

Cervical spine risk assessment and consent for manual therapists



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1

Framing the course..

- Confidentiality and anonymity
 - Patients and ourselves
- Practical work
 - Revisit skills, introduction to others
- Participation
 - Role play, group discussion, sharing practice, critical friends, reflection on activity and practice

Berkhof M, et al 2011



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Context

- The course is evidence based
 - Draws on selected research – msk, man ther and more broadly BUT data is limited: rare events
 - Experience – presenters and delegates
 - Not bias free...
 - Promotes patient preferences, values and person centred care



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Disclosures and limitations

- Roger and Steve are educators, researchers and practitioners
 - Interested in the process and nature of EBM, guidelines, clinical reasoning and safety
- Course aims to enhance your knowledge and reasoning in an area of practice
 - for you to apply in partnership with your individual patients
 - does not provide a protocol...



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Getting a feel of expectations

- Introductions and expectations a few people..
 - Profession and expectations for the day
 - We will note and return to these at the end to check we have covered them



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Learning outcomes for the day

- Understand the pathophysiology and epidemiology of selected vascular pathologies of the neck
- Clarify the relationship between manual therapy technique and risk when evaluating and treating the neck
- Identify risk factors for selected vascular pathologies of the neck
- Gain experience of clinical reasoning and shared clinical decision making with patients
- Enhance and apply clinical methods in the examination of neck and head pain presentations



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Warm up - get involved hands up



- Is treatment by manual therapists a common cause of vascular injury in the neck and stroke after treatment?

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MailOnline News

Thursday, Nov 17th 2016 10:18 '9C @ 1910 PC @ 1 Day Forecast

Did a photo shoot gone wrong cause Playboy model's death? Queen of Snapchat 'tore her carotid artery after a fall on the job and later suffered a stroke'

• **Katie May, 34, has passed away** after being hospitalized in Los Angeles since Monday
 • Her family said the single mother-of-one had a blockage in her carotid artery, which supplies blood to the brain
 • A GoFundMe page has been created to raise money for the education of her seven-year-old daughter, Mia
 • May had a huge online fan base, with nearly 2million followers on Instagram alone

By SHARON FARBER FOR DAILYMAL.COM and CHRIS SPINARD FOR DAILYMAL.COM
 PUBLISHED: 20:16, 4 February 2016 | UPDATED: 20:03, 5 February 2016

Playboy model Katie May might have had a fatal stroke this week after an injury sustained doing what she loves: the model - striking a pose.

The model fell during a photo shoot in Los Angeles last week and was later taken to the hospital for neck pain but released later that day, according to TMZ.

May, whose popularity earned her the title 'Queen of Snapchat' from Playboy, was still in pain last Friday and posted the following to her Twitter: 'Pushed a nerve in my neck on a Photoshoot and got adjusted this morning. It really hurt!' Any home

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MailOnline News

Family of Playboy model Katie May who died after a chiropractic treatment caused a tear in her major artery speaks out about the risks of 'neck adjustments'

• Playboy model and single mother Katie May, 34, passed away in February
 • It was revealed her death was result of neck manipulation by chiropractor
 • May tweeted that she had gone to the chiropractor to get her neck adjusted and was still in pain shortly before going to the hospital
 • Treatment caused tear in neck artery which stopped blood flow to brain
 • Her family hopes speaking publicly about her death will bring awareness
 • They want to encourage people to think before getting similar treatments
 • May left behind her seven-year-old daughter, Mia

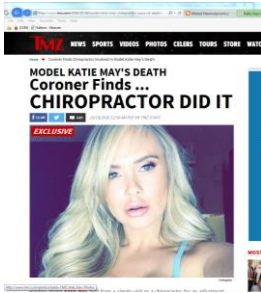
By DAILYMAL.COM REPORTS
 PUBLISHED: 20:05, 21 October 2016 | UPDATED: 21:17, 21 October 2016

Playboy model, Katie May died after having a stroke in February which was caused by a neck adjustment from a chiropractor, a coroner said on Thursday.

The 34-year-old's grieving family has warned other families about what went wrong.

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RECOMMENDED



Altered Haemodynamics for a reasoned discussion and resources by Alan Taylor

<http://alteredhaemodynamics.blogspot.com/search/updated-max=2016-12-03T03:10:00-08:00&max-results=7&start=4&by-date=false>

Alan has some great resources on his blog including videos:

- Cranial nerves
- Appraisal of vertebral artery test
- Risk assessment C'sp

<http://alteredhaemodynamics.blogspot.com/>

Roger signposts some of these later!



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Edzard Ernst
MD, PhD, FRCR, FRCR, FRCR, FRCR, FRCR

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• [Boron's new study of homopathy](#) [No negative effects on sea alterations](#)

The risk of neck manipulation

Published Tuesday 22 November 2012

Even though I have not yet posted a single article on this subject, it already proved to be a most controversial subject in the comments section. A new analysis of the evidence has just been published, and, in view of the issue just set of a Royal Charter for the UK College of Chiropractors, it is time to dedicate some real attention to this important issue.

The analysis comes in the form of a systematic review authored by an international team of chiropractors (we should not fear therefore that the authors have an "anti-chiro bias"). Their declared aim was "to determine whether conclusive evidence of a strong association [between neck manipulation and vascular accidents] exists". The authors make it clear that they only considered case-control studies and omitted all other articles.

They found 4 such publications all of which had methodological limitations. Two studies were of acceptable quality, and one of these studies seemed to show an association between neck manipulation and stroke, while the other one did not. The authors' conclusion is ambivalent: "Conclusive evidence is lacking for a strong association between neck manipulation and stroke, but it is also lacking for its association".

The 4 case-control studies, their strength and weaknesses are, of course, well-known and have been discussed several times before. It was also known that the totality of these data fail to provide a clear picture. I would therefore argue that, in such a situation, we need to include further evidence in an attempt to advance the discussion.

Generally speaking, whenever we assess therapeutic safety, we must not ignore case-reports. One might be next to meaningless but collectively they can provide strong indicators of risk. In drug research, for instance, they send invaluable signals about potential problems and many drugs have been withdrawn from the market purely on the basis of case-reports. If we include case-reports in an analysis of the risks of neck manipulations, the evidence generated by the existing case-control studies appears in a very different light. There are virtually hundreds of cases where neck manipulations have seriously injured patients, and many

SEARCH

RECENT POSTS

- AN IDEAL HOMEOPATHIC FIRST-AID BOX
- Happy 60th birthday YOUR ROYAL HIGHNESS!
- Chiropractors rush to jump on Donald Trump's bandwagon
- Alternative therapies: the emperor's new clothes?
- Undeniable: The Trump WELLNESS PLAN

RECENT COMMENTS

Any that comments can now be edited for up to five minutes after they are first submitted.

Click here for a comprehensive list of recent comments.

RECENT COMMENTS



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BMJ 2012;344:e3679 doi: 10.1136/bmj.e3679 (Published 7 June 2012)

Page 1 of 2

HEAD TO HEAD

Should we abandon cervical spine manipulation for mechanical neck pain? Yes

Benedict Wand and colleagues argue that the risks of cervical spine manipulation are not justified, but David Cassidy and colleagues (doi:10.1136/bmj.e3680) think it is a valuable addition to patient care

Benedict M Wand *associate professor*¹, Peter J Heine *research fellow*², Neil E O'Connell *lecturer*³

¹School of Physiotherapy, University of Notre Dame Australia, 19 Mount Street, Fremantle, WA 6959, Australia; ²Warwick Clinical Trials Unit, Division of Health Sciences, University of Warwick, Coventry, UK; ³Centre for Research in Rehabilitation, Brunel University, Uxbridge, UK

Cervical spine manipulation (a high velocity, low amplitude, end range thrust manoeuvre) is a common treatment option for

the increased risk after chiropractic treatment may be an artefact of patients seeking care for neck pain resulting from existing

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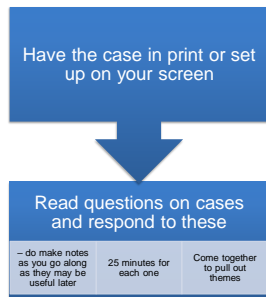


<https://www.nytimes.com/2023/03/15/well/live/neck-manipulation-chiropractor.html>

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Groups to discuss cases

- Aim
 - Groups of 7
 - Identify current knowledge and skills first session
 - Revisit case discussions at the end of the day



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Case discussions

- Aim
 - Identify current knowledge and skills first session
 - Revisit case discussions at the end of the day
- **Discuss case number 1 first of all**, then we will get together
- Answer questions on the sheet
- Focus on **detailed clinical reasoning and theory/mechanisms**
 - Eg if you identify something about CVS risk factors go deeper – what factors, what questions and why.
 - Link up to pathophysiology or epidemiology if you can to inform your reasoning and to identify potential gaps in knowledge that we can address through the day



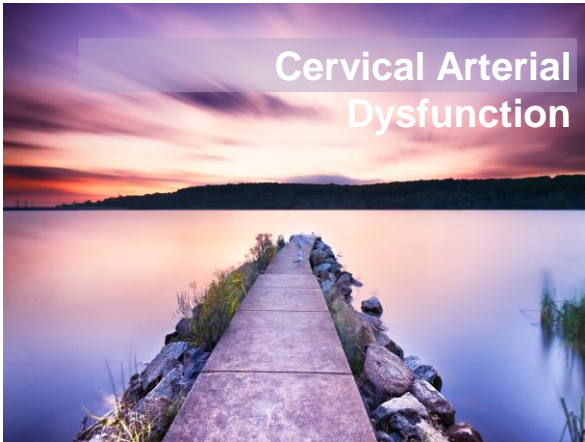
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Case 2

- Discuss case 2
- Answer questions
- Discuss
- 25 minutes ish



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International Framework for Examination of the Cervical Region for potential of vascular pathologies of the neck prior to Orthopaedic Manual Therapy (OMT) Intervention:

International IFOMPT Cervical Framework



Authors: Rushton, A., Carlesso, L.C., Flynn, T., Hing, W.A., Kerry, R. Rubinstein, S.M., Vogel, S.

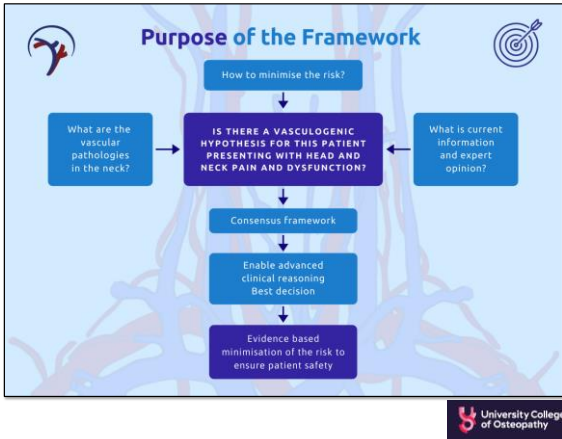
Author affiliations

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Vogel, S. - Research Centre, University College of Osteopathy, UK

<https://www.ifompt.org/site/fompt/IFOMPT%20Cervical%20Framework%20final%20September%202020.pdf>



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ONE: PATHOPHYSIOLOGY & EPIDEMIOLOGY
 Understanding the evidence of cervical arterial dysfunction around risk of serious adverse events regarding interventions for crano-cervical dysfunction

TWO: RISK FACTORS & HISTORY TAKING How to undertake an evidence-informed risk assessment of and be able to sub-group patients in respect of risk of adverse-events



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Cervical Arterial Dysfunction / Vascular Neck Pathology

Table 1: Range of vascular pathologies of the neck

Structure/site	Pathology	Symptoms/Presentation
Carotid artery	Atherosclerosis	Carotidynia ¹ , neck pain, facial pain, headache, cranial nerve dysfunction, Horner's Syndrome, transient ischaemic attack (TIA), stroke
	Stenotic	
	Thrombotic/Aneurysmal	
Carotid artery	Hypoplasia	Commonly silent, rare cerebral ischaemia
Carotid artery	Dissection	Neck pain, facial pain, headache, TIA, cranial nerve palsies, Horner's syndrome
	Atherosclerosis	Neck pain, occipital headache, possible transient ischaemic attack (TIA), stroke
Vertebral artery	Hypoplasia	Commonly silent, rare cerebral ischaemia
Vertebral artery	Dissection	Neck pain, occipital headache, TIA, cranial nerve palsy
	Giant cell arteritis	Temporal pain (headache), scalp tenderness, jaw and tongue claudication, visual symptoms (diplopia or vision loss – may be permanent)
Temporal/Vertebral/Occipital/Carotid arteries		
Cerebral vessels	Reversible cerebral vasoconstriction syndrome (RCVS)	Severe 'thunderclap' headaches
Subarachnoid	Haemorrhage	Sudden severe headache, stiff neck, visual disturbance, photophobia, slurred speech, sickness, unilateral weakness.
Jugular vein	Thrombosis	Neck pain, headaches, fever, swelling around neck/angle of jaw
Any other cervico-cranial vessel	Vascular anomaly or malformation	Possible headache/neck pain i.e. un-ruptured carotid aneurysm



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Risk of stroke following HVT

Based on data from Bejot et al 2014 and Nielsen et al 2017

VBA dissection stroke in normal population: 0.75 – 2.9/100,000
 VBA dissection stroke in HVT population: 0.4 – 5/100,000

Relative Risk: 0.14 – 6.66 (dec. of 86% to inc. of 666%)

Absolute Risk Increase: 0.006% ("worse-case" scenario)

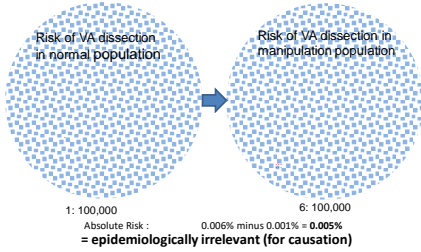
Numbers Needed to Harm: 416,666

Bejot Y, Daubail B, Debette S, et al. 2014 Incidence and outcome of cerebrovascular events related to cervical artery dissection: the Dijon Stroke Registry. International journal of stroke.9(7):879-82

Nielsen SM, Tarp S, Christensen R, Bliddal H, Klokke L, Henriksen M. 2017 The risk associated with spinal manipulation: an overview of reviews. Syst Rev. 6(1):64. .



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Comparative risks of commonly used therapeutic interventions for head and neck

TABLE 9 COMPARATIVE RISKS OF COMMONLY USED THERAPEUTIC INTERVENTIONS FOR HEAD AND NECK PAIN (NEW SOURCES WERE DETAILED IN FULL FOR CLARITY IN THIS LETTER)

Intervention	Adverse Event and Key References	Baseline Prevalence (Events Occurring Without Any Intervention) per 100 000*	Absolute Risk (Absolute Percentage Increase if Intervention Is Given)
NSAIDs ¹	Myocardial infarct	2400	0.2%
	Gastrointestinal bleed	87	
Aspirin	Bleed ²	87	0.21%-0.35%
Paracetamol	Cardiovascular events ³	2400	5.26%-6.43%
	Gastrointestinal bleed ⁴	87	0.18%-0.27%
	Renal	1350	3.24%-4.30%
Cervical OMT ⁵	Stroke (VBA)	0.79	0.005%

Background Pathophysiology / epidemiology History taking Physical examination Risk/Benefit



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Testing



Results: Of the 1677 potential citations only 4 studies were included, all of questionable quality. Sensitivity was low and ranged from 0 to 57%, specificity from 67 to 100%, positive predictive value from 0% to 100%, and negative predictive value from 26 to 96%. The positive likelihood ratio ranged from 0.22 to 83.25 and the negative likelihood ratio from 0.44 to 1.40.

Conclusion: Based on this systematic review of only 4 studies it was not possible to draw firm conclusions about the diagnostic accuracy of premanipulative tests. However, data on diagnostic accuracy indicate that the premanipulative tests do not seem valid in the premanipulative screening procedure. A surplus value for premanipulative tests seems unlikely.

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Highlights

- Positional testing for vertebrobasilar insufficiency (VBI) is often used by manual therapists.
- The VBI tests do not seem to be important in the pre-manipulative screening.
- The rationale and value of the VBI tests should be questioned.
- A negative VBI test can easily be wrongly interpreted as 'safe to manipulate'.
- The use of the VBI tests cannot be recommended and should be abandoned.

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Non-manipulation events of stroke (cervicogenic)



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[RESEARCH REPORT]

HENDRIKUS ANTONIUS "BIBI" KRAANENBURG, PT, PhD • ROB TIEER, PT, PhD • MAARTEN SCHMITZ, PT, PhD • GERT JAN LUKKOK, MD, PhD
 CECIL VAN DER SCHANS, PT, PhD • NATALIA HOUTING, PT, PhD • ROGER KEBBE, PT, PhD

Effects of Head and Neck Positions on Blood Flow in the Vertebral, Internal Carotid, and Intracranial Arteries: A Systematic Review

• **CONCLUSION:** The findings of this systematic review suggest that craniocervical positioning may not alter blood flow as much as previously expected.

• **LEVEL OF EVIDENCE:** Therapy, level 2a. *J Orthop Sports Phys Ther* 2019;49(10):688-697. Epub 5 Jul 2019. doi:10.2519/jospt.2019.8578

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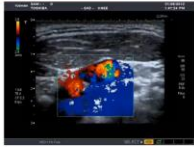




University College of Osteopathy

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HVT



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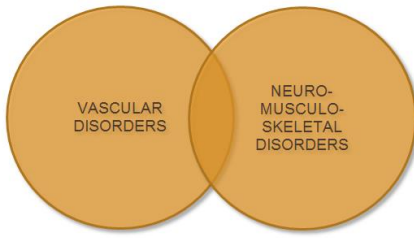
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PASSIVE EXTENSION



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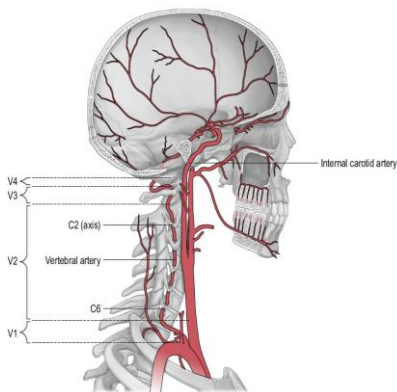


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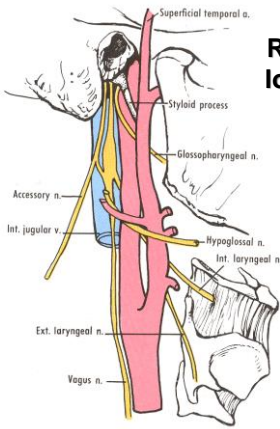
The AETIOLOGY of vascular disorders can be thought of on a continuum:



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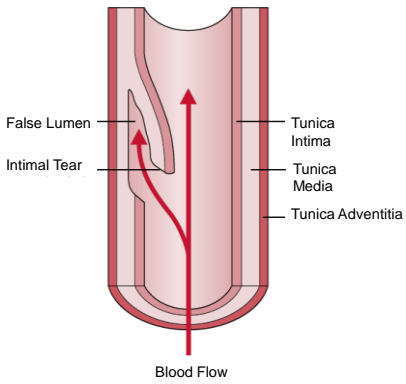
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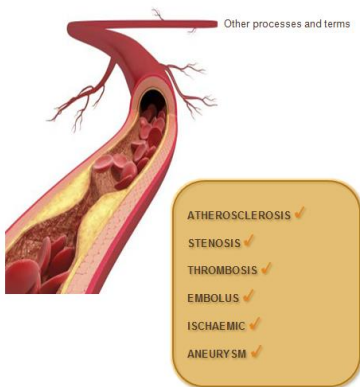
Relative anatomy of lower cranial nerves and carotid artery



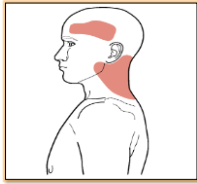
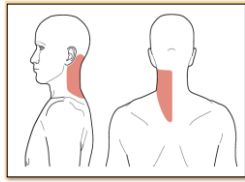
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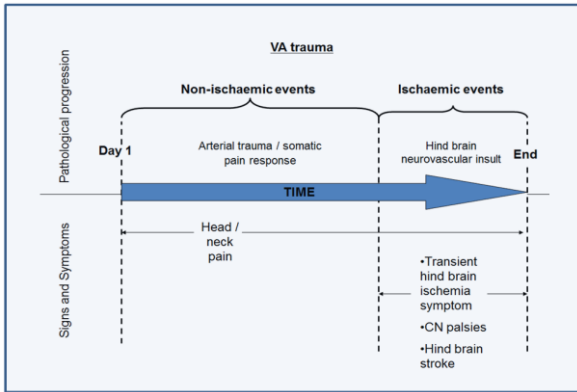
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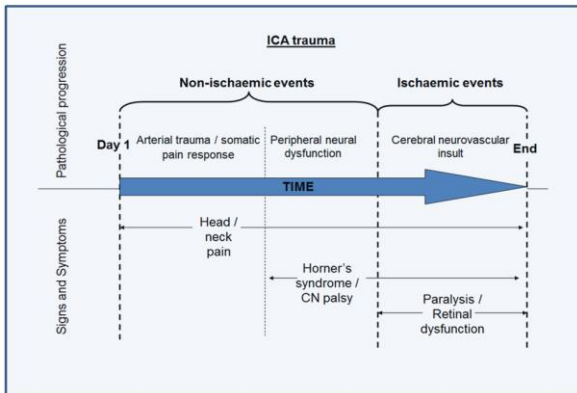
Taylor & Kerry 2010



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Patient centred communication, consent expectations, and sharing information with patients - review and practical



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Patient centred communication and therapeutic alliance

- Working alliance, therapeutic bond, collaborative, related to shared goals
 - Overlaps with trust and empathy
 - +ve relationship with symptoms, health status and satisfaction (Hall et al 2010)
- Interaction styles associated with therapeutic alliance as measured by communicative success, agreement, trust and rapport
 - Patient facilitating
 - Patient involving
 - Patient supporting



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Therapeutic Alliance



Søndenå, P., Dalusio-King, G. and Hebron, C. (2020)



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What are your concerns with receiving consent / discussing treating the neck with patients?



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What patients said

- *.. No he's never said anything about risk of treatment, no, no*
- *I can't remember probably at the beginning of treatment*
- *He does tell me you might be stiff for a couple of days*
- *He wouldn't hurt me*
- *I have faith that he only do the right thing*
- *... assume that if I've taken my top off and I've laid on the bed, I've given permission.*



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What patients that complain say

'The treatment to my back all happened very quickly. During this, I do not remember [osteopath] explaining what she was doing in any great detail or offering any explanations as to why she was carrying out this treatment.'

[Osteopath] didn't explain what he was doing and why, but because I have known him for so long I just left it to him and was happy chatting to him generally.'

'[Osteopath] said that there was a bit of stiffness in my neck. She said she would try to correct this and that I would hear another 'pop'. Again, [osteopath] did not explain the details of what she was doing or why she was doing it. She moved my head from the left to the right a couple of times, while her hands were still covering my ears, and I heard the 'pop'.'



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Share practice and then review consent information

- Role play
- Steve as patient
- Kind but critical friends
- What's going well
- What we might do differently
- **Volunteer needed**



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Steve

- 55 year old man.....
- Academic and artist teaches ceramics
- Active, coaches and refs rugby
- Non specific neck pain which you think is due in part to posture
- Plan to use manual therapy and exercise for your intervention



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Consent and consequences of vascular problems

- Manual therapy causal, gain consent as risk of intervention
- Non causal missed diagnosis
 - Treat as cauda equina, safety netting
 - Vigilant and give information
- What would you prefer if you were a patient?
 - to have the information for you to consider or for the clinician to decide for you what information you can cope with?

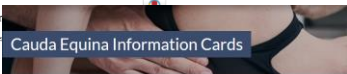


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Safety netting resources



Professional issue
Safety netting: best practice in the face of uncertainty
Sue Greenhalgh^{1,2,3,4,5,6}, Laura M. Finucane³, Christopher Mercer⁷



Cauda Equina Information Cards
Home / Learning Resources and Partners / Cauda Equina Information Cards
CES Cards
The idea and passion for the translated cards was ignited by Kunal Bhatnaha and Jayne Davies following a presentation at the PhysioUK Conference and research by Dr Susan Greenhalgh, Chris Mercer and Laura Finucane. It highlighted how physiotherapists are an important part in supporting patients to seek emergency help for acute Cauda Equina Syndrome.
Special thanks to Jayne Davies, Kunal Bhatnaha and Dynamic Health and to all individuals who supported the translation of these cards into different languages.
Please download the PDF to print any of the CES information cards below. We do not sell or stock any of these cards but provide the template for your use. The following translation are copyright of Dynamic Health for use by physiotherapists to print out and give to patients, they must not be altered. Please spread the word and give copies of these translated cards to your patients.
Below are all the current languages we have starting with English then the rest in alphabetical order. You can also check the Dynamic Health website for any additional language updates: <https://www.dynamicshealth.com/uk/en/about-us/translations-overview-back-cauda-equina/>

<https://www.macpweb.org/learning-resources/cauda-equina-information-cards.aspx>

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Underpinning principles of consent

- Autonomy
- Beneficence



When can these principles clash?



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Autonomy - beneficence

- Recent child case in UK brain cancer chemotherapy ok, radiotherapy no consent given to court....
- The Health Act based on fundamental principle of right to integrity and autonomy
 - Integrity, as far as possible, patients should decide, others respect their right
 - Consent process seen as exemplar of patients exercising autonomy
 - Oral consent to be documented

Health Law, Kent Kristensen, page 44, 223?

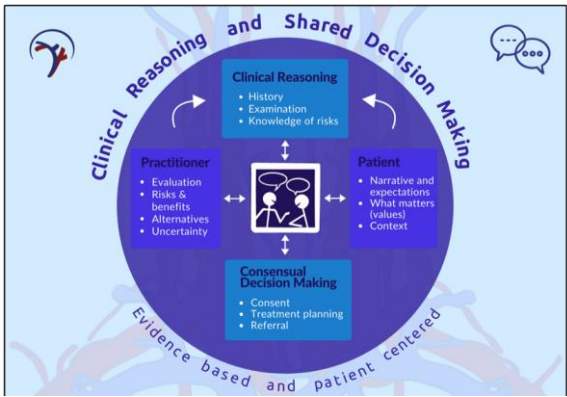


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Rights: Integrity and autonomy

- No treatment without explicit consent
- Information given is the basis of patient's self determination
- Right to info about health condition, options, risks
- Duty to inform with or without request from patient
- Right to decline treatment

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Consent elements

I Threshold elements preconditions

- Voluntariness
- Competence

II Information elements

- Disclosure (material information)
- Recommendation
- Understanding

III Consent elements

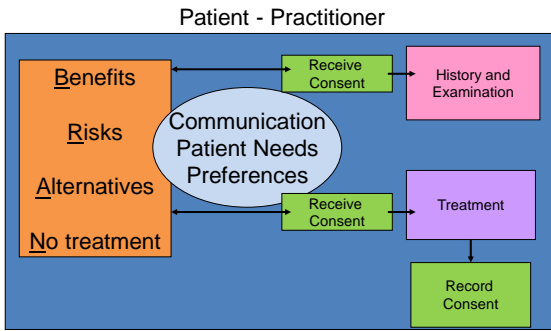
- Decision
- Authorisation



Beauchamp & Childress
Principles of Biomedical Ethics 2019

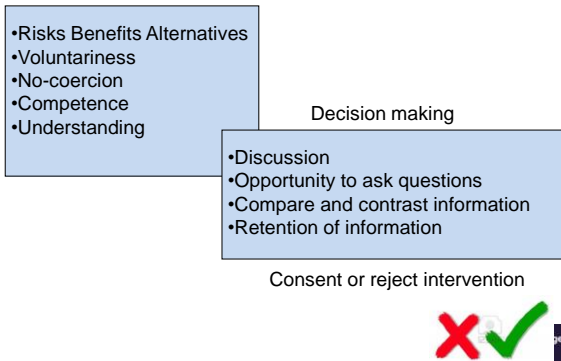


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Process



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Danish context and expectations

- Screening for serious pathology
- Appropriate follow up
 - Seeking further information
 - Encouraging patients to contact GP and or others (emergency services)
 - Referral process?



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Medical records - diagnosis patients with headaches as primary complaint

- Description of the headache
- Presence or absence of accompanying symptoms, including dizziness, vomiting, and/or visual disturbances
- Past and current relevant illnesses
- Past relevant traumas
- Relevant medication use.
- The review should also show that the examination at a minimum includes:
 - mobility of the neck
 - blood pressure measurement
 - consideration of an extended neurological examination for dizziness, vomiting, or visual disturbances



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Medical records consent for treatment

- Information provided:
 - Health condition
 - Consent obtained prior to initiation of treatment
- Adapted to the individual treatment and circumstances
 - Documentation increases with complexity, invasiveness of treatment, risk of complications and side effects
 - Adapt standard phrases to individuals
 - Record communication and advice from others



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Record keeping



- employees have access to record keeping
- employees are trained in keeping records
- necessary equipment for record keeping is available
- employees have time to keep records
- records are stored properly during the statutory storage period? (UK: 8 years? 25th birthday?)
- medical record is passed on, for example if the patient changes treatment or if the treatment center changes ownership or ceases to exist.
 - Contemporaneous records end of working day at latest



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UK standards – Records



- Record key elements discussion with patient. Information discussed, particular concerns, expectations or requests for information raised by the patient, how you addressed these, and any decisions made. "It is important that such issues are evidenced in the patient records."
- Validity of consent independent of the form in which received – written may work, but beware of voluntariness, capacity, appropriate information and discussion. ... "signature on a form will not by itself make the consent valid"
- Rectal and vaginal treatment exam – written consent and consider for other areas pt may consider intimate
- Observer is present (for example, a chaperone, peer observer, osteopathic student or potential student) as well as their status and identity, record the patient's consent to their presence.



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Active listening and picking up on cues

Non verbal behaviour

- Eye contact
- Facial expression
- Posture - gestures
- Tone

- [See: https://www.youtube.com/watch?v=-JSxDoNzy0g](https://www.youtube.com/watch?v=-JSxDoNzy0g) an example of not picking up on cues

Communication skills for medicine-training, Clinical communication skills - Non-verbal communication: consultation - version 1 of 2, University of Nottingham



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Verbal behaviour

- Self awareness – metacognition/reflection in action. Be present, prepare for the consultation.

Verbal approach	Aim
Paraphrasing: Own words and saying back	Demonstrate understanding not just repeating pt's words
Summarising: Key points given back to patient	Show patient what you have taken on board, helps transitions in the consultation
Clarifying: Asking patient to expand and what they mean by	Ensure same understanding and revelation of what matters to the patient
Reflection: Tentatively putting forward your interpretation – not a question but a statement – maybe a short summary	To test hypothesis or what the patient means Pt to confirm or disconfirm and elaborate
Acknowledgement: Respond to distress and concern cues	Demonstrate empathy and recognition of impact

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Practical – discussing risk

- The risk of harm from X is tiny, very small indeed.
- Individually write down in chat what you think this means in terms of how many people you think this effects in absolute numbers
- 1 in



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Explaining risk

- Use plain language
- Absolute risks and frequencies
- Images such as pictographs
- Needs of patient
 - Hoping to discuss (add to agenda)
 - What do you know about risk of ..
 - Did you have any worries about ...
 - Would you tell me about the options...



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Remember that figure from earlier

- Risk of Stroke following HVT is small (AR 0.006%)
- Quick race no pressure:
 - Work that out as a frequency 1 in xxxxx
 - Hands up when you have got it....



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- Personalised
- Absolute
- Numeracy
- Decision Aids



– Follow up resources and see chapter supplied by Roger

O'Shea Communicating Risk to Patients 2014
<http://www.icgp.ie/go/library/catalogue/item?spld=C71D8F2B-987D-1C99-8127ECD62659066B>

<http://www.ncor.org.uk/practitioners/practitioner-information-communicating-benefit-and-risk-in-osteopathy/consent/>



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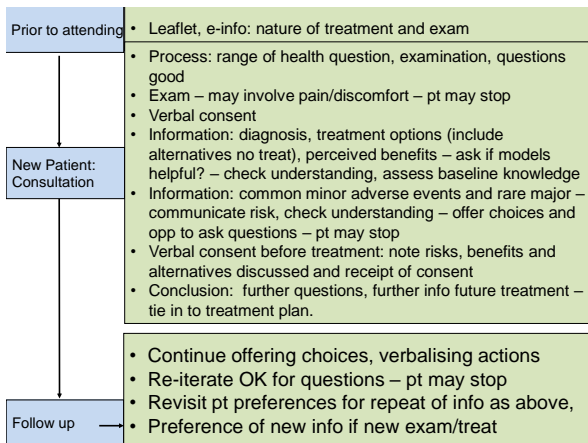
What to do when people don't want to know

- Explain still important that they understand options and what treatment involves
- Find out why they don't want to know
- Respect their wishes as far as possible
 - Still give information they need to give their consent
- Still declining
 - Consequences: consent not valid, record
 - Clear they can change their mind

http://www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_reasons_for_not_sharin_g_information.asp

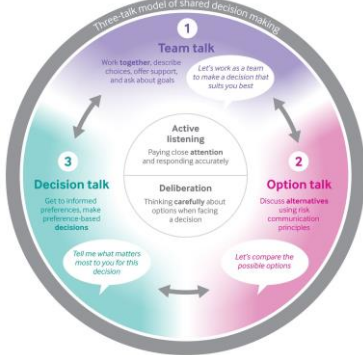


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Fig 3 Three-talk model of shared decision making, 2017.



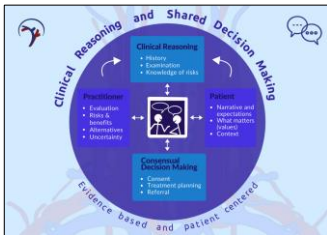
©2017 by British Medical Journal Publishing Group

Olyn Elwyn et al. BMJ 2017;359:bmj4891

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Challenge for practitioners

- To provide sufficient information for patients to make an informed choice of action (autonomy)
- To balance with desire to achieve good outcomes (beneficence)
- Practitioners need knowledge of risk, illness, disease, contra-indications, effectiveness of interventions, assessment of patient progress, etc. patient values and preferences: High level clinical skills and reasoning
- Individual calculations with individuals includes uncertainty – characteristic of professional action



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Thanks for listening and taking part...



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Patient History
Head and/or neck pain can be a symptom of an underlying vascular pathology or dysfunction

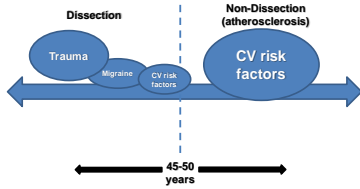
CONSIDER
Is there presence of frank vascular pathologies of neck?
Subtle signs and symptoms of the suspected pathologies should be recognised
Is there predisposition to vascular pathologies of the neck?
Risk factors indicating the potential for neuro-vascular pathology should be recognised

DISSECTING STROKE Recent trauma may represent an important significant risk factor for dissection			NON-DISSECTING STROKE Cardiovascular risk factors are more common in older patients for atherosclerotic (disease) events		
RISK FACTORS	SYMPTOMS	SIGNS	RISK FACTORS	SYMPTOMS	SIGNS
<ul style="list-style-type: none"> Recent trauma Vascular anomaly Current or past smoker Etc... 	<ul style="list-style-type: none"> Headache Neck pain Visual disturbance Parosmia (upper limb, face, lower limb) Speech difficulties Swallowing difficulties Nausea/vomiting Dizziness Drowsiness Loss of consciousness Confusion Etc... 	<ul style="list-style-type: none"> Unsteadiness Prosis Weakness (upper limb/lower limb) Facial palsy Speech difficulties Swallowing difficulties Dizziness Drowsiness Loss of consciousness Confusion Etc... 	<ul style="list-style-type: none"> Current or past smoker Hypertension High cholesterol Etc... 	<ul style="list-style-type: none"> Headache Parosmia (upper limb, lower limb, face) Visual disturbance Neck pain Dizziness Etc... 	<ul style="list-style-type: none"> Weakness (upper limb/lower limb) Speech difficulties Prosis Facial palsy Unsteadiness Confusion Swallowing difficulties Loss of consciousness Drowsiness Etc...

University College of Osteopathy

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Vascular Pathology Risk Factors



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Role of the history

Table 2 Historical factors that could be linked to cervical artery dysfunction.

- Acute onset unilateral cervical spine pain
- Acute onset occipital, frontal, supraorbital or temporal headache
- Current history of migraine (particularly without an aura)
- Past history of migraine (particularly without an aura)
- Family history of migraine
- History of cervical spine trauma (including minor or 'trivial' trauma)
- Onset of pain related to sudden cervical spine movement
- Tinnitus (particularly 'pulsating tinnitus')
- History of hypertension and risk factors for cardiovascular disease
- Recent upper and/or lower respiratory infection (within the previous week)
- Upper and/or lower extremity neurological symptoms and ataxia

Vaughan et al 2016



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Risk factors: dissection vascular events

Risk Factor - in order of most-to-least common	Dissection event (%)
Recent trauma (mild-moderate, which may include recent OMT)	40 - 64
Vascular anomaly	39
Current or past smoker	30
Migraine	23
High cholesterol	23
Recent infection	22
Hypertension	19
Oral contraception	11
Family history of stroke	9

The percentage figures refer to the proportion of all observed patients (from a range of studies) with the specified condition (e.g. 'Dissection event') who exhibit the specific risk factor stated in the first column.



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TABLE 3			
TYPES OF MECHANICAL TRAUMA EXPERIENCED BY PARTICIPANTS WITH CAD*			
Type of Trauma or Neck Strain	VAD (n = 9)	ICAD (n = 8)	Total CAD (n = 17)
Cervical manipulative therapy	3	1	4
Activity/sport with jerky head movement	5	0	5
Forced expiratory effort (labor and gym)	1	2	3
Lifting/carrying heavy weight on shoulder	2	1	3
Intensive sporting activity	0	3	3
Sustained hyperextension of neck	0	2	2
No trauma reported	1	6	7

Abbreviations: CAD, cervical artery dissection; ICAD, internal carotid artery dissection; VAD, vertebral artery dissection.
 *Values are the number of participants for each item listed in the table. Three participants (2 VAD and 1 ICAD) reported 2 types of mechanical trauma.

(Thomas et al 2015)



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Risk factor: non dissection events

Risk factor - in order of most-to-least common	Non-dissection event (%)
Current or past smoker	65 - 74
Hypertension	53 - 74
High cholesterol	53
Migraine	19
Vascular anomaly	16
Family history of stroke	14
Oral contraception	9
Recent infection	9
Recent trauma (mild-moderate, which may include recent OMT)	7

The percentage figures refer to the proportion of all observed patients (from a range of studies) with the specified condition (e.g. 'Dissection event') who exhibit the specific risk factor stated in the first column.



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Reported symptoms: dissection events

Symptoms - in order of most-to-least common	Dissection vascular event %
Headache	81
Neck pain	57 - 80
Visual disturbance	34
Paraesthesia (Upper Limb)	34
Dizziness	32
Paraesthesia (face)	30
Paraesthesia (Lower Limb)	19

Again not relative risk but proportion of observed patients with dissection vascular event



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Symptoms: non dissection

Symptoms - in order of most-to-least common	Non-dissection vascular event %
Headache	51
Paraesthesia (Upper Limb)	47
Paraesthesia (Lower Limb)	33
Visual disturbance	28
Paraesthesia (face)	19
Neck pain	14
Dizziness	7

Again not relative risk but proportion of observed patients with dissection vascular event



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Signs VBA dissection

Signs - in order of most-to-least common	VBA Dissection %
Unsteadiness/ataxia	67
Dysphasia/dysarthria/aphasia	44
Weakness (Lower Limb)	41
Weakness (Upper Limb)	33
Dysphagia	26
Nausea/vomiting	26
Facial palsy	22
Dizziness / disequilibrium	20
Ptosis	19
Loss of consciousness	15
Confusion	7
Drowsiness	4



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Signs: ICA dissection

Signs - in order of most-to-least common	ICA Dissection %
Ptosis	60 - 80
Weakness (Upper Limb)	65
Facial palsy	60
Weakness (Lower Limb)	50
Dysphasia/dysarthria/aphasia	45
Unsteadiness/ataxia	40
Nausea/vomiting	30
Drowsiness	20
Loss of consciousness	20
Confusion	15
Dysphagia	0.5



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HISTORY Identifying CAD risk factor

- Smoking
- Trauma
- Infection
- History of migraine
- CV disease
- Hypertension
- Absence of alternative hypothesis
- Diabetes
- Anti-coagulation therapy



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Physical Examination



<https://www.osteopod.com/health-articles/physical-examination-780>

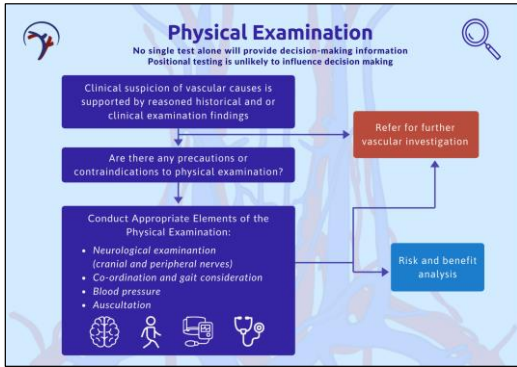


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Physical Examination

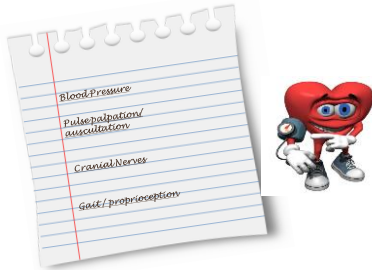


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Physical Examination



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HOW TO MEASURE BLOOD PRESSURE

Based on British Heart Foundation & NICE guidelines

by Roger Kerry

1 SIT COMFORTABLY
Loosen fitting clothing, back supported, stable environment. Do not cross legs. Wait 5 minutes and then support arm at level of heart (4th intercostal space).

2 BLOOD PRESSURE MONITOR
Use an upper arm, validated, maintained and calibrated device. If not have list of recommended automatic devices. Check brachial and radial pulse. If either irregularly present, then measure using direct auscultation over brachial artery.

3 PLACING CUFF
Ensure correct cuff size for person's arm. Fit cuff about 1" above elbow joint. Tighten cuff so it can just fit 2 finger tips. Ensure same height on top and bottom. Ensure cuff indicator lines up with brachial pulse.

4 STAY STILL
Do not move or talk during the reading. Repeat if necessary after 2 minutes.

5 KNOW YOUR BASELINES


If the clinic blood pressure is 140/90 mmHg or higher, offer ambulatory blood pressure monitoring to confirm the diagnosis of hypertension (NICE).

National Institute for Health & Care Research (NIHR) Health Research Power Unit (HRPU) 2015. Reproduced with permission from NIHR. British Heart Foundation (BHF) Hypertension Unit and Heart Health Research Group. Reproduced with permission from BHF.




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Cranial Nerve Examination



Cranial Nerves: A Clinical Reasoning Guide - The Fireside CPD Sessions
1:28 video · 1 month ago
<https://youtu.be/yS8lDpVFmEg>



Cranial Nerves: Subjective questioning - A SHORT FILM
0:57 video · 1 week ago
<https://youtu.be/Eur27pTwN1o>



How to remember the Cranial Nerves: The Function Based Approach - A SHORT FILM
0:17 video · 1 week ago
<https://youtu.be/UDBWmd9gbw>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7347716/pdf/S0317167120000967a.pdf> Covid times... Videos available

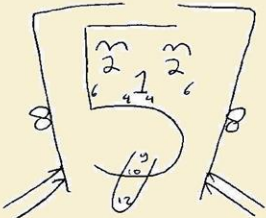


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CRANIAL NERVES

 this should be a simple, two minute screening examination

The Cranial Nerves		
Nerve Number and Name	Composition	Some Functions
I Olfactory	Sensory only	Olfaction (smell)
II Optic	Sensory only	Vision
III Oculomotor	Motor and sensory	Serves muscles of the eye
IV Trochlear	Motor and sensory	Serves the superior oblique eye muscle
V Trigeminal	Motor and sensory	Sensory from face and mouth; motor to muscles of mastication (chewing)
VI Abducens	Motor and sensory	Serves the lateral rectus eye muscle
VII Facial	Motor and sensory	Serves the muscles of facial expression, lacrimal glands, and salivary glands
VIII Vestibulocochlear	Sensory only	Equilibrium and hearing
IX Glossopharyngeal	Motor and sensory	Serves the pharynx (throat) for swallowing, posterior third of tongue, parotid salivary gland
X Vagus	Motor and sensory	Sensations from visceral (internal) organs, and parasympathetic motor regulation of visceral organs
XI Accessory	Motor and sensory	Serves muscles that move head, neck, and shoulders
XII Hypoglossal	Motor and sensory	Serves muscles of the tongue



Small and see 1 & 2
 And look around 3, 4, & 6
 Pupils large and small 3
 Clench your teeth 5
 Smile and frown 7 & 8
 Then say ah-h-h 9
 And see if you can swallow 10
 If you are left in doubt,
 Shrug and stick your tongue right out 11 & 12

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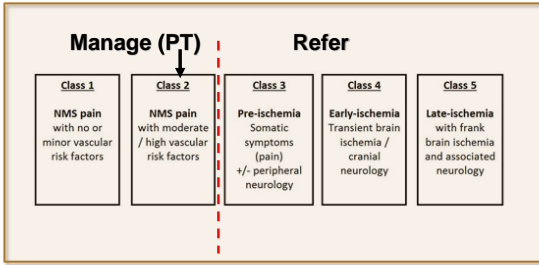
Group practical work

- In pairs
- Perform cranial nerve exam, gait and co-ordination
- Record the time you can do it in
- Bonus activity
 - See if you can come up with a test that evaluates as many of the motor functions in one go
 - Nominations for plenary show and tell.....



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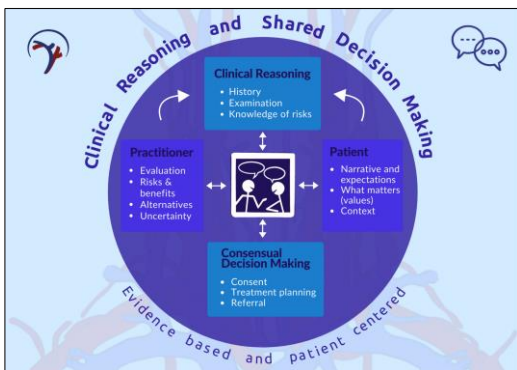
The Nottingham CAD Classification Model (nCAD)



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What is our reasoned framework for parameters of practice?



Class 1	Class 2
NMS pain with no or minor vascular risk factors	NMS pain with moderate / high vascular risk factors



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CASE 1: 45-year-old male
 2 months of symptoms, worsening. Relates to car accident when there was a mild shunt from behind.
 - Headache +dizzy on lying down and rolling in bed;
 - Spinning of room lasting only seconds
 - Nausea++;
 - no aurial symptoms
 Health - fine

Red Flag?		CAD?		Non-CAD?
Y	N	VA	ICA	
Notes				

CASE 2: 59-year-old male:
 2 month history of headache, neck pain ("unusual")
 - "Falling to side / unsteady" without known cause
 - admitted to Emergency Room and discharged after 1/7, dizziness improved rapidly
 - Health - Coronary artery bypass graft in 2002

Red Flag?		CAD?		Non-CAD?
Y	N	VA	ICA	
Notes				



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CASE 3: 33-year-old female:
 2 months of symptoms following read-end shunt car accident

- Headache and neck pain with exacerbations;
- Face pains;
- Dizziness in crowds;
- Veering in gait Health - fine

Red Flag?		CAD?		Non-CAD?
Y	N	VA	ICA	
Notes				

CASE 4: 42 year old male
 -Neck pain (to jaw) / headache (side) 1/12

-History of migraines but "not had this type of pain before"

-Thinks he "pulled muscle" in throat because has difficulty swallowing food/drink.

Health -High BP; been doing "McKenzie" neck exercises = worsening.

Red Flag?		CAD?		Non-CAD?
Y	N	VA	ICA	
Notes				

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Practical with vignettes

- Revisit vignettes
- Either use additional vignettes or revisit the first set you looked at
- Fill in the gaps – from this morning
- Case history
- Clinical methods
- Consent



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Summary and feedback

- Understand the pathophysiology and epidemiology of selected vascular pathologies
- Clarify the relationship between manual therapy technique and risk when evaluating and treating the neck
- Identify risk factors for selected vascular pathologies
- Gain experience of clinical reasoning and shared clinical decision making with patients
- Enhance and apply clinical methods in the examination of neck and head pain presentations



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