dehiscence, conjunctival necrosis, thin-walled bleb; Cornea: corneal endothelial damage, epithelial defect, anterior synechiae, superficial punctate keratitis, Descemet's detachment, induced astigmatism; Endophthalmitis; Hypotony: choroidal reactions (choroidal detachment, choroidal effusion, serous choroidal detachment, suprachoroidal hemorrhage, hypotony maculopathy, presence of supraciliichoroidal fluid, hypoechogenic suprachoroidal effusion); Inflammation: iritis, fibrin reaction; Lens: cataract development, cataract progression, capsule opacification, capsular constriction and/or capsulotomy rupture, posterior synechiae; Retina: retinal pigment epithelial tear, retinal detachment (serous and rhegatogenous); Scleritis: wound dehiscence; Vascular: hypHEMA, central retinal vein occlusion, hemiretinal vein occlusion, retinal hemorrhage, vitreal hemorrhage and blood clot, subconjunctival hemorrhage, disk hemorrhage; Additional Reactions: macular edema, sclera thinning or ulceration, intraocular lens capture, disc swelling, malignant glaucoma, lacrimal drainage system obstruction, ciliary block, corneal vascularization, visual acuity decrease, cystic conjunctival degeneration, upper eyelid retraction, dislocated implants, severe loss of vision.

USE IN SPECIFIC POPULATIONS: Pregnancy: Teratogenic Effects: Pregnancy Category X (see Contraindications). Nursing Mother: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, and because of the potential for serious adverse reactions in nursing infants from Mitosol®, a decision should be made whether to discontinue nursing or to discontinue the drug, taking into account the importance of the drug to the mother. It is recommended that women receiving Mitosol® not breast feed because of the potential for serious adverse reactions in nursing infants. Pediatric Use: Safety and effectiveness in pediatric patients have not been established. Geriatric Use: No overall differences in safety and effectiveness have been observed between elderly and younger patients.

More detailed information is available upon request.

For information about Mitosol® contact: 1-877-EYE-MITO (1-877-393-6486)
Please also see full Prescribing Information at MobiusTherapeutics.com
Manufactured for:
Mobius Therapeutics, LLC
4041 Forest Park Avenue
St. Louis MO 63108 USA
(314) 615-6930
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Compounded mitomycin degrades rapidly\(^1\).

So what you want and what you get could be a shot in the dark.

Mitosol® is reconstituted on the sterile field at the time of use.

So it’s right on the mark every time\(^2\).

Eliminate one more variable from your surgery.

Choose Mitosol®.

INDICATION

Mitosol® (mitomycin for solution) 0.2 mg/vial Kit for Ophthalmic Use is an antimetabolite indicated as an adjunct to ab externo glaucoma surgery.

Dosage & Administration

Mitosol® is intended for topical application to the surgical site of glaucoma filtration surgery and must be reconstituted prior to application. Sponges provided within the Mitosol® Kit should be fully saturated with the entire reconstituted contents in a manner prescribed in the Instructions For Use. The sponge(s) should be applied to the treatment area for two minutes.

Reconstituted Mitosol® should be used within one hour of reconstitution.

IMPORTANT SAFETY INFORMATION

Contraindications

Mitosol® is contraindicated in patients that have demonstrated a hypersensitivity to mitomycin, and in women who are or may become pregnant during therapy.

Warnings & Precautions

Cell Death, mitomycin is cytotoxic. Use of mitomycin in concentrations higher than 0.2mg/mL or use for longer than 2 minutes may lead to unintended corneal and/or scleral damage including thinning or perforation. Direct contact with the corneal endothelium will result in cell death.

Hypotony. The use of mitomycin has been associated with an increased instance of post-operative hypotony.

Cataract Development. Use in phakic patients has been correlated to higher instance of lenticular change and cataract formation.

Adverse events and reactions

The most frequent adverse reactions to Mitosol® occur locally and include hypotony, hypotony maculopathy, blebitis, endophthalmitis, vascular reactions, corneal reactions, and cataract.

For brief prescribing information visit www.mobiustherapeutics.com.