Academy of PHYSICAL MEDICINE

Maintenance Care - Ref 114AE

with Andreas Eklund

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TRANSCRIPT

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Steven Bruce
I'm joined this evening by Andreas Eklund, Andreas is a chiropractor. He's also a postdoc researcher at the Karolinska Institute in Stockholm. And his doctoral thesis was about persistent back pain. And he spends a lot of time at the moment looking into maintenance care and the effectiveness and cost-effectiveness of care for low back pain. Andreas, welcome to the Academy. Nice to have you with us.

Andreas Eklund
Thank you very much. I'm glad to be here tonight.

Steven Bruce
Before we get on to talking about maintenance care, which obviously I mean, I've looked through your slides. There's an awful lot to be said about this and a lot of information which will be really useful to both osteopaths and chiropractors. I'm afraid I can't, I can't avoid asking you about Sweden's approach to COVID-19. Your chief epidemiologist, Anders Teggler? Tegnell?

Andreas Eklund
Tegnell, yeah.

Steven Bruce
I got it wrong for the third time. Anders Tegnell, he's been on our media quite a lot recently, he was on a flagship current affairs programme on the radio this morning, talking about how things are going over there. You haven't locked down to the extent that Britain has, you don't use PPE to the extent that Britain and other countries have. How do you think it's going?

Andreas Eklund
Um, well, I think for one, it's hard to say I think we will have the results in a few years probably looking back at this pandemic. But it seems like it's okay. We had the biggest peak in May and then it dropped a lot during the summer. And it's been rising a little bit now than when people are back to schools and universities are up and running again. So, we're a bit worried at the moment that we might see it, it kind of rushing away again, but currently it's looking okay. We've had some problems with elderly people dying a little bit too much. And it's hard to say exactly why, whether it was the actual COVID strategy or just a faulty strategy in general with regards to our nursing home.

Steven Bruce
Easy to criticise there, isn't it? Especially in retrospect, because of course, at the beginning, we didn't know what would be the correct strategy.

Andreas Eklund
Exactly.

Steven Bruce
I feel for Mr. Tegnell because he's having to defend things that he probably never said or never advocated. Because, yes, there were some deaths. But of course, you're deaths peak and then dropped off. Tell me, your practice, you're in clinical practice two days a week, I think you said, haven't used your practice at all throughout the crisis.

Andreas Eklund
We were quite heavily affected for a month. Our practice is a little different than a normal chiropractic practice, because it's a multi-disciplinary rehab centre. So, we see a lot of old people with multiple comorbidities. So, we had to turn down a lot of patients who were in risk groups initially and kind of changed the routines in the clinic, space out distances within the gym and put some measures in place. But once that was done, it picked up quickly and then really, we were up and running again. And it looks like it hasn't been, we haven't been that much affected. So, it's been okay. But it is, it's the initial problem.

Steven Bruce
What sort of PPE are you wearing in clinic?

Andreas Eklund
Well, really nothing. We're, it's about keeping distance and distant disinfectants and staying home with, whether you have any slightest symptom, but there's no mouth protection. There's no visor unless there's a particular patient who wants it or he's in a particular risk group.

Steven Bruce
Interesting. Yeah. Okay. Well, let's move on to talk first of all about the Karolinska Institute, could you tell us a bit about that? What is it?

Andreas Eklund
So, it's the largest medical institution in Sweden. It's the largest medical research institution in Sweden. So, we train most of the medical professionals except chiropractors and provide specifically a lot of cutting-edge research, medical research. And it's really one of the top universities when it comes to medical research. So, it's a great place to be a researcher at with lots of great facilities and support systems and a lot of talent and skill and knowledge within the walls.

Steven Bruce
I guess a lot of people over here will find that a bit surprising. And obviously you trained at the Anglo-European College in Bournemouth, I think, you know the way things work over here, but a lot of people would find that quite surprising that you've got a major medical research institute at which all medical disciplines are cooperating.

Andreas Eklund
Yeah.

Steven Bruce
Or present at least.

Andreas Eklund
Yeah. It's a great place to be but there's not a lot of us. We are currently three chiropractors in the entire Karolinska Institute that are active as researchers. There's one naprapath and we have no osteopath. So, the people doing manual therapy research is a very, very small group. But once you're through the loophole, it doesn't really matter. You're just one of the researchers in the gang.

Steven Bruce
Do you have any idea how many osteopaths there are in Sweden compared to chiropractors?

Andreas Eklund
I don't know. It's a much smaller profession in Sweden compared to England, but I don't want to guess. I know it's much smaller and we have a small school that is quite different from the schools that you have in the UK. Um, I couldn't really say, no.

Steven Bruce
Yeah. It's curious that it's the other way around over here, isn't it? I mean, there are a good half dozen osteopathic colleges in this country. Whereas with chiropractic, it's Anglo-European. I think there's one in Wales and there's the McTimoney College, is it only three?

Andreas Eklund
Yeah, that's right, yeah.

Steven Bruce
Anyway, so the reason we got you on the show is because we are forever bemoaning the fact that there is relatively little evidence to support what we do, certainly we in the osteopathic profession. I'm kind of struck by the work you've been doing on maintenance care, because you've looked into who benefits and how you can select an audience that's going to benefit. Do you want to tell us a bit about the programme that you started?

Andreas Eklund
Oh, for sure. So, maintenance care is a concept that's been around the chiropractic profession really, since the beginning of times. And it's the idea that chiropractors or manual therapists somehow are able to identify lesions. And by treating those lesions, we might avoid relapses of different conditions. So, it's been used in different settings and in different ways, but mainly, chiropractors seem to use it for secondary and tertiary prevention. So, for patients with current conditions or conditions that are chronic. But really, up until 2008, there was no evidence to support the use of this procedure. So, the idea is that you schedule patients ahead of time, and trying to catch them before they peak or before they develop their pain or particular condition that you want to address with the aim of really preventing the condition. So, before 2008, there wasn't really any data on whether this was effective, cost effective or actually worked. And a group of researchers in the Nordic countries in Denmark, they set out to design this research programme. And it was a really ambitious idea. And the idea was really from the ground up, look at this phenomenon, understand it, and once they fully understood it, capture it in a clinical trial and address effectiveness and cost-effectiveness. So, if you move on just one slide, there. So, it was a research programme that was started really from the beginning up and it stepped to the next slide there.

Steven Bruce
I ought to interrupt you just here, I forgot to mention to the audience that we will bring several if not many of these slides up as full screen slides for you. But don't worry, because as soon as we finish the show, provided you click the quiz button you will be sent a copy of the slides to use as an aide memoire. But largely, everything that is on the slides Andreas is going to talk about anyway. So, don't worry if at the first instance you can't read it too clearly. Sorry Andreas.

Andreas Eklund
Yeah, so really 2018, it all started with a literature review. They set out to look at what was out there. And in this review, they found that there was no evidence-based definition, there were no indications for the use of maintenance care. Chiropractors seem to think it was really useful. But we really didn't know much about prevalence, efficacy and cost effectiveness. And a lot of times when a review comes out like this, a profession gets really upset. Oh, you've just proven that what we do doesn't work. But really, this is a great time where the literature review was really the start of something new that allowed us to understand where are the holes? And where do we go from here? So, just move one slide ahead, please. So, they set out to look at four different areas pretty much. It was case management, how do chiropractors manage these patients? What were the indications of care? How frequently did they treat them? And what was the actual content of that care? So, in total, there was about 10 publications that were published during that period. And it all led up to this clinical trial. That was the major part of my thesis. And the idea here is that the clinical trial would encompass all this information about how we as chiropractors work with these patients, and then test it in in a pragmatic setting. So really looking at what we do in clinic and not trying to invent something new.

Andreas Eklund
I think you've just said a key word there, haven't you, Andreas, because the first question that springs to my mind is, how the hell do you define chiropractic care or osteopathic care for that reason, because we all do different things in clinic. And we all do multiple things in clinic, we don't just do clicking one joint or rubbing one muscle.

Andreas Eklund
Right? So part of this preliminary data was to look at that. So, one of the trials actually did that. There was a student in the room, timing the chiropractor to see what part of the actual consultation was done on interviewing or talking, what was done on giving exercises, what was done on manual care, what was done on soft tissue work, etc, etc. So,, they could really see what was different between the regular visits, and these maintenance care visits. And the interesting part was, there wasn't really much of a difference. A slight difference in terms of what they recommended, they give a little bit less recommendations in the maintenance care visits compared to the normal visits that they would have them come for. So what we do, I mean, you raise a very important point here, there is probably ways of treating patients just as many as there are chiropractors and osteopaths. So, a pragmatic trial really looks at trying to mimic as a whole, as a group of whole, can we see if what we do is effective and not the actual components of the encounter as such.

Steven Bruce
I wanted to just ask another question. Just to explain. When you say maintenance care, how do you define maintenance care, this is care, which is not driven by symptoms, or a new episode or something.

Andreas Eklund
Right. So, maintenance care is really about the scheduling. So, the content, like I mentioned, is similar between the two different strategies. But the real difference is the this idea that we have a pre-planned schedule for the patient. And it seems like the range between visits ranges somewhere between two weeks and six months, but the norm is somewhere around two months. So, most chiropractors would put these patients on maintenance care on a one-to-three-month interval. So, it normally starts off with a regular intensive initial treatment plan for a particular condition, and once the patient becomes stable, and is free from that condition, and the chiropractor would even either say, well, you know, welcome back if you have a new problem, or let's put you on this preventive, pre-planned schedule that we call maintenance care, and see if we can prevent this problem from coming back. So, all of those papers are really interesting, but there is a lot of information. So, if you want to get around that there is a systematic review that you

just showed there that summarises all that information. So, in just one paper, you can put all that into perspective and understand that whole bunch of preliminary research that led up to this RCT. Right, so I think let's move on to the RCT, because I think it'll answer some of those questions that you raised here. So, the idea here was to look at effectiveness and cost-effectiveness. And to do that, by pragmatically trying to mimic what we do. So, we had two groups of patients, one that were allocated the maintenance care procedure, and the other group got the other alternative, come back as your pain comes back, and then we schedule you for another couple of visits. And then we put you back on that maintenance schedule again. So, we've had patients go through this initial screening procedure and treatment period. And once they were at that point where they would normally be recommended maintenance care. That's when the actual study started. And then we followed them for 12 months. And during those 12 months, we recorded their pain trajectory by using SMS. So at the end of each week, they would answer an SMS saying, how many days of that week they would have experienced pain. And we track this in a web-based interface. So, we can in real time see answers coming in. And if patients wouldn't respond, we could instantly react to that and call them and talk to them and have them respond to SMSs. And then we recorded a number of secondary outcomes in the beginning of the trial and at the end of the trial to really capture the activity limitations, quality of life, production loss measures, and another number of different things to really capture the whole patient experience.

Steven Bruce
Dare I ask, Andreas, were those outcome measures determined in advance of the study?

Andreas Eklund
Yes. So they were.

Steven Bruce
One of the things that's often criticised in studies is that people decide on their outcome measures after they've seen what happens.

Andreas Eklund
Yeah.

Steven Bruce
Counterintuitively, it's a bad way to do research, isn't it? I just wanted to know for our audience, obviously.

Andreas Eklund
Yes, certainly it is. So, the way it is done is you report your study into a trial registry. And in that trial registry you state, what you're going to look at, and what outcome measures you're going to use and how you're going to report that. So, we did that. And then we also published a protocol where we described in detail, what we were going to do, what we were going to measure, which statistical methods we would use to analyse the data, and how we would publish it. So that was all out before we concluded the trial, which is also a great paper to read if you're interested in this trial, because it describes the whole project in much detail.

Steven Bruce
Right. And for the benefit of the viewers, we will put up the references, all the reference you gave in the original slide deck will be sent out after this. And there'll be available on the recordings page as well. So, if you want to look them up, then they can.

Andreas Eklund
Right. I think you can move to the next slide if there aren't any questions there.

Steven Bruce
We did have one question which came in before we even started speaking, it was from someone who says, what are the most important clues from patient history that the individual is likely to benefit from maintenance care? Is there a ranking of factors which we could codify to make a recommendation? I might leave you to talk about that a bit later on, because I've seen your slide pack.

Andreas Eklund
Right, yeah. So, what I can say is, just like you're saying, we're gonna get back to that, because there we have some really good recommendations on that. But what we saw from the preliminary data before the RCT was conducted, if patients had recurrent pain, they were quite likely to get maintenance care or recommended. If they had chronic pain that responded well to care, they were very likely to get recommended maintenance care. So, we initially, or what people used to do or are doing really is judging the effect of care. And then based on that would recommend whether this is a suitable long-term strategy or not. So that was how it was done in the beginning. And hopefully, I'm going to show you how we can do this even better. Right, so one of the really, really big strengths of this trial was. we used a practice-based research network. So initially, we had 40 clinicians all around Sweden collecting data from their practice in real time, all the way up north to the very south, but the majority were around the major cities. In the end, we had 35 clinicians who managed to recruit patients into the trial. And they are really the big heroes of this project. Because if we didn't have all these dedicated clinicians who work for free, and dedicated their time and energy into collecting this data, we would have nothing to share with you today. So, I really want to acknowledge those conditions and how important this type of practice-based research is, and I mean for osteopath, physios, chiros. I mean, it's an incredibly effective way of getting real time, good data from practices if we have clinicians participating in these practice-based research networks. So that's how I got into research from the beginning, by being a data collecting clinician in one of these research networks

Steven Bruce
35 clinicians enough? Or is it more significant the number of actual recruits that they got into the study?

Andreas Eklund
Why I think it's really, really important to see that we had a lot of clinicians whether we have 30, or 40, wouldn't really make a difference at all, in the sense and in the same way that the number of participants in the study. So that, of course, is much, much more important. And in the end, these 35 clinicians, they screened 2033 patients, and out of those three different 28 were eligible. So, we had a series of inclusion criteria that they had to meet to be part of the study. And once we randomised patients, there were only 328 left that were eligible or willing to participate. And out of those hundred and 62 went into the control group 166 were a maintenance care patient. And we had seven dropouts and two were excluded due to pregnancy. So, in the end, we analyse 319 patients, which is a rather large cohort. When you're looking at complex clinical trial, 12 months like that we have here.

Steven Bruce
Is it? Because I've never understood how one works out the power of a study, of a randomised control trial. And 328, if you were testing, I don't know, a new statin or something, would probably be a very small number, wouldn't it?

Andreas Eklund
Right? So, it all depends on what you're measuring and how that measurement has performed in previous trials in terms of variability between measurements and between individuals. And it also has to do with what you want to measure, how big is the difference you want to measure between the groups. So, there is different ways of, you know, creating these really educated guesses, which a power calculation is really an educated guess, on how many patients you need. But in the end, what is really, really relevant is what can you say from the data, of course. And if you are very far from that number that you calculated to be needed, and you can't really see a difference, then probably it could be due to the fact that you might not have enough subjects. Now, if you have a very, very small difference that you want to measure, like you might have in a statin trial, where the sizes are quite small, then you'd need quite a large group of patients to produce that small, significant difference. Right, so let's move on. So, um, we followed them for 52 weeks. And I think this slide is an incredible slide. I'm very proud of these data, and we sent out 16,692 SMSs. And out of those 98.9% responded, so we have an extremely rich data set over these 12 months to capture these patients. Pain trajectory and pain experience.

Steven Bruce
Actually, that teaches us another lesson, doesn't it, because I'm sorry to get very much off topic here. But anybody who teaches you about marketing to potential patients, or to patients will say that SMS gets a much better response than email or anything else. Because, you know, it's immediate, it's there, it's in your face all the time. And obviously, I'm not suggesting that we start barraging everybody with text messages about coming in for treatment, but you know, it is a very effective way of getting a response. And that's an outstanding response, isn't it?

Andreas Eklund
It actually is incredible. Yeah, somehow we're kind of programmed to respond to SMSs. They come and then instantly you send a reply, and we had a really simple reply to send. And then we coached them early on that if they would fail to respond, someone would call them and ask why they didn't. So, we had a few people in the beginning who didn't respond. And once they have that call, well, they were back on track.

Steven Bruce
Just out of curiosity, obviously, it's easier to respond if the response required is very simple. What are you asking them to respond with?

Andreas Eklund
Well, it was really just a number from zero to seven, how many days of the previous week have you had activity limiting lower back pain? So, it was a short question, a simple answer. And I think that's the key to a successful SMS data-collection. It can't be complex, you can't have them write long messages to collect data. Right, let's move on. See what the next slide is.

Steven Bruce
You had three simpler graphs and your original slide deck. But I'm afraid I put them all into one here. So, I apologise for complicating it a little bit.

Andreas Eklund
Now that is perfectly fine. It looks very busy this slide. And it really isn't. We have two main lines here that I want you to focus on. One is blue, and one is green. The blue line is the control group. And the green line is the maintenance care group.

Steven Bruce
These are the wiggly lines behind the averages?

Andreas Eklund
Right, so the wiggly lines are the 95% confidence intervals. But the main lines are the really important ones to look at. So, what we see here is the mean number of days with pain per week for each of the 52 weeks during the study period. And as you can see, there are really two phases to the trajectory in the beginning up until week 19, there's an initial improvement where patients continue to gradually improve. But the maintenance care group does so a little bit quicker compared to the control group. And then there is a second phase, which is more of a steady state where they keep a small difference. But over time kind of keep the same trajectory for the rest of the period. So, I think this graph is interesting, because if you look at this from a week-to-week basis, the difference isn't very big. It's a really, really small difference. And it really becomes a significant difference when we add all these weeks together. So, the first question you might ask yourself is, is this really relevant?

Steven Bruce
Actually, the first question I was going to ask, Andreas, was when you look at these confidence intervals, they all overlap quite considerably.

Andreas Eklund
Yeah.

Steven Bruce
Because they overlap quite considerably, it could conceivably be that there's no difference at all.

Andreas Eklund
Yeah, for certain. So, you can see there are certain periods where they overlap where we can see there is no statistical difference. But then there are weeks where there is a small difference. But we must remember this is on average, and one of the publications is looking at this from a different point of view, where you will see where, how we can really explain the effect between these two groups. So, you have to dive a little bit deeper into the data to really understand what the difference looks like and how it affects patients. Right. So, let's move on to the next one, I think. So, in total, when we add all those days together, we found that the maintenance care group had on average 13 fewer days with activity limiting lower back pain, so about two weeks less pain, but they also had two more treatments. So, the conclusion was, yeah, add an additional number of treatments, maintenance care is effective. But is it clinically significant? That was the big question. And it's really hard to answer that from this trial, or from this paper in this analysis that we did here. And that was the big thing. When we published the paper, everyone was saying, well, this is interesting, but is it relevant? How is this relevant for patients? So, this paper got a lot of attention within the chiropractic profession, but also outside, in particular physiotherapists have been really interested in what we've done, and really critical, of course, some of what we've done, given that this is a procedure viewed is really passive for patients. And that there is this perspective that passive treatment is not good for a chronic pain patient because it locks them into a treatment regime, which is all fair comments, I think. So, this was really the first paper that looked at this. And then the next step was we wanted to look at subgroups. So, from the onset of the trial, really, when we designed the trial, there was an idea that we wanted to test whether different psychological subgroups could possibly respond different to maintenance care. So, in the beginning, patients were screened with this really comprehensive questionnaire called the West Haven-Yale Multidimensional Pain Inventory, or WHYMPI in research, researchers normally call it the WHY-MPI. And this instrument is rather old, it was developed in the 70s. And tested in the 80s,

90s, in a number of different populations, patients with TMJ pain, cancer pain, lower back pain, neck pain. And it's been used thoroughly. The thing with this instrument is that it was data driven. So, they collected data on a number of different domains. And then they use that data to try to understand other certain groups who cluster with certain characteristics. And they found there were three different subgroups, adaptive copers, interpersonally distressed and dysfunctional. And these subgroups have been used in a number of trials. And it's been shown that you can predict long term sick leave, you can predict treatment response. And they are really reliable and valid. But they're derived through this data-driven process, rather than these modern instruments like stock back or the Örebro Musculoskeletal Screening Questionnaire, that are theory driven, that were based on these concepts and ideas and then they were joined together and created more modern versions? So, it's a little bit old.

Steven Bruce
Would you say that these categories are used in other research? Do you mean other than chiropractic research, they're used generally across medical research?

Andreas Eklund
Yeah. So, we were really the first ones to use this in manual therapy and chiropractic research, but it's used in particular in medicine, and in particular when it comes to looking at sick leave, predicting sick leave from chronic populations. So, I'm just going to say a few words about these, because it's really important to understand kind of who they are. And I think as clinicians in particular, those of you who have a few years, I think you can recognise these individuals in your clinic. Now the adaptive copers. So, remember, all these patients, they were not, they all had pain, they all came in with more than 30 days of pain the previous years. This wasn't the first episode. And they had a pain intensity that was pretty similar to all these groups. And even though one group is better than the other in terms of sick leave these were all pretty affected people. The adaptive coper group is the group that has the best prognosis, the lowest risk of long-term sick leave, it is the group who is most active.

Steven Bruce
Sorry, Andreas. Kara, can you take that slide down please, it's the wrong one. Thank you.

Andreas Eklund
Let's just stick with this for just a minute or so. They are active, they have little affective distress, they have little inference and they have the perception of that they are in control of their pain. So, this is the good group. This is the one you want to be in if you ever were to have recurrent persistent pain. On the other end is the dysfunctional group. The red group here. They are the complete opposite. They are often passive due to their pain or inactive. They are often in a lot of affective distress. They have high interference in their life. And they often have a perception that they are not in control of their pain. The interpersonally distress group is somewhere in between, but characterised by deviating behaviours relating to other people around them. So, they often blame their pain on other individuals, spouses that aren't responsive to their pain, not listening, not caring for them, or being upset with them. So, this group is slightly different.

Steven Bruce
Do you see any movement between these groups ever?

Andreas Eklund
Well, that's one of the things, no one has ever used this as an outcome instrument, it's only been used as a screening instrument. So, this is certainly an avenue that we've considered in the future, perhaps this is, which you'll understand

in a bit, it could be a really smart avenue to look at when it comes to deciding whether one should quit maintenance care or not. But it's an interesting avenue, certainly that someone should research. Right, move on to the next slide. And then we'll talk a little bit about the effect here. So, in this slide we see three dots, and then bars sticking up and down from those dots. Those are the mean number of days with lower back pain or the mean difference between the two groups. So, if it's above the thicker black line, it's in favour of the control group, if it's below the thick black line, it's in favour of the maintenance care group. So, at the very left around the green circle, we can see that the adaptive coper group, the good group, the one that's active with little interference, they actually got worse. When they received maintenance care, on average, they had 11 more days with pain compared to the control.

Steven Bruce
That's bizarre.

Andreas Eklund
That is bizarre. And as a clinician, you know, before I did this research, the maintenance care patients that I thought I was doing the most for, were the ones that were active that, you know, they'd come in, they didn't have much of a problem. We chat about golf or their kids, and it was a joyful visit. And then they'd leave. And now looking back at the information that we have now, I was probably not doing the right thing for these patients. So yeah.

Steven Bruce
Again, to clarify my mind, we're saying that of the active copers who receive maintenance care, they had 11 more days of back pain than those who were in the control group.

Andreas Eklund
That's right, so they got worse. Crazy. So, if you step one more forward, so when we look at the interpersonally distress group, there was really no difference between the two interventions, they were equally effective or equally ineffective. Which is also interesting. And then if you move to the next one, but when we look at the dysfunctional group, they had a 30 days difference, so they had a whole month less of pain. And that's really significant when you look at the total number of days they had over the entire year. So here we have a group responding extremely well to this type of procedure and one group getting worse and one, well, you could do either, and they would have about the same results. So obviously, the next bit would be, so what's the cost of this? So, if you move to the next slide, we have the same thing as the other, but we're now looking at number of visits. So, the green group, the good group, the adaptive copers, not only did they get worse, but they also had four more visits compared to the control, so it's more costly and it was less effective. So obviously a very poor group to aim the treatment against. The ID group, they had on average 1.5 more visits compared to the control group. So, they were a little bit more costly, but equally effective. So, I don't know, here it's also a bit questionable whether these patients should be receiving this type of care or not. And then when we look at the dysfunctional subgroup. So, I can see now, this makes it a little bit confusing, because you've got the same graph as the other one. So, we should have had another graph behind it. It doesn't really matter, the important point is the zero. So, the graph that we should have seen would be that the dysfunctional subgroup, they would be really close to zero in terms of the difference between visits. So, we have the dysfunctional subgroups who have an equal number of visits at an extremely much higher effect. And one group receiving this type of care, getting worse with more visits. So, this is a really interesting finding and really puts things on its head when it comes to the user. Right, just click one more step ahead. So, this was published again in PLOS ONE received a tonne of information as well. But this one clinician were a little bit more apprehensive about, because as soon as you start talking about psychological profile and collecting data on pain experience clinicians start feeling, you know, this is not, I'm not a psychologist, I shouldn't be doing this, I shouldn't be considering this. Which is really sad and really strange,

because we're really starting a psychological profile as soon as we ask patients how they feel, or perceive their pain. Right, so let's move on to the next.

Steven Bruce
I've had a couple of questions, a couple of observations that have come in just, if I may interrupt. Somebody's asked whether everybody working on these cases, whether they were all chiropractors? And I think that probably that is the case from what you said earlier on, isn't it?

Andreas Eklund
Sure. Absolutely. And I'm going to make a case later on that I don't think this is something specific for chiropractors in terms of whether this should could be useful. I think osteopaths, physios using manual therapy could probably have similar results, if they used a similar procedure, a similar way of thinking about this.

Steven Bruce
Are you going to tell us at some point what the general composition of a maintenance care appointment was thought to be as a result of this? I know it was a pragmatic study. So therefore, people did what they felt they needed to in each clinic.

Andreas Eklund
Right, so normally, what happens is there's a brief conversation about their clinical status, how have they been from the previous visits? Is there anything new? How are they doing, and then probably some form of short clinical examination, confirm findings, and then manual care. So, the one thing that we know about chiropractors is they do like to use high velocity, low amplitude adjustments a lot. So, most patients receive some form of HVLA or mobilisation. Some then go on to receive, it could be a few exercises or recommendations on training. It could be some nutritional advice. That could be some lifestyle advice. But that seems to be rather limited. So there seems to be this discussion about the problem, the manual care intervention, and then not that much more. So, I think the average visit time for these patients were about 15 minutes, they were quite short visits, which is, I don't know, strange or not, depending I guess which profession you belong to.

Steven Bruce
I haven't been asked this, but I guess it will be crossing people's minds that having divided the patients into three psychological subgroups, people will be saying, well, is the effectiveness of the treatment psychological rather than the physical HVLAs or whatever else is done? Is this group, is the dysfunctional group more, I don't use the word suggestible, because that suggests that it's, you know, it's not a real effect. And of course, we all know that placebo is a real effect, even if that's what it is. But is it purely the psychology of the appointment that gets them better?

Andreas Eklund
That could very well be it. I've got a slide a little bit further on that kind of discusses this. But we can address this now, because this is a super important topic that we can't really stress enough. Our data makes a really good case that psychology is a major driver in this effect. And probably what we're creating is a safe structure for the patient to relate to, they know when their next appointment is, they know they have an effective intervention that helps them with their pain. They have a clinician that they can lean on, talk to, reason with regards to their life situation, and how to deal with this. So probably this safe scenario allows the patient to explore fear avoidance behaviours, perhaps addresses anxiety, perhaps allows them to push on a little bit more with their physical activities than they normally would, because they know they're not that far away from my next supportive event or supportive treatment. So, I

think that's probably a really important part of it. There could be other mechanisms at play here which we'll see in this next couple of slides. So, if you step on to the next slide. We went on to try to understand this, what was the clinical mechanism now? It's a strange description because we did a pragmatic trial, so we don't really know what part of the intervention was effective, it's a black box. Patients come in, they come out and we look at the effects. We don't know what part of that consultation was effective. But somehow, we wanted to look at how were patients affected. So, we had a few questions. Does it prevent new episodes? Is that what we do? Does it increase the pain-free periods in between? So, it just prolongs the interval in between? Does it depend on frequency of care? I mean, do we do more with more treatment, give a better effect? Or is it about the timing? So those were a few questions we had in our head when we went into this trial in this particular analysis. So, if you move on to the next one. So, the first thing we wanted to look at was, if we look at the time to the first relapse, so once they'd recovered, and then have their next episode of low back pain, were we able to push that time period away so that they, we actually prevented their pain from occurring. And so, this data is just from the dysfunctional subgroup, we have all the data for all the other subgroups in the paper. But really, the only thing that's interesting to look at is this within the dysfunctional subgroups, because that's what drives the whole effect. And really, there was no effect. They had relapses of pain at the same time period, pretty much. So, if you move to the next one.

Steven Bruce
Could I just ask you, Andreas? Could you explain the graph to us?

Andreas Eklund
Right. So, what we see here is this is just a graphical representation. This isn't real data. So, what we're seeing here is just the number of days with pain on the left, and then at the bottom we see the number of weeks and the arrow just meaning the time up until the first visit where we have the relapse of pain. So, this is just a graphical representation trying to explain what we were trying to look at here.

Steven Bruce
Right? Okay.

Andreas Eklund
So, this was a, for those interested in research, this was a cox survival regression. So we used a particular regression method to look at.

Steven Bruce
I knew that just by looking at it.

Andreas Eklund
Sure. This particular graph doesn't show it. In the paper, you can read all about that. The next thing we thought, well, what if we add together all those periods in between relapses, so we would call them non-episodes or pain-free periods. So, once they have the relapse and recovered, how many weeks up until the next one and then when we add up that for the entire year, the maintenance care group had 10 more pain-free weeks. So, it seems to be that gradually that the distance between episodes have become bigger and bigger and bigger. And in over a 12-month period, it seems about two and a half months, or more of pain free weeks, is what they can experience, on average. So that was interesting. So, the next thing, this is a little bit difficult to understand, but I know your audience is a smart bunch of people. So, I'm sure they'll follow me here. So, if you were to imagine that we took all the first visits in a new treatment episode and then put them together. So, we were looking at the trajectory around that first visit in each new

treatment period, or around the maintenance care visit. So that will be the red line in the middle, the week of the actual visit. And then we compare the two groups. So, the blue line, again, represents the control and the green line represents the maintenance care group. So, if you move to the next slide. So, we then look at the three weeks prior to the event, and the next slide, the three weeks after the event. And then the next slide. So, what we would then see is that for the control group, if our theory was correct, they would start having pain a few weeks, probably prior to the visit. And then they would come and see their chiropractor, they would get treatment and pain would go down just like we see in this graph. Yes, the pain goes up, treatment visit and then it starts going down as they get care for that acute episode. And if you go to the next one. But when we look at the maintenance care group, there is a flat trajectory over the visit to the clinician, indicating that, again, our theory is correct, the chiropractor seems to be able to catch these patients before they peak in their trajectory. So, it could be something about nociception here as well that they're actually helping these patients address pain generators early on, making them flatter in their trajectory and having less of an acute episode when they have the relapse. Right, so was that clear? That was rather complex.

Steven Bruce
I thought it was, I haven't had any questions about it yet, but they may come in, I don't know.

Andreas Eklund
Right. So, let's look at the actual conclusion of this. So, we can say that maintenance care does not seem to prevent new episodes or events. But if we focus on the dysfunctional subgroup, it increases the pain free periods and seems to stabilise the pain event.

Steven Bruce
What do you mean by stabilise the pain event?

Andreas Eklund
So that was the idea that we flatten the trajectory around the visit. So, they're probably having longer periods and once they get their pain back it's probably a less acute episode that they would experience. So, this would be really interesting because now if we cluster that effect around particular weeks, particular time periods during those 12 months, then all of a sudden it becomes highly irrelevant. Not only is it 30 days spread over a 12-month period, but it's in those acute episodes where it matters the most for the patients. And like you just went on to the next slide, it is probably about the timing rather than the volume. And I think probably the skill maintenance care is trying to see the future by looking at the past, by understanding the patient's previous trajectory. And based on that understanding try to fit the treatment plan that would kind of catch these episodes as closely as possible to the relapse.

Steven Bruce
It does sound a bit like what a practitioner would do instinctively. Is that what you're saying? We would look back and say, well, you get paid every three or four weeks, you better come in every three or four weeks. But just before it starts.

Andreas Eklund
Yeah, exactly. And I think that's exactly what happens. And I think a lot of clinicians automatically think that way. And so,, a lot of these results, they make sense, it's intuitive. And as a clinician who has worked a few years with patients I think you can both see these patients in front of you, the dysfunction patients that just suck the energy out of you, because their care need is just greater than you could ever give them. And then you have these adaptive copers

who are really fit and active and they come in with very little issues, and are really happy to get care but seem to have very little interference in their life.

Steven Bruce
I guess it's worth, I assume, pointing out that you're not saying that treating the active copers is a waste of time. It's the maintenance part of it which doesn't seem to make any difference?

Andreas Eklund
Certainly, yeah, I think the point of view we should have here is that the adaptive copers, recommend exercise, recommend them staying active. And once they get their problem back, have them come back. So, they should be in that group that gets this, you know, come as you need be procedure, whereas the dysfunctional patients are the one that we should hold under the arms a little bit more and be a bit more rigorous in terms of how we schedule them and create this supportive network around them.

Steven Bruce
Yeah, I kind of mentioned this earlier on. But somebody also sent in an observation saying that when I mentioned that people could move from one group to another, you would think that chronic pain would drag people from the active copers down into the dysfunctional group.

Andreas Eklund
Yeah, that is probably what happens over time. But we don't really know how stable these subgroups are. Whether it's, you know, these are inherent traits that will follow you throughout your life and as an adaptive corporate, you'd never become a dysfunctional patient, or whether, like your viewer suggested that being exposed to pain episodes drags you down and makes you develop these dysfunctional traits. That is probably true. And I think there's a lot of research to support that. That actually happens. Right, I think we can move on. So, this was now published in chiropractic and manual therapies. This paper was awarded the Scott Haldeman Award for research excellence at the WFC conference.

Steven Bruce
Who is the author?

Andreas Eklund
Oh, I wouldn't know. It's me. But again, I really have to say, I've had a stellar team behind me, some of these people who helped me in this project, in particular my professors Irene Jensen and Charlotte Leboeuf-Yde and my supervisor Iben Axén and then professor Alice Constat. These are extremely good researchers. So, the support here and the other people here are some of the clinicians who helped organise the data collection. So, without these, I mean, I'm only a small part of this project.

Steven Bruce
Andreas, who's funding all this research? Because that's always the stumbling block, it seems to me in our therapies that no one wants to pay for it because it's very hard to make money from the research in the way that a pharmaceutical company could perhaps.

Andreas Eklund
Yeah, so half of my PhD was funded by the Swedish Chiropractic Association. So, the members of the association they donate money over the years to a research fund. And that research fund has the sole purpose of supporting neuromusculoskeletal research in Sweden. So, half of my PhD was from there. And then I received a lot of funding from the ECU, the second half of my PhD was funded by the ECU. So European Chiropractors' Union. And these last four years have been funded by ECCRE, European Centre for Chiropractic Research Excellence, which has been one of the major contributors to chiropractic research and manual therapy research in Europe. So those are, without them, this would have been really difficult to fund because it's a small niche, and not from a society perspective. The condition is, from a society perspective, interesting to look at. But the procedure is less. Right, so let's see if we can make sense of this from clinic. How do we how should we proceed with this? What should we do with it. So, we can move to the next one there. So, let's summarise what we said then. So, patients with recurrent and persistent low back pain and in our trial we described that as more than 30 days the previous 12 months. And with a good initial effect from treatment, so by the fourth visit, they would have had to report a definite improvement. So that was one of the key elements of this, we only chose people who responded well to manual care.

Steven Bruce
Is that why the numbers drop so drastically?

Andreas Eklund
Well, partly. There were a number of reasons. One was this, it was an extremely complex trial. So some patients were just lost, then we had patients who did not want to be part of a trial. And then we had patients who did not respond favourably by the fourth visit. But a majority does, about 70% of our patients respond, wow, by the fourth visit. So, I wouldn't say that was the major issue that made patients drop out. And then there could have been other comorbidities that made them not particularly suitable for the trial or for manual care in particular. Right, so if we focus on the dysfunctional patients, those who have high pain severity, high interference with everyday life, high effective distress and a low perception of life control and low activity levels, if you move to the next one, we can expect, on average, 30 fewer days with activity limiting low back pain, 10 more pain free weeks, so two and a half months, less acute flare ups and probably cost neutral from a patient perspective if they're paying out of their own pocket. And probably cost saving from a societal perspective. So, this is a paper that hasn't been published yet. But it's coming. When we put an actual value to having pain, because we know that patients who have pain when they cost society money from medications and care seeking behaviour and in particular presenteeism, so production loss while at being at work. So those are quite interesting findings I think, I mean, for any procedure, if you were too able to report this, this should get the attention of third-party payers, clinicians who work in this field with low back pain.

Steven Bruce
When you say it's going to get the attention of the third-party payers, I presume you're talking there about the insurance companies? Are you aware of them being on board with that psychological profiling and therefore saying okay, well, you're not in the right psychological profile, you can't have insurance cover? You are, you can have insurance cover, you're dysfunctional.

Andreas Eklund
I'm not sure whether that is being discussed at the moment in Sweden, we don't have insurance in that way. We have medical insurance or insurance for medical procedures, but it's not very common. We have socialised medicine like you do in the UK. And it more has to do with, you know, that tax money, where do we spend that most wisely, and if

we can show that this is a procedure that is relevant for patients and relevant for society, then we're more likely to be having government deals that addresses this.

Steven Bruce
So, who would you expect to be doing the screening? And working out who are the dysfunctional patients who are going to benefit as well, as you say here.

Andreas Eklund
Right. So, at the moment I have a frozen picture of you here. So, I'm not sure on which slide we are.

Steven Bruce
Okay, we'll sort out that in a moment, it does happen from time to time.

Andreas Eklund
So yeah, so one of the issues here is exactly what you're saying. How do we find these patients? Um, and at the moment, we cannot really use the instrument that was developed this MPI instrument, because it's too cumbersome. It's 36 questions, it takes a long time to answer, you need statistical software to calculate these groups. So, it's really a terrible screening instrument in clinic. It was never designed for that was designed for research purposes. So, what I've been doing over the last year, year and a half has been developing a clinical instrument to define these patients. And this has been a project called Maintain. And we now have a working model of this of eight questions. And the idea is then to put all the information that we have from this trial, but also from a qualitative study that we have done recently, where we've looked at patients experiences of maintenance care, and trying to put that all together into a recommendation for clinicians or an instrument for clinicians to select these patients effectively in clinic. So now it's completely blank here.

Steven Bruce
I take it you can still hear me.

Andreas Eklund
I hear you. Yeah, I'm not alone.

Steven Bruce
The picture will come back at any moment. Now I'm hoping.

Andreas Eklund
No problem. Right.

Steven Bruce
Tell us which slide you want and Kara can put the slide up for you. At the moment, I'm looking at why, how does it work?

Andreas Eklund
Right, yeah, so. We've been at this avenue before. So, we don't know how it works. It could very well be a neurological biomechanical mechanism where we affect global range of motion, neuromuscular function, pain inhibition, etc. But much suggests it's a psychological mechanism that we talked about before that relates to

reassurance, coping strategies, reducing fear avoidance behaviour and reducing anxiety. And, like we also mentioned, perhaps the goal of treatment is to make a patient transition from the dysfunctional profile to the adaptive coper profile. And perhaps we could use the instrument to check for that and see, now we're at the point where we can let you go and not have this regimen, this ,tighter scheduling that we've had during the maintenance care procedure. So, I can see you now again.

Steven Bruce
Yeah. It's always a bit reassuring for me when I can see that the picture has come back. And I wonder how we're going to cope with a blank screen for the rest, it's never happened. One of our cameras is a very whizzy camera, which, it gets a bit temperamental sometimes. I don't think you'd likes Tuesday nights.

Andreas Eklund
Right. So, I think, if you move to the next slide. So how would we do this? Well, for sure the bulk of data or evidence lies in exercise, we know that exercise is effective in preventing recurrence of pain, low back pain, we know it has so many other health benefits. And if we can get people exercising, that's probably the best thing. However, if exercise is not enough, consider using maintenance care as an adjunct intervention as a supportive intervention to an exercise regime, or as an alternative when active strategies are not available or not effective. So, this is one of the things I see a lot in my practice, because I work closely with physios and there are patients that come in to us and we treat them for a short period of time, we hand them over to the physios and then they respond extremely well to an exercise regimen. And then there are those patients who just cannot either transition over as soon as they start loading tissues, they have a relapse or they are unable to do things for a number of reasons. So, there is a certain patient group where, you know, you can't really tell them to exercise because they cannot and you cannot really let them go and say hey, you know, it's your own fault. If you don't exercise, the blame is on you. Because there is a group of patients who do not respond and who, for some reason, doesn't have the available resources to effectively exercise.

Steven Bruce
Presumably there's a third set there, who are just non-compliant. They just can't be bothered to do the exercise.

Andreas Eklund
Yeah, yeah, exactly.

Steven Bruce
That may be partly the therapist's fault, I don't know, because if you don't explain it properly than they might not. But equally, there are patients who can't be bothered to do even 10 minutes of exercise a day if they're in pain.

Andreas Eklund
Right. And then there will be people who would argue that, well, if you give them manual care, then they will be less interested in doing exercise because you provide them a passive solution to a complex problem. So, there are many things to think about here. But I think exercise first, self-management first, and if that doesn't work, well, this could be an instrument in your toolbox.

Steven Bruce
What do you mean by self-management, may I ask?

Andreas Eklund
Well, it could be ergonomic advice, it could be advice on tissue loading, on how to relate to their pain. Could be things the patient can do themselves. That isn't specifically exercise related.

Steven Bruce
But again, still based on the chiropractors or the therapist input?

Andreas Eklund
Yeah. Yeah.

Steven Bruce
Okay.

Andreas Eklund
Right. And also, I think one of the things that is super important here is that we focus on production of fear, empowerment, improving coping strategies, increasing their activity levels, reassuring that there isn't a damage to their spine that is irreversible. All these modern pain signs, messages that we know are really, really, really important, and not focus on, well, we can see on X-ray here, there's degeneration, you're stuck with me for the rest of your life, or whatever story or narrative that you tell your patients to keep them?

Steven Bruce
That's a tough one there, isn't it, Andreas, because, you know, so many patients will come to the clinic. And they absolutely know that an MRI is what they need for their problem. And having been shown the MRI and somebody will point out that there's a little bit of a disc bulge here and here and here or whatever else, you know, they'll automatically assume despite what your practitioner says that that must be the cause of their pain, even if it's several layers too high for the symptoms they're getting. And trying to convince them that they mustn't assume that the X-ray has proved that they've got a need for surgery or the MRI is the proof, they've got a need for surgery, must be quite a challenge.

Andreas Eklund
Oh, it certainly is, in particular, when there are other medical professionals who are inclined, I don't know how you have it in in the UK, but in Sweden it's not uncommon to have patients come to you and they've been diagnosed with a degenerated back by their GP, and there is nothing really that they can do for them other than to give them pills. And that, really, they're at the end of the line. So that's, we see that way too often, you would expect GPs to have a better understanding of pain mechanisms today. And we see often. So, I think chiropractors are, some of us are terrible at this, in particular those who have an old-fashioned paradigm where the idea is to X-ray most of the patients and base their treatments on those X-ray findings, which is a completely outdated way of looking at how to manage pain in this current paradigm.

Steven Bruce
Yeah. A couple of questions for you. John has said, would the practitioners verbal reinforcement of positive progress in any programme of care have a bearing on the end results?

Andreas Eklund
Probably, yeah. I think a lot. I mean, this safe space, I think depends a lot on how we frame it. What is the content we put into this? Do we create, because these dysfunctional patients, they're vulnerable, they are the ones that are most at risk of becoming long term, long term sickly. So, these are really vulnerable patients. And we could either connect them to us, make us their hero in their life, or we can fill them with positive messages, empowering messages, that allows them to, yeah, to be the hero in their story. Now, we as clinicians, we love to fix them love to be the answer to their problems. But I think we need to fill the contents of the safe space with the story that they are themselves the ones fixing their problems, and we're there to support them in that direction.

Steven Bruce
That's what you mean by this slide, is it? It's convincing the patient that it is them and their own body which is fixing the problem?

Andreas Eklund
I think partly, but also not making the clinician the centre of attention here. I know it's a wonderful experience when your treatment is really effective. Patients step off the bench and they are pain free, or have these miraculous reactions to treatment. Every now and then. That's a wonderful experience as a clinician, but it is really, really, really important to make you the centrepiece of the attention here, because if you bind patients to you, as a clinician, you being the magician, it's very hard for them to move on past this maintenance care regimen to a more active lifestyle, whether themselves are responsible and in charge them of their problem. Because, as you saw, one of the main issues is they lack control, the dysfunctional group feel that they don't have control of their condition. So, you can either play with that, and give their control even more to yourself. Or you can help them regain control of their condition, which I think is absolutely crucial for the long term.

Steven Bruce
Somebody who has quite sensibly refrained from giving their name has said, how am I going to feed my ego and pay for my sports car? If they don't depend on me?

Andreas Eklund
Yeah, well, that is the issue. And I think, in the end, if we are good clinicians providing good quality of care, we will have an abundance of patients. I don't think, in the end, if we trick patients into treatments that are at best useless and at worst, perhaps making them worse, I don't think that society will reward that in the end, I don't think patients will reward that in the end. And I think we'll be out of jobs. So, I think the only way forward is do what is best for our patients. And that will always be rewarded by success in some way.

Steven Bruce
Somebody asked a question about the more needy patients. And I guess we're kind of assuming that the dysfunctional group are the needy ones, and they're asking if, how much you think the way practitioners interact with those needy patients has an effect on the results, because of course, the patients themselves tend to be more negative.

Andreas Eklund
I don't know. I mean, much of this is speculation, I'm trying just trying to put together the data we have, the data we have are really the things I showed you from the publication and these clinical interpretations is trying to extrapolate that on how we should proceed as clinicians. I don't know, I mean, a major part of being a good clinician, I think, is to be a good listener, to be empathetic to the patient's needs and understand their situation. And that might be, you'd

have to listen to a few things that are needy and complaining and address that in a positive manner. But I think the really effective clinicians, the really good ones, are the ones who can change that narrative into something positive, to understand those, behind those needs, identify the gaps in what the patient needs, and provide that, eventually through, could be behavioural change. It could be through exercise, through tools for themselves to gain eventually, but as a transition of that they would be more of the passive, someone who addresses these things passively. But trying to always push the patient in that direction.

Steven Bruce
Sue has sent in a question, which I guess is about how you structure the trial as much as anything else. She says she's wondering what the effect of the regular contact was on the patients, because they all feel more cared for, and therefore more aware of the symptoms, and if they weren't in the trial pouch.

Andreas Eklund
Right? Yeah. So that that is probably, that's what we think the AC group actually got worse, I don't think it was, per se, the actual treatment that made them worse, but rather that we gave them the opportunity to pay attention to their pain to a much greater degree that they normally would, they would come back after a month, and the chiropractor would ask them, so how has your back been? Have you had any pain? And they would perhaps have to recall, well, did I, have I, and reflect on that in a manner that is probably not helpful. So, I think for the AC patients that focus on their pain, and that attention probably is part of what's making them worse. Whereas for the dysfunctional patients, reflecting on what happened, how they dealt with it, how they're going to deal with it in the future is probably part of the solution, by creating this reassurance, reducing anxiety, coping strategies, etc.

Steven Bruce
Actually, I was just thinking that through on the fly, in your active copers groups, the control group and the maintenance care group, the fact that their pain may have been identical in both groups. It's still significant if they believe it's worse because they've had to focus on the symptoms, if that makes sense. Which means by giving them the treatment, you're making them more aware of the same symptoms that the other group had and therefore that's detrimental to them.

Andreas Eklund
Yeah, yeah.

Steven Bruce
I was probably stating the obvious, but I thought to get it out there.

Andreas Eklund
Yeah, I mean, these are wonderful questions and questions that we need to answer in the coming projects. Now that we're understanding the perspectives here, the next trial is going to be so much more interesting in terms of how we now use this information and move forward with it. So, I mean, it's like any trial, a good trial results in some kind of understanding. But most of the times it results in much more new questions, new ideas that you want to test and try and understand.

Steven Bruce
Thinking back to a question we were asked earlier then, in subsequent trials. Is there a reason why you would not also use physiotherapists and osteopaths in that trial? Or is it just convenience to use chiropractors?

Andreas Eklund
The reason we've used chiropractors now has been because this procedure has been really only documented within the chiropractic profession. Now, if we were to ask osteopaths about this, I'm sure they would have a similar procedure for recurrent problems or physios, etc. So, I don't think it's a unique thing to do with patients that we do. But it's been a big focus on chiropractic care is, in fact, a third of all visits to chiropractors are maintenance care visits. So, this is something we do a lot. And up until 2008, we didn't really know if it was good or not so. So that's why initially this has been the focus, chiropractors, the next step is to understand, you know, how can we extrapolate this to more providers? I mean, chiropractors are not in number enough to help address the crisis that we're in, in terms of low back pain, we need to be a number of people addressing this with similar strategies and similar ideas. We need to be working along with the evidence of all of us. So, I don't think this is unique for chiropractors. And I think we certainly can extrapolate this to the practice of osteopaths.

Steven Bruce
Well, I've just, I've just had an observation sent in by an osteopath saying that it's fascinating because a number of people watching have said they definitely recognise their groups in these categories that you've described to us.

Andreas Eklund
Well, wonderful, wonderful. I think partly why we used chiropractors was has been because we've had this working practice, research-based network of practitioners who are, you know, they're familiar with data collection, we know we can trust them, we know that we can give them assignments and they will deliver. So, part of it has been that because once you have money for a trial, you don't want it to fail. So, it's easy to bet on the safe cards of the people that you've used before and who are reliable.

Steven Bruce
I guess there's a greater assurance that there's some homogeneity in the treatment protocols, isn't there? Given that they were trained in a similar fashion.

Andreas Eklund
Yeah. So, the idea next is then once we've developed this tool, which is if we move ahead, the maintain project, I mentioned that before. And, really, it's an ongoing project that was meant to run between 2019, 2021. But then COVID came, so it's now been extended to January 2022. And the idea was to develop this clinical instrument, a decision aid for clinicians to select the right patients, using a short questionnaire, eight to 10 questions. And the idea was to have a prototype ready in September now and we do have a working instrument, we have a few more analyses to do. But we're hoping to be able to publish the data on that pretty soon so that it's out there for clinicians to use.

Steven Bruce
So, the point of the tool is to be able to select the appropriate patients.

Andreas Eklund
Yes, yeah, exactly. Exactly. Um, and we really had four separate aims with this project. One was developing the screening instrument for clinical practice, but also validate this. So, we tested in other populations to see it actually works. And also, we had another idea, now, what if clinicians could identify, because, like, we just talked about some of your listeners they've written in saying that they can see these patients in their clinic as in, you know, they can view them in front of themselves. Now, I have this idea, what if clinicians can do this, just from a thorough case history,

they could define whether they were adaptive copers, interpersonally distressed or dysfunctional. So, part of this project is to do a cross-sectional study where we teach clinicians to just put in a few more questions in their normal case history and see if that is enough, perhaps we don't need that instrument with questions for patients to fill in. Perhaps clinicians are skilled enough to do this just based on their clinical history taking. So that is a project that we were going to launch in May, COVID came, we still haven't been able to get the trial off. But we're hoping it'll run now in November, and for probably three months, collecting data on that. And the idea here is also to include other professions here. So, we can see whether there are any differences in different professions in terms of their ability to quantify or classify these patients. And the fourth thing was to investigate patients' preferences and ideas concerning barriers and facilitators in, you know, being part of a maintenance care procedure. Now that trial has already been done. So, we did that in the beginning of this year. And we're analysing the data. And move soon to be sending in a paper on that. And it's an incredibly interesting read, when you hear patients' own words and describing how maintenance care has affected them, all the different things. So, with trying to make this theoretical model that we're gonna test in the future to see if, if also, we can learn more about what are the things that patients really value for maintenance care in terms of, how does it really affect their quality of life and life situation? Very interesting thing.

Steven Bruce
Carolyn has sent in a compliment for you hear, Andreas. She says she usually glazes over looking at statistics and graphs. But this is really key stuff. And it really supports what we're probably observing already. But it gives us a way to work with it, which is, I like to think the same, actually, this is actually crystallising in our minds. And what we're doing instinctively with a bit more guidance could be even better.

Andreas Eklund
Yeah, certainly, I mean, these papers are, if you practice manual medicine, they are worth reading. They are pretty statistics heavy. There are some pretty complex statistical methods that we've used. But I think even though you might not be a wizard on statistics, there's still so much to gain from understanding these, reading these papers and understanding this data.

Steven Bruce
So, the short instrument, then, which referred to the first two aims in your last slide.

Andreas Eklund
So, the idea is that the fellows that developed this in the 80s, they wrote that Dennis Turk and Robert Kerns, I think, were the two persons who designed this MPI instrument. So, in a handbook of the Handbook of Pain Assessment that was published in 92, they suggest on a couple of pages that, you know, you might be able to use this as a short form instrument. And in this book, they suggest use these eight questions that define these four dimensions, pain, severity, interference, lack of control, and effective distress. And that has been the kind of outset of designing this short instrument, has been using their method and then trying to develop that into an even better instrument using different scoring methods. This is something, as a researcher, I love to talk about, but as clinicians they're probably not as interested as I am. But I think what I want you to take away from this is we're working on, you know, this method, and we're at the point now where we have this instrument, where we can, with eight questions, pretty much define these dysfunctional traits.

Steven Bruce
Andreas, as a researcher, aren't you just a little curious? This is coming from a book, not from a research paper. How well validated are these eight questions of theirs?

Andreas Eklund
I have no idea because there isn't really a good reference there. So that was the idea. We use their idea and then we validate that in our data, so that's what we've done. So, we took our maintenance care data and saw, can we reproduce these subgroups? Or at least the dysfunctional traits? Do we get the same effect? The difference between the two groups when we use that way of classifying them? And then can we reproduce this in three other different populations, getting a similar sensitivity and specificity when it comes to using the instrument? So that is really the project, you know, trying to use their idea, perfect it, so to say, and then test it and see if it actually works.

Steven Bruce
What's actually meant by affective distress?

Andreas Eklund
So that's emotional effect of pain. So, feeling anxiety, feeling upset, feeling angry, feeling sad. So those are the emotional components of the pain experience.

Steven Bruce
Right? Okay. And the scoring methods we've got down the bottom here is...

Andreas Eklund
So, they had two ways of scoring this. And we decided upon a different method. So they define them as each of these different dimensions were defined as dysfunctional. And if you had two or more of these, the patient will be classified as dysfunctional. So, the way they suggested we score it was rather complex. So, my way of thinking, or our way of thinking from our research group was to create a summary score. So, you're adding and subtracting these different things and then you get summary score, and then you're more or less likely, depending on how high that score is, to be dysfunctional. So, you have pretty much three ranges, one where you're probably not, one, you're probably going to have a good effect and the third one, these are highly, highly dysfunctional individuals. So that's the idea to create a score that is easier to relate to for clinicians and easier to calculate on the fly. So, we're hoping this should be something you can do in two minutes in the clinic, patients quickly score this and then you add these together. So, you should be able to do this when they're sitting right next to you in clinic.

Steven Bruce
I have to say that's one of the things that put me off about some of the patient reported outcome measure score charts that we were given in the past, some of the questions were so complicated, and I think, I was thinking back to the start back scores and things like that. The questions are so complicated, the patient will be sitting down for 10 or 15 minutes trying to work out what was meant by half of them. This I take it makes it easy for them and easy for the practitioner and therefore more likely to get done properly.

Andreas Eklund
That is the idea. That is the idea.

Steven Bruce
When did you say you expect to have this done under current COVID projections?

Andreas Eklund
So, we're hoping we send in the publication beginning of next year, submit the publication beginning of next year. And then depending on the submission procedure and the peer review process, it can take anything from a few months, if you're lucky, sometimes up to years. So, we're hoping this will be something really interesting for manual profession. So, we'll send it probably to Chiropractic and Manual Therapies, and they're usually really good reviews, and they're usually really fast with processing papers. So, we're hoping it won't take that long.

Steven Bruce
Right. Okay. Well, that's the end of your slide deck. I did have one question that came in earlier on. There's a lot of statistical stuff in what you've said. Would you like to, or are you able to summarise the key elements of that statistical evaluation for people? What is significant for us as manual therapists?

Andreas Eklund
You mean, the actual methods or the results, what the results mean?

Steven Bruce
The results, I think, is the key issue, yeah.

Andreas Eklund
Yes, so I think that the take home message here is maintenance care can be an effective procedure if we address the right patients, so if we address the dysfunctional patients, we're likely to have a substantial amount of fewer days with pain over an entire year, longer pain free periods, and less acute flare ups. And if we include a positive message that is in line with the pain science principles, this is probably a cost-effective intervention that we should consider for patients suffering from low back pain, in particular the ones that don't respond to exercise care, exercise procedures, or exercise interventions.

Steven Bruce
How much buy-in are you getting from the non-chiropractic, non-manual therapy professions? Are the mainstream medics happy with the research, do they accept it, do you think?

Andreas Eklund
Well, they've been pretty uninterested. I don't think I've had a single comment from the medical professions per se. Chiropractors and physios have been the two groups, chiropractors have been sharing and physios have been sceptical well, I mean, for right reasons. And I've been getting lots of really, really, really good questions, just like the questions regarding these dysfunctional patients being vulnerable. And, you know, is it ethical to attach these patients to clinicians over long periods of time? And will that not create treatment dependents and pull them deeper into the dysfunctional profile? And the honest answer is, we don't know anything beyond 12 months. So, it could very well be that if we continue this for two years, it starts getting detrimental for these patients, because we build up these passive relationships. So, I think we can do a lot to, you know, improve upon the procedure, probably, if we have a clear message on what clinicians should be communicating to their patients in these encounters. And also, what clinicians should be thinking about in terms of, what are the goals of this, is the goal the Mercedes, or is the goal the adaptive coper profile, and if we can have the adaptive coper profile and not the Porsche or the Mercedes as the goal, then I think we can do a whole lot of good with this procedure.

Steven Bruce
Right. And so, in terms of how we operate in our clinics, our practices at the moment, while we wait with bated breath for your paper to be published and the screening tool to be published, how do you suggest that clinicians deal with their patients at the moment and modify their treatment? On the basis of what you've said so far?

Andreas Eklund
Well, I think just like your viewers have commented here, I think an experienced clinician can probably tell the really dysfunctional profile and the really adaptive coper profile apart. So, you can probably see those patients in the clinic. And if that is in your mind all the time, and then you have a reflective way of using this, so are considering, is the patient getting value here? Are they actually receiving benefit from this procedure? And am I targeting this on the most vulnerable population or the most severe population in my practice? Or am I targeting this on the healthy ones? The ones I like treating because we have great conversations and they're really easy. So, if that thought process, you know, is running, I think we will all do really well with this, just by having that mindset and having this information in the foreground. So that I think that's the start just considering this information, understanding it, reading a bit more in the papers about what these profile means. Reflecting on this, when you meet patients, how would I profile these? Is this a dysfunctional patient? Or is this an adaptive coper? And then based on that, see if you can test a maintenance care schedule, if they don't respond well to more active forms of care.

Steven Bruce
Yeah, Robin's just echoing what you said earlier on, that actually, if we do this ethically, then we'll get rid of patients more quickly, because they'll be better, that'll progress to the active coper category. But also, we'll get more patients in because we're being seen to be successful.

Andreas Eklund
Yes, certainly, certainly.

Steven Bruce
And also, I'm invited by somebody to thank Aiden, who is the member who suggested getting you on the show, because obviously, it's been a popular show and they're really important questions. And I was thinking, as you were talking that last point there that the chiropractic code, the UK chiropractic code, I'm not sure if it's the same in Sweden, which has parallels in the osteopathic practice standards, has a specific element which says we must be very ethical inviting patients back in for multiple treatments. And having this evidence behind us means that you can do it with some sort of confidence that people aren't going to simply complain that you're trying to milk your patients for money, you can say, well, hang on. No, there's some evidence here that says if I see these people on a regular basis, there's a chance they'll have 10 more pain free weeks in a year, which is a significant amount, isn't it?

Andreas Eklund
Yeah. And also, when you consider the, so what we've been looking at here are differences between the group, but if you look at the absolute numbers in terms of how many treatments did the actual maintenance care group. So, if you look at the whole cohort, it was on average seven for an entire year. So, seven visits for an entire year isn't a massive amount of care, it isn't a massive amount of money. And I would be really surprised if seven visits per year would really make someone passive. And the control group then had obviously then five, because they had two less. So really, if this is used the way we've used it in the trial, it's not a matter of, you know, pushing 20, 30, 40, 50 visits a year, which you might see in some extremes where there is really a focus on, I would say unethical maintenance care.

Steven Bruce
A quick final question for you then, Andreas, the bulk of my audience is UK based, is there any role for UK chiropractors at least to get involved in your research? Can they take part as clinical researchers?

Andreas Eklund
Well, currently, I don't have any ongoing research in the UK. But the next step, once we've developed this maintain instrument, the idea is to have apply for funding for an international multicenter study. So where we look at a core set of outcomes in each country, and then each country also have an add on project that might look at a specific aspect of maintenance care. And then run this in Sweden, hopefully, in the UK in the US, Australia, and then to be able to compare a big data set where we can pull data sets from different countries, but also look at other cultural differences, because this research that we've done here are from the Scandinavian countries, these are Sweden, Denmark, Norway, Finland. So, we don't know if the culture is very much different, probably not in the UK, because most of the Chiros in Sweden are trained in the UK. But might there be a difference in North America or Australia, is there a different approach or a different way of doing this that is significantly different from what we've looked at here? So perhaps there might be opportunities for research if we get a trial running in the UK to be involved in this, so keep your eyes open and hopefully everyone will know about it once we start recruiting clinicians for the trial.

Steven Bruce
Look, andtreas, you achieved something which very few people can do. And that was reflected in one of the questions earlier on, that you've actually made statistics interesting. And you left people feeling quite encouraged. But we are now out of time, and even though I can see some questions coming in on the board behind the camera, we'll ask those subsequently off-air if I may. But I just wanna say thank you so much for giving up your time today, it's been a real treat. And I'm really impressed by what the Karolinska Institute is doing. And I want to know if that sort of thing is going on in osteopathy, certainly in this country, and I'm sure that there are people striving to make it happen. But I'm forever being told that funding is very short. So, I suspect it isn't happening on quite the scale that you've achieved. So yeah, good luck with the rest of the study. And hopefully, you can come back in again sometime in the future and update us on that.

Andreas Eklund
That will be wonderful. Thank you so much for having me. It's been a real pleasure.

Steven Bruce
And that was indeed, that's it for this evening. That's our penultimate CPD of the week. We have another one on Thursday. We have Bob Chatterjee, a spinal consultant coming in, he's going to be talking about interesting spinal conditions. And in particular, he'll be talking about cauda equina with a marvellous infographic, which I was sent for the first time today. Hope you can join us for that one. That's it for this evening. Hope you've enjoyed that, hope you've had your opinions crystallised about how you should treat your patients with or without maintenance care. And hope to see you against him. Thanks again. Good night.

Kara Lord
We're out.

Steven Bruce
Andreas, thank you. Hope you enjoyed that.

Andreas Eklund
Oh, very much so. I'm sorry, it's a bit jumpy from one point to another, it wasn't as coherent but I'm used to it by now.

Steven Bruce
I always struggle with this thing about whether we should control the slides or you should control the slides. And it's just all my experience of previous presenters is that when they control the slides, the slides stay up all the time. And we never see the face of the presenter, which is why we do it this way and I think you'd probably be better at that than us. And we could have used Prezi, which is so much more sexy when it comes to displaying the graphics, of course. But yeah.

Andreas Eklund
The important thing is that informations come across and people understand it and enjoy it. I mean, when I graduated I was not interested in statistics. But I've really grown to love statistics as it's such a powerful tool to look at data and look at the world. So, I'm hoping more people will feel that way.

Steven Bruce
I think it's easy to be overawed by Statistics, isn't it? Because you look at a few research papers and people talk about regressions and things like this, and you have no idea what they're talking about. And you just think it's too difficult. And I'm with you, I would love to understand statistics better, because I like numbers. But right at the moment, I've got a very slender understanding. We had a comment from Ashley actually, which is the one I didn't get the chance to read out. He was wondering what proportion of general practitioners patients are active copers as opposed to dysfunctional and perhaps they should pay attention to this as well? Because he reckons they do it instinctively, but not in any way that changes the vast field of need out there in the fundamentally dysfunctional society. Actually, actually, it's got a really poor view of society. Yeah, interesting. I wonder if they are, they ought to be looking at the same criteria, didn't they really?

Andreas Eklund
So I, I actually wrote a paper on that, where we compared the chiropractic patients to a primary care population at work, not on sick leave, but indicated as high risk group for getting on sick leave, and then two other special populations from secondary care. And it seems like we fit somewhere in between, we're not quite as well as that working population. And we're not where the secondary population is. So, I think that's an interesting paper. If someone wants to know more about that, have a look at my publication record. And you'll find that in there, I can give you that paper as well in the literature.

Steven Bruce
I will push out all the references that were in your original presentation. If you'd be bothered to send that to me, I'll include that as well. Because I will include that question at the end of the recording so that people can see that it was asked.

Andreas Eklund
It's about a third, a third of patients are dysfunction. So, it's a rather large number.

Steven Bruce
Yeah, well, it's a significant population of patients isn't it to share out between the osteopaths and the chiropractors. So, we can all have Mercedes sports cars. That's been really good and very kind of you to give up your time. Thank you. So obviously, it's a bit it's a bit later over there than it is over here. So, all the more thanks for giving up your time.

Andreas Eklund
Certainly. Is it okay, if I send you the list tomorrow with papers?

Steven Bruce
Oh, gosh, yeah, of course. Yeah. Good lord. I'm certainly not going to do anything with them tonight. And the recording won't go up for a couple of days because we have to do the edits and make sure that we get the right screenshots and things like that.