*Successfully Treating Older Adults: Techniques for the Entire Dental Team*

**WVU Alumni Association Weekend, March 25, 2022**

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# ANTIFUNGALS FOR OROPHARYGEAL CANDIDASIS

**Randy F. Huffines, DDS, FRCSEd**

## General Considerations

Candida is a normal part of the oral flora in 50% of the population
**Most important question**: why has overgrowth occurred**?**
Common precipitating factors - reduction in salivary flow, trauma, inadequate denture hygiene, recent antibiotic therapy, immunocompromise, chemotherapy, steroids, radiation treatments
Removable dentures must be removed and treated since their tissue surfaces are ideal for *Candida*

## TOPICAL AGENTS

### NYSTATIN (*Mycostatin*)

Topical only, not absorbed, no drug interactions
Solution - 100,000 U/ml Swish 5ml QID for > 1 minute, then swallow or spit out depending on pharyngeal involvement. Use for 14 days. Remove dentures prior to use and clean them. Nystatin is very bitter so solution is 50% sucrose (cariogenic).
Pastille - 200,000 U Let 1-2 dissolve in mouth 5x/day. Clean and/or remove denture first.
Ointment and cream - Dispense 30g tube. The cream or ointment can be used on the tissue side of removable dentures QID. Cream is white so is easier to see. For angular cheilitis apply nystatin cream or ointment or Mycolog II (Nystatin and triamcinolone) to corners of mouth QID. If cheilitis does not respond may be Staph infection- use Neosporin

### CLOTRIMAZOLE (*Mycelex*)

10mg troche has minimal systemic uptake so does nothing if patient just swallows the lozenge
Binds to oral mucosa. Contains dextrose
Dissolve 1 lozenge in mouth 5x/day for 10 days. Xerostomics may have trouble dissolving.

## SYSTEMIC AGENTS

### FLUCONAZOLE (*Diflucan*)

Loading dose of 200mg first day, then 100mg qd for 7-14 days.
Supplied in 50, 100, 200mg tablets and oral suspension 10mg/ml and 40mg/ml.
>90% oral absorption, peak serum concentration in 2 - 4 hours.
Half-life is 25-30 hours with normal renal function, use with caution in patients with renal or hepatic dysfunction.
Hemodialysis for 3 hours reduces plasma levels by 50%
Headache is most common side effect.
Rare cases of hepatic toxicity and exfoliative skin disorders.
Drug interactions - phenytoin, cyclosporine, theophylline, coumarin-type anticoagulants, oral hypoglycemics, cimetidine, thiazide, diuretics, some benzodiazepines.

# Dry Mouth and Dentures

Randy F. Huffines, DDS 

### *Saliva and oral health:*

Saliva may seem just like water, but that is far from true. Saliva contains hundreds of the body's "natural medicines" and parts of your immune system designed to keep your mouth healthy. Saliva contains chemicals that make speaking, chewing, and swallowing more comfortable. It also regulates the microorganisms ("germs") that cause oral infections. Most people have a dry mouth (called xerostomia) as a side-effect of medications. Also chemotherapy, radiation therapy, and some diseases can cause your glands to produce less saliva. It is important that your dentist find out the cause of your dry mouth so you can be treated properly. Many people do not know they have xerostomia because one must lose about half of their saliva before it is noticeable.

### *Oral lubricants:*

There are products designed to replace lost saliva. They are sometimes called saliva substitutes or "artificial saliva" but should be thought of as oral lubricants. Unfortunately, science has yet to produce anything that can replace all the functions of saliva. However, many people find that oral lubricants make their mouths feel more comfortable. Several oral lubricants come in a small spray bottle that can conveniently be carried in a purse or pocket. Some people prefer to just use water. Your dentist can suggest which product may be most helpful for your particular situation.

### *Eating with a dry mouth:*

There are many problems you may have with your dentures if you do not have enough saliva. Because of inadequate lubrication, chewing and swallowing foods, especially dry foods, may be a problem. Using gravies and sauces with dry foods in addition to frequent sips of water while eating can help. Using an oral lubricate a few minutes before eating can also help. Be sure to remove your dentures before using the lubricant so it can coat the parts of the gums that support the dentures, and then place the dentures back in the mouth.

### *Dry mouth and denture "fit":*

Saliva helps your denture hold onto the gums; what dentists call retention. When your mouth is dry the denture tends to feel loose. This is made worse because the supporting tissues under your dentures continue to shrink throughout the rest of your life. The amount of shrinkage varies from person to person. As the gums shrink, the denture and the gums become mismatched.

This happens little by little, but even a small change in the "fit" of the denture is more noticeable when the mouth is dry. Most people notice this more often with the lower denture. The size and shape of the upper gums usually make wearing an upper denture easier. As shrinkage occurs, you may need to have your denture remade or relined more frequently than someone who has enough saliva. A reline is a procedure in which additional denture material is added to the part of the denture that contacts the gums so that the denture once again closely conforms to the shape of the mouth. Even with a “perfect fit,” you may still experience some looseness due to the lack of saliva to help hold the denture in place. A denture adhesive may be of help in this case. There are many types of adhesives available, and your dentist can offer advice on which one best fits your needs. In addition to a feeling of increased looseness, you may have more sore spots under your denture due to reduced saliva. Without the saliva to provide lubrication between your denture and gums, the increased friction from the dry denture rubs a sore. Your dentist should first check to be sure the denture "fit" is as perfect as possible. If nothing needs be done to the denture, an oral lubricant or denture adhesive may help. If you continue to have problems, ask your dentist if dental implants might be right for you. Replacing dentures with teeth supported by implants has been a life changing experience for thousands of people. This miracle of modern dentistry is as close as possible to having your own natural teeth again and will eliminate most or all of the problems listed above.

***Dry mouth and oral infections:***

Since saliva regulates the microorganisms in the mouth, a person with dry mouth is more prone to oral infections. In denture wearers Candida, a yeast-like fungus, is a frequent cause of infections. One such infection is denture stomatitis. It is more common under the upper denture, especially in those with dry mouth who wear their denture during sleep. Most cases do not cause enough pain to be noticed so they may exist for years. It is very important to eliminate denture stomatitis if new dentures are to be made. This may require treatment with both tissue conditioners and antifungal medications. Another condition usually caused by Candida is angular cheilitis, recurrent sores that occur at the corners of the mouth. Antifungal medications are also of help with this condition. Antifungals are often used incorrectly so be sure you understand how and when to use them.
If you have some natural teeth, tooth decay is the most frequent cause of tooth loss in older adults who have a dry mouth. Without saliva to regulate the germs that cause decay, they are able to grow in number and cause more damage. Ask your dentist or dental hygienist for ways to reduce tooth decay.

# *Denture Adhesives: A Guide for Patients*

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## *What are denture adhesives?*

Denture adhesives are creams, powders, or liquids that have the ability to stick to the tissues ("gums") under a denture as well as to the denture itself. This improves what dentists call the retention of the denture – its ability to hold on to the underlying tissues.

## *If my new denture has been made correctly, why might I need a denture adhesive?*

Denture adhesives are NOT a substitute for an expertly designed and crafted denture. You may find you can function well with your new denture without the use of adhesives. However, research has shown that adhesives can improve the retention and chewing function of many dentures. You may have certain conditions that make wearing dentures more difficult, such as dry mouth, a stroke, or loss of some of the bone support for the denture. These and many other conditions can compromise the ability to function with even the best denture. Adhesives may offer some help.

## *Which denture adhesive should I use?*

Over 200 million dollars are spent each year in the US alone for denture adhesives. Additional millions are spent on advertisements to influence your purchase. Advice from friends or relatives can be misleading as each person has unique needs. As a general rule, powders do not last as long as creams but are easier to clean off the gums and dentures. Pads and cushions are best avoided as they may alter the occlusion ("bite") of the denture and lead to other problems. Your dentist is trained to evaluate your individual needs and offer the best advice for your circumstances.

## *How should the adhesive be applied?*

**Powders:** The mouth and denture should both be cleansed and kept wet. Tap a <u>thin</u> layer of powder over the entire tissue side of the denture. Gently shake off the excess. Insert the denture and press in place for 5 seconds. Close your teeth together, swallow, and clench your teeth together tightly for 10 seconds. If you have a dry mouth, it may help to first coat your mouth with a saliva substitute or water before placing the denture on your gums.

**Creams:** Clean your mouth and denture well. Dry the denture. For the upper denture apply 5 pea-sized dabs of adhesive equally spaced to the side of the denture that contacts your gums. For the lower denture apply 3 pea-sized dabs. If you have a dry mouth, immerse the denture in cool water for 30 seconds to let the adhesive soak up moisture. Insert the dentures and press in place for 5 seconds with your fingers. Close your teeth together, swallow, and clench your teeth together tightly for 10 seconds. If you have used the right amount, only a little should ooze out from under the denture borders. Over time you will find out just how much cream you need.

### *How should I clean out the adhesive?*

It is very important for the health of your mouth to remove all the denture adhesive from your mouth and denture daily. Powders can easily be brushed from the denture using warm water. Powders can be removed from the gums with a soft brush and toothpaste. Creams are more difficult to remove. To remove them from the denture, scrub the denture under very warm water with a denture brush. If the adhesive is very hard to remove, it may need to be soaked overnight and then brushed. Another method is to scrub the denture with an electric toothbrush while the denture is immersed in a sink of warm water. To remove the cream adhesive from your gums, first hold hot water in your mouth to help soften the adhesive. Next, scrub with a washcloth wrapped around one or two fingers and moistened with hot water.

### *Why are regular checkups still important?*

You may think that since you no longer have your natural teeth, you only need to see your dentist if you notice a problem. That is a dangerous myth. The supporting tissues under your dentures continue to change throughout the rest of your life. As the gums shrink, the denture and the gums become mismatched. This change happens little by little and is often not noticed by the denture wearer until significant damage has been done to the tissues, sometimes requiring surgery. Your dentist is trained to detect these changes and correct them early. Your dentist will also closely observe your tissues for signs of oral cancer, about half of which occurs in people with dentures.

# Patient Instructions for Immediate Dentures

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## The first 24 hours

Do not remove your immediate denture during the first 24 hours. Let it act as a bandage during the initial healing of the surgical area. If the denture is removed during this period, the gums may swell and make it hard to get the denture back in place. Take your pain medication as directed. It is helpful to take the first dose as soon as possible so it is in your system before the anesthetic ("numbness") wears off. Research has shown that it is much better to take pain medication regularly as directed instead of trying to wait until you "really need it". It can also be helpful to apply an ice pack over the area during the first few hours: on for 20 minutes, off for 20 minutes. If you follow these directions, mild pain medications alone may be enough to relieve any discomfort.

Specific instructions for you:

It is normal for some bleeding to occur during the first 2-3 days. When bleeding occurs, close your teeth together tightly for 10 minutes and the pressure from the denture will slow down the bleeding. Do not rapidly clench and release as this only "pumps" the site and can increase the bleeding. If you have excessive bleeding, contact your dentist immediately. Do not take any additional medications or herbal products during this time unless prescribed by your dentist or physician. Many seemingly harmless products can cause increased bleeding. Of course, if you are on any prescription medications for medical conditions, continue to take these as directed. If you forgot to tell your dentist about any medications you are taking, tell them at once. Clean the rest of your mouth and any remaining natural teeth as usual. Keeping a clean mouth can aid the healing process. Do not spit forcefully during this time or the denture could become dislodged. If you need to remove liquid from your mouth, let it drool out gently over a sink. Avoid mouthwashes during the first 24 hours unless prescribed by your dentist.

## At the end of 24 hours remove the denture

Put 1/4 cup of warm water in your mouth and with your lips tightly closed, begin to force the water under the denture to loosen it. Gently spit the water out. The lower denture is usually easy to remove by lifting straight up. Often, the upper denture comes out best in a downward and forward direction. The upper may be harder to remove, especially the first time. If it is stubborn, take your index finger and place it between your denture and cheek moving up and back until you feel the back upper corner of the denture. Move your finger onto the top of the denture border in this area and pull down gently, increasing the force until the denture is dislodged. The exact way your denture most easily comes out is dependent on your mouth's unique shape. After a couple of times, you will know just what to do. There may be very dark blood inside your denture. This is normal. You may also develop some dark spots inside your mouth or on your face over the area of the surgery. This condition, called ecchymosis, is not of any lasting importance; it goes away in a couple of days. Brush your denture inside and out with dishwashing liquid and rinse well with warm water. Put some more warm water in your mouth. Use your tongue to gently scrub the gums that were covered by the denture. Do not spit; let the water drool out of your mouth into the sink. Put your denture back in place and press it on to your gums for 10 seconds. Close together, swallow, and hold together an additional 10 seconds to correctly seat the denture.

## Eating during the first week

It is very important to maintain good nutrition during the healing process. It is especially important to drink plenty of fluids. During the first 24-36 hours you need to eat food that does not require chewing. Some suggestions are:

Bread/cereal group: thin oatmeal or Cream of Wheat
Vegetable group: juices, thin soups
Fruit group: juices, blended drinks and shakes
Milk group: Milk, cheese soup, yogurt, Carnation Instant Breakfast.
Ensure, Sustacal (these two products are nutritionally complete, lactose free drinks)

Meat group: eggs, meat broths or soups, pureed meats.
After the first or second day you can slowly increase the consistency of the food.
In addition to the foods above, consider soft foods like small pastas, well-cooked carrots and green beans, mashed potatoes, creamed vegetables,
soups, well-cooked fruits (no seeds), canned fruits, scrambled or soft-boiled eggs, and chopped meats.

Cut your food into small pieces and eat slowly. Eating with a denture is very different from eating with natural teeth. You may find it helpful to put food on both sides of your back teeth and chew straight up and down. Biting food off is generally better done at the corners of the mouth instead of the very front as is common with natural teeth. However, it is hard to predict exactly what biting and chewing movements will be best for you because they vary widely from person to person. You will soon learn what works best for you. Be patient with yourself.

## Speech

Certain sounds may be hard to pronounce when you first get your denture. Some people find it helpful to read out loud to themselves for the first few days to train their speech. Over time your speech will improve.

## Becoming accustomed to your denture

Having a denture in your mouth can be overwhelming at first. This initial reaction is to be expected. Our mouths are designed to detect even very small foreign objects. Therefore, something as large a denture can be quite a "shock." You will probably notice additional saliva in your mouth. This is because objects in the mouth are usually food, so saliva is increased to aid the eating process. It may take a couple of weeks for your mouth to realize the denture is now "part of you." In most cases, a lower denture will cause more problems than an upper denture. Even with a "perfect fit," the shape of the lower gums usually prevents suction, so a lower denture feels looser than an upper denture. A denture adhesive may be of help in this case. There are many types of adhesives available, and your dentist can offer advice on which one best fits your needs. If you continue to have problems with the lower denture, ask your dentist if implants might be right for you. Patients have fewer problems with the upper denture. In some cases, a feeling of fullness in the roof of the mouth may cause some gagging at first. This declines as the mouth realizes the denture is not a foreign object but is now "part of you."

## Sore spots

Sore spots can occur even in a denture with a "perfect fit." This is due to the fact that the gums the denture rests upon varies from place to place. Some areas are very thick and tough; others are thin and easily injured. You should contact your dentist as soon as a sore develops so an adjustment can be made; trying to "tough it out" can lead to a larger sore that is harder to treat. You can buy ointments to numb the area until you can get to the dentist, but these can mask the problem area and lead to larger sores if used too long. Never attempt to adjust the denture yourself.

## Dry mouth (xerostomia)

If you have a dry mouth, you can expect more problems wearing dentures. Saliva helps hold dentures in place and helps to reduce sore spots by providing lubrication under the denture. Your dentist can suggest products made for this condition that can make denture wearing more comfortable.

## Caring for your denture after the first day

Starting from the day you remove your denture for the first time, remove your denture and rinse it out after every meal or snack, and then place it back in your mouth. For the first 5 days, keep your denture in at all times except to clean. Avoid mouthwashes the first 5 days unless prescribed by your dentist; some mouthwashes may slow the healing process. You can use warm water rinses as described above during this time. To clean the denture, partially fill the sink with water to cushion the impact if the denture is dropped. A liquid dishwashing detergent is used with a denture brush to clean the inside and outside of the denture. Toothpastes made for natural teeth are too abrasive and will cause tiny scratches that will dull the denture material and teeth over time. After healing has occurred, a soft toothbrush with toothpaste is helpful for cleaning the gums where the denture rests. Your tongue should be cleansed as well as it harbors many of the germs that cause bad breath. After the first 5 days, it is best to leave the denture out at night and let it soak in a denture cleanser. This allows the gums to relax and maintain optimal health. Under certain circumstances it may be necessary to keep your denture in all night. If this is the case for you, you are at an increased risk for some problems such as oral yeast infections. Discuss this with your dentist for additional ways to keep your oral tissues healthy based on your individual situation.

## Regular dental care is still important

You may think that since you no longer have your natural teeth, you only need to see your dentist if you notice a problem. That is a dangerous myth. The supporting tissues under your dentures continue to change throughout the rest of your life. The amount of change varies from person to person. As the gums shrink, the denture and the gums become mismatched. This change is especially great during the first 6 months to a year following the removal of natural teeth. If this change is expected to be very large, your dentist may call this first denture a temporary denture because it is only meant to function until healing has occurred after which a new denture will be made to match the new shape of your gums. At other times only a reline may be needed. A reline is a procedure in which additional denture material is added to the part of the denture that contacts the gums so that the denture once again closely conforms to the shape of the mouth. In some cases, your dentist may place a tissue conditioner (temporary soft liner) in your denture

during this healing stage. The liner can be changed from time to time as the gums shrink to help keep you comfortable during the healing stage. As mentioned above, your gums continue to change throughout life. These changes happen little by little and are usually not noticed by the denture wearer until significant damage may have been done to the tissues, sometimes requiring surgery. Your dentist is trained to detect these changes and correct them early when the treatment is less expensive and less troublesome for you. Your dentist will also closely observe your tissues for signs of oral cancer. Many of the oral cancers diagnosed in North America occur in people that have dentures.

## Myths about dentures abound

Although well meaning, friends and relatives may give you advice that can be damaging to your new dentures and your mouth. Each individual is very different, and what might work for some may create problems for others. Never adjust your denture yourself; a minor alteration might be very expensive to correct. Your dental staff is trained to give you the best advice based on your unique needs. Ask questions – they want to help!

# *Root Caries: A Guide for Patients*

Randy F. Huffines, D.D.S. 

## *What is root caries?*

Tooth decay (caries) is not just a problem for children but can happen at any age. In fact, one type of caries becomes more common the older we get. It is called by several names: root caries, root decay, or root cavities, to name three. Unlike the type of decay you are probably familiar with that occurs in the top (crown) of the tooth, root caries occurs where the gums have receded (shrunk) away to expose the root of the tooth.

## *What causes root caries?*

Like all tooth decay, root caries is caused by bacteria. When your mouth is not kept clean, bacteria can cling to your teeth to form a sticky, colorless film called plaque. This plaque can lead to tooth decay. In addition, for root caries to occur, the root of the tooth must be exposed. Unlike the crown of the tooth that is covered by enamel, the root is made of dentin which decays much easier. Changes in the amount of saliva in your mouth can also put you at increased risk for developing caries. Saliva contains many chemicals that keep your teeth and mouth healthy. Many medications, chemotherapy, radiation treatments, and some diseases can cause your glands not to make enough saliva and therefore make cavities and other mouth problems more likely to occur.

## *How do I know if I have root caries?*

Many people that have root caries do not know it. Because it occurs at or even below the gum line, the warning signs that often accompany tooth decay, such as sensitivity to cold or sweets, may be absent. In addition, as we age our teeth become less sensitive and may not warn us that the tooth is damaged. Often root caries is first found by a dentist or dental hygienist during a professional cleaning or exam when they can feel the softened root with a dental instrument. Radiographs (x-rays) can be helpful in finding root caries between the teeth.

## *What can be done to repair the damage to the tooth?*

Root caries is very deceptive. Even when the cavity can be seen with the eye, it often appears small and not very alarming. However, because the damage is to the foundation of the tooth, a little damage can weaken the entire tooth and put it at risk for breaking off to the gum line. To illustrate, perhaps you have seen a large tree that appeared to be healthy but fell down because it was rotten at the root. Similarly, what appears to be a small amount of damage to the tooth may require a crown instead of a filling. Damage may have gone all the way to the pulp (inside) of the tooth and may require endodontic therapy (root canal) to prevent pain and infection. At times, so much damage has been done the tooth must be removed. That is why it is so important to have frequent exams so that root caries can be found early.

## *What can be done to prevent root caries?*

Since root caries is caused from bacteria, the most important thing you can do is to keep your teeth clean every day. If your gums have receded, cleaning can be more difficult. We are trained to develop a method customized for your specific condition that will allow you to be able to clean more thoroughly. Be sure to tell us if you have physical limitations that make it more difficult to clean your teeth. In addition to keeping your mouth clean, fluoride has been shown to be very important in the prevention of root caries. There are now many ways to be sure you receive the proper amount of fluoride depending on your unique needs, and we will customize a fluoride treatment plan just for you. Your diet is also an especially important factor because certain foods (especially those containing sugar) can greatly increase the number of bacteria that causes tooth decay. Between meal snacks that contain sugar are a big problem. Finally, frequent professional cleanings and exams can help prevent root caries or find it early when it can be more easily repaired. We are here to help you keep your teeth for a lifetime!

Randy F. Huffines, DDS © 2022

## Reason for use of fluoride trays

For the reasons we have talked about, you are at high risk to get more cavities in the future. Treating your teeth daily with a prescription strength fluoride gel can help lower the number of cavities you get. Using the clear soft trays we have made to cover your teeth is one of the best ways to get this fluoride treatment every day at home.

## Directions for use of fluoride trays

This is best done the very last thing before bedtime every night, so the fluoride can treat the teeth all during the night. You may be asked to do this treatment a second time after breakfast.

1) Clean your teeth well.

2) Place a thin line of the gel inside each of the soft trays into the depressions where your teeth fit. You need enough so that some oozes out from under the tray when you snap it over your teeth. Over time you will learn how much to use. It is better to have a little too much than too little.

3) Snap the trays with the gel inside onto your teeth. Spit out the extra that oozes out from under the trays. Do not rinse.

4) Leave the trays in for 5-10 minutes

5) Remove the trays. Spit out the extra gel. DO NOT RINSE. You do not want to drink or eat anything for at least 30 minutes. It is even better if you do this at bedtime so that the fluoride stays on for even longer.

6) Rinse out the fluoride trays well with water and store them dry in the denture cup we gave you. At least once a week soak them in any denture cleanser like Polident or Efferdent.

CLINICIANS GUIDE TO GLASS IONOMER PRODUCTS 2022

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*Note: I have included some, but not all, of the products by 3M ESPE and GC America. I have little clinical research with the Riva products by Southern Dental Industries, the Ionofil products by VOCO, or the GlasIonomer line by Shofu. I have had limited clinical experience with them. They may be excellent products.*

**General Principles for all GICs:**

1. Bond to tooth without any bonding agent
2. Fluoride reservoir: Conventional more fluoride than RMGIC
3. Good dentin replacement – Coefficient of thermal expansion like tooth
4. Follow directions for that particular product
5. Stickier than composite so consider matrix, use matrix ASAP when viscosity is low. Do not try to sculpt, overfill and trim/contour after set.
6. Use conditioner (usually polyacrylic acid) NOT phosphoric acid etch
7. Hydrophilic water-based product - tooth moist for best adhesion
8. Better finished with diamonds than carbides
9. Easier to ditch than composites (fatter burs, possibly slow speed)
10. Avoid acidic fluorides
11. Adhesive strength > Cohesive strength

**I. Glass Ionomer Restoratives**

1. **Conventional** (no resin, not light cured)

   a. Ketac Fil Plus Aplicap - 3M ESPE
   b. Ketac Silver Aplicap - 3M ESPE
   c. Fuji Triage (capsule) - GC America

2. **Conventional Fast Set** (sometimes called posterior)

   a. Fuji EQUIA Forte (capsule) - GC America
   b. Fuji EQUIA Forte HT
   c. Ketac-Molar Quick Aplicap – 3M ESP
   d. SMART Advantage Restorative – Elevate Oral Care

**Clinical Tips for Conventional GIC:**

1. Not light cured – acid-base reaction and self-cure
2. No bevel – better if bulk at margins
3. Finish under water and seal (coat) to protect during extended cure
4. OK to bulk fill – no polymerization shrinkage
5. In general, more opaque than RMGICs

## II. Restorative Resin Modified Glass Ionomer Cements (RMGIC)

1. Fuji Automix LC
2. Fuji Filling LC (paste - paste) - GC America
3. Fuji II LC (capsule) - GC America
4. Photac-Fil Quick (capsule) - 3M ESPE
5. Vitremer (powder - liquid) - 3M ESPE
6. Ketac Nano (paste - paste) - 3M ESPE - requires light cured primer

### Clinical Tips for RMGICs:

1. Usually light cured
2. Polymerization shrinkage
3. Place in 2 mm increments
4. Short bevel OK
5. More tolerant to dry finishing
6. Dark cure OK (not sure for Ketac Nano)
7. Consider conditioning even if company says not mandatory

## III. GIC Liners

1. Fuji LINING LC (paste – paste) - GC America
2. Fuji LINING LC (power - liquid) - GC America
3. Vitrebond (powder - liquid) - 3M ESPE
4. Vitrebond Plus (paste – paste) - 3M ESPE

### Sandwich Technique: GIC with composite on top (open or closed)

1. Using conventional GIC and total etch bonding technique:
   Place GIC and let cure, trim back if needed, etch tooth and GIC for 15 seconds, rinse, apply bonding agents to GIC and tooth per regular bonding instructions.

2. Using RMGIC and total etch bonding technique:
   Place RMGIC and light cure, etch only tooth (RMGIC has air inhibited layer), rinse, apply bonding agents to RMGIC and tooth per regular bonding instructions.

## IV. Luting Glass Ionomer Cements

1. Conventional GIC luting agents
   a. Ketac CEM (Aplicap and Maxicap) - 3M ESPE
   b. Fuji I - GC America

2. RMGIC luting agents
   a. RelyX Luting Plus (paste - paste) - 3M ESPE
   b. RelyX Luting Cement (powder/liquid for hand spatulation) – 3M ESPE
   c. Fuji PLUS (capsule, also available in powder/liquid for hand spatulation) - GC America
   d. Fuji CEM Evolve (automix paste - paste) – GC America