[MUSIC]

ROBERT SCHOEN: Colorectal cancer is a big public health problem. Second leading cause of cancer death. Fourth most common cancer. A lot of cases, a lot of morbidity. The lifetime risk of diagnosis is around 5%. It's slightly lower in women than in men, and you can see about two out of five, so that 40% will die of the disease who get the disease. Again the rates are slightly higher than women and men, and that's of interest because you know our screening recommendations are age 50. We don't care whether it's a man or a woman. And actually you know there's a little bit of bias in that. You could argue that women should wait a few more years before they begin screening because their risk is slightly lower. But that's not what we do from a political standpoint right now.

It's very interesting if you look at cancer mortality over time. So this is-- we go back to the 1930s. It's fascinating, look how high stomach cancer was in those days. And again what's changed? Is it hygiene, is it H pylori, but we don't really know, but there's been a very precipitous decline in stomach cancer over the years.

Now look at many of the other-- breast cancer is fairly flat. Of course lung cancer way up. Of course linked to smoking. But you see, now, this is colon and rectum in women. It's actually been going down in terms of death rates since the 1940s. Now there's no screening in the 1940s. So clearly there are etiologic factors that also play a role in cancer mortality, and we don't necessarily completely understand that.

If you look in men, of course, you know lung cancer. Huge. Stomach cancer, again, tremendous decline. You see colon and rectum was fairly flat up until about 1980, and then you started to see the drop. You know and this is from an epidemiologic standpoint. Look at prostate. Of course it went up, because we're detecting more. Now but does that really reflect mortality? No. We know there's a lot of prostate cancer that's indolent, that would never bother you during your lifetime. But the thing that's really striking is if you go to the recent data from, let's say 1990. Tremendous declines in incidence. Actually getting the disease in men as well as in women. And then I already showed you the death rates, but I just reproduced it here, just to show you that there was a divergence between men and women. But this is really strikingly impressive, and this presumably is contributed to by screening. And we'll come to that in just a second.

If you look at the annual percent change in incidence, look in the last decade 2001 to 2010, a 3% decline in death rate. And you know a 3% to 4% climb in incidence in-- from 2000 to 2010.

There's been a lot of talk about increase rising incidence rates in young people. It's a very interesting topic. It's definitely worth researching. We really should be doing something. But you can see, in men and women, it has gone up between people 0 to 49. But look at these absolute rates. 6-7 per 100,000. OK? Now we go to 50 to 64, and you see these rates are 70 to 100 per 100,000. And look at 65 plus. 250 to 350 per 100,000. So you know the magnitude of difference is astounding. So I mean if and where we should devote resources, it's clearly in older people. Because colorectal cancer is a disease of aging. The older you get the greater the risk. But again, these very impressive changes in the slope argue for tremendous success in dealing with the disease.

Now what is the basis of screening? Two very simple concepts, if you will. One is early detection, and the other is prevention. And that's really, it's the prevention, which makes colorectal cancer so special. Because now we're talking about not just mitigating the effect of the disease, less likely to die, less morbidity. We're talking about not even getting the disease. You know. And it doesn't come better than that.

So in terms of early detection, this should be intuitively obvious. But, you know, a localized disease has a 90 plus five year survival. Even regional disease is pretty good, in the 70's. But once you have metastatic disease, then you know you're basically cooked. It's not likely you're going to live five years.

This is data from SEER. Looking at stage of disease. This is relatively recent, and you can see still about 20% of the cases are diagnosed at the time of metastasis. 36% have regional lymph node involvement. So we're still somewhat late in the game in detection, we still certainly have room for improvement.

Now what's the big revolution? The big revolution is understanding that when we take out polyps, which is a relatively simple thing to do, we can prevent cancer incidents. Now clearly I don't know if this polyp would have ever evolved to cancer. I suspect it wouldn't have. The chances are really quite low. But we take a shotgun to this, we just take them all out, and we know we're making a difference. And that's better than a lot of things that we do.

Now what are the grade A recommendations by the United States Preventive Services Task Force in terms of prevention? Getting your blood pressure checked, having a pap smear, testing for chlamydia, cholesterol, and colorectal cancer screening. That's pretty extraordinary. You don't see mammogram. Mammography is a B. Prostate cancer is at D. PSA testing. I mean it is really, this, we have an extraordinary body of evidence, and I will try to review quickly.

This is-- I put up for the first year Fellows, because the terminology gets confusing. All of these are adenomatous polyps, tubular, tubular villous, villous, serrated. You rarely see this mix. Obviously hyperplastic polyp is not an adenomatous polyp. These are other findings that you might find on a biopsy when you biopsy a bump during a colonoscopy. And then it's a non-adenomatous finding.

What are the prevalence of an adenomas? I like this study. This is a 10,000 patient study, so the numbers are kind of easy to wrap your head around. This was a study looking at Cologuard the test for molecular mutations, and fehemacol compared to colonoscopy. So everybody got both. And here you are in a relatively healthy 10,000 patient study, 65 people were found to have cancer about 0.6 0.5 percent you see that pretty often. About 8% or so had an advanced adenoma. About 30% had any adenoma, and the rest had nothing.

So you can right away see from a screening perspective, if we say let's colonoscope everybody, well 2/3 of the people really didn't need it. You didn't help them. They were already negative. So you know, if we had ways of figuring that out, that would be a tremendous improvement. But there's also no doubt there is a substantial number of people with these precancerous lesions, and not an insignificant number with kind of advanced lesions. This is the definition of an advanced adenoma, basically agreed upon. Greater than or equal to a centimeter in size, generally as estimated by the endoscopus during the procedure. Whether there are villous components or high grade or severe dysplasia.

Bottom line is, advanced adenomas are associated with the long term risk of subsequent colorectal cancer. Now Ben Click has the, what I think the best paper on this, but it's only been submitted. It's not accepted yet. But this is from the PLCO trial, and this again has just been submitted. And he presented at the meetings in May. But this is a 11, 12 year or so follow up, maybe median of 10 years or so, of people who had a colonoscopy as part of the PLCO trial, and what happened to them over the next 10 years in terms of cancer incidence. And what you can see is the advanced adenoma group, even though they had this advanced adenoma removed at time 0, over the years you see their rates are significantly higher.

Now what also is very interesting in this paper is that the non advanced adenoma and the no adenoma group are very similar. Arguing that maybe this non advanced adenoma group isn't really a high risk group. And maybe we don't have to do some extra surveillance, at least compared to no adenoma.

Now remember, both groups do climb a little bit. So there is some subsequent cancer incidence. But it doesn't seem to be differentially different between those groups. Anyhow that'll be interesting. And hopefully we'll have that accepted in the next few months.

There are a number of methods that we can use for screening. I've enumerated them here. You know this is the question. Everyone. OK, forget all that, just tell me which one to do, and of course it's not such a simple answer.

The fecal code blood test has been around for decades. It's largely been replaced by now what is called the fecal imuno chemical test, or FIT test. The FIT test looks at globin, human globin. The occult blood test looks for blood. This, these are, there have been five large trials in Europe and the United States, we're talking about thousands and thousands of people in the trials. The US is the only one that looked at an annual FOBT, everyone else was every other year. The results are pretty consistent. You see in the every other year between 15% and 20% reduction in death for the people that got the Hemocol test. If you got it every year, it was better. And there is some complexity that.

But this was also kind of really big news. When they started to look at long term, 18 year follow up, they started to see that the groups that were in the screen group had a reduction in incidence. So this was the first signal, not only can we reduce death, we can reduce incidence. You won't get the disease. You take out the polyps, and the patient doesn't develop cancer. And that's pretty damn good.

Now what's interesting is you see that it took 18 years for these curves. If you look at 10, 12 years it really isn't much separation there. Now again, you do the Hemocol, it's positive. OK, you go for a colon, let's say we do it three years in a row, it isn't until the fourth year that you get it. So you know all of this adds as a lag in terms of seeing the net effect of that procedure. Ultimately quite a number of people ended up with getting a colonoscopy in the intervention group. This was third year data published recently, showing that even out to 30 years the groups that got screened have a lower colorectal cancer mortality compared to the control.

Why is that FIT test overtaking the fecal col blood test? Well, less stool handling. You don't have the three windows, you just have the one. Poke in the stool, you put it in that little container. No dietary restriction. This isn't the HEM test, this is a globin test. It turns out that globin in the upper GI tract, if I bled my from my upper-- it degrades as it goes down through the small intestine. So you have less false positive from upper GI bleeding. Also you can kind of vary the cut point, and thus constrain the burden of follow up testing. Let's say you're in a country that watches the dollar, say the Netherlands. They want-- they can only handle lets say a 5% or 3% positive rate, or 2% positive rate. So they establish the cutoff. So that they know only 2% of the people will exceed the threshold and will need to be driven to colonoscopy.

What does this FIT test do? What it really is meant to do is to select people who are at higher risk, who are more likely to be harboring an advanced adenoma or a cancer and get them into colonoscopy testing. Of course, it's not going to be perfect, but and-- and we'll come to that.

Interestingly, if you look at a bunch of studies comparing-- do you want to have a FIT, do you want to have a colon? More people will opt for a FIT than they will for a colon. Is that surprising? I mean I don't want to handle stool, but on the other hand taking that big prep, getting someone to drive me, paying the deductible, et cetera, et cetera. That's a bigger burden than just doing that stool test in the privacy of your own home.

If you look in Europe mostly we're seeing FIT Bates testing. There are some colonoscopy centers in Poland, in Germany. But most of the-- Spain, France, Portugal. Some of, you know, they're doing FIT testing as a more-- England.

OK. So again as I said, it selects people. FIT positive subjects at colonoscopy have higher rates of cancer and advanced adenomas. So it does work. It selects out the high risk group. Ah, Cologuard, this is the test that that, one point I want to make. It's a guaiac test. I mean it's a FIT test, plus looking for molecular mutations consistent with cancer. So you know if someone who has red blood in the stool. There's no point in doing a Cologuard test, you know it would be positive, there's blood. So, again, it's a more expensive test. What does it add? Well you had the big study which I showed you that 10,000 patients study. You see that their cancer detection was 93% compared to 74% in the FIT group. Advanced adenoma 42 compared to 24. So you see it did add something, that stool DNA adds something, but it's costly, et cetera, et cetera.

What about flexible sigmoidoscopy? So that was the test that was around 20 years ago or so. Of course it could be done without sedation, it could be done by a nurse practitioner. It's relatively fast, you could theoretically have it and go back to work, or whatever. You don't lose the whole day. So it has some advantages, but-- no buts. This of course then it was subjected to large randomized trials. These are the only trials that we have for endoscopic screening in terms of randomized trials. That are available. And what you can see if you look at the four trials, the four big ones, very consistent about 25% to 30% drop in death rate. I forgot to mention this, look at the drop in the distal colon in the largest study, somewhere around 50%. Extremely effective test. If you look at incidence, again about 20 or so percent drop in incidence overall, and in distal colon you see it's more like 30% or so drop in incidence.

Now what about in the proximal colon, flexible sigmoidoscopy? Well it seems to be dependent on the colonoscopy rate. The US trial which I was involved in had the largest rate of colonoscopy, and sure enough we were able to show a drop in the proximal colon in incidence. Obviously not as big an effect, but remember not everyone got a colonoscopy, just that people who had a positive flex sig, who went on to colonoscopy. So there's that box there.

Now so here you could ask the question. If the half, the flex sig is good, how about the whole sandwich? Should be really good, right? Well, then you could argue, shouldn't everyone have a colonoscopy as opposed to everything else? Isn't this the best? Well the one question is, well how good is it in the proximal colon? We know it's good in the distal colon, we have less evidence about the proximal colon.

So this is an interesting kind of study which Jorge Machicado kind of wrote an editorial about, a study that was reviewed. And we looked at advanced adenoma detection by screening method, OK? So if you look at, well, how many get referred to colonoscopy. So this is going to tell you, well what is it going to cost you in terms of how many people are going to have to run through the system? So if you do FIT, this is a little generous. Seven out of 100 will get positives. If you do Cologuard, it goes up to 16%. Flex sig, lets say 20. Obviously colonoscopy, everybody gets it. So then you look at, what is the percent of detected advanced neoplasia? So FIT, maybe 25 to 35. Cologuard, I just showed you 42. Flex sig, you see about 3/4 of the advanced adenomas are detected by flex sig, it's pretty damn good. I'm talking about through the whole col. Because some you find in the left colon, and some you drive people on and then they get a colonoscopy, and then you find it in the proximal colon. Obviously colonoscopy we're saying here is perfect, which of course it isn't. But if you look at the percent of distal compared to the percent of proximal detected, you see flex sig picks up 90% of the distal, and of course it's the proximal that you're missing in this group which presumably colonoscopy does best overall.

All right. So now if you look at the observational studies, even of colonoscopy, it's not as protective of proximal colon as it is in the distal colon. Why? Well, we don't exactly know. I'll just show you this meta analysis, just to show you the data. You see overall incidence reduction. Again, this is estimated, because we don't really have trials of randomized trials of colonoscopy. Flex sig, they're saying about a 50% reduction in incidence. Colonoscopy would have a 70%.

If you look at mortality, again very similar numbers. If you look at the difference between proximal and distal, obviously they think colon would even do better in the distal and also significantly better in the proximal. That's not so illogical. But we really, that these-- these are based on case control studies and the like. The only randomized studies we have is from flex sig.

So why is the right colon more difficult to protect? You know, why does right not equal left? Not only in politics. If there's potentially biologic reasons, OK. The molecular characteristics of cancer in the right colon has a proclivity to be different than the left colon. There's the CPG island method that later phenotype, micro-satellite instability type cancers. We know that polyp recurrence is more common in the right colon. You do a colon, and you don't-- you find a couple polyps, you bring the patient back, more likely you'll find an adenoma in the right colon than you will in the left. Now is that because you missed it the first time? That's possible. We know that there seem to be more flat lesions, more serrated adenoma in the right colon. The prep may not be as good. Maybe you don't even get to the cecum. All of those things could certainly affect.

This is a slide from the literature, and I still haven't put one of my own in there, but you know this is that mucin covered kind of polyp that you see in the right colon, and if you jet it away, in this case, they put dye on it, and lo and behold, there's a big serrated adenoma there. And that happens really on a daily basis in the GI lab. You don't wash it off, you will pick this up, and if you do you will.

So really what the issue between the stool tests and colonoscopy is that you have less sensitive tests versus a more sensitive test. So in a one time head to head comparison, the more sensitive tests are significantly better, and this is what we call more is more. If you do a colon and you do a FIT test, and then you did a colon on the person who got a FIT, the colon is going to be better. OK? That's not surprising. But then they have a different question. Say, well, wait a second. What if I look at repeated less sensitive exam, maybe over time, that would best the more sensitive test. So if I keep doing the fecal the imunochemical test every year, and then I get a positive and I and I do that over 10 years maybe that's better than the once in 10 year colonoscopy. The answer is we don't know. One issue is, can you get people to be compliant to repeat these tests over and over.

This is from the National Health Service in England looking at fecal occult blood testing. '06, '08, '10. And you see only 70% completed it once, 60% twice 44% all three times. So you have a less sensitive test, but you've got to get people to do it. So I mean there are obstacles.

Here's another huge obstacle. If you have a positive and you don't get a colonoscopy, you get nothing. Right? What good is a positive FIT test that has no follow up? So in the NHS it was only 88%. Now in some, it's in the 90s, but again in some places it's lower than that. So those are the challenges.

We have some randomized trials in the field now, OK. And those you know will be very interesting. One is in the VA. Looking at annual FIT compared to once in 10 year colonoscopy. They've just about recruited in the 50,000 participants, and then they're going to be watching over the next decade or so, what is the cancer incidence. We have a study in Spain, very similar. We have a study in Sweden. I'm not sure how that's going, that's a relatively new study just started a couple of years ago. That's looking at no screening, compared to every other year FIT, compared to colonoscopy. You could raise a question, no screening? I mean you know screening is effective. It's a little bizarre.

Now we have the Nordic study, which I'll show you some more data on. Now they're looking at no screening compared to colonoscopy, it started in more than a few years ago. They have brought the whole sample in. They're looking at colorectal cancer incidence, mortality at 15 year follow up. Here's the age range, these are the countries. They started with about 95,000 and they randomized about 31,000. 40% got the colonoscopy screening. You see the rates vary. In Norway it was 60%, in the Netherlands only 23%. So that's interesting right away. You have a randomized trial, you said OK come get a free colonoscopy. Not everyone does it. Of course in these countries medical care is free anyway, so that isn't the issue. But just shows you, you know, you're going into the population saying come get this, not everyone does it.

Look they did very good cecal intubation, and they spent a long time. Also fascinating in Norway you don't generally get any sedation for your colonoscopy. Only is it tough? Norwegians. We're not talking US types. You see in Holland almost everyone gets sedation. These were their yields about 30% adenoma, 10% advanced adenoma, 0.5% cancer. Very as expected from what I showed you in other data. This just shows you the variation in cecal intubation rate by country, and adenoma yield, pain during the procedure, pain 24 hours after the procedure. Interestingly, if you look at pain, and you and you say carbon dioxide insufflation versus air insufflation. During the procedure it doesn't make much difference. But if you look 24 hours later, moderate or severe pain significantly higher with air compared to CO_2, because the CO_2 dissipates 40 times faster than air. I do not-- I mean CO_2 just sense to use.

I've had this debate with Howard Dubner. He insists on using air. And he says it's because his technique is good. And you know I have no doubt. We used air for decades. Although I have to tell you, in my fellowship, the guy who had our fellowship, he was brilliant. He was using CO2 in early 90s. He would bring a big tank of CO2. I mean he just, he got it, you know. And anyway. It took then decades for everyone to catch up, but it's not like when I came here and I said, oh everybody should use CO2. I didn't know any better, but endoscopy versus non invasive testing.

Well endoscopy has the potential for a more potent effect on incidence, because it's better at detecting adenomas, we know from the randomized trials that people that got the flex sig and got the polypectomy, that's where we saw the drop in incidence. Endoscopy is somewhat more efficient, but-- because it only takes one round and you get the benefit. But FIT might catch up with repeated testing. That's what those trials are looking at. .

We have big disparities in terms of cancer screening uptake. In 2008 Oklahoma was the lowest, Massachusetts the highest. In 2010 still Massachusetts the highest. Now Alaska is the lowest. If you map this by red and blue guess what. Blue is better. The red states have much lower screening rates. There's a lot of disparities by ethnicity. Hispanics are much lower, lower education lower, poorer people lower, those without insurance lower. Again, no surprise.

So we know screening is effective. Anything is better than nothing. We have trades off in effectiveness. In terms of compliance versus efficacy. Research on the best still remains a ways away. And there may not be one best, may depend on the person what's best for that person. Clearly we have to create access for all. We ourselves need to be competent in what we're doing, especially in the proximal colon, and then we have a lot of work in terms of these follow up procedures, how often to do them.

G-I people are paid very well. OK? I mean look at these annual rate-- look what we passed. We passed urology, plastic surgery, dermatology, general surgery. I mean we are very well paid, and the reason that we're well paid is because of these endoscopic procedures, and that really means colonoscopy in the big picture. So we have a responsibility to be responsible in terms of doing this.

Now I always like to include this little, what I call how to do a colonoscopy. But I'm not that arrogant. How I do a colonoscopy. I might be, I don't know. So here's the colon. It's a complicated organ. It isn't easy to get a scope around the entire colon, as some of you are beginning to understand.

Now technique. Pulling back or straightening the shaft is number one most important. I still see endoscopies it's like, you know, Geronimo! Forward! No. No. The whole point is to pull back and sleeve the colon on to the scope. And that in effect shortens the scope.

Now as you advance, the sigmoid mesocolon induces a spiral, the scope advances kind of like a screw. But this can induce a loop, which can cause pain. Now here's the problem. I don't know if this is going to work, and if it doesn't then I'm going to do something, I'm going to get it because this is the most important thing I'm going to show you.

Here's the sigmoid colon right? And as you insert the scope in it, it just kind of balloons out here. But these are an example of the kind of loops that you can get. This is the most typical, what's called the end loop in the sigmoid colon. So you know, if you're pushing this, this is kind of ballooning up. And the scope, rather than going forward, actually can be retreating a little bit because you're pushing in, the loop is actually-- and then the scope is dropping down.

Then there's these transverse loops. The most common is this deep transverse loop. But there are others that can occur. Again, what they've done, and that's like the scope guide, which we have but nobody uses. But it was used in studies at one time. You can see the end sigmoid loop is the most common loop. And as I said the deep transverse is the most common loop.

Now. Pressure. Now this is something that drives me crazy, OK? What's the point of pressure? The point of pressure is to prevent that loop. You don't want that loop to go up. So instead of the loop going up you hold the loop down, and then you advance the scope, and you can imagine now the scope goes forward. So the question is, OK, well where should I put pressure? How effective is pressure? OK. So what they've done, they use the magnetic imaging, like I showed you, and they said OK. You know, if the tip is in the sigmoid, and I give sigmoid pressure, it works about 20% of the time. If the tip was in the descending colon, you know you can see it works 40% of the time, et cetera, et cetera.

Overall, in all the places, it works about a third of the time. Now OK. What about changing the patient's position? OK it turns out, that if you're in the sigmoid, and you want to get into the descending, if you turn the patient from their side to their back it works 63% of the time. If it's in the [INAUDIBLE] and you turn them, it works 70% of the time, et cetera.

So, now I ask you. What is better? Turning the patient or putting the pressure? To me turning. Now the problem is you guys are brought up in Mac. And so turning the patient, the patient's like this, and they you know, you hold please, and then yanking the thing. And whole thing but if you do conscious sedation, you say please turn on your back. And you know they help them a little bit, but basically they do it on their own. And I almost always turn the patient. And Jeff worked with me not too long ago, and he saw this, and they do it with-- on their own with just minimal assistance. And the studies say it's better.

Now here's another question. Where should the sigmoid pressured be given? And I see this every day. This is here, the sigmoid colon is right here. This is where I put my sigmoid pressure. But that's not where the sigmoid loop is. The sigmoid loop is really around the umbilicus, or on the right side. That's where the sigmoid colon loops up. So the pressure should be either at the umbilicus, or really to the right of the umbilicus. Not in the sigmoid colon.

Now if you are, OK give pressure please, and you don't tell them where, or this is what you're going to get. OK. Because that's where the sigmoid is. So you need to be proscriptive, you need to say, this is where I want the pressure. And sometimes I feel around and try to tell where do I think it looks like I'm going to get the best splinting. And then I say put the pressure here. So again, right side. Remember where do fistulas occur in Crohn's disease? Ileal colonic fistulas generally? Elise?

Sick to the sigmoid. Ileal sigmoid. Why? Because the sigmoid comes up next to the terminal ileum. And the cecum. OK. Now. Who is it more difficult? Women? Harder. People with a history of constipation or laxative use, generally more difficult. Smaller people. Harder, thinner, taller people harder. Curves are tighter. So those are people that you know you can plan, this is going to be a little more difficult.

Here's an old study looking at the peds colonoscope in women with a hysterectomy, and the peds scope was much more successful at getting to the cecum than the adult colonoscope. I mean this is in the conscious sedation error.

What about the water insufflation technique? I know Dave Binyon is a big proponent of that. I like it. I don't use it as an exclusive, but I'm thinking in my mind as I'm going in, I'm not going to be infusing a lot of gas. I'd much rather have water and not distend the colon up, although CO2 does diffuse very rapidly. But here's the idea. You kind of use the water to kind of straighten out these loops and not distend up the colon. It definitely works.

When I have someone who has a history of an incomplete colonoscopy, I'm thinking in my mind, water insufflation technique. Not-- sometimes when I know it's really difficult, I literally will shut off the CO2, so I can't even give any if I wanted to. And I use that for the ones that I know that-- the highest difficulty.

So these are my recommendations. Sigmoid pressure should be at the umbilicus or infra umbilical at the mid-line or in the right lower quadrant. Turn supine, onto their back, to cross any of these regions. Use the ped scope when it's difficult. With petite people, with history of constipation, with tall, thin men, or everybody. If you like life easy, and I use it with everybody. The difference between the peds and the adult scope is the diameter of the channel. OK, it is larger in the adult scope but I want to tell you something. The old adult scope was the size of the current ped scope. And for years we used that. So is it bigger channel, well presumably you could suction a little better if it was really messy, if there was bleeding. I guess it would be a little better. But the old ped scope we used for many years so I'm happy with the current ped scope.

Consider water technique or at least the principle. Sometimes to get in the secum you have to maybe do something creative, where you bring the patient to face of you, or of course the forehand technique. Kind of diffuse pressure or when really difficult, you turn the patient on their belly. That's very difficult to do with a Mac case, because you're worried that patient's not going to breathe. OK. Which I don't have to worry about with conscious sedation.

What causes pain? OK they had a thing where they had the magnetic endoscope and they gave the patient a PCA pump, and they said-- and they watch when do they push out, OK. And the answer is when it loops. Loops are what hurt. And the end sigmoid loop is the one that gives the most-- caused the majority of pain.

Now what about sedation? I don't like Mac. And propofol. I think it slows things down. I like to talk to the patient. It's not needed, in my experience, except for in maybe 2% or 3% of people. Guess what? It is ridiculously expensive. OK? Because you have to pay the anesthesiologist, who has to pay the nurse anesthetist, and it's all you know big buckaroos. A second doctor is involved. OK finally, the government realized, and said you know what, when we established the RVU for colonoscopy that was for the doctor to give the sedation and do the procedure. Well, if you're not giving the sedation, and someone else isn't giving the sedation, then I'm not giving you what I said I was going to give you, that's only fair. Unfortunately they didn't cut it enough. They really should have cut it more substantially. Right now when I do the moderate sedation, I'm allowed to bill for it, and I get guess what 0.1 RVU. OK? Which a colonoscopy is let's say 3.3 RVUs or something. So it's almost adds nothing. It's almost not even worth it to do the documentation to get the 0.1 RVU. But I assume that will change over time, I don't know.

What about anesthesia utilization? We saw a tremendous-- I thought I had some boxes here. We saw a tremendous increase. Percent using anesthesia. You see it was about 13% in 2003, and it went up to 30% in 2001. Oh right because people changed between 2003 and 2009, right. All of a sudden they needed anesthesia even though they didn't need it before, right? It doesn't make any sense. Again, it's regional. Look at the Northeast compared to the west.

How many of these are discretionary? That is in ASA one or two. You know. Quite a number. Look at the costs, what Medicare was paying, and then the commercial insurances are paying like $500 for this, and you see it's a lot of money. Now Medicare is separating it out, but as I say, the penalty is insignificant. Enough. I really strongly urge you, you need to learn conscious sedation, and you need to learn to do colonoscopy with conscious sedation, because that's really the point. If you have Mac, you get a loop. So what, you just push. You tell the guy, give a little more propofol! You know, they won't remember, they don't know. You don't need any technique. OK? But if the person is awake, you need technique.

And so there is why I think that's to take you to the next level. So there I will stop.