

Autonomic Imbalance in Children - Ref 71SW - Draft Transcript

with Steve Williams

1st July 2020

TRANSCRIPT

Please note, this is not a verbatim transcript:

- Some elements (repetition or time-sensitive material for example) may have been removed*
- In some cases, related material may have been grouped out of chronological sequence.*
- The text may have been altered slightly for clarity.*
- Capitalisation and punctuation may be erratic...*
- There may be errors in transcription. If something appears odd, please refer to the recording itself (and let us know, so that we can correct the text!)*

Steven Bruce

This evening I am joined by somebody quite special actually, I'm joined by Steve Williams, who is a chiropractor has been a chiropractor for over 30 years, 33 years, I think. But he's also a world authority on craniopathy and paediatrics. And we've got him in because we're going to talk about autonomic imbalance in children. Steve, great for you to come and join us this evening. Thank you.

Steve Williams

Well, absolute pleasure. I've been looking forward to it.

Steven Bruce

I have to say that, like so many of us, you seem to have been drawn toward your speciality by personal experience, I think your own son had problems in birth?

Steve Williams

Yeah, frankly, prior to having a child I'd only ever held one baby in my life. And I didn't really like the little things very much. They made lots of noise and things came out of them which I wasn't overly impressed with. So, I wasn't keen. But when you have your own you get into it. And unfortunately, mine went through a hideous birth process and was a horrible vomiting, screaming child who then was a slow developer. And I figured we've got to do something about that. And so long story I won't go into now, but gradually over the years, we managed to sort him out largely, I still see one or two things we missed out on, which I wouldn't do these days. But that gave me a real passion for actually doing something for other children. It was like it was chosen for me. It was something I couldn't not do. After doing that I had to then make it available to other children for the differences I'd seen it and made on my own child.

Steven Bruce

Yeah. I guess not surprisingly, because you're into paediatrics, you're also very heavily into sacro occipital technique, which is, in general terms, I suppose the chiropractic equivalent of cranio sacral therapy in osteopathy, is that right?

Steve Williams

Yeah, probably. I mean, it's an interesting one, SOT was developed by Major Bertrand DeJarnette, in the 1920s and 30s he started. And he was an osteopath before then training as a chiropractor, so it crossed over both things, he worked with Sutherland and stuff like that and then took it into a structural realm. I suppose the difference with cranio sacral therapy and SOT, SOT is there's a lot of very structural stuff there as well as the cranial technique. And it's an interesting crossover between the two. But yeah, it's very much it's the window into the cranial world for most chiropractors.

Steven Bruce

I'm hoping that I'm not going to display my unique ignorance in this but can you also explain what's meant by craniopathy?

Steve Williams

So, this is an interesting one. I always when I have osteopaths at seminars, take the mickey by saying chiropractors were the first to do cranial work because the two books written were Sutherlands wonderful The Cranial Bowl and Nephi Cottam was a chiropractor who two years before published a book on craniofacial adjusting. Now his techniques were different from Sutherlands, frankly, but he did publish on cranial work before that, so I always say we started it. You may be way better known for it, we started it. None of that matters. But yeah, so that's where craniopathy came from. It's from the work of Nephi Cottam. And then it was it was taken on by within the world of SOT as the International Craniopathic Society who award the higher-level qualifications within SOT and they are up by the fellow of the International Craniopathic Society and stuff is all linked to that. So that's where it comes from. But it's just, it's craniopathy, cranial work. It's all the same thing.

Steven Bruce

Right? Okay. And just out of curiosity, you're probably quite familiar with what's going on in the cranio sacral world in osteopathy, are you any further ahead in getting acceptance by the general medical professions of SOT than we are?

Steve Williams

I really doubt it. No, I don't think there's going to be a great willingness to do that. It's an interesting thing that these kinds of things, I think within the regulatory world and stuff like that, no, I think there's going to be very little acceptance of it. They want an evidence base, even though we know the evidence base for virtually everything done is very, very small, including within medicine. But it's something that they have difficulty concepting the idea of. Not quite as much difficulty understanding as they do homoeopathy for example, but it's not popular. Having said that, I'm regularly approached by medics on an individual basis or some consultants to work with them with children with gastrointestinal issues and various stuff like that. Because they see the value of it, but they don't necessarily see it, I think in the world of acceptance if you want, in that different level, we're a way away from it,

Steven Bruce

I have to say I think that's one of the nice things about the conventional medical world is that although there are lots of sceptics out there, they are allowed the freedom to do what they please in terms of finding the best interests of the patient. And quite often, consultants will not be operating strictly according to the evidence base, they'll do what they believe to be correct and GPs equally, are very often keen to refer to sacro occipital therapists.

Steve Williams

Yeah, I think once they discover that you're not an idiot, and that you're going to refer on the ones that actually need to go through the medical system. I think that they become very comfortable with it, when they realise that we actually do understand differential diagnosis and those yellow flags and red flags that need other inputs. And I think that is massively important. Yeah.

Steven Bruce

That is a really important point. I just realised I had this little slide done for you, which was supposed to have come up when I introduced you, but you know who you are so you probably didn't need to see it.

Steve Williams

I still remember a little bit.

Steven Bruce

But what I was gonna say there is that actually that business of being able to communicate on a scientific level, at a physiological level with conventional medics is really important, isn't it? And I think what's put them off in the past is that sometimes we can seem a little bit esoteric in what we're talking about a little bit, to use that expression, woo. When actually, frankly, none of us really care about what we sound like. We just want to get outcomes for patients and so often that happens, but the general profession doesn't accept that.

Steve Williams

I think that's absolutely right although I have to say if I'm writing to a medic, I try and avoid too much woo in there, even if I do believe it, you know, I will put it in a way that they can understand it and that's a rational approach. I think one of the things with cranial work, cranial work we do on babies, I'm going to be talking about it in a little while, is if you relate it to cranial nerve dysfunction, they get it, they can see that if you're irritating the jugular foramen, you have the potential for irritating cranial nerve 9, 10, 11. And therefore, they can see why the baby may get some of those symptoms. And I think that's really important. If we just put it down to this is the anatomy, this is possibly where the dysfunction is, this is what we're doing. Okay, there's a there's a rationale to it.

Steven Bruce

Okay, so what about this autonomic imbalance in children then, that seems to me to cover a whole multitude of sins.

Steve Williams

It really does. And, you know, it's a broad-spectrum thing. So, what we're seeing these days is a massive amount of autonomic imbalance. I've been seeing babies in practice for 30 years now and in that time, I am seeing more, babies who have high sympathetic tone than I used to. Now you may well say, Yeah, okay, you've got more of a reputation, more experts. So, you're going to see a particular type of child. And I agree with that, that does change. But I think we are seeing a greater amount of expression of autonomic nervous system, or certainly that sympathetic part of the autonomic nervous system in children. And my presentation, which we're going to flick to in a little bit, is a little bit about what are the reasons behind that and they vary between being structural and from the mom, and related to the microbiome and a whole range of things like that which are actually driving this imbalance we're seeing in children, the chronicity of this imbalance. And it's becoming a real issue. It's one of the reasons why we're getting so many kids with learning issues. If you maintain the Moro reflex into your third, fourth year you are going to get some issues. Okay? It's not meant to be there. And then if you're getting issues then you're going to get imbalance

between the two sides of the brain and we're going to get to a range of problems we see in children so commonly dyslexia, dyspraxia, ADHD, spectrum disorders, all of those kinds of things, potentially having a lot of their input into them from the very early days.

Steven Bruce

What do you see most of do you think in clinic?

Steve Williams

So, well, that was interesting, because I had too many new patients. I was only seeing for quite a few years really, learning disorders and spectrum children and ADHD and all those kinds of neurodevelopmental disorders for older kids because there was a three- or four-month waiting period appointment. Now what I've done is I only see children and babies. So that's cut it down and this is cut it down a lot. So now I'm seeing the commonest thing we see in practice is probably number one screaming babies, number two plagiocephaly. And the screaming babies can be a whole range of things which are causing them to be upset they usually bought in because the mother is upset and reflux, and colic and those kinds of things would be the big ones with it. But later on, it's the neurodevelopmental disorders, which are probably the most common thing we see in practice.

Steven Bruce

Just to get one big elephant out of the room early on. Clearly, chiropractic particularly had problems with advertising its services in dealing with children some time ago, and so did osteopathy to some extent, but nothing like the amount that you did. What do you do at the moment to attract patients, babies and small children into your practice? Is it all word of mouth or do you have forms of advertising you feel you're allowed to use?

Steve Williams

No, I think advertising or opening a can of worms. Yeah, we tend to attract the attention of the sceptics. I think the issues with Simon Singh really gave us, you know, taking into the court case against Simon Singh maybe wasn't the best idea. And it gave it really gave a major issue. And they came after us, the sceptics and Sense About Science, various organisations. And yeah, there was a lot of complaints, not one of the complaints was found to be, of the last lot, was not to my knowledge anyway, was found to be agreed with by the General Chiropractic Council and there was 600 or something like that.

Steven Bruce

Yeah. And it took a lot, a lot of effort and a lot of time, a lot of money to get through them all on the part of the GCC, I believe. Yeah, I didn't mention earlier on you had nine years on the GCC if I remember correctly, were you there when Singh was going through his process?

Steve Williams

Yeah, the I was there during the first set of complaints on the GCC. And so yeah, I learned about it firsthand. So yeah, it was it was an interesting experience. And I'm relieved to be not on that anymore. It's a

lot of admin for. I prefer trying to make differences to chiropractors lives. And I think we can probably I can probably do that better from a teaching perspective, rather than the GCC these days.

Steven Bruce

You teach around the world. Quite a lot in South Africa, I think, but America and elsewhere.

Steve Williams

Yeah, I teach in South Africa, I did the last couple of years in South Africa, Australia, United States a lot. And then widely in France, Germany, Spain, I teach at two universities in Spain, I teach at paediatric courses with them. So yeah, I love it. It's an absolute passion. Communicating this is an absolute passion for me so I thoroughly enjoy it.

Steven Bruce

You want to start us off with your presentation, then, and I suspect that'll start, I've got one question for you already, but let's get some of your information out there first of all.

Steve Williams

Nice I'd like to thank the Academy of Physical Medicine at the beginning. By the way, if you guys want a copy of this presentation, you don't need to scribble anything down. You can go to my site, which is www.academyoffunctionalpediatrics.com/autonomic and I'll be showing that at the end of this as well. So, if you want it, there's a presentation and you can get it downloaded. So, one of the things big thing about autonomic dysfunction is it just related to the baby's delivery into the world, as a lot of people say and I say no, there's a lot of issues that develop prior to that. Autonomic dysfunction really does commonly occur prenatally, what's the parental health status like? These days, we're getting a lot of people who are having trouble getting pregnant, getting pregnant later, and living high stress lives, they have an effect, I'll look at some of the research that affects that later on. Maternal stress response is just massive. It's a massive factor in this. One of the biggest things I say to my patients who are trying to get pregnant and who are pregnant is, all those that silly little stresses going on in your life, you've got to leave go, they are not as important as that thing inside you, that is much the most vital thing. And that is massively important, real important. Maternal microbiome is again, the interaction with the vagus, between the microbiome and the vagus, the baby's microbiome and it's vagus nerve is very important. And if the maternal microbiome is poor, the baby isn't going to get the wide and diverse microbiome very fast. And that's gonna lead to issues with inflammation, a whole range of other issues. And of course, structural health, what's the mother's structural health like? If her structural health is out of balance, as we chiropractors, osteopaths, physios know, then that's gonna make delivery more difficult and therefore more stressful for the baby.

Steven Bruce

Steve, just before you go on, there's some nasty interference with your mic. It sounds like connecting a connection problem. Are you using the computer mic?

Steve Williams

I am using a computer mic, it may be me knocking the computer. Can I just if I'm doing that, is there any?

Steven Bruce

Yeah, that's fine now, it comes and goes. I just wanted to see if there was any obvious.

Steve Williams

Okay, there isn't. I'm terribly sorry about that. Let me know if it comes back.

Steven Bruce

One of the pleasures of Zoom.

Steve Williams

Yeah, exactly. Exactly. Okay, so if you're looking at the maternal antenatal health, an increase in firing about maternal sympathetic nervous system and increased stress hormone. If they're firing too much. They can have significant effects on intelligence and behaviour. They make a difference. It's so important the mom is not overstressed. We know things, oxidative stress, nutritional problems, environmental toxins, drugs and alcohol, they have a direct effect on the foetus. You've ever seen Foetal Alcohol Syndrome, you know that. It's not a pleasant thing to see. Some really recent research which came out 2019. This is a fabulous paper and its basically higher maternal adverse childhood experiences, so if the mom had bad experiences in her childhood, like abuse, like bullying, all those kinds of things, the higher the mum scores in the in these things, they predicted a shorter placental telomere length, so the placenta was less healthy, and greater respiratory sinus arrhythmia, RSA suppression in infants, so that the infants had a greater autonomic imbalance. If the mother had those early childhood experiences. It's phenomenal how those kinds of things can cascade down the generations.

Steven Bruce

So just out of curiosity, I mean, I'm no expert on how we measure these things. What's the quality of the research there? Is it an observational study, presumably it is.

Steve Williams

Yeah, it looked pretty good. They had about 30 in each section. And they were basically basing it on a questionnaire which showed, and it's a validated questionnaire about adverse childhood experiences and how they were affecting the life and whether their stress responses were to them, and those who weren't, and they may compare the two. Now I'm sure the research can be criticised to an extent it looked a good paper, and it's published in a very good journal as well. So, you know, it's an indicator and we look at these kinds of things. This is another paper from 2020, which actually suggests that prenatal maternal stress affects the coupling between the maternal and the foetal heart rate detectable in the last trimester. Okay, so the heart rates are supposed to couple to an extent, increase and decrease together and that kind of thing. This affects the coupling of the maternal and foetal heart rate. Very interesting. We do see that infants who have issues with or moms who have issues with bonding very often have stress responses which are

abnormal. This is maybe a pre bonding thing where they're not in that sort of balance together. Don't know about any of you guys, you're obviously doing temperatures now if you're checking people, while I'm checking mums and babies every day, and I'm finding their temperatures are so similar, fathers not the same, but mums and babies' temperatures really matching even though even if the mother hasn't been holding the baby in the previous 10 or 15 minutes, interesting. There seems to be that sort of you can cut the umbilical cord but there is still a connection. This is key thing antenatal maternal psychological stress is common and was associated with key psychosocial measures during pregnancy and with adverse birth outcomes. If they've got this distress during pregnancy, they're more likely to have adverse birth outcomes, and that's more likely to stress the child. And there's just a phrase in this last study here, which comes from 2013, which I love, okay, which is "results implicate maternal prenatal stress as a source of epigenetic mechanisms that affect brain development and programme risk for emotional dysregulation and mental disorders over a lifetime across generations." So, it may not even be what your mother was thinking, it could be your grandmother or whatever, on through that. It is utterly interesting and the amount of research that's out there does key in that the stress factors can have a major issue on foetal stress response early on,

Steven Bruce

I suppose an obvious question is in this Yes, I can readily believe that stress would affect a foetus. But how would you define that stress? What level of stress are we talking about? And a huge number of people will have grandparents who went through the Second World War, and they must have all been under stress. So, are we all affected?

Steve Williams

It's a really interesting thing you say there, and frankly it's a judgement. You know, when they talk when you're talking about adverse childhood experiences, for example, that stress those are very serious issues that happened to you in your childhood, and they and they coloured your life, if you like it, you know, in a particular grey colour or whatever. So, I think that on those kinds of things, but you're right, you know, we're all stressed at various times, does that make a difference? It's a difficulty. It is a difficulty but it seems that there is a weight of evidence is building up saying excess stress is a bad thing and is going to be passed on down the generations. I mean, stress is a good thing, we all need stress with the hormetic response, we need some stress, otherwise, we're not going to work. But it's a question of balance with it. And what's the right amount of stress in your life? My life? I mean, certainly coming out to this lockdown and going through it. I think my stress levels have been more than a good hormetic stress personally.

Steven Bruce

I had one of your chiropractic colleagues talking to me on Monday at lunchtime, and he used that description of childbirth as forcing a watermelon down a hose pipe. And if you keep that in mind, it's difficult to imagine how any mother could not be stressed before she delivers a baby.

Steve Williams

Frankly agreed. Yes, that's it. That was probably Donald was it?

Steven Bruce

It was Donald. Yeah.

Steve Williams

Yeah. Yeah, he's got a good turn of phrase. It's his Zimbabwean brat background. But great stuff. Okay. I'm going to go back on to the screen share. And so, one of the things we see as another major stressor that we're seeing is caesarean section, the rates of caesarean section. World Health Organisation and all of the various royal colleges and stuff like that recommend that caesarean birth is a good thing because it's lifesaving, we got to be honest, but probably 10 to 15% of deliveries it's appropriate. In the UK currently it's 30% of deliveries, 14% elective, 16%. Emergency section. Okay, that's significantly higher. In the United States, I was doing a presentation for United States couple of nights ago. So, I looked up their research that was very interesting. 22% in Utah, 38% in Mississippi, but if you happen to be living in Beverly Hills it's up around 90%. There's some private clinics around the area then it's interesting. A colleague of mine, great paediatric chiropractor from South Africa, he practices in Johannesburg and all moms go to private clinics there to have their babies, or the ones he sees. And he's done a survey of babies coming into his clinic, and 90% of them are from caesarean sections. And we are changing the nature of our children and their health outcomes by having caesarean sections. There's a great bit of research from 2018 here. HRV analysis, heart rate variability, revealed higher cardiovagal modulation in spontaneously born newborns without analgesia. That's really what we want to get them born with. Compared to those infants born by caesarean section, there was a significant difference. And so, they've already got a higher stress response when they come through, and they're going to have an altered microbiome, as we all know. So, the caesarean section, which is becoming more and more common is not a great start for the baby's life.

Steven Bruce

It's a bit of an unfair comparison that though isn't it in some ways, because I can't imagine there are that many babies who are born without analgesia of some sort.

Steve Williams

Well, it depends what you what your term as analgesia, I suppose gas and air is even an analgesia. But I think the analgesia they're talking about there is any sort of opiate and any sort of spinal block or anything like that, which they're talking about. And of course, you know, you could also argue the HRV is more likely to be affected by a baby who has an emergency section because by their nature their delivery has failed for some reason, and they're in potential trouble. But if you compare it to those with elective sections, there's also a difference. So, you know, yeah, there can be various unfair things, which we need to look at these studies very carefully. But caesarean section is another potential stressor.

Steven Bruce

Here's an observation from one of our audience, or in fact two of our audience for you. They've commented that to say that a mother's stress may adversely affect the health of a baby, it doesn't do very much to improve her stress levels.

Steve Williams

I totally agree with that. And, and forgive me for not going on about that at the time, I think I got distracted by it by something else. One of the things I'm going to say to you is, the last thing I'm gonna do is look at a mother and say you're stressed, your baby's gonna have a problem. That is a disaster. Mothers feel guilty anyway, let's not make mothers feel any more guilty. It's one of those things, you know, we're never sure as a mom, or as a dad, but particularly as a mom, because you're doing often much of the more the initial caring, whether we're doing the right thing, whether we're behaving appropriately with it. So, guilt is not something we want to do. But one of the things I do and I do it very gently, okay, is just sort of saying, Look, it's been shown that the better we can control our stress response, the more likely you are to get pregnant. We see a lot of people trying to get pregnant, not able to, and secondly, and you can be logical about that you can say the adrenal system, explain adrenaline, cortisol, that kind of thing, how it sensitises fight or flight reflexes, I do go through it. And then I talk to them. And during pregnancy, it's much more important that you think about this baby than other things. And so, I go through breathing exercises, I go through relaxation with them, I go through a whole range of things that they do. One of the things I say is you're not allowed to eat a meal without going through some 478 breathing, inhale for four, hold for seven, and breathe out slowly through the mouth for eight. Do five of those breaths before every meal. So, it takes them, and I talk about sympathetic and parasympathetic balance, it takes you into that parasympathetic. So, you're going to digest your food, and your baby's going to get more benefit. That's the way I talk about it. So yeah, they're absolutely right. And forgive me for giving the impression that it was any other way.

Steven Bruce

I've got some more questions, but I'll let you carry on for a little while before I interrupt you again.

Steve Williams

Beautiful. There we go. So, we're going to talk about structural health. Well, osteopaths, chiropractors, physios, this is our big area. And does structural health affect this? Well, my argument to you is massively. If you have a pelvic torque and I'd ask you guys out there, how often do you put your hands-on top of an iliac crest on either side? And how often are they level? Pregnant, child anything like that. It's a comparative rarity in my clinic where actually bang they're level and I actually measure them on a postural analyzer. And I measure the differences between the height of the left and right iliac crest is one of the things we can see changing afterwards. And it's really, really rare that they're level. If you have this asymmetry of the iliac crest, you're going to get an asymmetry of the soft tissues effectively. We call it a PIAS rotation. So, one ilium rotates posterior inferior, one ilium rotates anterior superior so you get that pelvic torque. If you get that torque lots of the time the sacrum will also torque. So, you'll get an anterior inferior sacrum on one side, that is going to create a significant stress on the pelvic floor and on the ligaments that attach from the pelvic floor into or from the bony pelvis into that lower part of the uterus, upper part of the vagina where the baby has to pass through. So, if you got a PIAS rotation, your sacrum twisted, you're going to create a rotary torque and we're going to see that rotary torque on the baby's head. So, we're seeing and I'm sure you're seeing it an epidemic of head torque, twists in the head. Okay, some of its positional preference, but a lot of it is actually because during the last trimester, with the head down, the pelvis has been torqued and it's torquing the uterus and creating a stress on that foetal head. And remember the occiput's in four parts at the

time, you torque those two portions to the occiput, you're going to torque the base of the skull, you're going to change the physiology down there, you're going to create those asymmetries and you're going to affect potentially the jugular foramen. So, if you look at that, look at the pelvic floor here, you can see the bony attachments of the pelvic floor, three foramen that pierce the pelvic floor urethra, the anus and vagina, and that vagina has to dilate really significantly to be able to deliver. If you've got a twist, you're tense in some muscles, loose in other muscles, you're more likely to have issues getting through that. So, one of the things we can do for our pregnant patients is balance out the pelvis, balance off those transverse fascial planes, the pelvic floor, the thoracic diaphragm that travel across the body, balance them so that the baby is sitting in an appropriate environment, it's got as little stress on it, physical stress on it, as possible. So here this is a lovely diagram for me because it shows this round ligament anteriorly and shows the uterosacral ligaments. Remember there are two of those which go around either side of the rectum from the sacrum. If you have a twist in your sacrum, you're going to have slack in one of those uterosacral ligaments and you're going to have tension in the other uterosacral ligament, that's going to put a torque on the spian part of the uterus, the same thing you're going to have here. These are really fascinating ligaments, the round ligaments coming through here they go through the inguinal canal and insert at the lips of the labia majora. And they're responsible for a lot of that inguinal, groin, labial lip pain that pregnant moms, and not necessarily pregnant women get. But if you've got a PIAS rotation, you're going to twist these guys as well. So, you're going to get that asymmetry affecting the whole of that uterus, you're going to create a torque of that uterus, and that's where positional asymmetries of the baby and stress on the foetal head are really, really important. And it's one of the reasons why they may be transverse, they may be breech, they may be face presentation. And one of the reasons is these asymmetric pulls on the uterus not allowing the foetus to get into the appropriate position which is head down in a position of flexion. Okay, so that PIAS rotation, that's chiropractic speak, I suspect that, but you're gonna have your same version of it, it's the rotation of the pelvis. Posterior inferior on one side, anterior superior on the other. Okay, and here, we've got a great diagram showing it. So, we got urinary bladder there, we've got the cervix and the uterus there, then we've got the rectum there, and you can see any twists of the sacrum you're going to slack in one uterosacral, you're going to tighten the other. The transverse cervical ligaments if you twist those ilia, one going one way one the other. They're going to torsion, they're going to create stress on the lower part of the uterus. And we often see subluxations or lesions you might call them of the pubis, asymmetries of the pubis, that's gonna create trouble from the pubovesical ligament going to the bladder, and also the pubocervical ligament coming back there, so they're going to stress that whole system as well. And it's a lovely diagram showing how the bony pelvis is responsible for how that lower part of the uterus sits. So, this slide is really about just showing some of the techniques we use, here we're using a slow stretch and a fast stretch this is a very pregnant woman. In fact, she delivered the next day, which was interesting, we're using slow stretch and fast stretch techniques here there's a slow stretch into under the diaphragm getting into there with the thumbs, and then we do a splint technique which is a fast pull out. Okay, we use their respiration to access under the diaphragm and a fast pull out just to reset the proprioception in that area. And here we're using a technique which is gentle with thumbs just above the pubis and this is what we call pelvic floor balancing. It's actually balancing the insertions of the rectus abdominus and the oblique abdominals and all of it, where they come down into that sort of anastomosis, which then forms the pelvic floor coming underneath. And if we balanced the tension in these guys, then we tend to get better tone in that pelvic floor. So that's what we're doing there

with those techniques. And the key thing is moms need to be treated, they need to get their structural health well, as well as working on their other bits to actually help it. And here we're correcting the sacrum, here I'm using what we term an activator gun, which is a little fast stretch machine, just rebalancing the sacrum and here using vibratory pressure, taking the posterior side of the sacrum and correcting that to balance up that whole area. So, what I'm going to talk about briefly is what happens when things go wrong. Okay, what we see when things are actually going in a bad direction, birth trauma, any condition that adversely affects the foetus during delivery. Okay, the issue is, is it a major problem? So, what the baby had a bad time does it affect it later? There was a lovely study that came out in paediatric nursing journal which basically said perinatal morbidity, or it predicted health age 12. So baby was really sick at birth it was it was more likely to have other issues later on. And that doesn't surprise me. Okay. And the asymmetries that we see in some of these children are, you know, really quite common. 73% of infants showed one or more asymmetries at birth, 61% the head now has become more common since I've been practising in paediatric practice, 42% asymmetries of the face and 16% of them with a torticollis and that's not necessarily just a lump in the SCM or fibrosis in the SCM that's just a head positional thing where they can't turn one way, they can turn the other and that can be a lesion or subluxation of the upper cervicals all that kind of thing causing it. What I really need to say is, birth trauma is under publicised and undertreated. Major birth trauma, things like plexus lesions, fractures, organ ruptures, cuts when they've been too enthusiastic with a c-section cut, Bell's palsy, I've had, I think two or three Bell's palsy in the last few weeks from forceps deliveries, those kinds of things they're obvious, but there's a lot of other trauma which is occurring, which is not obvious. They haven't got a fracture. They haven't got an obvious fracture, but you've got a baby, which is unhappy and upset. It's not working well. It may be vomiting, it may be constipated, it may be getting gut pain, it may be drawing its legs up and getting into problems. Those are the babies we need to tackle.

Steven Bruce

Out of curiosity how long did the signs of those Bell's palsys generally last? I'm not suggesting there might be longer term underlying effects.

Steve Williams

Well, that's an interesting one. So, it really depends on these things. I've seen all of the versions of Bell's palsy you're gonna get, if you've got a neuropraxia and nerve bruising, you're probably looking at three weeks to six weeks, they improve significantly in the first two weeks, they start improving, you'll see some strength coming back to it, if you got a neurotmesis or an axontmesis, a long time if ever, for some of it, some of them actually don't grow and then end up having surgery to pull up one side of their face or allow their eye to close, and those kinds of things. So fortunately, the vast majority we see are actually neuropraxias where there's a significant amount of bruising, some of them have a degree of damage in there because you can tell that's an issue when it goes on for a little bit. But one of the things I found that the cranial work and freeing those up and then the reason why do kids get Bell's palsy, you know, from a forceps delivery? We have a mastoid process right here on our temporal bone, which protects our facial nerve. Remember the facial nerve runs through your temporal bone, along with the auditory nerve splits off comes out the stylomastoid foramen right at the bottom of that, and then goes forward into supplying the fight the facial nerves, okay, all the facial muscles, here we have a mastoid which protects it, you can't get to

it. On a baby, you can get to that facial nerve, it's open, and that's why they're vulnerable to it. And so, and they really are vulnerable to it and not all of them are from forceps deliveries but I'd say 80% of the ones I've seen have been from a forceps delivery.

Steven Bruce

And since we're on that topic, then, do you leave them to self-resolve or do you do some treatment to try to remedy the problem?

Steve Williams

Yes, you're right. I'll treat them very actively. So, balancing out the temporal bones, just doing one thing is not what I would do. I would be balancing out that baby, so I'd be treating the whole individual. But specifically, for that, making sure that the temporal bones are in balance, there isn't an asymmetry between them. They're capable of movement, of gentle movement and they're working, that will allow this area to drain much more. But to do that, I'll be balancing the ilia, the sacrum, the reciprocal bones for the skull base bones, get that moving. But we also use some cold laser, I get a cold laser on any of these injuries very rapidly. And that has a fantastic effect as well. And, you know, sometimes it's a little hard work to use on babies they're not really that keen on it, but you don't actually need to get it on there for that long. But a high-quality cold lay it can be very helpful.

Steven Bruce

Okay, if I may, I've got a few other questions from the audience as well. While we're off the slides. Mary says when you were talking about stress in childhood, did you mean up to 18 years old or are you talking about purely through the earlier years?

Steve Williams

I think childhood is defined up to 18 years, and when I read this paper, obviously, there's lots of things I would like to ask the people who wrote the paper, but from what I gathered in it, it is childhood experiences from, from early childhood to teenage years. Okay, and they can be the some of the worst childhood experiences that we can imagine, some of them.

Steven Bruce

And Linda's asked an interesting question, because you talked about prior history affecting sort of stress levels and dysfunction in children. What about egg donation? Is there any research and information on how the history of the egg might affect the child's development?

Steve Williams

Oh, god, that's such a good question. And I've asked myself this. I mean, I've not seen it. I've just not seen anything to suggest that. And I just don't know, I would imagine, yes, I imagine but also, I've not seen any research really showing whether this comes down through the sperm as well. Is this possibly from the Father? Or is this just influenced by the mother carrying it? I don't know. I wish I knew. It's a great question. I know.

Steven Bruce

Robin sent in a long one. He says he's often wondered about stress impacts during delivery. His other half was induced for their second child and the birth itself was about as smooth as you could hope for. But we knew all week that his mother was gravely ill at the other end of the hospital. She died seven and a half hours after the baby was born. Who is an official APM baby, apparently, and we nearly lost him to sepsis, he says, three weeks later, and he wonders if the stress could have affected his immune response?

Steve Williams

I don't I can't give you evidence on that. Okay, I can give you my opinion. And that is strongly yes. Strongly yes. That that is going to be the case. One thing I'm seeing with babies is they are actually connected to the moms, to the dads to an extent but the connection is stronger to the mom, because that's the person that's carried it right the way through. And they are intensely connected. Another phrase I use to mums, again, not trying to make them feel guilty. I'm giving this phrase out of context for what I say. But I use the phrase, everything you feel your baby feels. Okay. So, and I do believe that and I do believe if there is a really significant stress going on that that can cause issues. I don't have evidence for it. But that's my personal thing. Whether there are studies about that. I don't know.

Steven Bruce

Becky's asked, what about breech babies? Because you talked a lot about torsion on heads in a normal delivery. What happens when they're the other way up? I have a personal interest in this because all three of mine were breech.

Steve Williams

Yeah, they've always got issues. We know with breeches, they have a significantly higher level of hip dysplasia. So, we know that's one of the issues they have. They have high level of torticollis. They have higher levels of mandibular hyperplasia, they have higher levels of foot deformity, they have higher levels of all of the squashing things because they're in the wrong position. If you get away without it, great stuff, that's great, but also because they it's unusual these days to get a vaginally delivered breech. You do see them occasionally but it is unusual, most of the time they're C section, and most of the time they're elective section, they rarely go into labour. So, they will then have issues. So, one of the things we see in c-section babies, I talked briefly about it there, altered cardiovagal tone and stuff like that, they're more sympathetic dominant because they haven't been through that squishing thing but it also doesn't switch on the skin reflexes as easily. These skin reflexes matter a lot for normalising the primitive reflexes or those neonatal reflexes, and those reflexes are massively important for long term outcomes. They need to be brought up to threshold to be then fully expressed, and then to be integrated or inhibited, whatever phrase you want to use, later on. And what we see is a greater percentage of a lack of integration of those primitive reflexes. I'm going to show you a little bit of research when I'm talking about the microbiome in a little bit about c-section babies having altered microbiome and that affecting them, making them much more likely to have inflammatory diseases and those kinds of things. So, it's a whole range of things that can lead onto and my

babies, I've had issues we've all got those things, doesn't mean they're going to express all of those things, but it just means that they'll highlight.

Steven Bruce

One more before you move on, if I may. Mary again says do you have an opinion about how the position of the mother during labour might affect stress? Apparently being on the back tends to tilt the apex of the sacrum anteriorly, reducing the space of the birth canal.

Steve Williams

Thank you, Mary. Great observation and absolutely. So, the research shows that the pelvic outlet, which is what you got to open up to get a baby out of there, the pelvic outlet is 1.5 centimetres smaller when you're supine. Okay? Why would you give birth supine unless you had no choice? And of course, if you've had an epidural, you really don't have much choice, you can't move your legs. Okay. You don't know where they are. So yeah, so that's the thing with supine, but if you're not there, please don't give birth supine, other positions, kneeling, crouching, it's not the same in water, being supine in water. Remember, there isn't the compression down on it because you're in a less of a gravity atmosphere. So that's different. But you want to be taking the pressure off the baby. So absolutely try and avoid supine delivery if you can. It's not always possible and these things you know, and the ideal thing is we want a healthy baby out of this situation.

Steven Bruce

Are you a fan of birthing pools then?

Steve Williams

Yeah, not as much as Michel Odent, getting in there with them and getting his bathers on and getting mucky with all the stuff. Yeah, I think they're great. I haven't seen enough research to say how they affect the microbiome. Because the microbiome is massively important. Some of the stuff I'm going to say to you in my last slide says don't wash your baby. It's really important to leave microbiome the baby gets from that vaginal canal. okay, which is seeded for it to colonise the baby. My only worry about the pools is the microbiome is good afterwards? I've not seen research on that. If anybody's got any please let me know because I do keep an eye out for these things. But I don't see everything necessarily. So, if you are aware of any, but that would be my only worry about it. Yeah, I'm a fan otherwise. Michel Odent is the guy that works in France, the French obstetrician, is an absolute genius and he's still speaking he speaks he's a brilliant speaker as well, worth hearing. One of the predisposing factors what causes oxytocin use, that's artificial oxytocin, in inductions. Of course, now induction of labour is associated with adverse outcomes. Malpresentation, if the baby's in a funky position, they're going to get an issue. Multiple pregnancies more than one pregnancy. One baby is always an issue. We had the absolute delight this last year of having the first quads we'd ever had in the practice, and they were just gorgeous. Parent come in with a with, both parents one under each arm, throw them down in the seats, and they're great. The triplet boys, identical boys, singleton girl and the boys it's the egg is split twice. And it's really interesting you can see from a very early age who is going to be in charge and it wasn't the boy, the boys. It was fascinating. It was really lovely to see but there is always in multiple pregnancies. It's always one of them in a funky position or something

like that going to get a stress, get an elbow in their head or something like that. Prolonged labour, going on too long particularly prolong second stage, pushing. That is where the baby's under massive stress, you get stuck in the birth canal for a long period of time that's a trauma predisposer. Epidural anaesthesia is linked to trauma. It's also slightly unfair just linking it purely to that because usually when they have an epidural, there's usually been a long labour already, and they may consider they may have to do a c-section. So, you know, that's one of the reasons that can be linked. And of course, forceps delivery, again holding our baby pulling out can be major issues, but that can actually come out with a live baby, the baby gets stuck in the birth canal and stays there can die so it can be more important getting the baby out and we'll deal with the issues afterwards and we as our professions are the best ones to deal with it. Shoulders dysplasia, one shoulder getting trapped is common in supine deliveries, biggest reason for it, it's just too small a space for the shoulders to deliver. And of course, macrosomia, very big heads, not normally a problem, but induction of labour is an issue.

Steven Bruce

Interestingly, I'm sure that isn't a completely exhaustive list. But I noticed you haven't mentioned ventouse or early delivery.

Steve Williams

Ventouse is an issue, early deliveries got massive, massive problems associated with it. And that would take a whole thing by itself, you know, I've treated 24-week gestation babies and they're the size of guinea pigs, and it's slightly terrifying. It is slightly terrifying and so there is an issue with it. But no, that's not an exhaustive list. That's a paper and it's a good paper. It's a well-known paper so I tend to use that as the list. What are the traumas toward the bony cartilaginous skeleton? Skull fractures. Skull fractures are quite common in babies, if you see them with a cephalohematoma, a lump usually on the parietal, I've seen them on the frontal skull but they're most common on the parietal by far. If you have a lump there, you have between 11% and 24% association with a depressed skull fracture underneath. Don't tell the mum that. I've made the mistake of telling the mom she immediately went to the GP demanding an X-ray. But when you get a lump like that, we assume that lump is a subperiosteal bleed, and we assume there's a fracture underneath it and we assume there's a bleed inside as well. So we don't want to vitalize that, you don't want to do too much active treatment in the first two weeks of life. That's one of those yellow, red flag warns. Be cautious with those, guys. Don't do too much to them in the first few weeks. Let them go so if there is a bleed and really examine the neurology very carefully, do a really good neurological examination to make sure that that baby's okay and I keep a close eye on those guys.

Steve Williams

So, trauma to vascular tissues, cephalohematomas, retinal haemorrhage is a common one, cranial haemorrhage is surprisingly common, and hydrocephalus we see those as well. Trauma to nervous tissue, Erb's palsy, waiter tip position, brachial plexus injuries, ocular injuries are probably the commonest we see, a turned eye, problems with the lateral rectus, really, really common we see those. So that would be probably the most common nerve injury interestingly. Trauma to soft tissues, torticollis, a true torticollis, you get a bleed into the SCM creating a lump and you've got to get in on that bleed, by the way, guys, if you get if

you've got a lump in the SCM, you need to get in in the first few weeks and facially release very gently around the edges of that lump. That is a way you can disperse it. If it's left there, it can cause the SCM to shorten, laterally flex, rotate the head and then you'll get a bigger head one side, a smaller head the other and all sorts of asymmetries come with that. And of course, asphyxia in the birth canal that can be a major issue. I won't talk about that at the moment. Key stuff what's the parasympathetic innervation, all go back to our anatomy. We all know this. Okay? The vagus is the parasympathetic innervation largely, the heart, the lungs, remember, it's inhibitory to the heart, the heart would be faster without it. So, if you've got it, if the babies had very high heart rate during delivery, it's potentially vagal irritation there. Heart, the lungs, oesophagus, stomach, the gallbladder, the small intestine, the proximal colon, are all supplied by the vagus, and really most of the colon right round to the distal colon is supplied by the vagus. Now, there are supposed to be some parasympathetic fibres from the sacrum, which then go and supply the distal part of the colon. Well, there's quite a few studies done by neuroanatomist and they're very interesting. They are a difficult read, frankly, because they're talking about different types of nerve endings and stuff. But they are suggesting that they may be sympathetic, not parasympathetic. That the only parasympathetic supply is from the vagus, there are different opinions on that, I've read all the papers that I can on it and I'm still none the wiser. So, I'm in the middle it might be sympathetic, it might be parasympathetic.

Steven Bruce

Where typically is that vagal irritation going to occur?

Steve Williams

You're preempting me, I'm right onto that. There are three entrapment points and we're going to talk about those and we'll talk about how we free them up as well. The sympathetic innervation arises from the thoracic and upper lumbar core. So, what does the autonomics do? The parasympathetic stimulation increases peristalsis and secretory activity and slows heart rate. It's your rest and recuperation nervous system, it's driving the blood through, driving the peristalsis through, it's getting that digestion done, and getting the baby fed and happy and adjusted. Sympathetic stimulation slows gut motility, slows digestive function big time, drives the blood away from the gut and increases heart rate and drives the blood into your skeletal muscles ready for your fight or flight reaction, or holding on to your hairy mother to be taken away from danger. Remember your Moro reflex, that abduction adduction reflex, is what I term hairy mother reflex. It's from the apes. So, the apes will then hold on to their hairy mother and be taken away from danger. That is the Moro reflex. And babies have it even though they don't do much with it. But when you see that hyper movement abduction adduction that is stimulating the sympathetic nervous system that is stimulating the adrenaline, that's stimulating cortisol. That's taking blood away from the gut, that's stopping the digestion occurring. When that's occurring a lot, we're going to get issues with it. So, the enteric nervous system modulates the activity of ease and as the infant's sleep cycle lengthens, we get longer levels of autonomic work where that system balances up. So, these, the answer to your question, these are the primary vagus nerve entrapment points, so you've got your skull base, you've got your sub clavicular and your diaphragm, they're the major issues, we've got those things. I'm just going to run through a little bit of anatomy remind everybody of their anatomy and stuff like that. But first of all, we'll look at synclitism and asynclitism. Okay, so asynclitism is where this sagittal suture here is in any position other than transverse in

the birth canal. Okay, so this is an anterior asynclitism, it's where the parietal horn gets caught on an anterior scapular base. So, if the sacral base is too far anterior, this gap is not going well, the parietal horn will get caught. How do you know that? Well, these ones usually go into labour and they're labouring away and they're two or three centimetres dilated and they're not dilating any more than that, they get stuck. That's usually where they got caught in asynclitic position. And as you're getting a contraction occurring here, what's going to be happening here, you're going to get greater and greater lateral flexion occurring, you're going to get shear at the skull base. If you shear that skull base, you're going to be shearing, having a shearing effect on the jugular foramen and the other issues. Posterior asynclitism is here, and that's really where the parietals get caught on the pubis, not as common as this one, but does occur. And again, you're going to get a shear stress occurring in this and this you'll often see evidence of these they'll get a cephalohematoma, a lump on their parietal and they haven't had a forceps delivery. They haven't had a forceps delivery, and they got a lump on their parietal the first thing I'm thinking of, they got stuck in an asynclitic position for some period of time and that created. This is normal synclitism. And ideally, the head should go in and out of asynclitism. It wiggles its way down, using some of the primitive reflexes to encourage the birth process to happen. So, this is a real baby skull base, and this is really important what we're looking at here, so we got our foramen magnum, and we've got our occiput here. The occiput is in four parts at this stage, you've got your condylar parts either side there, you've got your basilar part, and then you've got your occipital squama. All this bit of the skull base here is basically from cartilaginous bones from that hard bone. Why? Because it doesn't want to be able to deform so much as a bolt of the skull, which is much more from membranous bones, it's more bendy. Between these hard bits of bone, you have got here your jugular foramen and looking at these two you can see the difference in size between the right and the left, that's the left jugular foramen and the right jugular foramen and here, significant difference in size. There is an asymmetry around here. If you get a twist of that skull base or a lateral shear, then you're going to get a potential compression of that jugular foramen. If you squeeze together the temporal bones, you're going to get potentially a compression of that jugular foramen. This is the petrous temporal here. This is the petrous temple. This is the tympanic ring there on either side tympanic ring, you got your petrous temporal there, and between the petrous temple and the occipital condyle is your jugular foramen. Remember, your jugular foramen is cranial nerves 9, 10 and 11. And the blood vascular drain is for 80 to 90% of the blood coming out the cranium, out those two little holes either side. So, what do those nerves supply? Glossopharyngeal supplies the muscles of deglutition, the muscles of swallowing. The vagus, we've just talked about what the vagus supplies, it supplies the heart, lungs and gut, parasympathetic supply to virtually all of your guts and your heart and lungs. And then you've got the spinal accessory which supplies your SCM and your upper trapezius all coming out of that little hole. So, if you get a compression to this, you can get some significant issues and that's one of the commonest things we see with a birth trauma getting a compression of the jugular foramen. So, what do they look like? Babies with this, they get heart rate and breathing issues, often a high heart rate and respiratory dysfunction. And it can be stopping breathing, it can be breathing too fast, all those kinds of things they get some sort of respiratory dysfunction, and often repetitive infections. Difficulty in swallowing your choking while feeding, baby sucking way on the bottom or sucking way on the breast and suddenly coughing. And so that is dysfunctional. That's really glossopharyngeal dysfunction particularly. Functional gut disorders, functional gastrointestinal disorders they're called these days, straining, constipation, reflux, colic, all the kinds of issues

we see really commonly in practice, because that vagus is being inhibited, and the baby can't get the gut and it's driving the blood away from the gut and the guts not working. We see those things really commonly. An increased sympathetic tone, what's your example your evidence of increased sympathetic tone, it's a baby who's agitated, who can't be let to go to sleep, you've got to be quiet round the baby. You should be able to talk around the baby it should, it should be used to it, it's been in the mother's tummy. If the mother is talking and doing housework around, it should be happy with that, because it's what it heard in utero. But if it's constantly making and going into these moro responses, that's an issue. And that's increased sympathetic tone. You may also see dilation of the pupils on these guys and also a little bit of photophobia where they don't like bright lights and stuff like that. That's another indicator of it. And of course, torticollis head asymmetry, going to one side can be a sign of involvement of the spinal accessory as well. So, lots and lots of symptoms and the babies we see in practice, really coming from this jugular foramen compression. Just to give you an example of what some of the issues are with this. We're looking at here proton pump inhibitors. Now proton pump inhibitors are one of the commonest drugs given these days. Omeprazole is one of the commonest things we see, it's given for reflux, okay, it's not recommended to be given for ordinary reflux only when there is actually damage to the mucosa occurring and identified as damage, but it's given a really commonly and because it stops the gut making acid it gets it really effects the parietal cells in the gut stops them making acid. It stops one of the major defences of that baby's system. It stops the acid being able to destroy nasty things coming in through the gut so they get gut issues they get more likely to get necrotizing enterocolitis a really nasty gut infection, late onset sepsis in prem babies, Clostridium difficile infection, lots of respiratory infections are more common in this, obesity, and even small intestine bacterial overgrowth and these kids getting reflux and all kinds of issues into later life because of that. And there's a 30% increase fracture risk from these proton pump inhibitors in young fractures because when they stop the parietal cells in the gut working, they also stopped the osteoblasts remodelling bone. So, the bone becomes more brittle because the osteoblasts aren't remodelling, the osteoblasts are still laying it down, it's not being remodelled, and they get issues with fracture as well. So, it's not a great idea. And they create dysbiosis in the microbiome in the mouth, gut and lungs in the paediatric population. So, what one of the things we got to do is try and avoid them being prescribed or use them for the shortest possible period of time. So, we try and get them and I do talk to them, the GPs, encourage the moms to talk to GPs, I'm not in a position to tell them don't take them. But let's try and get you off them. And it's let's do it in combination with the GP to try and make sure they're not on them for as long as possible. It's a really common thing.

Steven Bruce

I've got to interrupt for a second there if I may, you can't be uniquely aware of what PPIs do, both to mother and the baby. And we've had two previous speakers talking about how bad they are in terms of the absorption of different bitumens. This information must be available to the conventional medical profession, why are they still administering these things?

Steve Williams

Yeah, that's not a question need to ask me. If you look at all the guidelines, the guidelines, World Health Organisation, the American Academy of Paediatrics, all that kind of thing. The guidelines are very specific. They are to be used only in cases, because they don't tend to change reflux, they just stop the acid being

produced and they should only be used for a short time and only in those where there is ulceration of the oesophageal mucosa and you've got to identify that.

Steven Bruce

What do the NICE guidelines say, are they the same?

Steve Williams

I actually haven't looked at the NICE guidelines for that. But I can only imagine they would be. It would be bizarre if they weren't. So yeah, I can imagine they would be.

Steven Bruce

Sorry, I distracted you. So, let me let you go back to your slides.

Steve Williams

That's not a problem. And so, we're looking at the infant microbiome. Microbiome is one of the most important things, colonisation of it begins before birth. Okay. Macrophages take microbes from the maternal gut to the foetal gut. Absolutely fascinating. Before birth. We thought they were born with sterile guts. That's now probably not what's happening. Those that have a different microbiota, it will affect their health. If they're delivered vaginally, they get a different long-term outcome. C-section is associated with higher levels of metabolic syndrome, type one diabetes and asthma and all the inflammatory diseases, higher levels associated with the c-section. Breastfeeding is such an important thing, they've identified more than 200 species in the breast milk. That's unbelievable. The best probiotics we get have 10 or 12 species in there. 200 is remarkable. Breast milk is a source of commensal bacteria which enhance infant health by preventing pathogen adhesion and promoting gut colonisation of good microbes. So, it's really important, most of the breast milk is not to feed the baby, it's to feed the microbiome, which will then feed the baby. So, it's just a beautiful system that's been worked out. So, whatever happens breast is best, even if they can do it for a short while if they can do it. One of the things we got to make sure is most moms give up breastfeeding because it's painful or they're not able to do it because a baby doesn't suck effectively. And that's where we need to be treating the babies early to make sure they can suck and can feed effectively. Okay, so what I'm looking at here is the connection between the microbes and the brain, they talk to our brain, some of the things that occurring. Excuse me, I'm gonna cough. Some of the things that are occurring in our system are changes in our thought patterns because of what the microbes creating in it. Is it you craving that biscuit or that crisp or something like that? It's really interesting. But anyway, the gut brain connection occurs by interactions between gut microbes. There are way psychoneuroimmunology pathways - easy for you to say - immunological, cytokine development or endocrine, where the hypothalamic pituitary axis is and that's really via the vagus. So, we're just going to briefly look at those. The gut microbiome contributes to the sort of inflammatory milieu that's occurring within the host, and it depends on the bacteria that are in there. Lactobacillus secretes lactic acid, which inhibits colonisation by bad guys. Enterobacteria and Pseudomonas. They're bad guys, they're likely to stimulate a robust systemic inflammatory response in the gut. Staph aureus is associated with elevated cytokine levels. And inflammatory cytokines exert effects on the CNS. They shape mood, response, stress and illness behaviour, long term illness behaviour being affected

by those cytokines, that actually people may think they're iller than they are because the cytokines affecting those kinds of things from the microbiome, just incredible. Wrong way sorry. HPA access. This is where we're talking about really the pituitary linking to cortisol secretion and then adrenal issues. Chronic stress reduces the diversity of the microbiome and affects relative abundance of various bacteria in the gut. This correlates to increases in inflammatory cytokines, classic interleukin six and tumour necrosis factor alpha. Bad guys which are linked to this. So the more stressed the baby is, the more it's going to link into these systems, the more inflammation they're going to get in their gut, and the more inflammation in their system. So, stress almost has a repetitive action and that communication is by the vagus.

Steven Bruce

Can I put a few questions to you, just to interrupt the slides for a second? I know there's loads of them coming in and I think we might run out of time at this rate if we're not careful. Gemma's asked how long you recommend leaving the baby before it is washed or wiped down because you said it was important to for the microbiome to be in place.

Steve Williams

Okay, so I mean you can wipe round its mouth and stuff like that, just make it look good for people coming in to see it you don't want a big splurge of blood across the head and stuff like that. I'll get that out but generally, I believe in leaving the baby for several days.

Steven Bruce

Days? Gosh.

Steve Williams

Days. Oh yeah. Days, days. Yeah, for sure. And don't wash with soap, just water, okay, don't wash with soap just water on the baby? Yeah, for sure.

Steven Bruce

And Rebecca's asked what we should be looking out for in an emergency c-section baby.

Steve Williams

That depends on the story with, a great question, but it does depend on the story, why they got an emergency section. If they're a failed Ventouse, failed forceps and they had a really bad Apgar score and all that kind of thing, you'd be looking out for a whole range of things. But basically, that baby you're looking for one of the biggest things you're looking for stuff we're talking about here, which is stress affecting that hypothalamic pituitary axis, and stress affecting that baby's vagal tone, sympathetic tone.

Steven Bruce

Mary's asked about PPIs. Again, whether they cause a reduction in gut absorption, which I'm pretty sure you did say, but is there any evidence of malnutrition in children as a result?

Steve Williams

Yeah, frankly, yes, they cause us to not produce B12 so well. There's a whole range of things that they cause. And they cause the gut to, baby's guts are born with wide spaced interstitial spaces between cells, wide interstitial spaces, to absorb the maternal immunoglobulins, which are large things in the first few weeks of life. Then they start closing down. What you want, if you're gonna have a healthy gut, is tight junctions. That way you can't absorb large molecules through that many of these drugs stop that junctional tightening occurring, and they're going to get issues with it. And yes, they're going to get widespread interstitial spaces and much more likely antibody antigen reactions occur.

Steven Bruce

And for those watching if you wanted more on that, we've had a couple of presentations which dealt with the effect of PPIs, one by Tracy Witty on B12 as we've just discussed, and another by, someone you might recognise Steve, Simon Billings came and talked to us about vitamin D the other day. And I know your close colleagues and both of them were vitriolic about PPIs. Emily's asked how you explain the benefits of cold laser therapy to a mum, given that it's so close, it's around a baby's head?

Steve Williams

Yeah, I'm using it on the head as well with these things. I mean, the dangers of cold laser are shining it in the eyes, you're going to damage the eyes. So, I really talk about the evidence base. There's a significant evidence base for this. It stimulates stem cells, it stimulates a whole range of recovery things. I've got a little spiel I can go into regarding cold laser about what it does, lowers inflammation, stimulates stem cell production and I say and there aren't any bad downsides, it's a super pulsed laser we use so there's no heat with it. And we put it on and you just make sure the baby doesn't get any eye exposure.

Steven Bruce

And does the evidence base include treatment on babies?

Steve Williams

The evidence base includes for this laser treatment on brains. I bought it for use on neurodevelopmental children, it's got some evidence base on brains. I can't quote you evidence base for using on these things this is my experience.

Steven Bruce

Someone who remains anonymous, asks whether you would include a fast labour in one of your traumatic factors for children?

Steve Williams

100% on the commonest things we see in practice, but really symptomatic babies a fast labour is really, really common.

Steven Bruce

And Ali says, do you think the timing of the water's breaking has an effect?

Steve Williams

Yes, if waters break early, they put too much stress on the foetal head. I like them to go a significant part of dilation. They can get towards 10 centimetres before dilating. They've got that cushioning effect, ball valve action, cushioning on a baby's head, more comfortable for mom, more comfortable for the baby. Yes, I like them to be intact for at least a significant part of that first part of labour.

Steven Bruce

And last one and I'll let you move on Pip says do you recommend infant probiotics especially in c-section birth?

Steve Williams

That's coming.

Steven Bruce

Right, in which case we better let you get on.

Steve Williams

Okay, fabulous. Okay. Microbiota, there is bi directional signaling between the gastrointestinal tract and the brain through the vagus nerve, the microbiota gut brain access vital to maintaining homeostasis. The microbiota and vagal communication, think about your people who can't control their feeding behaviour. This may be how the feeding behaviour is stimulated by the microbiota, stimulating the vagus to make us hungry and make us crave certain foods. And microbiome is a key regulator in brain development, ageing and neural degeneration. Absolutely for sure it is. So, there are lots of reasons for that occurring. Probiotic supplementation is shown to be beneficial when given via the mother pre-birth, okay prebiotic and probiotic to the mother prior to birth been shown to be successful. Probiotic supplementation during the neonatal period reduces all-cause mortality. Well, that's good necrotizing enterocolitis, sepsis in vulnerable infants. So, if they are prem and if they've had a bad labour, probiotics make a big difference. And one of the most important is lactobacillus reuteri shown to be effective in the treatment of colic. This is a beautiful paper, just out in April this year, levels of bifidobacterium, clostridium, lactobacillus and klebsiella. The various levels of them predict colic severity and crying times, we need the good bacteria to make sure we don't get long crying times with these guys. So, I'm going to look at just a little bit of treatment. So, I'm going to show a little bit of assessment for these babies. And I'll come off screen to show it but I'm just going to show the slides first. This is a sacral assessment we do. One of the ways we do that is we squeeze together the buttock cleft, you're very brave if you take the nappy right off like that, I just look down at it, I've had so much poo up my arm it's ridiculous at various times. So, we're looking for any cleft deviation. If we get a cleft deviation to the right, that is a right anterior sacrum, we've got a cleft deviation to the left that is a left anterior sacrum, it's a very reliable test in my experience. We're going to do a correction for that if we get that any sort of twist in that sacrum, we need to get balanced up. And the techniques we use are slow stretch,

followed by fast stretch corrections. And the slow stretch we hold for five to eight seconds, eyeball pressure, on a newborn baby it's pressure you'd apply to your eyeballs. It's not hard, and we can finish with a tiny little flexor flick, and I'll show that in one second. And here one of the key things is you got to make sure that sacrum is capable of balancing the respiratory function with the cranium. When we breathe in, there is a compression of the abdominal viscera into the pelvis. And there should be motion of the sacrum. This is what I call a rusty hinge technique where we're pumping the sacrum to make sure it's balanced. So, I'm going to escape from this for a second. Okay, my thing, and I'm going to show you those techniques on a baby, so one of the things we do is we hold the baby, can you see reasonably well, at the moment Steven? So here we've got the baby, and I'm not holding, I wouldn't treat a baby holding up the air like this is just so you can see, squeeze the buttock cleft, look for deviation, if we have a left deviation, we have a left anterior sacrum. So, what I'm going to do is I'm going to contact the right sacrum because that's posterior and I'm going to get on all the sacral segments. I'm gonna also contact the right ilium. And I'm going to go to the ASIS and the PSIS, I'm contacting the ilium there. I'm going to press the posterior side of the sacrum, which is the right side, forward. So, I'm just holding there, I'm using a counter pressure on the ilium. And we're holding that for how long, five to eight seconds. So, we're maximising. We're doing a slow stretch proprioceptive stimulation, and we're going through the muscular barrier till we get the ligamentous barrier, the ligamentous barrier is where it hardens up slightly. I can add then, at that point five to eight seconds later, a little tiny little fast stretch. If you're not happy with your ability to do that, please don't do it. It should be minute. It should be a fast stretch you can tolerate on your eyeball. So, it's not that hard. That then should when you squeeze this, you should get a significant improvement in the buttock cleft. You're not going to get a particularly deviated buttock cleft bang on in one treatment, but it should be better. So that's really important then you've got to make sure that sacrum is capable of the respiratory movement. So, it's capable of pumping, base forward, apex forward. So, what I do is I squeeze together the ASISs if you squeeze together, the ASISs in the front here, what you're going to do is flare the PSISs posteriorly, squeeze them together, you pump apex forward, base forward, apex forward, base forward like a rusty hinge, just wiggling it backwards and forwards. You can do it with a baby's breathing rhythm if you want to. It's hard work to do it, I don't do that. This is literally just to make sure it moves. And make sure it's capable of that motion. That will settle down lots and lots of sacral issues. But we always do that before we go up into the cranium and into starting that cranial work. Very, very important that we do that. C1 adjustment, and we're going to show as well, C1 adjustments we do very, very gently there should be no popping and clicking in little babies, there is no need for it. Literally here we do a p to a stress. I'll actually show you this in a second in my positioning, how I do this, and we find the posterior side of the C1 and we hold that in the direction of correction. How long, five to eight seconds. Slow stretch, eyeball pressure and fast stretch if we want to at the end, you don't necessarily need to do the fast stretches, holding the slow stretch correction can be very effective. Diaphragm release on babies can be very important, if their diaphragm is tight, you need to get it released. We do exactly what we do on adults with it but just on a much smaller scale. We palpate for tight areas in the diaphragm. We go into it with a slow stretch, hold five seconds, pull apart with a fast stretch, go in with a slow stretch pull apart, it's not a toggle in, it's a pullout, literally pulling out and that resets the diaphragm you can see how much the baby likes it sticks his tongue out and it's very happier with it they usually don't even notice, they don't mind it at all. This is a little bit of cranial work. The two most important bones you can work on in the cranium for this are the occiput and the temporal bone. Now I'm

going to show those properly in a moment, assessment and correction for those and then is the clavicle. An inferior medial clavicle. If the clavicle has been compressed down there, we need to get it out of that compression. You can do it, this is an activator, this is a baby activator you should only use ones that are approved for baby use. Or you just get underneath that clavicle Hold it, hold it in the direction of correction five seconds and then you can add a little fast stretch to it. That'll do it just as well. I'm going to show you the C1 correction. So, this is how I sit with these babies. I make a figure 4 in my lap, baby sits in the figure 4, mom plays with the baby here with some sort of a brightly coloured shiny thing, I stabilise here and I can come through here and I can p to a glide the cervical spine. Classic thing with a jugular foramen issues is a C1 which is posterior on one side, what we're going to do is hold that from p to a, hold, slow stretch, slow stretch, slow stretch, we can add a fast stretch to it if we've got the confidence, you don't need to, just literally hold it in the direction of correction, and for five to eight seconds, and that will affect them really well. As I said before, the diaphragm stretch is literally going into the baby, okay, into the tight areas of the diaphragm in, pull apart, in, pull apart, going up underneath that ribcage and pull apart. Very gentle. babies don't even notice it's being done. Very, very straightforward. And it's really disastrous if you start making a baby cry or howl and I try and avoid that. So, we try to make the baby very happy with what's being done. And one of the ways I do that, by the way is I'm constantly talking to the baby as soon as I start talking to mom and telling them what's happening with the baby, the baby knows I've lost interest and it's gonna get really noxious about it all the time. I explained to the mother what I'm doing by telling the baby and I'm telling the baby, Hey little guy, we're just gonna do this. The reason for this is this, and the baby gets it. And because you're having that contact with them, they get it, can't lose that contact soon as you start talking to mom, baby knows you're not with them. And you've got to be with them in the moment and if you're in a bad mood, baby all know as well. It won't respond to you very well.

Steven Bruce

Steve, I have to say my biggest concern from this is that after this programme, we're going to have a whole nation of half blind osteopaths and chiropractors practising your technique on their eyeballs.

Steve Williams

Yeah, be careful. Particularly if you wear contacts.

Steven Bruce

We're nearly out of time. Can I ask you some more questions before we go on?

Steve Williams

Yeah, of course of you can.

Steven Bruce

Jules has asked about probiotics, delivered directly to the baby through milk or through the mother?

Steve Williams

Ideally through the mother. But I often do it through both, particularly if I think the mother's microbiome is absolutely shocking, particularly if she's had IV antibiotics with the delivery or something like that. I hit them both. Okay, but ideally through the mum and you can get it through pregnancy as well.

Steven Bruce

And I've got a couple of questions that you haven't addressed because you've talked really about pregnancy and neonates. But Elizabeth says would you treat an eight-year-old with persistent constipation since birth which I guess is what are your thoughts about the causes of that in an eight-year-old?

Steve Williams

Okay, they are these, I work with a consultant gastroenterologist on constipation in children, I'm seeing cases of constipation when they go three weeks without pooing and that's even with lactulose and some rocket fuel to get the stuff out of there. So, I'm seeing really chronic constipation in kids. Yes, lots of this is the cause originally and then they get a dysfunctional microbiome and then they've had lots of drugs to try and help it and then there's a whole range of things we've got to start rebuilding with.

Steven Bruce

Okay, I've got a lengthy one here from Lucy and she sent it in actually, before we started, I thought I'd keep her on tenterhooks and save it up to the end. She says, she's been hoping that you would cover issues with sleep, more specifically not being able to switch off to go to sleep. Her 10-year-old daughter is now taking melatonin to help her with this, but she'd love to find another solution. They tried all sorts of medications and relaxation exercises first, but she just popped her head up afterwards, bright as a button. The melatonin does help but it's still a struggle. And they're still waiting for an autism assessment. But again, the hyper sensory things could also be autonomic imbalances? She's been quite surprised at how many kids are needing melatonin these days and she treats a lot of kids and sleep is such a common issue. Your thoughts?

Steve Williams

I couldn't agree more. It's a really common issue. So, on any child like that, I would go through a neurodevelopmental examination looking at retention of primitive reflexes and then because the likelihood is that the child is probably in significant sympathetic dominance, they probably got a brain imbalance left to right brain, probably the left brain is dominant, probably too busy in that left brain, particularly if they're a detail type. And so, I would look at trying to get their hemispheres balanced and normalise the primitive reflexes. So, there will be a lot to do on those kinds of children because they've had it for a lot of years. It's not it's not developed overnight.

Steven Bruce

Yeah, well Lucy, I hope that's helpful. Can you still hear me?

Steve Williams

Just about.

Steven Bruce

My microphone has just disappeared.

Steve Williams

At least yours is working better than mine.

Steven Bruce

It's inside my shirt, you tell us something interesting while I try and find my microphone.

Steve Williams

Go on, show us a topless shot. That'll be good. You've off him now. Okay. Well, what I was going to talk about was the occiput and the temporal. We're probably not going to have time to do that, particularly today, but we do test for the occiput, which is literally just a little pliability test, squeeze here, the occiput is restricted in that squeeze and it's again tiny pressure, we go into the direction of freedom to unwind. My big thing with cranial work is you don't need to feel the pulses, they're difficult to feel in babies. And we use some almost like motion palpation tests for these cranial bones. to then go into an unwind. Look at the direction of freedom. Once you go in the direction of freedom, you'll be going in the right direction. Soon as it's hardened against you stop, look for another direction. You'll get those releases going.

Steven Bruce

Steve, we're out of time. Can I just give you one final question and what I was about to ask when my microphone escaped? Lindsey says what's your opinion on putting babies to sleep on their backs?

Steve Williams

We have no choice. So, if you put it in any other position it's higher risk. We know it save lives. The advice when my children were young was put them on the front, the cot deaths raised massively, so they automatically turned to put them on their back. So, there is a complex question. So, I advise mums who feed babies, I advise them to keep them upright after feeding, they shouldn't put them down on their back immediately. They should keep them and they can sleep prone on their mother, they can go prone on their mother, they should alternate their head position, one side and the other. I like them co-sleeping with a mum provided the mom doesn't have a drug issue, any sort of sleep disorder or too much alcohol, co-sleeping with a mother, mother will tend to reposition the baby regularly. Side, back, side, whatever she does it in her sleep automatically. But if you're leaving a baby alone in a room, got to put a baby on the back, there is evidence that the levels of cot death, there is no doubt it's saved lives. But babies for the first three to six months should not be far away from the mum for any period of time, in my opinion and look at the primitive peoples of the world, what do they do? They're on their moms while they're working, they're doing all that kind of stuff. They're constantly there, that heart rate they're getting, they're getting the mother's electromagnetic system, taking the mother or leaving the baby in another room on its back is high risk. Okay, sorry on any position other than its back is high risk. So, it's a complex question. It's certainly creating

some plagiocephaly and it'll keep us in business correcting that, but it's a complex question with that. Do I have time to run through one of the slides?

Steven Bruce

Go on. Yeah, I'm conscious and people may have planned to go somewhere, where they're gonna go these days at nine o'clock in the evening. I don't know.

Steve Williams

You got it. Okay. This is really just a recommendation what you can do now, this is what we need to look out for what we can do now. Stress, lower stress as much as you can during pregnancy, encouraging natural birth, a vaginal birth, as naturally as you can, allow the umbilical cord to pulse out, lots of evidence that the cord blood contains lots of good things for that baby. So, try and allow that to pulse out a couple of minutes usually. Don't wash the baby excessively, might need to clear up a few mucousy bits, but don't wash the baby. So, microbiome is there for a reason, that vernix is there for a reason. Feed the baby and the mom, particularly the mum prebiotics that allows the probiotics to get there. The baby probiotics and the mother's milk will have prebiotics in there to feed the probiotics. Fat soluble vitamins are really important. They're massively deficient in babies. So, K, D and A, we feed them to the mum if they're being breastfed, if not, we feed them to the baby.

Steven Bruce

I can't agree with this last point of views. It says get chiropractic care.

Steve Williams

This is for the chiropractors get structural care. Do you agree with that?

Steven Bruce

Definitely, definitely.

Steve Williams

Okay. Structural care is massively important. That's me, if you want to, if you want to get details of this Academy of Functional Pediatrics, the bottom one, there is where you get this, you'll get a copy of the notes.

Steven Bruce

We'll put that out for people on the website as well. Justin, can you unshare the screen please? That would be really helpful. So, Steve, lots and lots of information there. We'll do our best to share all that with the people who've been watching and others who watch the recording. You've also written a book Pregnancy in Paediatrics, I think?

Steve Williams

Yeah, Pregnancy Paediatric: A Chiropractic Approach. Yes, I've written that. Yeah, and all of my work is available. I hate doing the advertorials, but it's all available on the site.

Steven Bruce

You might hate doing advertorials, but actually there'll be a lot of people, there are clearly a lot of people interested in what you had to say and we can't cover all your knowledge in a 90-minute show, if they want to learn more they need to know where to go to find that out, don't they? You run courses in this country through the Federation?

Steve Williams

I run them through my clinic, I run them personally, I do them for various other groups as well. But again, I run courses. They run every year, maybe not this year, we'll see, we might run some. We haven't got, we've cancelled everything that we had, I was supposed to be in the States Next weekend.

Steven Bruce

Also, you made the point earlier on that you do take osteopaths on your courses, that you're not racially prejudiced.

Steve Williams

I'm not because I regularly get asked question, what's the difference? I struggle.

Steven Bruce

Me too. Do we should we care? Does it matter?

Steve Williams

We're all trying to help people.

Steven Bruce

Exactly. Steve it's been great. Thank you very much for giving up so much of your time. Thanks for running over. I really hope people do sort of follow this up, those who have an interest in treating children because there was a lot of fascinating stuff in there. And I know we can do a lot more for people even if we're not allowed to advertise it.

Steve Williams

It's a real pleasure and thank you for all you're doing for this stuff. Your work is great.

Steven Bruce

Thanks. It's our pleasure.