

North Toronto Eye Care: An Accredited Dry Eye Centre

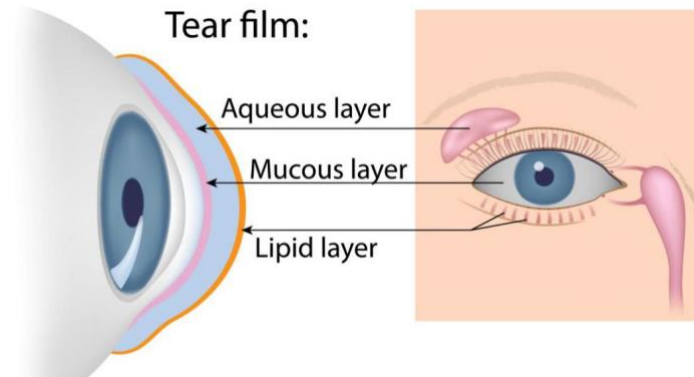
Thank you for taking the time to meet with us today for your **DRY EYE CONSULTATION**. Please read through the information in this package so you can better understand the condition and treatment options available to you.

Dry Eye Disease (DED) is a multifactorial and often under-diagnosed condition where the eyes either do not produce enough tears or the tears evaporate too quickly due to poor quality. While typically not sight-threatening, untreated DED can lead to worsening symptoms such as itching, discomfort, and irritation, increasing the risk of infection and reduced vision. Proper eye care is essential to alleviate symptoms and prevent complications.

Your doctor and eye care team will conduct a thorough evaluation and appropriate testing to diagnose dry eye and provide a customized treatment plan tailor to your specific needs.

Thank you for giving our team the opportunity to help you address your **OCULAR SURFACE** concerns.

OCULAR SURFACE:



The ocular surface comprises of the following structures that protects our eyes:

Tear Film – layer of tears that coats our eyes that is made up of lipid (oil) and muco-aqueous (water and protein) layer

Lacrimal Glands – located by our brow bone, it produces the aqueous (water) portion of our tears

Meibomian Glands – found within our upper and lower eyelids, it produces the lipid (oil) portion of our tears

DRY EYE DISEASE (DED):

Dry eye is a chronic and often progressive condition. The Tear Film and Ocular Surface Society Dry Eye Workshop II defines it as:

*“Dry eye is a **multifactorial disease of the ocular surface** characterized by a **loss of homeostasis* of the tear film**, and accompanied by ocular symptoms, in which **tear film instability and hyperosmolarity, ocular surface inflammation and damage, and neurosensory abnormalities** play etiological roles.”*

Dry eye is classified into two categories:

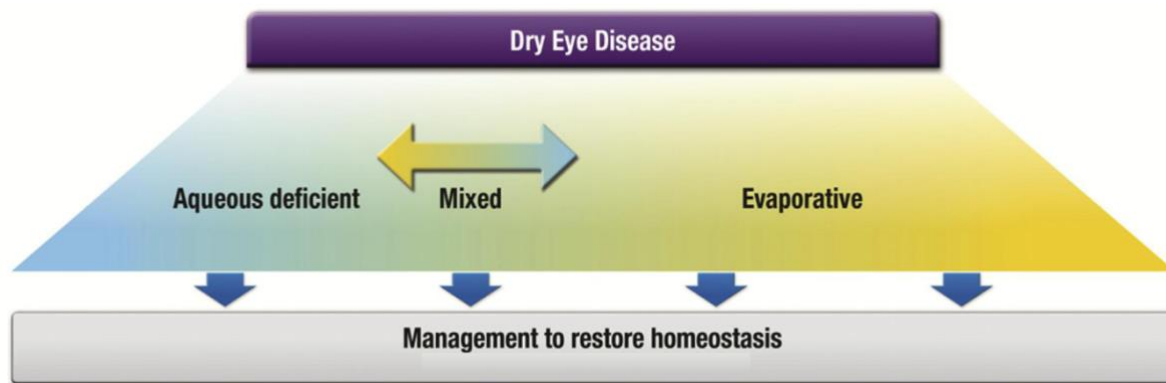
Aqueous Deficient Dry Eye

This occurs when tear secretion by the lacrimal gland is insufficient. The most common cause of ADDE is inflammation to the lacrimal gland, which is highly associated with autoimmune disorders. This condition is more prevalent in women, and represents about 15% of all dry eye patients.

Evaporative Dry Eye

This occurs when the lacrimal gland functions properly, but the tear film is disrupted and unstable, which causes the tears to evaporate too quickly. This is often due to **meibomian gland dysfunction (MGD)**, whereby the meibomian glands become inflamed or damaged and cannot properly secrete meibum (oil) into the tear film. EDE makes up 85% of all dry eye patients.

While individuals can have aqueous deficient dry eye or evaporative dry eye, as the severity of dry eye worsens, it becomes more likely that they will have characteristics of both conditions. Therefore, aqueous deficiency and evaporative dry eyes exist as a continuum, as demonstrated in the diagram below.



IDENTIFYING THE TYPE OF DED WITH DIAGNOSTIC TESTING

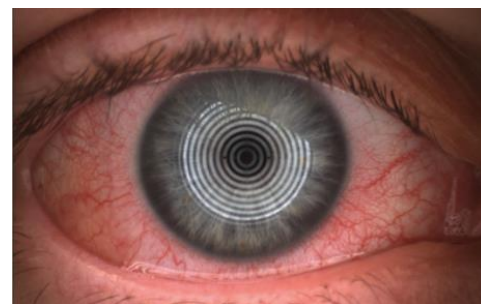
Imaging and diagnostic technologies are essential for diagnosing DED, identifying contributing factors, distinguishing DED from other ocular surface diseases, and helping to develop a **PERSONALIZED TREATMENT PLAN**. Diagnostics are crucial to help establish a baseline, monitor progression, and improve patient compliance as patients will understand their condition better.



LIPISCAN: This imaging technique visualizes the meibomian glands. Meibography helps identify gland atrophy, segmentation, and tortuosity, which are common in meibomian gland dysfunction (**MGD**).



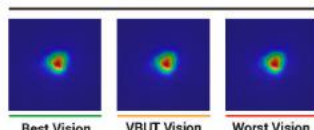
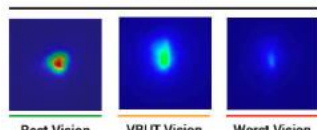
OPD TOPOGRAPHY AND PLACIDO MIRES: This comprehensive tool provides an accurate assessment of the corneal surface and identify irregularities to the corneal surface that can contribute to DED symptoms.



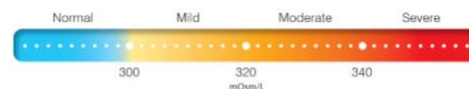
Vision Break-Up Time

5.5 sec

STABLE



HD ANALYZER: This tool measures the stability of the tear film by assessing the time it takes for vision to degrade after a blink. A stable tear film results in longer break-up time, indicating better tear film quality.



TEAR OSMOLARITY: This test measures the homeostasis level in tears. Elevated tear osmolality or hyperosmolality is a key marker for diagnosing DED. Tear osmolality is determined by the interaction of tear production, evaporation, and drainage.



INFLAMMADRY: This is a rapid test that detects elevated levels of MMP-9, an inflammatory marker consistently found in tears of patients with DED. This test helps identify inflammation, guiding targeted treatment and improving patient outcomes.

DRY EYE CENTRE

MANAGING DRY EYE DISEASE BEFORE ANY EYE SURGERY, INCLUDING CATARACT SURGERY IS CRUCIAL

ACCURATE MEASUREMENTS:

The tear film is the eye's primary refractive surface. An unstable or unhealthy tear film can lead to inaccurate measurements during pre-surgical evaluations, such as biometry and keratometry. These measurements are essential for selecting the correct intraocular lens (IOL) power. Inaccurate measurements can result in suboptimal visual outcomes post-surgery.

SURGICAL OUTCOMES:

Dry eye can significantly impact the success of cataract surgery. Patients with untreated DED are more likely to experience fluctuating vision, discomfort, and other complications postoperatively. Ensuring the ocular surface is healthy before surgery helps achieve better visual outcomes and higher patient satisfaction.

POSTOPERATIVE COMPLICATIONS:

Cataract surgery can exacerbate pre-existing dry eye or even induce dry eye symptoms in patients who were previously asymptomatic. This can lead to increased postoperative discomfort, slower recovery, and a higher risk of infection. Managing dry eye before surgery helps mitigate these risks and promotes a smoother recovery.

PATIENT SATISFACTION:

Patients with untreated dry eye are more likely to be dissatisfied with their surgical outcomes due to persistent symptoms such as grittiness, burning, and fluctuating vision. Addressing dry eye before surgery ensures that patients have realistic expectations and are more likely to be pleased with their results.

INFECTION PREVENTION:

A healthy ocular surface reduces the risk of postoperative infections, such as endophthalmitis. Treating conditions like **BLEPHARITIS** and **MEIBOMIAN GLAND DYSFUNCTION**, helps maintain a clean and stable ocular environment, reducing the likelihood of infection.

AT NORTH TORONTO EYE SURGICAL CENTRE WE ENSURE THE OCULAR SURFACE IS HEALTHY AND THAT IT SETS THE STAGE FOR SUCCESSFUL SURGERY AND SMOOTHER RECOVERY

We are able to achieve this through:

☒ **PRE-OPERATIVE DIAGNOSTICS:**

Ocular Surface Testing (OST) assessment on the day you meet your surgeon for Cataract Consultation will reveal the state of tear quality, tear production, and resulting contour of your ocular surface. By understanding how tears are produced and distributed across the eye, OST can help detect DED and allowing for a tailored surgical treatment plan, allowing for optimal outcomes.

☒ **PRE-OPERATIVE HOME AND IN-OFFICE DRY EYE THERAPY:**

This includes the use of preservative-free artificial tears, hot compresses, and lid wipes at home in addition to **ZEST** blepharitis lid exfoliation and additional lid based therapies done in office

☒ **POST-OPERATIVE MANAGEMENT WITH OPTOMETRIST:**

Continued dry eye care is managed together with either referring optometrist or optometrist at our Dry Eye Clinic.

DRY EYE QUESTIONNAIRE: DEQ5

NAME: _____

DATE: _____

1. About your **EYE DISCOMFORT**:

a) Other than your vision, during a typical day in the past month, **how often** did your eyes feel discomfort?

- 0 ☐ Never
- 1 ☐ Rarely
- 2 ☐ Sometimes
- 3 ☐ Frequently
- 4 ☐ Constantly

b) When your eyes felt that discomfort, **how intense was this feeling of discomfort** at the end of the days, within 2 hours of going to bed?

- | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Never | Not at all intense | | | | Very Intense |
| 0 <input type="checkbox"/> | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

2. Questions about **EYE DRYNESS**:

a) During a typical day in the past month, **how often** did your eyes feel dry?

- 0 ☐ Never
- 1 ☐ Rarely
- 2 ☐ Sometimes
- 3 ☐ Frequently
- 4 ☐ Constantly

b) When your eyes felt dry, **how intense was this feeling of dryness** at the end of the day, within 2 hours of going to bed?

- | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Never | Not at all intense | | | | Very Intense |
| 0 <input type="checkbox"/> | 1 <input type="checkbox"/> | 2 <input type="checkbox"/> | 3 <input type="checkbox"/> | 4 <input type="checkbox"/> | 5 <input type="checkbox"/> |

3. Question about **WATERY EYES**:

a) During a typical day in the past month, **how often** did your eyes look or feel excessively watery?

- 0 ☐ Never
- 1 ☐ Rarely
- 2 ☐ Sometimes
- 3 ☐ Frequently
- 4 ☐ Constantly

OFFICE USE ONLY
TOTAL SCORE: []

DRY EYE CENTRE

YOUR DRY EYE DISEASE IS UNIQUE TO YOU

Everyone can experience symptoms of dry eye differently. Dry eyes affect both eyes, however many people may find one eye more bothered than the other. Some people can have signs of dry eyes that are seen by their eye doctor but may not experience any symptoms. This suggests that they are still able to compensate and maintain the homeostasis (balance) within their tear film. However, if these signs are not addressed soon enough, there can be a loss of homeostasis that will lead to them experiencing discomfort.

COMMON DRY EYE SYMPTOMS:

- Dry, Grittiness, or Scratchiness
- Sensation of grain of sand within the eye
- Soreness or Irritation
- Burning or Stinging
- Watery Eyes
- Watery Eyes
- Eye fatigue or visual disturbance (fluctuating vision)
- Light Sensitivity
- Contact Lens Intolerance

DESCRIBE YOUR DRY EYE SYMPTOMS: _____

RISK FACTORS:

- Increasing Age
- Female
- Autoimmune Conditions (ie. Arthritis, Sjogren's Syndrome, Thyroid Eye Disease)
- Environment (Low humidity, AC, Smoking)
- Medications (ie. Antihistamines, antidepressants, acne medications, hormone replacement therapy medications)
- Previous Eye Surgery (ie. LASIK/blepharoplasty)
- Previous Eye Injury
- Contact Lens Wear
- Extended use of devices (TV, computer, phone)
- Eye Medications (ie. For glaucoma or iritis)

LIST YOUR MEDICAL CONDITIONS/MEDICATIONS:

- _____
- _____
- _____

LIST YOUR CURRENT EYE DROPS/MEDICATIONS:

- _____
- _____
- _____

PREVIOUS EYE SURGERY:

- _____

DEMODEX

Another common contributor to DED is Demodex, a microscopic mite that can overpopulate within the eyelash follicles. Demodex mites are common on human skin, eyelids, and lashes. They can cause red, inflamed, itchy and crusted eyelids (**BLEPHARITIS**) and promote recurring bacterial infections of lash follicles (**STYES**) as well as **MEIBOMIAN GLAND DYSFUNCTION (MGD)**. Treatment of Demodex Blepharitis includes lid exfoliation with **ZEST** and/or use of lid hygiene products, especially those containing tea tree oil or hypochlorous acid.

OCULAR ROSACEA

Rosacea is a chronic inflammatory skin condition caused by hypersensitivity to environmental stimuli, affecting the face and sebaceous glands (oil glands). It leads to a reddish complexion due to dilated blood vessels and can cause scarring if untreated. Affecting up to 5% of the population, rosacea is most common in middle-aged individuals, particularly Caucasians with fair skin, and more frequently diagnosed in females. Ocular Rosacea can occur without facial rosacea and is frequently under-diagnosed. Ocular Rosacea impacts the eyelids and eyes, and is often accompanied by dry eye, **MGD**, and **BLEPHARITIS**. Symptoms include swollen and/or red eyelids, burning/stinging eyes, and recurrent styes. Proper identification and treatment are essential to manage symptoms and prevent vision and comfort issues. While there is no cure, various treatments can help manage Ocular Rosacea effectively, including **IPL THERAPY**.

DED TREATMENT OPTIONS:

Dry Eye Disease is a chronic medical condition, much like high blood pressure or diabetes. Chronic conditions necessitate ongoing treatment and regular monitoring at our Dry Eye Centre to assess the severity of the disease and the effectiveness of the treatment. **PERSONALIZED TREATMENT PLANS** will be developed based on each patient's clinical examination and diagnostic results to address their specific issues.

ADVANCED DRY EYE THERAPY: (TREATMENTS ARE PERFORMED IN-OFFICE)

LIPIFLOW®

Lipiflow® is an advanced treatment for **MEIBOMIAN GLAND DYSFUNCTION** and **EVAPORATIVE DRY EYE**. This innovative treatment works by gently heating the eyelids and applying a light massage to the Meibomian glands, effectively clearing blockages and restoring normal gland function. The device utilizes patented Vectored Thermal Pulsation (VTP) technology to deliver heat and massage to the inner eyelids, removing obstructions within the glands.



How Lipiflow® Works

Lipiflow® is a quick, 12-minute in-office procedure that targets the root cause of dry eyes rather than merely addressing the symptoms. The treatment involves single-use, sterile activators that safely and comfortably deliver therapeutic heat and pressure to the Meibomian glands. This process helps to clear blockages and restore the natural oil flow necessary for a healthy tear film.

Benefits of Lipiflow®

- **Effective Relief:** Lipiflow® has been shown to alleviate dry eye symptoms for up to a year, providing long-lasting relief
- **Health Canada Approved:** This treatment is approved by Health Canada, ensuring its safety and efficacy
- **Comfortable Procedure:** Most patients describe the treatment as gentle massage

LUMENIS® INTENSE PULSED LIGHT (IPL)



Intense Pulsed Light (IPL) therapy is an in-office treatment that uses light pulses to liquefy hardened oils blocking the meibum glands, thereby clearing the glands and stabilizing the tear film. This treatment also eliminates bacteria and mites and reduces inflammation by closing abnormal blood vessels. By targeting these vessels, IPL generates heat that triggers the body's natural healing process. IPL is widely regarded as the gold standard for treatment **MEIBOMIAN GLAND DYSFUNCTION (MGD)**, **BLEPHARITIS**, and **OCULAR ROSACEA**.

Treatment Process

Signs of inflammation with enlarged vasculature and resulting symptoms of DED often improve after a couple treatments and continue to enhance throughout the therapy course. The initial therapy typically involves 3-4 sessions spaced 3-4 weeks apart, followed by manual meibomian gland expression. Depending on the severity and frequency of symptoms, maintenance sessions are usually recommended every 6-12 months.

Comprehensive Treatment Approach

We combine IPL therapy and Lipiflow® to address both inflammation and blockages in the meibomian glands, providing a comprehensive solution for **MGD** and **OCULAR ROSACEA**.

Additional Benefits

IPL not only alleviates dry eye symptoms but also **boosts collagen production**, enhancing the overall appearance of the skin.

ZOCULAR® EYELID SYSTEM TREATMENT (ZEST)

ZEST is a highly effective in-office treatment designed to cleanse the eyelids and base of eyelashes. This treatment is perfect for removing bacteria, biofilm, **DEMODEX** mites, dandruff, debris, and excess oil. It utilizes a specially formulated gel containing refined okra extract known for its power cleansing and anti-inflammatory properties.

Ideal Candidates for ZEST

ZEST is recommended for patients suffering from **BLEPHARITIS** and **MEIBOMIAN GLAND DYSFUNCTION**. It is also beneficial for those **preparing for Cataract Surgery**, as maintaining clean and healthy eyelids can improve surgical outcomes.

Treatment Approach

Patients often experience significant improvements after just one treatment. For ongoing benefits, maintenance treatments are typically recommended every 4-6 months.



PLEASE DISCUSS WITH YOUR DRY EYE TEAM WHETHER OR NOT YOU ARE A CANDIDATE FOR ANY OF THE ABOVE ADVANCED DRY EYE THERAPIES

MANAGING DRY EYE:

Low-risk strategies of managing DED begins with identifying and modifying or eliminating environmental and lifestyle factors that contribute to Dry Eye. Also, recognizing physical conditions that exacerbate DED as well as certain systemic and topical medications that may worsen symptoms is crucial for making necessary adjustments. By addressing these factors, patients can significantly reduce the impact of DED and improve their overall eye health.

ENVIRONMENTAL FACTORS

DED can be triggered by various environmental factors, including extreme weather conditions (both cold and heat), high altitude levels, exposure to smoke, wind, and allergens such as pollen and dust.

LIFESTYLE FACTORS

Several lifestyle factors can contribute to the development of Dry Eye. These include prolonged computer or screen use without adequate blinking, frequent exposure to smoke or smoking, wearing contact lenses, having undergone previous eye surgeries, and taking certain medications that may induce dry eye symptoms.

PHYSICAL CONDITIONS

Physical factors can lead to the development of DED. These include misalignment of the eyelids or tear ducts, hormonal fluctuations, thyroid disorders, and autoimmune conditions such as Sjogren's Syndrome.

CUSTOM TREATMENT PLAN: HOME THERAPIES

Custom Treatment Plan includes home therapies to manage dry eye symptoms and to prevent the symptoms of dry eye from recurring.

RESTASIS/ CEQUA/ XIIDRA: ENHANCING TEAR PRODUCTION

These are prescription eye drops designed to reduce inflammation in the tear glands, thereby boosting the body's natural tear production. These medications are particularly effective for treating chronic aqueous deficient DED and are used twice daily.

AUTOLOGUS PLASMA SERUM EYE DROPS: REDUCING INFLAMMATION AND PROMOTE HEALING

Serum tears are made from blood and are rich in platelets and growth factors that help cells grow and heal. They also contain important vitamins and proteins that protect and repair the eyes. These tears are especially useful for treating eye conditions that impair the ocular surface, such as DED and Sjogren's Syndrome. Studies have shown that serum tears can help regenerate corneal nerves and improve eye health. Additionally, serum tears have antioxidant and antimicrobial properties that protect the eyes from microbials and damage caused by free radicals.

PLEASE TAKE YOUR AUTOLOGOUS SERUM EYE DROP PRESCRIPTION TO A COMPOUNDING PHARMACY
WE RECOMMEND:
PEOPLE'S CHOICE PHARMACY
10063 YOUNG ST RICHMOND HILL
905 770 3113

Autologous plasma eye drops are prepared in a sterile compounding department. Your blood will be drawn and then the plasma will be extracted from your blood. The plasma will be packaged at the right strength in dropper bottles. These drops must be kept refrigerated.

Please do not share your drops with anybody else, because they are made from your blood!
PLEASE CALL AHEAD TO BOOK AN APPT PRIOR TO HEADING TO THE PHARMACY

PUNCTAL PLUGS

Punctal plugs are tiny devices inserted into the tear ducts to slow tear draining, keeping the eye surface moist and comfortable. They relieve symptoms of dry, itchy, and burning eyes. There are two types of plugs: temporary plugs, made of materials like collagen that dissolve within days to a week or semi-permanent plugs, made of durable medical plastic like silicone, lasting 3-6 months. This treatment is ideal for chronic aqueous deficient dry eye once inflammation is managed.

HOME THERAPIES: SYMPTOMS MANAGEMENT BASICS

HOT COMPRESSES

How they work

The heat from the compress liquefies the meibum (oil) in the meibomian glands located in the eyelids, enabling the oil to flow more freely from the glands to the ocular surface, where it helps prevent tear evaporation.

Instructions

- Wash hands.
- Remove all make up, have eyes and face clean
- Heat the mask for 20 seconds in the microwave and with eyes closed, place the compress on your eyes for 10 minutes.
- Before placing over your eyes, touch the compress to your wrist to make sure the compress is not too hot.

Dosing

Perform for 10 minutes 2 times a day.

Available brands/products:

- Bruder mask
- iRelief mask

OMEGA-3 FATTY ACID SUPPLEMENTS

How they work

An imbalance in omega fatty acid ratios can lead to inflammation. Supplementing with omega-3 fatty acids, specifically 2,000mg of combined EPA and DHA in a 3:1 EPA to DHA ratio, enhances meibum quality and alleviates patient symptoms.

Instructions

- 1) Take by mouth a daily dosage of 500mg of DHA (docosahexaenoic acid) and 1,500mg of EPA (eicosapentaenoic acid) for a combined 2,000mg of omega-3 fatty acids per day.

Available brands/products:

Formulas that use a high quality, re-esterified, triglyceride -based omega-3 supplement with a 3:1 EPA to DHA ratio and at least 2,000mg of combined EPA and DHA can improve the quality of oil found in the meibomian glands.

- Physician Recommended Nutraceuticals (PRN) De3 Omega

LID SCRUBS

How they work

Debris buildup and crusting on the eyelids can be caused by naturally occurring skin, bacteria, and mites, leading to irritation, itching, and exacerbation of dry eye symptoms. Lid scrubs help remove oil and debris, which can harbor bacteria and cause inflammation.

Instructions

- 1) Wash hands.
- 2) To loosen the debris along the lash line, place a moistened clean warm cloth on the eyelids for about 2 to 3 minutes.
- 3) Using a new pad/cotton swab with scrub foam/spray for each eye, close your eyes and then gently swipe in a horizontal motion along both upper and lower eyelid margins at the base of the lashes.
- 4) Rinse eyelids with clean water and pat dry with towel.

Dosing

Use tears 2 times a day.

Available brands/products:

Lid scrubs can come in the form of moist towelettes, eyelid sprays, or foams.

- iLid'N Lash Wipes
- Cliradex
- Blephaclean
- Systane
- Blephadex
- IQ HOCl
- Bruder Hygienic Eyelid Wipe or Solution

LIFESTYLE CHANGES

- Avoid fans at night and turn car vents away from your face.
- Add a humidifier to your workspace or home.
- Stay hydrated.
- Get at least 7 hours of restful sleep every night.

DEVICES AND BLINKING

People tend to blink about 50% less frequently when looking at screens. It's important to take regular breaks from screens. For optimal eye health, try to follow the 20-20-20 rule: every 20 minutes, look at something 20 feet away for 20 seconds and remember to blink!

ARTIFICIAL TEARS (LUBRICANTS)

How they work

Artificial tears offer relief and alleviate stress on the ocular surface.

For patients with meibomian gland dysfunction (MGD), oil-based artificial tears can be particularly effective.

Instructions

- 1) Either lie down or tilt your head back to a comfortable position and look upward
- 2) Use your non-dominant hand to pull your lower eyelid down and away from your eyeball, creating a "pocket" for the drops.
- 3) With the other hand, hold the eye drop bottle between your thumb and forefinger and position just above your eye.
- 4) Without letting the bottle tip touch your eye, squeeze one drop into the pocket.

Dosing

Use tears 4+ times a day.

Available brands/products: (preservative-free formulations)

Artificial tears can come in the form of drops, gel, or ointment. Gels and ointments offer soothing relief while you sleep and prevent morning dryness.

- Thealoz Duo
- Hylo (Gel/ Dual Intense)
- Idrop (MGD/Gel)
- Hydrasense
- Ocunox
- Systane nighttime ointment
- Lacrilube
- Soothe

COSMETICS

- Avoid lining your waterline or tightlining, as this can block your meibomian glands, leading to gland blockage and atrophy.
- Be aware that many cosmetics contain harmful ingredients
- Steer clear of waterproof mascara; its ingredients make it difficult to remove.
- Always remove makeup before bed.
- Lash serums containing prostaglandin or prostaglandin analogues can exacerbate dry eyes, Caster oil on the lash line is a safer option.
- Botos around the "crow's feet" area can interfere with normal blinking, preventing tears from spreading evenly across the eye.
- If you use false lashes or lash extensions, ensure you clean your lashes thoroughly, even though we generally advise against their use.
- Topical Retin-A (ie. tretinoin) and retinol creams can damage your oil glands. Keep these products away from your eyes.