

What you need to  
know about....



# Contact Lenses



# Eye Care For You

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## **Introduction:**

Whether it is for vision correction, eye color enhancement, or treatment of corneal disease, millions of people around the world today enjoy the benefits of contact lens wear.

Approximately 50% of the world's population requires some form of vision correction. In 1993, it is estimated that 50 million people worldwide choose to wear contact lenses as the primary means of obtaining clear vision.

Contact lenses have evolved from the blown glass lenses of the 1800's which covered the entire front of the eyeball into the high-tech ultra thin plastic corneal lenses of today. They are manufactured to precision specifications and correct a wide range of refractive errors. A variety of lens materials, tints, and wearing options are now available to the contemporary contact lens wearer.

## **The principles of contact lens correction:**

Contact lenses are designed to rest on the cornea, the clear outer surface of the eye just in front of the iris. The contact lens is held in place mainly by adhering to the tear film that covers the front of the eye and to a lesser extent by pressure from the eyelids.

As the eyelid blinks, it glides over the surface of the contact lens and causes it to move slightly. This movement allows the tears to provide necessary lubrication to the cornea and helps to flush away debris.

Contact lenses are optical medical devices, which are primarily used to correct various refractive errors of the eye, including myopia (near-sightedness), hyperopia (far-sightedness), astigmatism, and presbyopia (gradual loss of the ability to focus on near objects with age).

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In these conditions light is not focused properly on the retina, resulting in blurred vision. When in place on the cornea, the contact lens functions as the initial optical element of the eye. The optics of the contact lens combine with the optics of the eye to properly focus light on the retina, resulting in clear vision.

## **Advantages of contact lens wear:**

Contact lenses offer many benefits to the millions of people who wear them. These advantages fall into several categories:

### ⇒ Visual :

Contact lenses allow a wider field of view than spectacles. First, there are no spectacle frames to block peripheral vision (side vision), because the contact lens is actually in contact with the eye and directly follows eye movements, the optical correcting properties are maintained in all directions of gaze. Therefore, the pupil is centered behind the optical center of the lens at all times, which allows a wider field of view. It also eliminates certain optical distortions present in some eyeglass prescriptions. Thus, contact lens wear can provide better depth perception than eyeglasses, especially in high prescriptions.

### ⇒ Cosmetic:

Contact lenses are practically invisible when worn, providing a more natural appearance to the wearer than when spectacles are worn. Improved appearance is one of the most significant benefits of contact lens wear and is one of the most important reasons people choose to wear contact lenses.

The psychological effects of improved appearance go beyond vanity, however. Eyeglass wearers may experience significant social disadvantages which can be reversed when wearing contact lenses.

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Contact lenses are often used to enhance or change the wearers eye color in addition to correcting refractive errors. Tinted lenses can either combine with existing eye color (enhancing tints) or cover the natural color resulting in a completely different eye color (opaque tints)

In some cases tinted contact lenses are used by people with no refractive error ( emmetropia), purely for the cosmetic effect of eye color change or enhancement. In such cases the tinted lenses are plano, meaning they have no optical power.

Certain types of tinted lenses can be used in a medical rather than cosmetic application to create an artificial pupil for patients with disfigured pupils.

## ⇒ Convenience:

Compared to spectacles, contact lenses don't get splashed with water or rain and don't steam up from perspiration or condensation. They don't slide down the nose or cause pressure sores on the ears, nose or temples. They are also more practical to wear than eyeglasses during strenuous activities such as sports.

Of course, contact lenses are not entirely free from inconvenience, either. Wearers must adhere to the prescribed wearing schedules, lens care regimens, and follow-up office visits.

## ⇒ Occupational Advantages

Most occupations require good vision, and contact lenses are appropriate in most cases for the optical advantages they provide. Photographers and those that work with microscopes, telescopes and other such instruments enjoy the freedom from the obstruction of eyeglass lenses and frames. Even some surgeons prefer contact lenses on the job for the optical benefits and because they do not steam up from perspiration. Police officers, postal workers, sales people and others whose jobs take them in and out

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of doors frequently enjoy the benefit of not having their glasses fog up due to condensation. Professional athletes and other sport enthusiasts enjoy the enhanced vision and convenience benefits of contact lenses. Of course, the cosmetic advantages of contact lenses are especially valuable to those in the entertainment industry and others for whom personal appearance and direct eye contact is a primary concern.

⇒ Safety:

The contact lens can act as a protective barrier between the environment and the cornea. There are cases where contact lenses have prevented serious corneal injury from projectiles and caustic fluids. In sport, contact lenses eliminate the possibility of a broken or injured nose or face due to impact of the eyeglass frame. HOWEVER, CONTACT LENSES ARE NO SUBSTITUTE FOR SAFETY EYE WEAR AND WEARERS MUST STILL WEAR APPROPRIATE EYE PROTECTION WHEN ENGAGED IN ANY POTENTIAL HAZARDOUS ACTIVITIES.

## **Characteristics of an "ideal" contact lens:**

The history of contact lenses reveals a rapid and dynamic evolution of new materials and designs over the past 100 years. Indeed, research and development efforts continue at a rapid pace and further improvements and additions are expected.

Although, contact lenses are available in a wide range of materials and designs, there is no lens as yet which fulfils all of the following criteria of the "ideal" contact lens:

- Transmits adequate oxygen and carbon dioxide.
- Induces no adverse physiological effects.
- Has excellent optical qualities.

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- Completely comfortable to wear.
- May be worn continuously (extended wear).
- Easy to handle, insert and remove.
- Durable and resists soiling.
- Resists microbial contamination.
- Easy to care for ( disinfection and storage.)
- Cosmetically acceptable.
- Easy to fit, dispense, verify.
- Inexpensive to the consumer.
- Simple and inexpensive to manufacture.
- Biodegradable and environmentally sound.

These criteria are among the major factors driving research and development efforts in the contact lens field today.

## **Types of contact lenses.**

### Hard ( Rigid ) lenses:

- Non gas-permeable (PMMA) do not flex on the eye and do not allow oxygen to pass through the lens to the cornea.
- Rigid gas permeable (RGP) lenses are somewhat more flexible than PMMA lenses, and do allow oxygen to pass through the lens to the cornea.

### Silicone elastomer lenses:

These lenses are rubbery to the touch and are very elastic. They are made of silicone rubber and are known as elastomers.

### Soft (Hydrogel) lenses:

Soft lenses are made from flexible plastics and allow oxygen to pass through the lens to the cornea.

### **Which type of contact lens is best.**

It should be apparent from the previous discussion that there is currently no single type of contact lens available that meets the criteria of the "ideal" lens.

There are advantages and disadvantages associated with each type of contact lens, and no one type is considered "best".

The contact lens practitioner must select the best contact lens for each individual patient based upon the unique visual, ocular and lifestyle needs of that person. Not everyone is a suitable candidate for contact lens wear—especially patients with a history of repeated eye infections, allergic reactions, or low tear production. As with any other medical device, contact lenses are not without a degree of risk of adverse effects.

The major risks of contact lens wear include eye infection, corneal abrasion, and allergic reaction.

Fortunately, most of these complications are infrequent and can be avoided by careful fitting and proper follow up care by the practitioner, and compliance of instructions by the patient.

## **Use of non-prescription contact lenses.**

Historically, all contact lenses, including tinted and costume lenses have been considered and evaluated as medical devices. A prescription is required by an eye health care professional such as an ophthalmologist. Although contact lenses provide visual and cosmetic benefits, their use carries some risk of ocular complications, the most serious being microbial keratitis, which can lead to vision loss. Thus, proper evaluation and fitting and instruction on the care, cleaning and wear of contact lenses is important to reduce the risk of ocular complications.

Risks associated with improper wear, care and cleaning of contact lenses include allergic reactions, bacterial infections, corneal abrasions, corneal ulcers and epithelial keratopathy, corneal thinning, corneal neovascularization, and corneal warpage.

In some patients, contact lenses may not be advisable because of pre-existing conditions such as significant eyelid, tear film, or corneal abnormalities.

An important consideration is that these risks of ocular complications are the same whether or not the refractive error is being corrected, because these are inherent in the contact lens.

## **Illegally sold costume contact lenses**

Costume contact lenses come in a variety of colors and designs and are popular as a fashion accessory especially among young people. Some ophthalmologists have reported treating patients for problems associated with wearing costume contact lenses sold illegally, from places such as beach stores and beauty salons.



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Many people incorrectly assume they do not need to see an eye care professional or obtain a prescription if they are not wearing contact lenses to correct refractive errors such as myopia (near-sightedness). Contact lenses are considered medical devices—whether or not they are prescribed to correct refractive errors. If contact lenses are not properly fitted by an eye care professional such as an ophthalmologist, or if they are not cared for or cleaned properly, they can cause problems that can result in permanent vision loss. In many cases, it is also unclear who manufactured the contact lenses. This may mean that the lenses were made with unapproved material in unsanitary conditions.

## **Eye conditions and diseases.**

Some of the eye conditions and diseases that can be caused by contact lenses include:

- Bacterial infections
- Corneal abrasions.
- Corneal ulcers.
- Allergic reactions.

## Recommendations:

- DO NOT wear contact lenses unless they are prescribed by an eye care professional.
- DO NOT wear contact lenses from any vendor not authorized by law to dispense contact lenses.
- NEVER swim while wearing contact lenses
- Make sure contact lenses are properly cleaned and disinfected as instructed by an eye care professional.

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- NEVER swap or share contact lenses with anyone.
- NEVER sleep while wearing contact lenses unless they are extended wear contact lenses prescribed by an eye care professional.
- The safest contact lens wear regimen is daily wear

## **Symptoms:**

If you experience any of the following symptoms, you should see an Ophthalmologist/ Eye M.D. immediately:

- Pain, especially if associated with redness
- Sudden change in vision
- Discharge associated with redness

## **Regular Eye Examinations:**

It is important to have regular eye examinations. Young adults are recommended to have one comprehensive eye exam. People aged 40-60 should receive an eye examination every 2-4 years, and those over 65 every 1-2 years. Of course, if ocular disease is present, or if you have a family history of eye disease, you should be evaluated without delay and thereafter according to your ophthalmologist's recommendations.

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## **Risk of eye damage due to the use of non-prescription contact lenses.**

Many people mistakenly think that just because they aren't wearing contact lenses to correct a refractive error like near-sightedness they don't need a prescription but this is not the case.

Contact lenses are medical devices that require specific shape parameters for proper fit. People assume that buying contact lenses from beauty salons are safe but they aren't being told how to clean and take care of the lenses or how long they can safely be worn. This can lead to potentially serious complications including bacterial infections, corneal abrasions, corneal ulcers and allergic reactions. Ill-fitting lenses can result in permanent damage to the cornea, and even vision loss. Many patients wear contact lenses all night while at parties or dancing. Unless contact lenses are made from a special material that allows high oxygen absorption by the cornea they should never be worn overnight.

### Other problems that can cause eye damage:

- Swimming with contact lenses or getting sand in them.
- Exchanging contact lenses with each other. The exchange can lead to the spread of bacteria, viruses, fungi and amoebae that can cause serious vision threatening eye disease.



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