Dentistry Update
Howard Speaks Podcast 045
Dr. Gordon Christensen
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Websites, Emails, Phone Numbers and Products Mentioned:

- PCC Dental - http://www.pccdental.com/
- Clinicians Report - http://www.cliniciansreport.org/
- Carestream CBCT - http://www.carestream.com/cbct-panoramic.html
- Biolase - http://www.biolase.com/Pages/Welcome.html
- PlanScan - http://e4d.com/planscan-complete-system/
- CEREC - http://www.cereconline.com/
- I-CAT - http://www.i-cat.com/
- Sirona - http://www.sirona.com/en/
- PlanMeca - http://www.planmeca.com/
- Vatech - http://www.vatechamerica.com/
- Implant Direct - http://www.implantdirect.com/landingpage
- Nobel Biocare - http://www.nobelbiocare.com/international/en/home.html
- BioHorizons - http://www.biohorizons.com/
- Branemark - http://www.branemark.com/
- HIOSSEN - http://www.hiossen.com/
- PubMed - http://www.ncbi.nlm.nih.gov/pubmed
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- Dyract eXtra - https://www.dentsply.co.uk/Products/Restorative/Compomers/Dyract-eXtra.aspx
- Fuji II LC - http://www.gcamerica.com/products/operatory/GC_Fuji_II_LC/
- Riva - http://www.sdi.com.au/en/riva-self-cure/
- 3M Ketac Nano - http://solutions.3m.com/wps/portal/3M/en_US/3M-ESPE-NA/dental-professionals/products/espe-catalog/~/Ketac-Nano-Light-Curing-Glass-Ionomer-Restorative?N=5145263+3294768954+3294798060&rt=rud
- Fuji IX - http://www.gcamerica.com/products/operatory/GC_Fuji_IX_GP/
- MELISA - http://www.melisa.org/
- VELscope - http://www.velscope.com/
- Schein Identafi - http://www.henryschein.com/dental-oral-cancer-detection.aspx

Howard Farran: I cannot believe that today I get to interview the god of dentistry, Gordon Christensen and I mean seriously, in all seriousness, historically there was Pierre Fauchard in France, then there was G.V. Black and you're the third guy on that tier. You are an absolute legend. I'm sure you know it but for me personally Gordon I always call you my dental father because when I got out of school, the mind set of the school is kind of like the marine core, the boot camp, they did everything they could.

Gordon Christensen: It's worse than that.

Howard Farran: They did everything to destroy your morale and when I got out of dental school I literally almost got on my hands and knees and kissed the ground when I walked out of that place and then something happened to me. I went to Provo, I ended up going once a month for a year when I got out of school with Mike DiTolla and we sat in the front row and you were the first person that totally inspired me that dentistry was a science that you'll never, ever be smart enough to completely figure out.

It's bigger than life, it's all science and you were the total inspiration of treating dentistry just like a hardcore science and I can't even count how many dentists tell me that you're their ultimate role model, their ultimate idol and I'm so glad that you're doing this podcast with me today.

So my first question to you Gordon, straight out of the gate is very simple. I got out of school in '87 in May and then that October was Black Monday. I saw the recession of 2000, we've been through several recessions and when I got out of school orthodontic centers of America was on the New York Stock Exchange and there was a dozen on NASDAQ and they all failed.

So here I'm out now 27 years, you've been at this game longer than I have, you've seen many recessions. You saw corporate dentistry rise to the New York Stock Exchange, NASDAQ, collapse and now you see it coming again with Heartland Dental having 600 offices with 2000 dentists as employees and Pacific Dental and Aspen. So my question to you is what would you tell the 5000 dental graduates who just walked out of dental school? A lot of people are thinking the sky is falling, that we're all going to be working at Walgreens, so my question to you is how does this sovereign in professional dentistry look and Gordon in 10 years will half the dentists be working in chains like Walgreens and Heartland and Aspen and Pacific Dental?

Gordon Christensen: I have some data on that Howard and you probably do too. Right now 60% of American dentists are solo practitioners and they're all in their little shop doing they're own thing. I predict by five years we'll be down to 40%, by 10 years we'll probably be down to 30%. It's that bad. When I got out of dental school many years ago I went into the military and I made far more in the military than I did and the result was I had that experience before I went onto a couple of graduate schools.

Now they get out of school and there's not much military because the federal government has hung down the military forces to the point where there's hardly anything going on. Bottom line is they have to go somewhere, they have $350 000 in debt and where are they going to go? If they start their own practice they're going to throw another $500 000 to a million on that, they can't do that. They can go into public health dentistry for a while, however they can go into a major corporate.

I spoke recently, as you probably have, for Pacific. I've spoken for Heartland before. They're both trying very hard to make this an opportunity for these young dentists, so they stay a while and then leave and go into an associateship usually. One of my brother's grandchildren did that. He got with one of the biggies for a while and got some experience, good and bad, and then he left and went on to a practice where he's now very, very satisfied.

But to answer your question, are we all going to be working for someone else? No, but the majority of the younger people will be. I don't see any way around that. There's just nowhere else to go. There's another complicated factor and that is we have more dental schools than we need. We have two in the state of Utah, we don't need any. We're seeing schools pop up here and there and everywhere. There's schools that are private, some of them are doing a very fine job, but they're saturating the market to the degree that it's even worse for young dentists who want to start a small practice of their own.

Bottom line, to answer the question, quick answer, corporate is good, corporate is bad and it depends on how you look at it, what time you are or how long you're been out of school. But yes, many will be working for other people.

Howard Farran: How many recessions have you seen since you graduated from dental school and what did you think of this last recession and do you think it's all changed or do you think before you know it America will just be adding a quarter of a million jobs again in another boom?

Gordon Christensen: Just yesterday I was looking at one of the doomsayer's videos and there are those projecting even more recession. When we do a budget as you probably do, you're an excellent business man, as we do a budget we look at not only what we owe but what we have to take account for, on Clinicians Report, our research group, we have thousands of people who have signed up for one year, two years, three years but let's say a major recession came. Do we have enough money to pay back all of those post-dated subscriptions? And the answer is yeah, we have 125%. Has the federal government got enough money to pay back entitlements? The answer is a vehement no. All they're looking at is their immediate debt, not their entitlements, not the social security, not the Medicare. They're looking at just what they obviously owe.

What does that mean? There are numerable more things that need to be accounted for and there are the doomsayers predicting another, not a little and short term recession, but a major recession. I don't know whether I agree with that but these are economists and they're a lot smarter than I am.

What did the last recession do to us? Now practice wise it didn't do much to me because I've been around so long, people know me and they want to stay. It took a terrible hit with Clinicians Report and with practical, clinical courses. We have now

recovered two thirds of the charities which Clinicians Report is a 501(c)(3) charity. Two thirds of those charities in the state of Utah went bankrupt during that recession. Unbelievable.

The president at that time of the United States wanted to eliminate all charities, which I'm glad kind of died. Bottom line, I've been through at least one major and about three other minor recessions. In fact my whole course is usually entered toward how do we overcome to some degree the recessionary mentality which is I don't want to spend, I've directed my energy to it.

Howard Farran: So Gordon if you're coming out of school, $350 000 in student loans and you work for a chain for a while and you finally get a practice. To the dentists that have been out just like the last 10 years, there's a lot of very expensive machinery out there. A CBCT is $100 000, a CAD/CAM, a CEREC or an E4D with Planmeca is $100 000. Lasers, I mean some of these lasers like BIOLASE, $40 000.

Gordon Christensen: There's a $80 000, I just looked at one.

Howard Farran: So let's go through those three. A big capital purchase. A lot of guys will be listening saying should I really double down and get another third of a million dollars in debt with a CBCT, a CAD/CAM and a laser? Can you go through those one by one?

Gordon Christensen: Yes. I have a whole course on technology, in fact I've just done six videos for Schein on technology. We're doing a number of things in the technological area, there are probably 50 technologies out there. If they were to buy every one of them they would have a good solid million in debt or more. As we look at the more expensive ones as you've enumerated, they are indeed valuable. I have had CAD/CAM now for 29 years. I don't use it a lot because I'm a prosthodontists and so many of my procedures are multiple units which I can do and I'll be candid somewhat faster with conventional methods than I can do with CAD/CAM.

However, 9/10ths of crowns in America are singles and they can be done as you know well, very adequately with CAD/CAM on a rudimentary basis I have no problem there. So only 8% of dentists have CAD/CAM in their offices at this point, that's about 13 000 dentists, 8000 of whom are using the device so there's some of them sitting on Dentaltown, there's some of them sitting on eBay. So some have made a purchase and then regretted it. Others have made a purchase and become a religious zealot over that concept.

One of the challenges I see in that arena is some of them have raised themselves to the boutique level of fee. I know that they can do it at a very normal level and have a

reasonable fee doing a crown with CAD/CAM and that's one of the emphasis I use when I talk about that.

This last ADA meeting in San Antonio weeks ago, I put PlanScan and CEREC head to head. We had the best scanners they could find in each one of them, the best people. We scanned them and milled them right there. Looked at them. They came out very equal. Then I had a conventional technique that we compared and we put them together and it came out darned equal so I know they can be used in practice at a level that will be financially successful for the individual.

We've done more in cone beam I think than any other group because we've had the opportunity to have it ourselves for 12 years and then one by one by one we brought in test devices. I had CareStream in there right now as compared with the purchased item we bought many years ago, 12 years ago, which was the PlanMeca. That device at this particular point, as you mentioned, is somewhere around $100 000 if you have all the bells and whistles it's significantly more.

Is that worthwhile? If they're doing implant placement, if they're doing third molar extraction, if they're doing endo which they all are, they will eventually, I'll give them five years, not only want cone beam, it will become standard in care so I'm seeing that one is probably far more mandatory than the in-office milling concept.

As far as laser, Rella, my dear wife Dr. Rella has been going practice to practice, into offices that are laser dentist. She got the names from the laser academy nationally and she's been going into these offices and doing microbiology and has some positive and some very negative things. Most of the claims made by most of the laser companies are only partially true or quite false.

Can you sterilize a pocket? The answer is yes, for one millisecond. Then it comes back in and no longer is it sterilized. Is it less painful? Yes, it's less painful. Do you have to use anesthetic? Not if they're dead. But if they're not dead you must use anesthetic for a sizeable number of them. Is it better than conventional methods? Yes and no, and I don't want to take the time to go through that sort of thing but is it worth $40 000 to $80 000? The answer is a very moot point.

It depends on who you are, what you are, how you advertise, are you using it as a marketing tool? Are you using it for a scientific based procedure that actually is better? So of those three I would say cone beam is going to take the cake there because that's going to become standard in care very fast. The other two are desirable for some and probably excessive for others.

Howard Farran: So Gordon, you talked about, you originally bought PlanMeca for a CBCT and that was my first Pano machine was PlanMeca. Huge company in Helsinki,

Finland. Right now the CAD/CAM market is probably 90% Sirona and we just see that PlanMeca bought a majority position in E4D out of Dallas. In 10 years do you think Sirona will still have 90% of the market or do you see PlanMeca being a competitor? Do you see other CAD/CAM companies coming out of Korea or Japan, around the world?

Gordon Christensen: You're at a really road. When I talk about digital periapical, they're like Fords and Chevys, they're very similar. When I talk about digital cone beam, they're as different as night and day. You've got SUV's and Porches and trucks and so forth, some can do a panoramic and a come beam, some won't do a panoramic and a cone beam without piecing the whole damn thing together. Others won't do a panoramic, some have radiation other have minimal radiation, some can be made down to smaller sizes, others I don't like the sizes, they're as different as night and day.

The most popular one out there right now and this changes routinely is i-CAT from Schein. The second most popular is Sirona and a lot of that has been oriented towards the purchase of CEREC and the desirability of CEREC connect. The third most popular is kind of a debatable thing it's PlanMeca however that's, I've given you US data. If I go internationally Vatech continues to be extremely high if not number one. Vatech is South Korean. CareStream is right in that marketplace. CareStream is French. Sirona obviously is second and that's German. Do we do anything in America? Not much. A lot of it's held up in FDA, a lot of it's held up- I wish we had more active American ingenuity but we're held down politically fairly rapidly.

You're going to see an up and down, up and down fluctuation of these cone beams till someone does everything, in other words it must be able to have the sizes, almost like a rheostat where you can turn it up or down, must have the ability to go faciolingually adequately with enough definition that I'm not bumbling around trying to see is that really there or isn't it there? Many times you'll do a panoramic and do a subsequent cone beam and we get different images on the same thing. I'm going to put a prognostication on it that some would strongly disagree with but that's my prerogative since I'm talking. I would say we're like an automobile in about 1950. We're partially there but we're not there with digital periapical- 3.4mm thick, we need it down to half a millimeter thick. It's one of the strongest problems we have in the whole profession. It can't detect initial caries, the devices are costing as much as a small car, eight, nine, ten, eleven, twelve thousand dollars. I can buy a phosphor plate for $40 and get the same image. That's something American dentists haven't figured out yet.

You can do a phosphor plated CCD or CMOS on the same radiation device, one is $40 and the one is $10 000. We're stupid in America along that line, we were just in Australia a while ago. We found that when I was down there recently Australians are using phosphor plates most of the time. We Americans are stuck on CCD and CMOS

which is fine for some things like implants but not necessarily for hygiene and other things.

What am I seeing then? I'm seeing will one cone beam dominate which is your question, one is right now. Will it stay there? I doubt it, although i-CAT is great others are coming along and now PlanMeca has gone into PlanScan, PlanScan's going. In fast I hear some rumors that they're selling even faster than CEREC right now. We will watch and see which one wins that race. It's like a horse race, they're in the race right now, who's going to win? Nobody knows.

Howard Farran: So you think PlanMeca right now might be selling more CAD/CAM machines as of right now?

Gordon Christensen: I heard that rumor from various commercial people. We'll see. I don't know but why do we have 13 000 of them sold and only 8000 of them being adequately used? I helped PlanScan not too long ago go from a cart to a gamer computer rather than having a big miserable cart, they now have a gamer computer where you can sit it anywhere you want in the operatory and it's wireless so each one of those companies has got to look seriously at the other then you've got other companies that are milling now. You've got 3M that's now contracted with an organization to mill. You've got CareStream that's milling so there are other comers on the market. The easier they make the scanner, the less expensive they make the whole concept, people are going to go there.

Howard Farran: So Gordon, a lot of people are wondering if combining a CBCT with a surgical guide, if it will lower the surgical skill necessary to place a single root form implant. Is this the Holy Grail? Do you see this to where someone who doesn't consider themselves a surgeon does not take out impacted wisdom teeth or partially impacted wisdom teeth, could see a missing tooth, do a scan, have a lab make a surgical guide and then just give a block, snap the surgical guide into place and place the root form implant. Do you see this as like a Holy Grail of implantology?

Gordon Christensen: You're on one of my- I don't know whether to call it a pet peeve or whether to call it just an observation. As you probably know I run two levels of implant courses. One I wrote which is a two day course in Utah, it's on small diameter implants and it's on conventional diameter implants, 3mm and up, on healthy people with good bone. That's level one. I can take a person who has minimal surgical experience and make them very adequately capable of placing an implant in a healthy person with good bone. Just a simple placement of an implant. They all could parallel a crown prep, how much different is it to look at a ridge and say go down the middle and don't miss the contiguous teeth. If 90% of implants are singles, which is the data, how hard is that? Not hard at all? 90%.

Now what's the next jump? The next jump is unhealthy people, or people who have more peculiar health problems and going into sinus lift, going into other kinds of surgical situations where it's more precarious and that would be 10%, some would estimate even up to 20% of implants are in those kinds of situations, but certainly not everything.

The second course we go into that subject adequately, if someone has had a preliminary course in how to do smaller diameter, and larger diameter, 3mm and up. Now to answer your question, do I think that the surgical guide is going to save people? Having done implant surgery 35 years, which I have done, original course was Randall Mark himself, I would have to say when it came along, surgical guides, years ago they had placement device for crown preps, you'll probably remember because it might have been a little before you where you put this jig on a tooth and you parallel it and it took me longer to make the damn jig than to do the prep. I'd have three preps done before I made the jig. Is this the same thing? Maybe.

I know my dental assistants laugh if I put a surgical guide on, what are you doing that for? I think for new dentist the surgical guide has major advantage. I think for mature dentists it has questionable value for the simple things, the more difficult things yes. That's a personal opinion.

Howard Farran: And for a simple single placement in a healthy bone, are you laying a flap or are you doing a tissue punch?

Gordon Christensen: I was at a program in Chicago where we had a couple of periodontist, an oral surgeon, I'm a prosthodontist and a general dentists. It was like talking religion. Everybody's right. If you're Catholic, you're right. If you're Mormon, you're right and everybody else is wrong so everybody on that panel had a different opinion.

The general dentists were back and forth, I do both. If the bone is particularly peculiar, let's say it's got a big hump on the occlusal that comes down to the Mae West shape, I'm laying a flap, I can see it. On the other hand if it's just a straight down, tapered bone for crying out loud if I can't hit that I'm hopeless.

The flap, yes occasionally. With small diameter implants, 80% of them are placed with no flap at this particular point. You look at the situation, you use a ridge caliper, just a simple device, couple of hundred dollars and measure the ridge up and down facial lingual, put your fingers on and there you go straight down the middle of the ridge with small diameter implants avoiding that $400 to $1000 surgical guide.

Howard Farran: Gordon, being a prosthodontist, 31 million Americans with no teeth totally denturists, they have dentures, would you like small diameters and would you

prefer magnets as opposed to ball and ring to help give them some support, especially on the lower?

Gordon Christensen: You're on a really good question Howard. Having done small diameter since they were cleared by FDA which was 1997, FDA cleared small diameter implants under 3mm in diameter, as I said the 1.8 to 2.9 I've done hundreds and hundreds of them. We've lost a few. The course I'm giving this Thursday and Friday, I give the participants many reprints of scientific investigations that have been done over the years showing about a 95% stability and acceptance of small diameter implants at five and more years. When they're placed in a situation such as six of them in the lower anterior, or four of them, four of them is normally what I do, four in the lower anterior with balls on them, that was the 3M concept that's about 60% of the market right now, versus the new Zest coming out that have a Zest component on the coronal portion, very different as you know, in fact I'll be giving a paper at one of the implant meetings ICOI coming up in a few days comparing two conventional diameter implants with four small diameter implants, both in the anterior, versus two and two, in other words four in the posterior dent and what's the best? Obviously a four legged table is better than a two legged table but I see the small diameter implant as a godsend to the person making under national average of money.

National average for a family as you undoubtedly know is $51 000 a year for a family of four. Now can you take a family of four and lay $20 000 or $40 000 out? Not with some sophisticated financial plan and even then they don't want to do it. They will spend about 10% of their gross annual income on elective items which we're talking about. So they'll go 10%, they're not going 90% or 100%.

So I see four small diameter implants at $700 each which is national average for a small, where the denture at over $1400, we're in the 10% of their full income. They'll do it. Will they go up to all on four, which you know as well as I is an elite few making tons of money, no they won't go there. They will go for two or four small ones.

Howard Farran: Are you just liking the ball and O-rings do you like magnets at all?

Gordon Christensen: Well if the bone is, and as you know bone is classified into various levels, lower anterior being level one or the most dense bone, in that bone four small diameter implants could have either housings on with the locater type or ERA type abutments but I still prefer the little rubber washers which give you about 1mm of movement potential. If I put a rigid one on that gives you a tenth or two tenths of a millimeter, I like one millimeter so when they bite beef steak over here it will lift a little bit.

If it's four, yeah I'll go with the locater ERA type, small or large diameter. If it's four posterior and anterior. If it's just four anterior, I tend to favor the balls.

Howard Farran: So Gordon, we've seen the price of implants. They used to be Branemark started in Sweden and that's where the Nobel peace prize and he started Nobel Biocare and over the years many other companies like Implant Direct have got much cheaper implants. Some people say titanium is titanium, other people say no you need the patented design and it was kind of confusing to everyone just a few weeks ago when the largest dental company in the world Danaher bought Nobel Biocare for two billion because they also own Implants Direct. So now they've got a high cost and a low cost, so is titanium, titanium or is a high cost Branemark a Mercedes, Porche and a low cost Implant Direct more a Ford, Chevy?

Gordon Christensen: I'm going to irritate every implant company right now but I know you like that so let's just do it. Some time ago, as Implant Direct started it- started a myriad of other brand names as things evolved through the years, Jerry being a high level innovator did a very fine job in simulating or duplicating or mimicking the major brands, as you know. One day he flew in his corporate jet, it was early in the morning, there was a snow storm and he said Gordon would you like to come with me I want to show you- in Southern California, it happened to be a weekend and I said okay. So I leaped in the plane with him and we flew to Southern California and I said Jerry I'd like to see such and such implant.

I know you will understand this. By the time he's shown me through the factory, the new implant was made. Now we're talking about innovation, we're talking about creativity, we're talking about immediacy, we're talking about the ability to see an idea and jump rather than committee, committee, committee council, presidency, financial advisors, board of trustees, etc. Bottom line was we brought the thing back and we brought back some mimic of the abutments of the big boys. They were not only as good, some of them were better than those coming from the bog boys.

That was a shock because I thought these will have to be K-Mart specials. They weren't. The alloy is basically titanium, vanadium and aluminum and let's face it, they're all about the same thing. You've got a machinist standing there going $100, $100, $100, $100, $100 on a big long piece of titanium alloy and then you sandblast it, you pickle it in an acid and you put some mysterious surface on it and that becomes their patented integrating material but then you look at the data internationally and you see this patented brand is about the same as that patented brand in overall, long term longevity. So say this one's really better than that one, we're not seeing it.

We did a survey just recently of general dentists to see what general dentists who were doing surgery were using. Implant Direct came out number one. Nobel was number two and this was all data that could be readily observed on our research website Clinician's Report.org, if they went in there you could find this specific data. What we found was

the cheaper brand was number one, a secondary brand was Nobel obviously and then it went on down the line. Not too many of the more expensive ones got in there.

We're teaching in our own implant courses medium level cost products, such as BioHorizons is definitely a mover. I don't know what place it is now, it's give or take fourth place in implant world, I could be off one or two places not much. We're seeing some come from South Korea, HIOSSEN, I've got it in a course coming up the end of this week. A Korean company that has really stuck their neck out and done some nice things. South Korean company of course but now back to your question, how do we have Walmart and one of the most expensive brands in the same company? I've been on the internet with others on that just recently. How does that work, when you've got a low budget and a high budget and they're looking pretty equal in the research? Why am I going high if low buy is still similar? They've got to answer that. If they kill high boy, they're going to lose money. If they kill low boy, he's gone and they'll come back and haunt him again, no question because let's face it and this is going to irritate everybody, an implant done properly is an implant.

Howard Farran: Yeah that's interesting. Interesting purchase acquisition. I want to switch gears, we've been talking about more dentistry from an engineering point of view, digital dentistry engineering. Gordon, tell me if my perception of right or misled, it seems like, I got out of school 27 years ago in 1987 and most of the fillings were amalgams and they seemed to last 39 years, they seemed to be bacterial static, I think the 10 ions flying out of the amalgam what have you, and then we had this cosmetic revolution where everyone's metal free, everything's tooth colored and the filling of choice was an inert plastic composite.

Having seen these now out there for 20 years, it seems like they have a much shorter life. Maybe as short as like six years and the thing that I don't understand is whenever I see composite lectures they talk about the wear rate all day long, I don't see fillings wearing down. They talk about the megapascals of bond strength, I don't see them falling out. I see dentistry as a biological problem of this bug, streptococcus mutans and it just goes to town, you're just taking out decay with a number four round bur, it's oatmeal. So my question is, is dentistry kind of going to wrong way? In that last quarter century, have we gone from great fillings that didn't look pleasant or cosmetic, that lasted forever and were low cost, to now we have beautiful fillings but they're not very antibacterial and they don't seem to last very long.

How long would you say the average amalgams were lasting that we were placing in the late 80's versus the composites that we're placing now?

Gordon Christensen: I have good data on it and now we're going to irritate another segment.

Howard Farran: Alright let's irritate everyone.

Gordon Christensen: The bondodontist group is going to be irritated at me now, that's fine. We have good data on it internationally and anyone listening to this can certainly do this observation themselves. Go to PubMed or go to Google scholar and put in whatever you want to know and up will come papers. How many do you believe? Not a lot of them. That's another one of my pet peeves, it's peer review. But Howie's probably more peer reviewed than some of the so called peer review journals. If he says something wrong, if Howard says something wrong he's going to have 10 000 Townies on him in four seconds. Peer review usually has three people, sometimes they even know what they're talking about, most of the time it's questionable.

Going back to composites now. The data shows that a typical class two composite, G.V. Black or bigger that would be here's a cusp and here's a cusp, the tip of the cusp to the tip of the cusp is measurable. If one third of that is cut away, that's at G.V. Black level. If one third is cut away of the cusp distance, the tooth has lost 40% of its strength and what do we see in one third or bigger? We see a miserable six or seven years of longevity in international data done with resin based composite.

Now that's kind of irrefutable information. On the other hand, if we look at amalgam of similar large size, the tooth is weakened, does the bonding remain? Are you kidding? Anybody who has cut off a porcelain veneer on acid etched enamel knows you can't get it off, you have to go in and cut it off. If you take the same veneer and say one of the teeth was sticking out, I can blow the dang thing off most of the time or take a picker and pop it off the dentin. So what started out as a reasonable bond on the dentin with the hot, cold, hot, cold, hot, cold, hot, cold of foods- coffee, ice cream, coffee, ice cream, the bond soon degenerates. That's a fact. With amalgam, what do we see? It's not bonded, we'll you could bond it peripherally for a little while. We know that with various materials, we're seeing double or more the longevity, in other words at least fourteen years for a big amalgam.

I was interested years ago, I helped start University of Colorado and recently the University of Kentucky dental schools. At the University of Colorado my major, my mentor who taught me a lot of things was the amalgam king of the earth and that was Miles Markley. Some of you older guys listening will remember that name. Miles Markley had a father who was also an amalgam proponent and Miles had slides going back to his father's practice. He had amalgams that had been in longer than the average lifespan of a patient. Lifespan. To say that these are somehow inferior is not even debatable. We looked at amalgam many years ago to detect how much this roughly 50% of constituency in the amalgam created apparent and who knows whether it's all there, apparent health problems.

You've all seen on the internet where they heat the amalgam and all the fumes come out of it, you heat your mouth that hot you'll have fumes coming out of every hole in your body and you'll die. So whether or not that's legitimate is highly debatable. We found about 3%, and I could be off some, of patients that would have some sensitivity or allergenic potential with dental amalgam, to exclude it on that basis is undoubtedly foolish. However, World Health Organization has clearly stated it had to be phased out. What does that mean?

Phased out. Does that mean at the end of the millennium or 9000 years from now? What does it mean? That's a typical political weasel statement. Some dentists have already phased it out. Am I doing amalgam? No, I'm not. I'm a prosthodontist. I look at general dentists who are doing primarily smaller things usually and right now our latest survey showed 68% were doing amalgams some of the time.

Some of the time. There was a sizeable quantity, 20-30% who were doing no amalgam, so it's still in America. If I were in Scandinavia today, any one of the five countries I could be booed right out of the room for even talking about amalgam, Western Germany, Switzerland schools have not even taught it there for 15, 20 years. It's still a very debatable point. Yes, we have gone backwards in longevity, we have gone forwards in aesthetics and I'm the past president of the aesthetics academy, I'm partially responsible for it, but very let's say straight forward about whether or not we've really done a wonderful job to throw plastic in everybody's mouth. Amalgam is slightly cariostatic, composite is, you don't want to hear this, slightly cariogenic.

Howard Farran: Why is it slightly cariogenic?

Gordon Christensen: Only because there is nothing in it that would kill people. In other words you've got all the glass particles, you've got the silicone dioxide and various things and you have an expansion and contraction going on, you have a dentin bonding agent that doesn't really bond well on dentin but does bond very well on enamel and you've also got, these are peripheral points, you've also got the so called bulk fill that's been kind of a joke because in bulk filling, two thirds of the- in Toronto Canada, what we're seeing there is that two thirds of the- no wonder class two resins are failing. Is it the material or is it a lack of ability to cure it properly?

Howard Farran: So based on two million dentists around the world doing fillings, so would you say then the average amalgam on average probably lasts twice as long as the average composite?

Gordon Christensen: That would be probably conservative, yeah.

Howard Farran: That would be conservative? And Gordon do you see composites adding a cariostatic ingredient in the near future?

Gordon Christensen: Well think about it with me Howard, if you put a cariostatic ingredient in a material that does not have water solubility, the cariostatic ingredient can't get out. We've tested sealants with fluoride in and if you can visualize a sealant with fluoride particles in it, only the external particles can dissolve into saliva. Our research shows six weeks after the sealant had gone in and the external little spicules of fluoride on the outside had dissolved out, cariostatic activity was over. Any material that would be cariostatic that would be composite would have to be hydrophilic and there are a couple, not used much in America.

You'll remember compomers, compomers- compomer Dyract eXtra is a better name- that is a hydrophilic resin so the spit can come in, the spit can go out and drag out slight fluoride ion with it. Any composite or composite like material that's going to be cariostatic has got to have some ingress and outgo mouth fluids.

Howard Farran: Now your colleagues in Australia would say this is why they prefer glass ionomer on the walls and the base, so do you think glass ionomer fillings, or what they call the sandwich technique where they put a glass ionomer base and walls and layer on the top, do you think that's more cariostatic?

Gordon Christensen: Yes, no question at all. Dr. Rella, my wife's research, her research right now is showing, and I can't explain this at all, that the resin modified glass ionomers, the most popular restorative materials as you know as well as I, Fuji II LC or Riva from Australia, Riva high viscosity very good material, Ketac Nano from 3M, that those are releasing more fluoride than the pure glass ionomers, Fuji IX and Chem Rock and others. I can't understand that, she'll report it as soon as we've got enough data to feel totally legitimate so I'm a little premature in even saying it, but both of them release a lot of fluoride. Pure glass ionomers and resin modified glass ionomers.

So as a reparative material on a crown margin that's failing or in a very cariostatic kid who's in the pimply, drug taking age, 12 to 20, probably a lot of them should have fluoride releasing materials, either as an internal portion of the restoration or as a little restoration.

Howard Farran: And how much longer do you think, if a composite is lasting six to seven and amalgam 14+ minimum, where do you think the resin modified glass, or the glass ionomer fillings would last?

Gordon Christensen: There is no question that glass ionomer, not resin modified, that glass ionomer is not as aesthetically acceptable as composite and for the nitpicking, bondodontist who wants to make these look exactly like a tooth, they're not going to be satisfied with that at all at this stage in its development.

Resin modified glass ionomers on the other hand can have a reasonable acceptability aesthetically, but still they're not as aesthetically wonderful as one of the current good generations of resin based composite. It will be a long time before that come on.

Howard Farran: So I'm going to aim this discussion to a question that we see on Dentaltown all day long, I only have you for twelve more minutes, gosh it's been a fast hour. There's a lot of kids in dental school right now, maybe a third of the students are thinking okay the economy is not that great, is this a good time to come out or should I go to specialty school? We have nine specialties, could you go through the- first of all could you go through the nine specialties and, because you've been around a long time, or any of these specialties look more promising than a general dentist?

Gordon Christensen: I'm going to rapidly go through seventeen of them.

Howard Farran: Seventeen? There's only nine.

Gordon Christensen: Dental anesthesiology failed as a specialty in the past little while I've tried to help make it a specialty, it never made it. Dental anesthesiology is there and some will go into it, and it's an area of need. Diagnosis and treatment planning is going to continue to grow rapidly because of the complex cases, particularly of the older generation, endodontics is going absolutely nuts.

Endodontics, because of the aged people, the pulp gets smaller and smaller and smaller, it's going to go completely- it a viable area for any young kid to get into if they want to. Aesthetic dentistry is in every- except maybe endo, public health and a few other things, but aesthetic dentistry, anybody that climbs on aesthetic dentistry is going to go nuts over the next little while.

Implants are on fire. Only 1% of Americans have had an implant. I get in countries where it will be multiples of that. We are so far behind on implants. There's a commercial hype and miscellaneous specialty turf battles, that area really needs to be burst open.

Occlusion is an area again sitting there waiting. Somebody who's dumb enough to jump onto TMD and some of the occlusal things will undoubtedly find that area fertile if they can stand to be there. It's much like internal medicine, it will drive you nuts.

As we look at operative dentistry, some say that's going to go away, are they kidding? Well my wife has found well over 100 organisms in dental caries, back in 1880 we thought there were only five or six and dentists have stuck on that misguided judgment for all these years. You could kill all the step mutans in the world, we'd still have gross dental caries. 100 different organisms or more, she hasn't even identified some of them.

Oral maxillofacial radiology is, we only have 500 of them. Any young kid that want to jump on that and get in a community of a dozen, he's going to go crazy too with need. Maxillofacial surgery is not going away. Maxillofacial surgery will be there right now it's mostly general dentists but it does take a little longer to do when you have to get a Mickey Mouse MD if you want to really be accepted well in a hospital, so that's a negative. I have no idea why we have not kept dentistry in that same degree. A dentist knows far more than a pimple doctor or some others. It's amazing that we've pulled ourselves away somehow and had nothing to do with that.

Oral pathology, somebody who hates people and wants to sit in a room and just look down a scope, that's wide open and growing because of cancer and all the various things we've got. Ortho's not going way, big people marry little people. Little people marry big people and there's always too big a teeth for little people and too little teeth for big people. That's going to be there. Pediatric dentistry, they kept telling me that was going to die. Did it die? No. It's bigger than ever. We had one move into this totally saturated area recently and the guy was busy within days because whatever makes kids is not going away and they're going to keep making kids and therefore pretty wide open.

Perio is dead.

Howard Farran: Why?

Gordon Christensen: Why is perio dead? What are periodontists doing right now? What do you think Howard?

Howard Farran: Implants.

Gordon Christensen: They're doing implants. You think about it, implant, slit gum, maybe, find bone, it's white, make hole, screw, $2000.

You can do the same $2000 and do perio and watch the teeth degenerate, get sensitive, you hear what I'm saying? What would you want to do? Perio is a dying area, and I make periodontists irritated with this data but it's a fact. Find a periodontist doing purely perio now. None. That's the only downer I'm going to give you and I'm about done with the podcast.

What about practice management? Wow. Every school needs a mini MBA course, you know it better than I. They get out of school not able to even count, let alone account or write, let alone plan a financial management situation. Preventative dentistry, they think you can't make money in there. 10% of your patients have got overt caries going on routinely, overt caries, all you've got to do is say would you like to slow that down or

stop it? Who's going to say no? They jump on, give them a fluoride tray and stick some fluoride in it.

Prosthodontics are supposed to die. When I was helping start University of Colorado, the then dean said we don't need any prosthodontics by the year 2000. Oh my Gosh. If we take now fixed, removable implant and a little appendage of actual patients, that's 50% of general dentistry that was supposed to die. It tells you you've got to get your hands in there and work to figure out what the heck is going on.

You hate all clinical and you want to just sit in an office and plan other people to do it? Public health. There's seventeen different things. We are vital, we're turned on, it's not going away. Take the organisms in perio and caries alone. We don't even know what they are, let alone how to fix them.

Howard Farran: Gordon, a lot of people say that implants get periodontal disease too. I just, it's very different than periodontal disease around teeth versus the periodontal inflammation on implants, would you agree with that? That it's a totally different disease?

Gordon Christensen: I would like to lead your listeners to a website. There are quite a few semi legitimate websites out there, many would be considered holistic or semi quacky, but there's one that looks pretty darn legitimate. It's one that's named Melisa. Go there, anyone of you and look at what that website is saying about titanium, or the other ingredients of the dental implant, vanadium, aluminum, you will find major allergic and sensitivity reactions.

What am I really saying? Look at this peri-implantitis. Then you look at the implant in the bone and it's perfect! What making that gum red, what's making it look like peri-implantitis? I have a very strong feeling it's metal sensitivity, just the same as a nickel chrome crown.

Howard Farran: That's just Melisa.com?

Gordon Christensen: Just put in Melisa and then any other adjective like metal allergy, I haven't been into it very recently, and then just go to the metal, they'll have listed the metals.

Howard Farran: I've only got you for five more minutes, how are you doing on time?

Gordon Christensen: I'm fine, yeah.

Howard Farran: Okay Gordon, oral cancer. When I got out of school 25 years ago just the people who smoke and drink for 20, 30, 40 years. Now everyone's talking about HPV and oropharyngeal cancer. What are your thoughts on that? Do you see this as a

growing epidemic or do you think this is a large scale problem? Are you recommending your young patients to get a HPV vaccine?

Gordon Christensen: Yup, we definitely do and we're setting- techniques to put the two together and try to determine if there is in that particular body we're specifically looking at a problem with either. Oral surgeons tend to get whipped up when I talk about the fluorescent testing of people for cancer detection. As you know you've got the scrape it off business, you've got the dyes where you spotted it all over everybody and got their shirt dirty, we've got the fluorescent- the four stages of oral cancer, two of them I want to find immediately. That's where they're still an epithelial, the basal portion has minor involvement and the fluorescent lights show that. The other two you can actually see a legion, or one we're testing right now where you spit in a bucket and they test DNA to see if there's something going on there in the mouth. I have to see something to even be suspicious and it costs a couple of hundred bucks to do that.

I'd like to shine a light in there and I'd like to see a grey area and say come back in two weeks, if it's still there we'll decide what to do then. They're back in two weeks and I'm still seeing a grey area, I'm going to wait two more weeks at which you get a slit and a regular biopsy. Now I'm catching it on the stage one and two, not three and four. By the same it's stage three and four, you can't really fix that. They're going to lose half their face they're going to lose a significant chunk of bone. I feel very strongly that should be a dentist, or dental hygienist readily detectible situation but because it's a low revenue producer it has not been a big thing, as you know.

Dentists say well I'm not going to do that, it doesn't bring me any revenue. They should be doing it just like they're doing hygiene. Hygiene brings slight revenue, you can easily make this bring slight revenue.

Howard Farran: What brand name of a light do you like?

Gordon Christensen: Well the VELscope is the most popular, however Schein is selling one called Identafi that is also excellent. Anyone that's flashing the fluorescent light in there is going to show grey areas wherever there's tissue challenge. There are some false negatives, false positives because if you bit your tongue and shined the light on there, it would be grey. That's why you wait two weeks and wait another two weeks.

Howard Farran: But do you see oral cancer increasing because of HPV?

Gordon Christensen: I don't know whether I could even say that without just really guessing, it appears yes.

Howard Farran: My question is Gordon, the data says that Americans see a dentist twice for every time they see a physician. I go to Walgreens, a pharmacist can give a flu

vaccine, I can't and HPV is associated with oropharyngeal cancer and I'm not even allowed to give an HPV vaccination or a flu shot. How come I'm a doctor of dentistry and I can't give grandma and grandpa a flu shot or a child a HPV vaccine?

Gordon Christensen: We need a lot of things nationally in our major organization. I'm very supportive of the ADA. We need a committee, a council, whatever the heck it takes to sit down and say look, dentists get the same dang education as you boys, when you're talking to a physician. Dentists had too much to teach so they split us off. In the mean time we have the same education as you do, use us.

I just wish we were back in that except for the political implications and the challenges we're now sitting with the so called affordable care act. If it weren't for that I'd say I would be vehemently wanting to reintegrate with that group. We should have the same process, the same acceptance as any typical physician. The only thing we lacked is bumbling around in the last year or two watching somebody else do something, but as far as actually treating people, giving injections, doing antibiotics, analgesics, we're far ahead of the typical physician. We just need some political clout there.

Howard Farran: I only have you for one more minute but I've got two last quick questions. Florida passed a law that let's foreign trained dentists from around the world be a hygienist, so they passed the hygiene board. Would that we a good idea for all 50 states? Or is that a bad idea?

Gordon Christensen: We are so over saturated in dentists right now but we're more oversaturated in hygienists. We have five schools in this little state in which I live. Five schools. Do we need five? No. We might need two. Do we need to saturate it with foreign people? Take a look at California with dentists. They've opened the doors when I was down on a mission some time ago I could talk to the Indian dental society, the Hispanic, the Chinese, the Korean but if you try to get them all together, they weren't there. Too many dentists. I'm a little questioning whether that should be done.

Howard Farran: And last question, we talked about is dentistry going backwards with fillings from long lasting to shorter lasting, what of fluoridation? My Gosh Gordon, it seems like every time you turn around another town is taking out, we still have 30% of American towns without water fluoridation. What do you think of community water fluoridation?

Gordon Christensen: Well you know this- some of it has fluoride in it, some it doesn't have fluoride in it. My wife won't drink tap water anymore, she doesn't like the taste of it. It has nothing to do with purities, she doesn't like the taste of it. It's not as valuable as it was before but it hits the people who need it the most. They are the poverty stricken people living in areas where they're not buying bottled water, they're drinking it right out of the tap. It's still highly desirable and I think you know as well as I or better that there

are do-gooders who are trying to get it out are usually in that fringy area of health holistic medicine which is good and bad.

I would say that fluoridated water has been around ever since I've been in puberty, fluoridated water is still very desirable for the very people who need it, low income people.

Howard Farran: Well Gordon we are out of time and I just want to say thank you for being my number one role model idol and I can say that one behalf of literally probably half a million dentists around the world. You're a living legend, it's just great to see you. Thank you for all you've done for dentistry.

Gordon Christensen: Thank you. I'm going to lead into two websites if they want to get more information about what we do. Practical clinical courses, PCCdental.com and Clinician's Report.org and that will give information about what we're doing. Thanks Howard, you too have done an unbelievable job to stir the profession up and get them thinking again and by the way you look good. It's great, keep losing.

Howard Farran: I did, alright buddy, tell your lovely wife I said hello.

Gordon Christensen: Thank you.

Howard Farran: Okay, bye-bye.