Questions submitted in Zoom meeting chat during the 11/12/25 TSCIR Webinar on E-ISNCSCI

Submitted questions have been answered by the ASIA E-ISNCSCI subcommittee

Examination sequence

Q: When considering full vs expedited exam, can you not do motor portion first then decide and guide based on those findings?
A: On a general level, the decision whether to perform full ISNCSCI vs. E-ISNCSCI depends on whether the full motor exam, NLI, and AIS are sufficient, and if rare errors in AIS and NLI classifications can be tolerated. If 100%-accuracy in these classifications is required, or additional sensory testing (rostral to and/or caudal to the segments that were fully tested) is needed to obtain other classifications (e.g., sensory levels, ZPP's) then the full ISNCSCI must be performed. If an examiner is not sure whether to perform a full ISNCSCI or an E-ISNCSCI exam, they should start performing the motor testing as mandatory part of both exams. Of note, the full ISCNSCI exam does not need to begin with sensory testing before motor testing.

Q: In the case example, why were LT and PP all assessed starting at the same dermatome level? In the Version 2 instructions, it discussed testing at the most caudal of the two consecutive dermatomes. Would this result in testing one dermatomal level higher for each subsequent sensory test (i.e. LTR > PPR >LTL > PPL)
A: In the motor exam for the case that was demonstrated (https://asia-spinalinjury.org/wp-content/uploads/2025/09/E-ISNCSCI-V2-Case-2025-01-1920.mp4), C5 is identified as the presumed motor level on both sides. Following the instructions for sensory testing (https://asia-spinalinjury.org/expedited-isncsci-exam/), according to step 1, for this case with symmetric assumed motor levels the sensory exam could start on either side, and in this example is started on the right for LT at C2. Because of findings listed in step 2b (LT sensory testing intact from C2 through the presumed motor level), the right LT exam stops at C5. According to step 3, PP exam starts at C5 and ends at C4. Following the rules of step 4, one should start with examining of LT on the left side at C5 as being the most caudal dermatome of the two consecutive dermatomes that tested normal for LT and PP on the right side (both C5), and stops at C4. As stated in step 5, PP exam starts at left C5 as the dermatome corresponding to the most caudal dermatome that was tested as normal for light touch over two consecutive dermatomes in the prior step, and testing stops at C4. This shows that this does not result in testing one dermatomal level higher for each subsequent sensory exam, but at the most caudal segment tested as normal.

For some exams, the span of dermatomes that are tested for each sensory modality will become progressively higher (more rostral) as testing is performed. This will depend on side-to-side symmetry of the sensory findings and whether ipsilateral findings for LT and PP

sensation differ. Please see the 4 case classification examples that were posted to the ASIA website with E-ISNCSCI-V2 (https://asia-spinalinjury.org/expedited-isncsci-exam/) , each of which has variability in the distribution of the required sensory testing across levels, relative to the motor findings. In the example that was presented (identical to Case 1 on the ASIA website), right pin prick, left light touch, and left pin prick are each tested for just C5 and C4 for determination of NLI.

Q: From a practical standpoint, ie pt positioning, if you are testing S4S5 LT, why not just perform DAP and VAC.
A: The goal of the E-ISNCSCI is to utilize the least amount of sensory and anorectal exam needed to determine NLI and AIS classifications. After the patient is turned to their side for S4-5 sensory testing, it is an option to perform a digital rectal exam and check DAP and VAC even if (as in the case example) the findings will have no impact on the AIS because the patient has already been determined to have AIS C or D. Similarly, S4-5 could be tested for light touch and pin prick bilaterally even if some light touch was present on the first side tested, rather than omitting the remainder of S4-5 testing. The information could have value for determining prognosis (e.g., the degree of pin prick sparing as a predictor of recovery), and anorectal exam findings (including those other than DAP and VAC) may be useful in assessing neurogenic bowel dysfunction and planning for a bowel program. Testing of sensation in the sacral segments is therefore part of the International Standards to document Autonomic Function following SCI (ISAFSCI). However, the digital anorectal exam is invasive and can cause more discomfort than S4-5 sensory testing, so the option to omit it when it is not needed for AIS determination will be appreciated by some patients and clinicians.

Use of Full ISNCSCI vs. E-ISNCSCI

Q1: Should we perform the expedited version when we need to determine the NLI and AIS urgently, and then perform the full exam soon after?
Q2: Do you recommend that an individual with brand new acute SCI should undergo the full exam with follow up exam being the expedited version to get a better clinical picture of sensory/motor function? If I performed the expedited exam- I would likely still need to do a detailed sensory exam outside of the exam to obtain valuable clinical information to guide decision making (sensory for bowel program/needs, seating/positioning needs and justifications, braces and skin) based on individual presentation).
A: Recommended uses of full ISNCSCI vs. E-ISNCSCI are listed in a table on the ASIA website. We anticipate ongoing discussion with clinicians regarding the preferred option for different situations. An objective of the E-ISNCSCI was to have a faster option when classification is urgently needed and the NLI and AIS are sufficient. We recommend that the full ISNCSCI be performed early post-injury at a timepoint when an accurate exam can be obtained, to fully characterize the deficits with highest accuracy for all defined classifications. This early full exam could then be used for determining neurological prognosis based on prior research. We also recommend that a full ISNCSCI exam be performed around the time of admission to inpatient rehabilitation, to fully characterize deficits and allow all classifications to be determined. There is usually sufficient time available at this point in the care process, and the exam will typically be performed by a physician with extensive training and experience with ISNCSCI classifications. The E-

ISNCSCI may be an appropriate follow-up exam at different timepoints during inpatient rehabilitation to quantify neurological changes that impact clinical decision making.

Q1: If we are already aware we are performing an ISNCSCI on a patient with a complete injury, is the E ISNCSCI useless?
Q2: This means that we only perform the abbreviated version for only incomplete but not for complete?
A: E-ISNCSCI can be used for complete and incomplete injuries. For complete injuries, none of the "sacral sparing" exam items (S4-5 light touch and pin prick, DAP, VAC) can be omitted, so there is no time savings for those items. However, typically a large portion of the sensory exam will be omitted. See Case #4 on the ASIA website for an example with AIS A paraplegia.
Please note that the role of the E-ISNCSCI depends on the clinical context. In cases where a full ISNCSCI examination can be performed, the abbreviated form does not provide additional classification value, as the full ISNCSCI remains the gold standard. The E-ISNCSCI was developed specifically for situations in which time, patient tolerance, or clinical circumstances limit the feasibility of the full examination, and where determining the NLI and AIS (and not the other classifications) is sufficient. In those settings, the E-ISNCSCI serves as a practical and validated alternative, but it is not intended to replace the comprehensive assessment when that is possible.

Q: How frequently should neurological examinations be carried out in a rehabilitation ward within the first few months after injury (initial admission for rehab).
A: There is no clinical consensus on how frequently a reexamination should be performed during initial inpatient rehabilitation for a person with a new SCI. Ideally, the rehabilitation team will identify neurologic changes that impact neurologic prognosis or functional goals, so the plan for treatment and adaptive equipment can be modified, if needed. Also, it is not uncommon for patients with new SCI to report some sensory or motor loss during inpatient rehabilitation. These symptoms can be difficult to assess even if a full ISNCSCI exam is then performed; for example, if there has been no exam since an admission two months earlier. Ideally, interval ISNCSCI exams would be available that documented some of the neurologic changes that had occurred since admission. Additionally, some patients are at greater risk for neurological deterioration during inpatient rehabilitation due to their SCI etiology, particularly for a few non-traumatic conditions (tumors; infections) or due to spinal instability. For these patients, a recent neurological examination is preferred when assessing for suspected worsening. The E-ISNCSCI provides a much faster option for confirmation of changes of motor scores, AIS and NLI and to initiate a follow-up full ISNCSCI exam for a detailed quantification of these changes.

Q1: In our area consistency and accuracy of the assessment is very poor. If we could only get the exam, E or full, performed accurately one time what time frame after injury would you recommend to maximize functionally appropriate classification that the individual will be "labeled" by over the next many years?
Q2: Completely understand the benefit for the patient to have initial baseline information. Absolutely. Can we then entertain the possible recommendation for it to be completed every 5 yrs, for example, to capture progress and recovery so the documentation/diagnosis

is updated and most accurate as their recovery journey progresses (which of course for most is there lifetime which is much longer than in the past).
A: These questions pertain to the need to document the examination and classifications at timepoints when it is expected to be stable, to serve as a baseline. The optimal timepoints will vary depending on the health care system, typical duration of inpatient rehabilitation, frequency with which SCI specialists provide ongoing follow-up care, and available resources. Depending on length of stay, the neurologic classifications at time of discharge from inpatient rehabilitation might approximate the classifications that will be present when the neurologic exam stabilizes. If classifications other than NLI and AIS are required then a full exam should be performed; otherwise, the E-ISNCSCI might be sufficient. A full exam one year post-injury would be preferable for serving as a long-term baseline exam, since motor and sensory findings typically have stabilized by that timepoint. If resources are sufficient, it would be reasonable to also repeat a full exam every five years to fully characterize deficits and provide all neurologic classifications.

Q: Do you think that the expedited exam will be accepted by SCIMS/MSKTC
A: SCI Models Systems, EMSCI, Rick Hansen SCI Registry, and other national or international databases were developed to collect data that will best support SCI research. The members of the International Standards Committee strongly support the continued use of the full ISNCSCI at time of admission and discharge from inpatient rehabilitation. The full ISNCSCI should also be obtained during acute care, provided trained examiners are available to perform it and at a timepoint post-injury when the patient can participate to obtain an accurate exam. It has to be emphasized that also the correct application of the E-ISNCSCI requires knowledge of the exact exam procedures of the full-ISNCSCI.

Q: Is E-ISNCSCI mainly for research outcome assessments or also for day-to-day clinical practice? I worry that clinicians, in day-to-day clinical practice will just choose to go for the easier option!
A: The E-ISNCSCI is appropriate for clinical practice, at timepoints when a full motor exam, NLI, and AIS are sufficient. It is a valid concern that busy clinicians may choose to use the E-ISNCSCI when the full ISNCSCI is more appropriate. Please find details of application scenarios of the E-ISNCSCI vs. the full ISNCSCI in the table of the Version 2 protocol of Version 2 on ASIA's website.

Q: What do you think (if anything) is lost by only performing the e-ISNCSCI?
A: E-ISNCSCI provides full motor testing, upper and lower limb motor scores and just two classifications: NLI and AIS. The portions of the sensory exam omitted are the sensory findings rostral to the levels assessed for NLI determination (all of which are assumed to be normal) and the sensory findings between the assessed levels and S4-5. The latter may include the portion of the sensory exam needed to delineate the sensory levels. Also, because those dermatomes are not tested, combined with the fact that DAP and VAC are sometimes omitted, ZPP's cannot be determined. In extreme cases, sensory testing needed for E-ISNCSCI could include just a few dermatomes, which would make it challenging to use the exam as a baseline when assessing symptoms of worsening sensory impairment. It also would be a significant omission for a clinical trial of a therapy that affects sensory outcomes.

Q: Have you observed any ceiling effects in the new versions of the instrument?
A: Since determination of AIS using E-ISNCSCI-V2 is essentially 100% accurate and NLI is 98% accurate, those classifications would have identical floor or ceiling effects as with the full ISNCSCI. The ability to calculate summed motor scores is identical to the full ISNCSCI so would have identical floor or ceiling effects. Summed sensory scores cannot be calculated, due to the omission of much of the sensory testing.

Questions about the prior S1 substitution option that is no longer recommended

Q: In assessing the supplemental use of S1 motor and sensation for VAC, DAP, and S4-5 sensory, which error was more common: false classification of AIS A due to absent S1 sensory/motor, or false classification of AIS B/C/D due to the presence of S1 sensory/motor?
A: In our study, the most common error with S1 substitution caused patients with true AIS B to be classified incorrectly as AIS A. This indicates that in our study sample, which included patients with median injury duration of 10 days, many AIS B patients had absent S1 sensation bilaterally. For details, please check the paper discussed in the webinar. Burns SP, Walden K, Kirshblum S, Schmidt-Read M, Tansey K, Schuld C, Rupp R. Development and Validation of an Algorithm for Item Reduction of the International Standards for Neurological Classification of Spinal Cord Injury Examination to Determine Level and Severity of SCI. *Top Spinal Cord Inj Rehabil*. 2025 Summer;31(3):61-67. doi: 10.46292/sci25-00008.

Q: In a busy clinic when patients are in their wheelchairs, it would be extremely helpful to have a proxy for S4S5. Unfortunately, the S1 proxy was not sensitive. Any future explorations for a proxy?
A: The clinicians on the International Standards Committee recognize the increased difficulty of examining S4-5 versus S1. There are a number of options that could be investigated and, if resulting in accurate classifications, could be added to a future version of E-ISNCSCI. For example, the high rate of true AIS B incorrectly identified as AIS A may not be present in patients with longer injury duration, which could allow use of S1 substitution for follow-up exams in patients with chronic injuries. Additionally, it may be possible to identify patients who are extremely unlikely to have absent sacral sparing based on just the full motor exam and NLI; for example, cervical or upper thoracic NLI with lower extremity motor scores greater than a specific score. Incorporating additional rules to allow use of S1 substitution would increase the complexity of the testing protocol, but experienced clinicians may prefer to have such options if they further shorten the exam while still providing highly accurate NLI classifications.

Other questions that apply to both full ISNCSCI and E-ISNCSCI

Q: Who are the healthcare professionals typically responsible for conducting the ISNCSCI exam?
A: The full ISNCSCI exam, as well as the E-ISNCSCI exam, should be performed by trained examiners for whom all components of the physical exam are covered under clinical privileges or scope of practice. The specific disciplines will vary across health care and

research settings. In clinical settings, the exams are typically performed by medical providers (physicians, physician assistants, and nurse practitioners). Training resources are available through the ASIA e-Learning Center (http://asia-spinalinjury.org/learning/). Skills needed for examination and classification are best developed though practice with observation and feedback, as provided in dedicated training workshops.

Q: When there is muscle contraction but it does not produce any movement, what score should we give?
A: Muscle strength grading is identical for the full ISNCSCI and E-ISNCSCI. A palpable voluntary muscle contraction should be graded as 1/5, even if no joint movement is produced.

Q: What is the panel's opinion on the old Frankel classification vs the ISNCSCI?
A: ASIA Impairment Scale (AIS) grading of injury severity is an evolution of the former Frankel classification. AIS grading adopted the "sacral sparing" definition of injury completeness, which reduced the frequency with which the patient showed neurological examination improvement but the assigned severity grade worsened. The AIS also introduced objective definitions for scores of C vs. D, based on a count of muscles with strength 3/5 or greater versus less than 3/5. This contrasts with the Frankel classification that used subjective terms such as "useful functionally" to quantify the degree of motor sparing.

Q: What information should patients with new SCI be asking for to understand the extent of physical damage to their neurological system to better grasp the root of their paralysis and expectations for recovery outcomes
A: ASIA's International Standards Committee has developed patient education resources that explain how the ISNCSCI exam and classification is performed and how it has to interpreted (see adult ISNCSCI brochure in lay language freely downloadable at https://asia-spinalinjury.org/new-adult-isncsci-brochure/). Expected neurological recovery following acute SCI is described in patient education textbooks and recent peer reviewed manuscripts. The Consortium for SCI Medicine published consumer guides that are companions to the Functional Outcomes Clinical Practice Guideline that was published in 1999. That Clinical Practice Guideline has recently been revised and will be published in 2026.

Q: How do you address the unique needs of pediatric patients during the ISNCSCI exam?
A: Special considerations for performing the ISNCSCI in the pediatric population are addressed in the WeeSTeP course available through the ASIA Learning Center. (https://asia-spinalinjury.org/learning/). The rules for application of the E-ISNCSCI in pediatric patients are the same than in adults.