

[MUSIC PLAYING]

**NEIL M. RESNICK:** And we're here to talk about incontinence. Welcome. Clearly a problem, and yet clearly one that warrants our attention given its enormous prevalence, morbidity, and expense. I'm having-- do I use this or do I use this? There we go.

So first it's important to understand that incontinence is never normal at any age, regardless of whether or not the patient's got cognitive impairment or mobility impairment, even in a nursing home at age 90. There's a study that we did some years ago in the New England Journal and we found that less than half of older people who are demented and immobile had trouble-- I mean-- had-- were continent. So that's-- it's never normal. Second, it's caused or exacerbated by medical diseases and drugs about which we are the experts. Third, it's amenable to medical therapy and even care. And finally, if we don't ask, they won't tell. And the sad thing is that about a third of incontinence in older people is completely curable, a third is virtually curable, and the last third can be significantly palliated.

So it's really important to go after it because 80% of older people do not tell their doctors of their incontinence. Yet most of them can be cured or improved. So it's an important thing to know about. So that said, the question is how can we best convey the issues and the approach in the short amount of time that we have? I think the easiest way to do, and the way that we most-- we all learn the best is through a case.

And so this is going to be a case-based discussion. It's a real case. It's an 88-year-old woman who had Parkinson's disease and suffered a hip fracture, became confused, was treated with Haldol and then became incontinent. And on exam she was in a wheelchair, Parkinsonian with heart failure, fecal impaction, bladder distension, and atrophic vaginitis. In short not the kind of patient that our surgical colleagues are clamoring for, not the kind of person that most physicians would hold out much hope for, and yet two months later, she was back at home mentally intact, fully ambulatory, and completely continent and able to achieve her greatest wish which was to attend her grandson's marriage.

So the question is how? The best way, I think, to understand the causes of incontinence is to try to take a step back and say, what is it that allows us to be continent in the first place? At any age continence requires the mentation to know where-- that the bladder is filling and where it is, the motivation to care, the mobility to get there, and the manual dexterity to deal with the zips and snaps, and the toilet seat that one spouse left up. In addition, it requires, or it's best if there is an intact urinary tract. The thing is that all of these change with age, and so while we can take-- when AJ mentioned that we set up the country's first continence center, I've seen patients of all ages.

And when I saw people who were under the age of 70, virtually all of the problem was in the last bullet, a problem with the urinary tract. But when I saw older people, most of the time, the problem was in the first four. And when it was in the urinary tract, if I didn't take care of the first four, I didn't have any hope of making them dry. And that's why for a century, continence was considered a normal part of aging and completely untreatable because we were treating it the same way we would in a 50-year-old woman instead of as we would in an 80-year-old. In the 50-year-old woman, all the rest of those things are fine. So if she coughs and she leaks, she's got a problem with her urethral sphincter, we can suspend that. She's dry. But by contrast in older people 2/3 of the cases can be made dry without touching the urinary tract, and 90% can be made dry without touching the surgery-- without requiring surgery.

So it's fundamentally different. Now that's not to minimize the changes that occur with age in the urinary tract because they're substantial. We did a study. It took us 10 years to do this to find enough older people who are completely dry and willing to undergo a in-depth comprehensive two-hour video urodynamic evaluation. But here's what we found. There are some things that increase with age and some things that go down, and those of you who are surprised to see that anything increases with age can rest assured none of them are any good. But they're in the left-hand column.

And that is the presence of involuntary bladder contractions, so that when the bladder fills it reflexively contracts. That occurs in about a third of older people who are dry. The pattern of urine output changes with a switch to a phase of it most of it being excreted at night. Those of us in this room under age 70 excrete 2/3 of our daily ingested fluid before 8. Those of us over 70 are likely to have it flipped, which is why 3/4 of older people get up once a night to pass their urine and 1/3 get up twice. But if it's long-standing and not a problem, then it doesn't have to be investigated.

The prostate increases in size with age and the PVR, which is the post-void residual, increases with age as well, but not to more than 100 cc. The others go down, warning that the bladder is filling declines. Urethral resistance declines in women because the urethra shortens and the urethra sphincter weakens, and the only barrier between an older woman and incontinence when she coughs, is the remaining tone of the sympathetic nervous system, mainly the alpha sympathetic nervous system, and that keeps the upper sphincter contracted. Finally contractility goes down in both sexes, and that's why the post-void residual goes up.

So none of those changes however cause incontinence, after all they emerged from our study of 100 older totally dry people. On the other hand, they clearly constitute a constellation of changes that predispose the older person to becoming incontinent, that is they're more vulnerable to it, should they encounter any additional precipitant. And in that sense, they reproduce all of geriatric medicine in all of the syndromes. That is aging diminishes the reserve of every organ system. So it's got less resilience. In addition, older people are much more likely to have a new disease or a new drug that will tip the balance.

But that leads to two critically important corollaries. First, treatable causes, that is these other diseases generally outside the bladder and these other drugs are much more apt to cause incontinence that's reversible easily by an internist or a primary care physician than is true in younger people. And second, you can, even if there is an underlying urinary tract abnormality, you can restore the person to complete continence without necessarily touching the urinary tract abnormality. You can't do that in younger people. Remember all those other four things I mentioned in younger people are normal and the only thing that's causing the incontinence is they have a severe abnormality of the urinary tract. If you don't address that, you don't make them dry.

But with older people, those other four things are tipping the balance and if you fix them, that urinary tract is just one more risk factor. But if the other four are improved, what's left of the urinary tract may not be enough to cause persistent incontinence. So let me illustrate that.

You've got an 80-year-old woman, who like a 1/3 of her peers has a bladder that is overactive, she contracts when she doesn't want it. But by drinking less, and voiding more often, and knowing where the bathroom is, paying more attention, she's able to be completely dry. She may have some urgency. She may have some frequency. But she keeps the bladder volume below the threshold at which that spasm occurs, and she's completely dry.

But now let her get bursitis in her hip, and now she's got pain, impaired mobility, she can't get to the bathroom in time, and now the urgency and frequency convert to urge incontinence. If we treat the bladder over activity, which she's had for years while remaining dry, we haven't done anything for her pain or her decreased mobility, and because no treatment available will abolish those bladder spasms, it'll just make them occur later at a higher bladder volume. She's still going to have them. And when she has them, she's not going to be able to get to the bathroom. So if you don't treat the bursitis, you're not going to be effective in treating her incontinence. But if you do treat the bursitis, you can eradicate the incontinence even though those bladder spasms are there. Because they were there before when she was dry and now they'll still be there and she can be dry again.

So these are the fund-- If you remember nothing else from this talk it's that continence-- incontinence is never normal, despite age or mobility. And it is generally due to things outside the urinary tract that are highly amenable to our ministrations and only if and when those fail do we need to go further. So that's it.

That also provides a rationale for superimposing another list of causes of incontinence to those we normally think about in younger people that are-- that is-- in the bladder and the urethra. So those superimposed things are the drugs in the diseases that older people commonly get that tip the balance. And since I can't remember any of these things, off the top of my head, I usually use mnemonics and I developed this one some years ago. It's DIAPERS.

The D for delirium, and you know that delirium is the acute onset of confusion. It waxes and wanes and it's generally due to some problem outside the brain, usually a drug or a disease. And with that, you don't know where the bathroom is, don't know where the bladder is-- that the bladder is filling, and so the patient's wet. But once you address the cause of the delirium it abates the incontinence subsides.

Infection is of the urinary tract, but we need to remember that most older people who have 100,000 E. coli for instance, do not have a symptomatic UTI. It's asymptomatic bacteriuria, which occurs in 20% of older people. It does not cause symptoms. The key symptom you're looking for is dysuria and it does not cause incontinence. But an acute symptomatic UTI which can defeat the efforts of even a younger person to get to the bathroom in time, can clearly do the same for old people. But just as in younger people you only have that symptom for a few days with that problem, even if you don't treat it. You realize that if we don't treat a UTI most get better on their own and the symptoms go away within a week. So the older person who comes to you and says, I've been wet for the last year or two, and you find asymptomatic bacteriuria, it's irrelevant and shouldn't be treated, and if you did treat it, it wouldn't help the incontinence.

Next is atrophic urethritis and vaginitis. Very common in older people. The-- remember from embryology, you knew there was some reason that we all had to undergo embryology, but you'll remember that the urethra is formed by an invagination from the vagina going upwards, and then an external plug from the bladder going downwards, and they meet in the middle and that forms the urethra. So the distal urethra, like the vagina, is under hormonal influence.

And it's the estrogen influence that leads to that lush submucosal elasticity and a barrier, so that just like a fresh washer in a sink faucet it can completely compress and become water tight. But just as that washer in the sink, as it gets old gets less elastic and more brittle, and no matter how hard you squeeze it, it can't be watertight, that's what happens as estrogen leaves. Because that rich vascularity of the sudden submucosa withers away, the urothelium becomes thinner, and at some point it can even crack. And when it cracks, it allows access to the sub underlying tissue of the acid urine, which can cause a lot of irritation and burning and mimic a UTI.

A lot of women call it-- they say it feels like scalding, and that can last much more than days. I've had women come to me who have been incontinent for a year, and that was the cause. The treatment for that is estrogen. You can give it as a cream, as 0.6 milligrams you know with that-- in fact that 1 gram tube. You can just start with a half of a gram and then work your way up to a gram. I generally do it every day for about three months, which is about what it takes to get into remission, and then I pull back one day a week so that a month. So that I'll then give it six days a week for the next month, five days a week for the next month, and winnow it down so it's as low as you can get while still remaining continent.

Alternatively you can insert, or refer to somebody who's an expert in this, a vaginal ring which lasts for about three months. But it readily goes into remission, and it helps for much more than just the incontinence. Because you know that atrophic urothrititis is also means that if that tissue is withered and there's cracks there, it's easy to allow passage of bacteria into the bladder. So that you can get symptomatic cystitis, recurrent cystitis and also dyspareunia. So if you treat it with estrogen, you get rid of not only the incontinence and the frequency and the urgency, but also help with their sexual function and can diminish recurrence cystitis.

Next is pharmaceuticals. And those are virtually ubiquitous in older people and we know that the best way to think about it is that virtually any drug can cause any symptom in any older person at any time. But there are certain drugs that are more likely to be the genesis of incontinence in older people. The first are the long-acting sedative hypnotics, and those are mainly the benzos. And of the benzos, the long-acting ones are the bigger problems. Something like diazepam. Its half life is over 100 hours in older people.

One tablet of Valium can be detected in metabolites in the urine three weeks later. Not a good drug to have an older person relax or rest or go to sleep and then wake up and function, and they have been associated with increased risk of falls and fractures, driving accidents, and incontinence. So we try to avoid those. The loop diuretics-- and I emphasize the loop because people tend to think that thiazides are a problem, and that's an issue because we know that hypertension affects 2/3 of older people. And that thiazides are the single best proven treatment for it. And it's a shame to see people go off a pill that costs a couple of pennies a day and that will reduce their risk of stroke and heart failure and all those things by 40%, because we are worried about incontinence. It does not cause incontinence. It can cause urgency and frequency for a couple of weeks, but there's a Goldblatt escape phenomena of the kidney, so after about four or five weeks it's not a problem anymore. It is not a diuretic but it-- so it won't cause incontinence.

By contrast, furosemide or the loop diuretics can clearly cause incontinence. They're like a bladder stress test, right? You've got a bladder that 1/3 of the people have bladder spasms, and now you put a liter in it over a short period of time and they have to run like hell to get to the bathroom. So that's another reversible one. And I emphasize that because we use these things all the time, and we don't need to.

A lot of old-- and most old people's swollen legs are not due to heart failure. Most of them are due to venous varicosities or to medications that cause peripheral edema. And they can be treated by changing the drugs or putting on compression gradient stockings as opposed to using furosemide which increases the risk of falls and orthostatic hypotension. And for the people who have heart failure, recall that in old people, the majority of heart failure is diastolic dysfunction and with a rigid LV furosemide is not the first drug to reach for. It's probably the last. So we can really avoid these things in most places and make older people better overall, not just their incontinence.

Anticholinergic agents are next, and that reminds us that the bladder requires the cholinergic nervous system to empty. And when you block, it urine builds up, and then it can spill over. The adrenergic agents are next, but their impact depends on one's sex. If you are a male and you've got a big prostate, then remember that the prostate is rife with alpha receptors. And with age their number, their affinity, and their lividity all increase, and they're also in the prostate capsule. So when an older man gets an alpha stimulant, it squeezes the prostate, which surrounds the urethra and can cause a functional obstruction.

Women on the other hand, remember we said, had a much decreased urethral resistance because they're urethra shrinks with age. It gets shorter. And their urethral sphincter, which is part of the pelvic floor, weakens with age and loss of estrogen. So the final barrier they have is the tone of the alpha adrenergic nervous system. So if we block that with one of those azosins, Terazosin, Alfuzosin, Doxazosin, whatever, and I mean, you know, I thought Doxazosin was gone. But I just saw somebody yesterday in my office who was on Doxazosin, so they're still getting these drugs. There are hundreds of case reports of women who got alpha blockers and developed stress incontinence, and when they came off them the stress incontinence was gone. They didn't need a bladder suspension. They could be totally dry.

Then there are the drugs that cause fluid accumulation, and my gosh are they common. It's hard for me to remember the last time I saw a patient who wasn't on one of these. I mean think about it, the calcium channel blockers, most of which are dihydropyridines. Anything that ends in -pine can result in peeing. We'll talk about that in a minute. The glitazones, remember the rosi- and thiazolidinediones both cause retention. The NSAIDs cause retention, particularly the more potent ones. The new Parkinson's agent, the pramipexole and the ropinirole, those are additional powerful causes, and so too are the gabapentin and pregabalin.

So try to think in your mind the last time you saw an older person who wasn't on one of these different agents, and they cause fluid retention. It's easy to miss in the office. It's so easy to miss in the office. I can't tell you how many of my residents and fellows, when I ask them, do they have fluid, do they have edema, say no. And I look at them, I and I say, I know they have edema. They say, you haven't even seen them.

But I've seen the voiding diary, and I heard the history. And they're up all night peeing and the only way they're up all night peeing is if they're mobilizing fluid. And the only fluid they mobilize at night when they're not drinking is a fluid that comes back into their system when they put their legs up to a heart level, and all that fluid that's accumulated in their legs overnight-- I mean during the day time now comes back into the vasculature, distends the heart, up goes the ANP. The heart says, I don't need this stuff. Send it to the kidney. The kidney says, I don't need it. Send it to the bladder. The bladder says OK, and up she goes.

So these are common causes. So you have to look for peripheral edema. It really-- I don't see a single patient anymore that I don't take this thumb and push down on the pretibial space, and you'll see it far more often than you think. Then there are the ACE inhibitors. And anybody know how they work to cause incontinence? That was a hint. Right? So it turns out, the ACE inhibitors are involving the kinin system and bradykinins are metabolized differently in older people, and the risk of having an ACE associated cough are double in older people than young.

So ACE inhibitors are great for old people, but just watch for the cough, and it's so simple. If you look at these. Think about these. These are ubiquitous in the care of the patients you are handling and if they have incontinence how trivially easy is it to fix it.

So next is excess secretion. We are now fortunately in October, but look for this in the spring, when that famous medical magazine, Parade, which is the insert in all these newspapers comes out. And every single year Evian Waters has a doctor who writes an article saying it's critically important that everybody get eight glasses of water a day, preferably Evian and I don't know about you, but my office is flooded. The phone's ringing off the hook. The answer is nobody. No one needs eight eight ounces of water a day. And if you want to check it, you can look in the American Journal of Physiology when Heinz Valtin got so furious about this. He actually investigated and did a terrific scientific study and proved it. Nobody needs it. The kidneys work. They can retain fluid. You don't need that much.

So excess excretion is common in older people and you can cut it back. Restricted mobility is the next one. Now we think of restricted mobility, we as internists, when I'm not in my geriatric life well somebody has got you know an amputation or they've got a stroke or something like that, but I'm thinking of the more subtle ones that bother all old people. This fear of falling, the imbalance, the off-- the little dizziness because they've got some peripheral neuropathy. But it's even more common the things you can fix. Bunions and calluses and ill-fitting shoes and arthritis down there in a prosthetic. All those kind of things that are simple and easy and cheap and common, and you can restore the mobility so they can get to the bathroom in time.

And then there's stool impaction. Not that uncommon in older people, and if they've used an enema you won't see it, because they'll use something like a Fleet's and the distal colon will be empty. Your finger goes up, there's nothing there but you know when you get these flat plates that people have belly pain or whatever, that they can be impacted all the way around and across and you won't see it with your finger. But the clue to this is they have new onset incontinence. It's overflow because the bladder is turned off until it spills over and the feces are loose and watery and ooze around the impaction. So they will get double incontinence.

So the patient who comes in and says for the last weeks, month, whatever, my mother, wife, whatever, has had incontinence of urine and stool, it's thing to think. One digit cures both. So these are the seven easily reversible common causes of incontinence that every person in this room can easily take care of having never had a geriatric lecture other than this in their life.

Pretty simple and effective because it turns out that these account for 1/3 of incontinence in older people cured. In the remainder, most people will have a component of this, and when you would get rid of these, it makes their incontinence much better. And it may be so much better that it occurs very infrequently. And as far as they're concerned, they're done. They'll wear a pad occasionally but other than that, they're fine.

And if they do want to be completely cured, if you now want to give them some other step treatment, it makes it much more likely that it will work. And as we mentioned, these things all have side effects beyond the urinary tract. So the patient who's delirious and not getting to the bathroom, delirium is mortal. It kills people, and it causes falls and fractures and everything else. If you cure the delirium, not only do you improve that and their risk of falls and fractures, but the incontinence as well.

So what are you apt to find after that's done? It's so easy at this point. Think about it as we would as PCPs. Like the heart, I mean-- there's only four things that can still be going on. Either the bladder contracts when it shouldn't, that's called an overactive bladder or detrusor over activity, alternatively it fails to contract as well or when it should. That's called an underactive bladder or detrusor. And the other two involve the outlet. The resistance is either high when it ought to be low. That's obstruction. Or it's low when it ought to be high. That's stress incontinence. Pretty simple.

Good news. It gets simpler still. Because if you look at those four, you can rearrange them into just two categories, a storage disorder or an emptying disorder. In the emptying disorder when the bladder's weak or obstructed, the post-void residual is high, generally above 400. In a storage disorder, the problem is not getting the urine out. The problem is they can't keep it in, so the post-void is low. And as a result, that is the result of either bladder contracting when it shouldn't or the urethra just not being able to close tight enough when they cough.

And it gets easier still. Because the emptying disorders are very uncommon. So since most older people are women. Now you learned that right? Those of you old enough to remember the Beach Boys, remember? They were trying to teach us. Two girls for every guy, because the older you get, it turns out by the time we hit 90 it's four girls for every guy, and remember since the urethra shortens and the sphincter weakens with age in women, 85% of incontinent people, older people, are women.

So in women, who is almost all the people you're going to see with incontinence, the problem is always a storage disorder. And 2/3 of them are a bladder that spasms and 1/3 is stress incontinence. That's it. Now for those 15% of men who are in your practice, again it's 2/3 have a bladder that's overactive, these spasms. So whether you're a man or woman it's 2/3 will have the spasms. And then 1/3 of the men will have an obstruction.

So if they have that you can send them off for more evaluation. So we'll do your dynamic tests if you want that to happen or you can send them to some other urologist or whatever, but that's it. It's as simple as that. The DIAPERS mnemonic, those seven reversible causes of incontinence. That's a third of the cases that it will cure, and if it doesn't cure it, it's still made the other-- made the rest of incontinence better and more amenable to treatment. And if it's still incontinent, there are only four possibilities. Two of the bladder, contracts when it shouldn't or doesn't, two to the outlet that resistance is high or low. And you rearrange it. And most people have the storage disorder so it's bladder spasm in 2/3 of older people or stress incontinence in women for the remaining 1/3 or obstruction in men for the remaining 1/3. Makes sense?

We can-- this is not rocket science. We can do this. But before we get too carried away, it's important to recall that although it may only be 5% or 10% or so, incontinence can be the forme fruste, the first presenting feature of a more serious underlying condition, such as a brain or spinal cord lesion, or bladder or prostate cancer, or bladder stones or hydronephrosis if it's a man with obstruction.

So how are we going to put all this together in a simple approach that we can deal with in the office? Here we go. And you'll never guess what step one is. A history. We remember that. So we just need to know the symptoms. So the symptoms, there are really only two kinds, the urge incontinent one, with that bladder the spasms. The way it works is the bladder is filling on its own, and all of a sudden the bladder decides it's going to spasm.

And when that happens the person says, oh my god, and this is the way they'll tell you, and in fact what I found long ago my fellows actually called it my sign, because we described this, is the patient will go, Doc it's like that. They snap their finger. Right? You've heard of Levine's sign with the crushing substernal chest. Well this is like that. They say it comes out of the blue, like a bolt of thunder. I get this abrupt, sudden, intense desire to void. A minute before that, I wasn't even aware my bladder was filling. I was sitting there watching TV. I was clearing the dishes. I was doing whatever. But then all of a sudden, boom. That is pathognomonic of a bladder that spasms. You're done.

The next symptom is stress incontinence. For that we don't mean psychological stress. This is not related to your practice. Nothing to do with burnout. This is the patient, and in this case it's always a woman unless the man has had not a TURP, but a radical prostatectomy for prostate cancer. If a man has a radical, he can have stress incontinence. But that is the tiny minority of men.

But it's mainly women. And they will say, when I cough, I leak instantaneously at the exact second I cough. And you can affirm this on the physical where I ask them, you know, you ask them somebody to cough, and they go [COUGHING REPEATEDLY]. You don't want that. You want a single forceful cough, and I'll illustrate it. [COUGH] And you watch and, [WHOOSH] there is a squirt. And it starts the second the cough starts, and it stops the second the cough ends. That's stress incontinence. Done.

Now what's the-- what's the trick is that some people will say, oh I leak when I sneeze or I cough. So you have to ask them, is it instantaneous or not? And they'll say, what do you mean? And what you're looking for is, I cough or I sneeze, and I'm OK. And then all of the sudden, oh my god, here it comes. Whoa! Well that's a delayed leak, and what happened was the bladder was unstable, overactive, and the cough or sneeze tipped it over and caused it to spasm. It takes about five seconds for it to build up enough pressure to overcome resistance, and then it goes like as a stream. But it's not while they're coughing, it's after the cough or sneeze.

So that's the differential diagnosis. Then you want to go through the DIAPERS causes. Remember those reversible causes? Then the functional assessment to make sure they can actually get to the bathroom and undo their clothes and stuff, and then voiding diary. Now how many of you have done a voiding diary? Not everybody's hands go up. I'm amazed. This is most fun of all. You get to play Sherlock.



So here's the way it works. My secretary, your secretary, can tell people if you're coming in, and you never know what they're going to come in. So they come in for your office and you know, I'm here for an annual wellness visit, whatever. And then as part of the thing, it comes out that they've got incontinence. So what I do is I tell them, all right. So what I want you to do is go home and take this sheet, and you give them a voiding diary. We can talk about that in a minute. And come-- make it-- fill it out for three days and come back and make an appointment to see me in, you know, for a follow-up appointment. And I make that just for the incontinence.

So what does voiding diary look like? Looks like this. They can just take a-- if you don't have one to do, and they're easy to get all these Lay Foundations, the Simon Foundation, the National Association for Incontinence, NIH. They all have them. You can download them. You can email me. I'll send you one. But all you're looking for is for them to basically fill out whenever they void or whenever they leak for three days. So it doesn't have to be fancy.

So now, let's take some examples. These are all real cases. Actually we could go on for all night, but I know it's Friday and night so you probably want to get out, but let me give you a couple. 90-year-old man is wheeled into my office. His wife has called and said, you know he's got to go to a nursing home. It's driving me crazy. He's wet all the time. I can't deal with this anymore. And he comes in. He's got cognitive impairment. He's in a wheelchair. He's incontinent. She said he was wet all the time.

The voiding diary however tells a different story. He's wet between 8 and noon. He's dry the rest of the day. He even takes a nap in the middle of day, and he's fine. So let's go through it. A little like the catechism. Is it because he's old? No. Now why is that? It's not just because I told you that. There's another reason. He's old all day long, and he's dry. He's only wet for three or four hours. So it can't be his age. Is it because he's immobile. No he's immobile all day. But he's only wet for three hours. Is because he's cognitively impaired? No. Same reason. So why is he wet?

It's the furosemide he takes. So how did we fix it? We gave her a prescription for an 89 cent green urinal. Actually they're clear now. And she put it between his legs once an hour between-- first we made sure he needed the furosemide, but he did. So at 9, 10, and 11, she put it between his legs. George, do you need to pee? Yup, and he would pee. And that was it. He lived another year and a half and wasn't wet at all from then on. So no evaluation. No diagnostic testing. No surgery. No pills. He's dry.

OK. Let's go to another one. Another guy who's 93. Now he's older so maybe you're thinking age, but three years older. He's 93. Cognitively impaired, mobility impaired, wheeled in by his wife. She said he was wet all the time, but the voiding diary told a different story. He was wet all night. In fact she was-- she said basically doctor, I swim to sleep. She had to clean-- the bed was soaked every night. She's sleeping in a separate bed. She was devastated. She was in tears. She was a wreck. She was sleep deprived. But he's dry all day long. And he too took a nap. From 2:00 in the afternoon until 6 at night, he took a nap, in his wheelchair, never wet. So it wasn't because he was demented or impaired mobility. It wasn't even because he was sound asleep. He was dead asleep for those four hours. So why is he wet all night and dry all day?

He had heart failure. Suppose I told you you had a woman who was 63 years old, just had three MI's, had an ejection fraction of 15%, and she got up at night to pee, and you go well, you know, it's heart failure doc, what's the point? But what is nocturnal incontinence but nocturia one step worse in somebody with impaired mobility and cognition. So what did we do? We treated the heart failure. He was dry. That was it. Done. No surgery, no investigation, no referral, no pills. Done.

Third one. A woman came in to see me. She flew in from California. She had been-- she was looking for an experimental agent. Remember we had the first incontinence center in the country, so we had all these research protocols and things going on. So she came in. She tried all these other things. She'd been to three urologists, two gynecologists, everything. Nothing had worked. There was nothing else left. It was one last try. So in she comes. So I look at her voiding diary, and I said, OK we got the answer. She said, oh my god, bless you. So what did it show? It showed at 1 AM every night, she woke up with wet bed. The rest of the day, she was dry. A single episode, but every day of the week. Why is she wet?

OK. It was that nightcap. Now you know who actually wrote the first case description of this was Dr. William Shakespeare, who said that alcohol both provoketh the desire and inhibitith the ability. Right? You didn't know he was talking about incontinence. Did you? So that was it.

So what did I tell her? Quit drinking. Right? And she looked at me. She said, for this I flew 3,000 miles from California for all that and you're telling me to quit drinking. I'm sorry. She was really-- well I hesitate to say pissed-- that but she was aggravated. I said, I'll tell you what, I'll bet you a case of wine and you're from California that this will do it. Just try it for a month. And six weeks later, I got my case of wine. She had been dry for 30 consecutive days and she remained dry. That was it She was not happy, but she was dry.

So this is where the fun is. OK. So next. The stress test on the physical exam we already talked about it. They stand up, you go around the back, they've got their johnny on. I make sure that their glutes are relaxed because if they're all tightened up they can avoid leaking with the cough at that minute. But they'll leak in their normal life when they're not tightened up, so I just go in behind them.

They don't know that I'm looking, and I put a chucks on the floor because they hate to wreck your floor, your carpet, or whatever. So I put that. They separate their legs just a little bit and then I say, cough that one, and I look. Instantaneously leak. We're done. No they were not. Provided that when they then pee and get a post-void residual that you can easily do with an ultrasound.

And if you don't have it in your group, you should think about getting them. They are are several thousand dollars but you can bill like \$30 for each one. So you can recoup it very easily in a group, and it's noninvasive, no risk, and it gives you a lot of information. But if the post-void residual plus the amount that she voided is at least 150 ccs and she did not leak when she coughed she doesn't have stress incontinence. That's it.

The rest of the physical exam, you're looking for neurologic, I mean major neurological things like Parkinson's, stroke, paralysis things, and the rectal exam in a man is not to see if he's got a big prostate. 85% of men have a big prostate and the ones who don't you got to ask why not. It's usually because they had some stones, or prostatitis, or something else, that can cause some constriction and scarring and might even cause obstruction. So the size of the prostate in a man is absolutely unrelated, zero correlation. Literally, it's 0.04, but that's essentially zero correlation with obstruction.

What are you looking for in the prostate? You're looking for whether or not they have impaction, and you're looking for whether or not they have prostate cancer. The other part of the rectal is you're looking for whether or not there are neurological sensation is intact. You want to make sure they have normal saddle sensation and that they can contract voluntarily around your finger and let it go.

And the final thing I do is, I take a q-tip, and I break it so it's got a little sharp edge. And I just lightly stroke on either side of the anus and it should be a contraction. It's a reflex called anal cutaneous reflex, otherwise known as the anal wink. My secretary loves that one. But that's it. So if they've got an intact anal wink and they can contract around your finger and let it go and they have normal sensation, cord lesions gone. That's it.

Lab tests are simple. You know the metabolic survey of the-- you know if they have polyuria. The BUN and creatinine in a man if you're worried about obstruction. The post-void residual, we talked about already. And the urinalysis is only if they've got symptomatic acute UTI, and the incontinence has only been of a week or so.

The other ones are for specialists, and you don't have to worry about them. Even I don't use it more than like 5-10% of the time. So here it is. Empiric diagnosis in the office. After you exclude the transient causes, the DIAPERS mnemonic, if they're retention with a post-void of at least 100 or more, then you can consider a referral but that's 5% of the people. And otherwise you just have them do the cough stress test and do the post-void residual. That's it.

If it's a woman, if the stress test is negative and the post-void is low, you just treat them as presumed overactive bladder, which we can talk about in a minute. And if the stress test is positive, then you can treat them as stress incontinence. And in a man, most of them you're going to refer. But that's only 15% of the incontinent people.

So what's the most common causes of incontinence in older people? The most common cause as we said, is an overactive detrusor. 2/3 of people-- so once the DIAPERS is done, that's a 1/3 and of the remaining people 2/3 are just an overactive bladder. So that's what we're going to talk about in the remaining few minutes.

It's hard for me to illustrate kegels from the podium. So overactive detrusor. Remember it's like a bolt of lightning, out of the blue, and sudden onset, and they leak. The principles are general principles. The first thing we want to do is remember, as we said, the lower urinary tract is only one of several risk factors. I focus on that last in older people. First in younger, last in older. And remember also that when taking care of older people, minor improvements can reap major goals.

You know I used to think when I was in training if I saw somebody with 15 problems, it was like oh my god what did I get myself into? How am I going to get out of this? This is awful. It's overwhelming. But in old people, what I've learned is, it's great. Those are the best. Because if you can make each one just 5% better times 15, you have completely a different person in front of you and you have transformed their life from going to a nursing home to being independent and staying at home and enjoying life again. So it is great.

So in young people, you can see on this graph, the number of leaks per day is on the y-axis. And it's all due to an overactive bladder, detrusor over activity. That's in young. So if I see a young person, and they have this urge incontinence with this abrupt thing. I don't have any choice. I have to treat that red. The detrusor over activity because that's 100% of the cause of all the leaks per day that person has. But if I have an old person, some of it is the red from an overactive bladder, an urge incontinence, but the rest is yellow.

What's in the yellow? All the things we've been talking about. And those are the things you focus on. These are internal medicine, family medicine. We can fix them. And when you fix them, the yellow goes away and now the detrusor over activity is now much less. And that line between them, everybody's different. But in many people, the detrusor over activity might be all the way at the bottom like 2% and 98% might be yellow. So you can make a big difference.

Now finally we get to these other things. We've already talked about, you know that urinal to give him toilet access or treating the heart failure but, and stopping the other medications that could do it. But if everything else fails, and the person still has the urge incontinence, then what do you do? Now you notice, we're all the way at the very end and I haven't mentioned a thing about any of those drugs you hear on TV. And that's where they belong, at the very end, for the minority of people you see.

So let's get to it. Remember we started this was-- the case was an 88-year-old woman with Parkinson's who had a hip-- fell, had a fracture, got confused, got treated with Haldol, became incontinent, and she was a wreck. And we realize now in retrospect she is a poster child for reversible incontinence. This is a joy.

So we decompressed her bladder. We disimpacted her. We diuresed her. We stopped her Haldol. We added the estrogen for atrophic vaginitis, and we put her back on her Sinemet which for some reason had been stopped because she had been hypotensive. That of course was due to the Elavil that she was also on that we had stopped, so that went away.

So that was it. And then her Parkinson's remitted. Her heart failure resolved. Her bowels regularized. Her mobility improved. And her incontinence got much better. She had been wet like 10 times a day. Now she's only wet three or four times a day. Everybody's happy. Nurses are happy. The doctor and the patient's better and the family's better. But why stop there? We've only just started, right? We're on a roll.

So now we take the history. We got rid of those reversible causes. Now we get the history, and we find out that she's got that immediate precipitant incontinence. She wakes up four times a night to pee, again because those bladder spasms. She had no symptoms or signs of stress incontinence. And she had a low post-void residual. So now what are we going to do? Here's what we do.

See? Did I fool you? You thought you were waiting for a drug weren't you? This is behavioral management, and this is really cool. You take that bladder diary that you have in front of you and you look at the intervals. And you'll see that when she tried to go four hours or five hours between voids, that's when she was most likely to be wet. But usually if she would try to go fewer like maybe three hours between voids or two, whatever it is, you look for the longest interval you can find at which she can remain dry.

And you say, all right, here's what we need to do. Just void that amount say every two or three hours if that's what she can do successfully. Every three hours whether you need to or not, whether you feel like it or not, go to the bathroom only during the daytime. And once you've had three consecutive dry days, I want you to postpone by a half an hour. So you go 3 and 1/2 hours between. And you do it in an iterative fashion until you get to four hours between the voids. Again only during the day. And 50% of the people will then become dry with that alone. Now you do have to teach them one other thing and that is what's called urge suppression.

That is, remember when that urge comes out of the blue? So what do they do? They run like hell to the bathroom. What should they not do? Run like hell to the bathroom. Why? Because while they're running like hell to the bathroom, they're in panic mode. They're thinking about the door, and the toilet seat, and everything else instead of their bladder. Instead they need to do what we call now freeze and squeeze.

They need to stop dead in their tracks and concentrate on tightening their pelvic floor muscles to prevent the bladder from squeezing. And the way I tell them in a way that they can understand is I say, you remember that beach in the summer and you were watching all the waves come up and they come crashing against the shore and roll up, but as they roll up the beach they lose their force until eventually they crest and then they recede.

And that's exactly what's going to happen with that bladder contraction. It comes on like crazy, and then if you can just hang on and literally for 30 to 60 seconds, it will crest, and it will recede. And that will be the end of it. And then when the urge is gone, you can walk to the bathroom. So if you teach them that, and then once they learn it, extend their intervals 50%. Remember you've already cured 1/3, now you've got another 50% of the remainder are now dry. And that's it.

So what's the role of a drug? It's only to augment it. Which ones are better? They're all the same. I've given you a list of the drugs and DDAVP never been proven for incontinence in old people and runs the risk of hyponatremia and seizures. Neuromodulation Botox. Those are you know if you got patients who have this much trouble and that much of an issue, I'd be happy to see them or you'll send them to some other specialist who can actually do those things, but that's literally, we're talking 2% or something of the people who are incontinent.

So to conclude, incontinence is-- older people is common and underdetected, but it is never normal at any age, regardless of whether they have trouble with mobility or cognition. It's causes are multi-factorial usually beyond the urinary tract and with a stepwise persistent approach, most of these people are treatable and often curable without complex testing, without referrals, and without surgery. So I thank you for your attention, and I'll be happy to stay later to answer the questions.