EDWIN CAPULONG: So I guess my-- the definition of a physiatry I guess the role of physiatry in multidisciplinary spine care might be the more appropriate term for-- or title for my talk. But first let me define what a physiatry is. We're like a hybrid of everything. So we're possibly more of a musculoskeletal and a neuromuscular hybrid, just because of our training.

So, during our training, we have to go through the series of inpatient and as well as an outpatient practices. From traumatic brain injury, to spinal cord injury, to EMG, peripheral neuropathy. And also part, or a huge part of our training, is a musculoskeletal program, which is sports related injuries or degenerative factors for spine as well as other joints.

So our goal for this talk is to hopefully discuss what, I would say, a more ideal health model for spine care and also introduction of the PMNR services across the system, and also familiarize with programs that can help your practice in dealing with the chronic pain. And also I will have to discuss some of the pathophysiology of pain and some clinical vignette. I wouldn't say a full blown clinical vignette, but we're going to discuss some of the more common etiologies of masqueraders for our spine practice.

So back pain, as you know, is one of the most common disabling conditions, which is about 60% to 80% of prevalence. And it increases with age. More than 80% to 90% of these patients will get better just with conservative treatment.

So who treats chronic back pain, or who treats back pain per se? Well there are several. Rheumatologist, physical medicine and rehabilitation, pain management, sports medicine, primary care physician-- which is the traditional physicians to treat back pain-- and also are spine surgeons, both orthopedics and neurosurgeons.

So what is the current health care model in University Hospital? I guess this is the pre Spine Institute health care model where it is PCP-driven model. So if-- and I'm not saying that the PCP, or the primary care physician, is not doing a great job. In fact they did a very good job in at least trying to take care of our, all our spine patients.

But the in this kind of a model, which is our pre Spine Institute care, the delivery of health care, at least for spine, is more fragmented. There are too many referrals at one time. There are, potentially, are duplication of services that is being referred to both pain management as well as medical spine, or PMNR for that matter. And also there is an early referral to spine surgery.

So a lot of our cases here being referred to our spine surgeons are literally medical spine. And a lot of those patients too, sometimes, will start with the spine surgeon, and the spine surgeon will prescribe physical therapy. And we're trying to do is the reverse now, is trying to create a model where we maximize all the conservative treatment before we refer patients to our spine care or a spine surgeon.

And again, there's improper utilization of resources. And-- not to say the least, I guess-- non standardized therapies, I mean, that's kind of still out there. But creating a Spine Institute, hopefully, will standardize our spine care in creating some sort of a high reliability medicine or, what we call as a care path model.

So this is the model for pre Spine Institute where primary care is the center of the spoke and that literally drives the patient to all the specialties. And, currently, we have created a model where medical spine is not just PMNR. Medical spine is not just family practice. But also, we incorporate the concept of medical spine as a pain practitioner, that being an anesthesiologist in itself.

And again, with pain management or interventional pain, we're trying to define what pain management looks like, at least in our Institute, where PMNR is a huge part of the interventional pain practice. So we have two currently in our system, Sam Moufawad and myself. And the goal, hopefully, is to create some sort of an early referral to our spine surgery in cases where they really need surgical intervention.

So I guess my thought here is that you cannot just treat the patient conservatively if they already have a neurological deficit. If their MRI is positive and their symptoms are concordant, meaning their neurological symptoms are in concordant-- say, for example, you have an L4-L5 pathology in your myotomal weakness is L4-L5, and there's a large herniated disk that is not responsive to conservative treatment, let alone our interventional procedures, I think these are the patients that we need to refer, as soon as possible, to our surgeons.

The reason being is that there are some studies out there that-- I think the return to work as well as the return to their activities of daily living is a lot faster if you involve a multidisciplinary approach, and that includes surgical treatment. Anything that has a decreased functionality, as the principle of what a PMNR is, we rehabilitate patients so they can go back to work. Anything that has decreased functionality because of any impairment, that includes a dorsiflexor weakness or even an intractable pain, obviously that needs attention and a referral to appropriate spine team. So we kind of have-- we kind of like redesigned the service structure.

And again, I thank you-- thank the Spine Institute through the leadership of Chris Furey as well as Nick Bambakidis in creating a system wide model where we literally develop a coordinated clinical care system where we have a central scheduling where all patients suffering from the back pain will have one call center and a referral system that, before seeing a surgeon, all calls, or at least goes to all back pain patients-- most likely 80% to 90% of the time are non-surgical anyways-- goes to either pain management or medical spine. And also some sort of an outreach program, including patient education as well as doctor education.

So all in all, I think this health care model, which is a multidisciplinary spine care involving all specialties from neurosurgery to orthopedics to PMNR to pain management and hopefully, with the support of the primary care system, creating a more cost efficient quality of care as well as increase patient satisfaction.

All right so, again, this is just a recap of what Dr. Lawrence has discussed and also our pain colleagues. How do we approach back pain, especially if it's chronic? Again, it's a multidisciplinary approach. It's a step-wise. You have to diagnose it correctly. And once diagnosed correctly, you have to institute the first year pain therapies, which is physical therapy, tents.

And I want to probably discuss more of the Connor Integrative because I think we should probably start them early rather than later.

And all of those modalities that are physical therapy based, that-- including Tens unit and all of the medications that Melissa had discussed. And, again, the second tier-- these are all the interventional pain procedures. And lastly, advanced pain therapies that includes neuroablasion as well as surgical treatment.

Again, Connor Integrative medicine is a huge part of this because there's a certain cohort or subset of these patients literally are responding to integrative care model. And we have a very strong Connor integrative practice here through Dr. Francoise Adan's initiative. And we just recently hired a chiropractor to take care of all of our mechanical back pain.

So all in all, we already have almost like a 360 degree continuum of care that-- we employ acupuncture manipulation, massage therapy, physical therapy modalities in addition to the regular Western type of treatment from no-- from conservative to more aggressive therapies, that including, as I said, from medical to surgical treatment.

Same thing. I think I'm not going to elaborate this. This is a well multidisciplinary approach for chronic back pain, well said. Everything has to go through all of these steps. In fact, one of the things that I think we should probably start working on and I think we've started working on this is the wellness program. In addition to a wellness program-- that includes smoking cessation as well as weight loss-- we also, I think, have to think about the utility of a chronic pain rehabilitation program, which is more site based.

And again the functional restoration program from our functional neurosurgeons as well as our pain management, that including not just the physical therapy as well as the fact the functional capacity evaluation work hardening, but also the utilization of the more advanced made therapies, that including spinal cord stimulation as well as nerve stimulation overall.

Just a repetition. Again, this is what we have right now, at least for our current PMNR services. So we have musculoskeletal, chronic pain program, and [INAUDIBLE] has a very high interest in developing the chronic pain rehabilitation program. And we, as I said, we have Dr. Matt-- Sam Moufawad as our pain management doctor. Our sports medicine doctor is Chris Parnell, which is also our residency program director.

So we have-- we're ACGME accredited for a residency program, just for an advertisement. In fact, all our residents now are going to a interventional pain or medical spine fellowship in the future. So this is what we have.

So this is just one part of PMNR where we haven't discussed that much, but, literally, for an inpatient rehabilitation, we also take care of TBI, SEI, stroke. In fact, we're part of the trauma team, and I'm the console service de facto director looking at SEI, TBI acutely. So we're trying to give them some recommendations. So hopefully we can get them to increase their function and get them to rehab as soon as possible.

So how bad is chronic pain epidemic? I think it's bad enough that we have an opioid overuse. And the university hospitals health system, amazingly-- and I know-- and I'm impressed with the way we kind of started the process of creating a pain Institute addressing the opiate overuse in our system. And I don't have this slide, but we have a slide that specifically stated that we have reduced, possibly, a significant amount of old opiate prescriptions within our system. And I think that impacts overall the quality of care that we are going to deliver to all of our UH patients.

So what is the pathophysiology of pain? This is literally like everything from multiple chemical mediators to anything morphologically change-- changes, at least in anatomically, that causes any pain. A lot of it-- if it becomes chronic, it becomes supratentorial. And, if that happens, limbic system is involved. And if that happens, it's hard to treat them just because you have this downhill spiral.

And that's the reason why Dr. Lawrence talk is very relevant because we will use for our adjunct anti-depressants as well as the gapapentin derivative treatment. Just to help this chronic pain patients because in the long run, there's not much of any use for opioids in these types of patients.

Again, with the chronic pain of paradigm shift from peripheral to central, from cortical to limbic-- and this is where the challenge is. And this is why I think the multidisciplinary approach with PMNR as well as anesthesiology as the main conservative treatment providers will have a huge impact and our spine care.

Again, this is a paper from the Cleveland Clinic where the influence of psychosocial factors impacts outcome. And I think we know this all the time. Better outcome in terms of function, quality of life, dose response in patients who have less probable influence of psychosocial factors. And here's the, again, some of the pain therapies that we have discussed used and abused.

And this is, again, some sort of an example of what nociceptive and neuropathic pain pattern in terms of their clinical entities, as well as some sort of a pathophysiology. For nociceptive, it's caused by tissue damage. And this is what you see in a musculoskeletal pain. For neuropathic, this is what you see in your central cord, as well as your radiculopathic pain.

And the combination of both is where I think the chronic pain pathology comes in, low back pain, fibromyalgia, neck pain, and all of those clinical entities. And we use all of these treatment and armamentarium depending on how we view the pain. Again, either nociceptive, radiculopathic, or central, as well as mixed. Interventional pain therapies, I'm not going to go through this. Well well discussed by our pain colleagues.

So overall, I think the back program should consist of something like this, you know, patient's education, lifestyle modification, then medication and physical modalities, including Connor Integrative therapies, work hardening program, spinal injections as well as, on the bottom bracket, you have surgical therapies, chronic pain rehabilitation as well as implantable devices.

It doesn't have to be a step wise take-- that's step wise, like the way the way I'm discussing it, but it could be more of a-- maybe you can do a work hardening first or even a spinal injections. It's probably more for multidisciplinary-- disciplinary approach that incorporates everything that is available for us in a multidisciplinary fashion.

So, just to close my talk-- I just kind of removed some of the slides-- but hearing everything, talking about some clinical vignettes, just think about spine as, literally, it could be a masquerader, right? So when you say masquerader, not all back pain is related to your spine. It could be a referred pain coming from the hip. It could be referred pain coming from the spine.

And I think Zack made a very good point about dual diagnosis, which means that if you have a cervical as well as lumbar stenosis, you fix the cervical stenosis first-- just because of the functional impact if you have a significant cervical myelopathy. Now in hip-spine syndrome, in my opinion, it has almost similar impact. Because if you have a-- both spine as well as the hip pathology on an equal footing, I would say, you know, I would say treat the pathology, which is peripheral in this particular case, the hip first before you even go to the spine.

Same thing with cervical radiculopathy and carpal tunnel. You have to treat the carpal tunnel first before you, in my opinion, treat surgically the cervical radical apathy. And that bodes well with the shneck syndrome, which is shoulder and neck. Again, anything that is adjacent to the spine has to be ruled out because a lot of them are most likely related to the spine, I'm sorry, to the peripheral joint.

Just like, let's go with the shneck C7 radiculopathy. You know, sometimes they can create some sort of a lateral epicondylitis, kind of similar. So if there is a recalcitrant what looks like a lateral epicondylitis, maybe you should probably take a look at the spine, as well.

And one of the things that during my training that kind of impacts my diagnosis treatment is-- well, diagnosis per se-- is that and anything that is a C8-T1 radiculopathy, you have to think other than radiculopathy because most of the time C8-T1 is not common. You can get a C5-C6 C4-C5 disk herniation, those are the more common ones.

Same thing with the lumbar radiculopathy, L4-L5, L5-S1. Anything that has a pathology or symptoms above the knee, you have to look at the hip, sacroiliac joint. Anything that have a symptom that is shoulder related, not below the elbow, you have to look at the shoulder or you have to look at some tendinopathy.

ALS, one last thing. One case when I was an attending at a Cleveland Clinic-- very classic ALS, but it kind of confused everybody. It was a referral from a neurologist. And, cut the story short, a patient has ALS.

ALS is like a combination of both upper and motor neuron lesion. So you can have a muscle atrophy in addition to a radiculor pattern. Just to make sure, it's kind of different treatment. Patients usually will not respond to surgery, or even the type of treatment that I can offer.

So in summary, you have to maximize nonoperative treatment for at least six weeks in patients with no neurological deficits. We have to refer patients appropriately for surgical intervention. That is, you have an MRI that is can concordant with the neurological symptoms, and there's a definite neurological deficits and, if I may add, some sort of a functional deficit as well.

You have to rule out some of the spinal disorders, or masqueraders, that may cause an overlap in symptoms and affect your treatment. And familiarize with a program that can help your practice in dealing with the chronic pain, that is, chronic pain rehabilitation program. And again, this is, I think, what we have accomplished so far creating the Spine Institute model. Thank you.