

**The Global Spine Care Initiative: classification system for spine-related concerns  
Online Supplemental File**

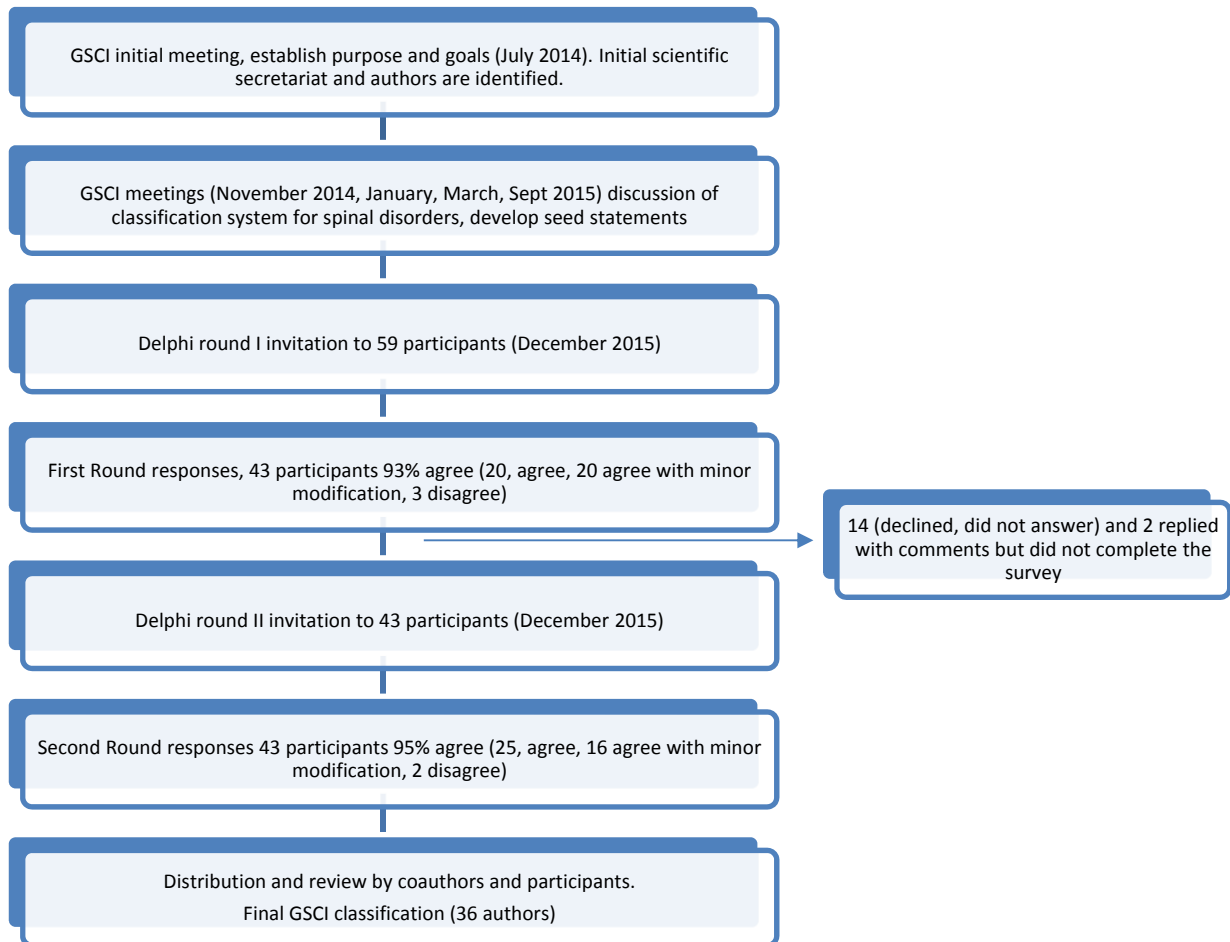
Fig. 1 Criteria for the development of the classification system for spine-related concerns

1. Applicable to all members of the population who may present to a clinical setting for spine-related care or advice and include people who may or may not be experiencing symptoms who could be the target for a public health message.
2. Applicable to the general population (adults and children), the working population, and clinical practice populations.
3. Is person-centered and is compatible with an integrated health care environment.
4. Used to differentiate individuals with spine symptoms likely to respond to specific interventions.
5. Applies to all spine-related symptoms and disorders, including but not limited to pain and impairment of activity, and will allow for spine region and duration of symptoms.
6. Includes all concerns about spinal symptoms including people with no or mild symptoms, moderate or severe symptoms, serious pathology, and rare cases of life threatening diseases.
7. Can be used irrespective of the case definition or spine symptom, including neck pain, back pain, thoracic spine pain, radiculopathy, scoliosis, osteoporosis, fracture, inflammatory spine disorders, infectious spine disorders, or deformity to name a few.
8. Can be used to complement and is consistent with current guidelines or algorithms describing evidence-based assessment or treatment interventions, ranging from primary and secondary public health interventions, to active and passive treatment interventions and advanced surgical and medical interventions.
9. Allows clinicians and policymakers to link evidence-based interventions to the people who are most likely to benefit from the intervention while discouraging those interventions that are likely to over-medicalize spinal pain and lead to unproductive and unnecessary and expensive consumption of limited resources in low-income communities.
10. Is broadly acceptable and adaptable to clinicians with different qualifications and specialties, the general public and national and local health care systems and not specific to any one specialty, profession, resource, qualification, culture, or administration.

Fig. 2 Seed document of the Spinal Disorders Classification

Class 0 = No or minimal symptoms, may have risk factors  
Class I = Mild symptoms, no or minimal interference with function or activities of daily living, no neurologic deficits  
Class II = Moderate or severe symptoms, interference with function or activities of daily living, no neurologic deficits  
Class III = Neurological signs/symptoms originating from spinal pathology  
Class IV = Severe spinal bone deformity, trauma, or pathology  
Class V = Spine-related symptoms associated with systemic or destructive pathology

Fig. 3 The consensus process



## Appendix A. Examples and applications of the GSCI classification

The following are examples on the use of each class. These examples are cases from real people who have consulted a single spine care clinician (SH) in his practice or during his participation at World Spine Care clinics in different low income countries. The presentation is followed by the class and suspected condition or diagnosis in parentheses. It should be made clear that these are first impression classifications that could change following further diagnostic testing.

<u>CLASS</u>	<u>Subclass</u>	<u>Examples</u>	<u>Implication</u>
<u>Class 0</u>	Class 0a	A 60 year old woman was asked to fill out an epidemiology survey on back and neck pain. She was physically fit, did not have spine pain but had noted spinal muscular soreness if she overdid her workouts. The soreness was usually relieved by massage. She had never felt that spine pain was a problem but the survey made her curious and she approached a spine care clinician to ask for advice on how to avoid the possibility that this could become a problem.	<i>(entire spine, prevention)</i>
	Class 0b	A 44 year old woman, who was markedly overweight, smoked, worked 10 hours per day in a stressful job that she hated. Her husband was disabled by a work related back injury. She did not have pain or symptoms but a month prior to work had a twinge of pain in her low back while bending over. The previous week she woke up in the morning with neck pain that went away in half an hour. Worrying about her husband, she made an appointment at the spine clinic since she was concerned about the possibility of becoming disabled with back or neck pain like her husband. She asked for x-rays or MRIs and advice on what she can do to avoid becoming disabled.	<i>(concern about becoming disabled)</i>
<u>Class I</u>	Class Ia	A 30 year old man sought care at a clinic after a rear end motor vehicle crash. He had pain in his back and neck that was not substantially impacting his ability to work or function but the pain was an irritation with minor interference with some activities. He asked for treatment to get rid of the pain that he has not had before.	<i>(non-specific back pain and neck pain)</i>
	Class Ib	A 36 year old professional athlete has had low, middle back and neck pain for 10 years for which he was regularly seeing a manual therapist for relief. He was still on top of his game but was concerned that the pain was slowly increasing and wondered what he could do to avoid early retirement.	<i>(non-specific spine pain)</i>
<u>Class II</u>	Class IIa	A 55 year old nurse noted axial low back pain that came on the prior week after a day of especially heavy lifting. The pain would not let her lift anything heavy and she was having some difficulty taking care of her children after a day at work. She was concerned that she would not be able to return to her normal job if the pain did not go away.	<i>(non-specific low back pain)</i>
	Class IIb	A 44 year old businessman had mid-thoracic pain after a skiing accident 2 years ago. It did not go away and the pain was starting to impact his life in that he no longer could ski, had difficulty sleeping, and noted difficulty concentrating when the pain was bad.	<i>(non-specific thoracic pain)</i>
	Class IIc	A 24 year old male the prior week pushed his car out of a ditch. That night he could barely move. For 2 days he had back spasms so intense that he was unable to stand for more than a few minutes. The only relief he had was lying on his back with his legs elevated.	<i>(non-specific low back pain)</i>
	Class IId	A 49 year old woman noted a slow increase in pain from her head to her buttocks that came on while she worked as a hotel housekeeper. She was on disability, has had 2 low back surgeries and one neck surgery. She was depressed and dependent on medications and considering suicide.	<i>(non-specific spine pain)</i>

<u>Class III</u>	<u>Class IIIa</u>	A 66 year old male said that his neck was very sore and that he had no trauma. He noted radiating pain and numbness in his arm. He also noted difficulty with his balance and increased difficulty controlling urination, although he reported no incontinence. His symptoms were becoming progressively worse over a period of 6 weeks.	<i>(neck pain with myelopathic and radicular symptoms)</i>
	<u>Class IIIb</u>	A 38 year old man is brought into an emergency room with severe incapacitating low back pain after a slip and fall. He can barely move, has pain and numbness in both legs and is incontinent of urine.	<i>(lumbar acute cauda equina syndrome)</i>
	<u>Class IIIc</u>	A 38 year old man underwent lumbar surgery for acute cauda equina syndrome due to a disc herniation 6 months ago. He has no pain but continues to have numbness in both legs, urinary incontinence and sexual dysfunction for which he is asking for care.	<i>(lumbar chronic cauda equina, stable with residual symptoms)</i>
<u>Class IV</u>	<u>Class IV a</u>	A 14 year old adolescent consulted a World Spine Care clinic with concerns that her back was crooked. Her friends were teasing her that she had a “hunchback” and she was noting increased pain in her back and could not participate in sports because of shortness of breath. She wanted someone to help her look better and to help her to be more active in some form of sports activity.	<i>(cervical and thoracic scoliosis with pain and deformity)</i>
	<u>Class IVb</u>	68 year old man presents with chronic low back pain that he has had for 20 years. It is getting progressively worse to the point where he is almost bed ridden and every time he moves he feels his back pop and has radiating pain in the legs. X-rays show severe degenerative spondylosis with a 8mm unstable spondylolisthesis.	<i>(lumbar degenerative deformity)</i>
<u>Class V</u>	Class Va	A 53 year old farmer attends a spine care clinic in Botswana with acute mid back pain and new onset Gibbus deformity. He has a history of tuberculosis which was not adequately treated.	<i>(probable spinal tuberculosis with pathological fracture)</i>
	Class Vb	A 34 year old woman attended a World Spine Care clinic in Tanzania with complaints of pain in her low back and legs. On questioning, she had back, hip, knee, and foot pain with swelling and redness of her joints. She had burning on urination and noted red, painful, tearing eyes and was very tired. She believed she had a fever.	<i>(low back pain with possible reactive arthritis)</i>
	Class Vc	A 46 year old male who was HIV positive presented to a spine clinic in Tanzania with unilateral spine flank pain. On questioning, he described pain on urination and that there was a strong odor to his urine. Tapping over his kidney area was very painful and reproduced his symptoms.	<i>(thoracolumbar pain with possible urinary tract infection)</i>

Appendix B: Extrapolation of the GSCI Classification and the other Spinal Disorders Classification systems

<b>Global Spine Care Initiative Spinal Disorders Classification primary presentations and sub-classes</b>	<b>No or minimal symptoms (Class 0)</b>	<b>Mild symptoms, No function/ADL interference, No Neurologic deficits (Class I)</b>	<b>Moderate or severe symptoms, Interfere with function/ADL, No neurologic deficits (Class II)</b>	<b>Neurological signs/symptoms originating from spinal pathology (Class III)</b>	<b>Severe spinal bone deformity, trauma or pathology (Class IV)</b>	<b>Spine-related symptoms associated with systemic or destructive pathology (Class V)</b>
WHO International Classification of Disease (ICD-10)	No diagnosis	Acute or chronic pain, no severity distinction	Acute or chronic pain, no severity distinction	Multiple pathological diagnoses	Multiple pathological diagnoses	Multiple pathological diagnoses
WHO International Classification of Function	XXX.0	XXX.1	XXX.2, XXX.3, and possibly XXX.4	Variable depending on level of functional loss	Variable depending on level of functional loss	Variable depending on level of functional loss
Quebec Task Force on Whiplash Related Disorders	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4	Not addressed
Quebec Task Force on Spinal Disorders	N/A	Class 1	Class 10, chronic pain	Class 2,3,4,5,6	Class 7,8,9	Class 11
Bone and Joint Decade Task Force on Neck Pain and Associated Disorders	N/A	Grade 1	Grade 2	Grade 3	Grade 4	Grade 4
National Institute of Health Back Pain Standards	N/A	Low impact, not chronic, or chronic	Based on impact, not chronic, chronic, moderate, or severe	Not addressed	Not addressed	Not addressed
Australia Work Cover Classification System	No pain or injury	Group 1	Group 2	Group 3 with verified radiculopathy	Group 3 with verified pathology	Not addressed
AMA Guidelines for Permanent Disability 5 <sup>th</sup> Edition (DRE)	Category 1	Category 2, low impact	Category 2, higher impact	Category 3	Category 4 and 5	Not addressed
AMA Guidelines for Permanent Disability 6 <sup>th</sup> Edition	Class 0	Mild Class 1	Moderate Class 2, Severe Class 3	Class 1, 2, 3, depending on impact	Class 1, 2, 3, depending on impact	Not addressed
The Global Alliance for MSK Health Global Survey Module	Answer “no” to all questions	Answer “yes” on pain question but “no” for limitations (acute or chronic)	Answer “yes” on pain and limitations (acute or chronic)	Possibly part of the peripheral extremity symptoms	May reflect medical diagnosis	Not addressed (could be part of diagnosis)

XXX = ICD10 code