How to think like an SCI physiatrist

Function, identity, and life after catastrophic injury

Allison Kessler, MD

Section Chief, Spinal Cord Innovation Center

Henry and Monika Betts Medical Student Education Chair

Associate Professor of PM&R, Northwestern Feinberg School of Medicine

POLLING QUESTION #1

Which statement best describes physiatry?

A Primary role is pain management

B Primary role is neurosurgery

C Primary role is enhancing and restoring functional ability and quality of life for people with impairments or disabilities

D Primary role is physical therapy

Three skills to take away:

01 Distinguish recovery from participation

Differentiate neurological recovery, functional gains, and return to meaningful life roles.

02 Recognize what makes function reliable

Identify medical, cognitive, environmental, and support needs beyond the motor examination.

03 Evaluate a plan through its purpose

Apply a goal–barrier–intervention–implementation–outcome framework to a catastrophic claim.

The prognosis is not the whole story

A patient's question

What will my life look like?

Will I still have control, relationships, purpose, and a future I can imagine?

A physiatrist's question

What would make that life possible?

Which abilities, routines, treatments, tools, and supports can move the person toward it?

The medical story and the life story need to be connected.

BEFORE: IN THE DARK

The unknown feels overwhelming.



AFTER: LIGHTS ON

Real life is challenging,
but often more manageable than we imagine.



Start with the person—not the return-to-work date

46-year-old warehouse supervisor

Cervical SCI with no functional hand use

Brain injury affecting initiation and insight

Dependent transfers; spouse cannot lift safely

Two-story home with four entry steps

Preinjury work was about 70% physical

What would meaningful progress look like? Will future work be possible?

And what matters most to this person?

Catastrophic injury changes the planning question

A healing-centered question

What needs to heal?

Which restrictions are temporary?

When can usual activities resume?

A life-centered question

What has changed across the person’s life?

What is possible now?

What will make it safe and sustainable?

Pursue recovery and rebuild daily life in parallel.

Three outcomes—not one definition of recovery

OUTCOME	QUESTION	ILLUSTRATIVE EXAMPLE
Neurological recovery	Has the neurological impairment changed?	New motor or sensory function
Functional improvement	What can the person now do—and with what support?	Use a computer with adapted access
Participation	Can that ability be used in a valued life role?	Communicate, study, parent, or work

An unchanged neurological examination does not mean nothing improved.

ICF terminology behind the functional lens

TERM	MEANING
Impairment	A problem in body function or structure.
Activity limitation	Difficulty executing a task or action.
Participation restriction	A problem with involvement in a life situation.
Context	Environmental and personal factors shape real-world functioning.

World Health Organization, International Classification of Functioning, Disability and Health, 2001. [10]

The same impairment can produce different lives

Impairment

Paraplegia – loss of leg function

Activity

Cannot climb stairs to exit a home with stairs in the entryway

Participation

Cannot leave home

Change the context Appropriate mobility, door access, assistance, and transportation can change the outcome.

Worked example using WHO ICF concepts; not patient data. [10]

In general, compared to persons without disability, do you believe the overall quality of life of persons with significant disability is…?

A a lot better

B a little better

C the same

D a little worse

E a lot worse

What do people really care about?

82.4%

of surveyed U.S. physicians believed people with significant disability had worse quality of life.

714 physicians | Iezzoni et al., 2021

54.3%

of interviewed adults with moderate-to-serious disabilities reported good or excellent quality of life.

153 adults with disabilities | Albrecht & Devlieger, 1999

Ask the person. Do not infer quality of life from an examination.

Two separate studies with different samples and questions—not a direct comparison. [1,2]

What matters most may not be walking

Tetraplegia

Arm and hand function was selected most often.

Paraplegia

Bladder function was selected most often.

Bladder, bowel, sexual, skin, and temperature-related priorities were emphasized more by participants with SCI than clinicians anticipated.

Let the patient's priorities shape the plan—not just the most visible deficit.

Samejima et al., 2026: online survey in Japan; 103 people with SCI and 85 healthcare professionals. [3]

The motor examination does not describe the whole day

CLINICAL DOMAIN	WHY IT MATTERS TO FUNCTION
Breathing and cough	Respiratory support and a plan for illness
Bowel and bladder	Predictable routines, supplies, privacy, and timing
Skin and positioning	Seating, pressure management, and daily checks
Autonomic function	Blood-pressure or temperature issues affecting activity
Pain and spasticity	Comfort, sleep, movement, and care routines
Transfers / equipment	Safe access to bed, bathroom, home, and community

Quality of life after SCI: what matters beyond the injury?

Patterns associated with better overall quality of life and life satisfaction

Community living

Community residents report higher life satisfaction than matched nursing-home residents.

Putzke & Richards, 2001 | 37 matched pairs

Less disruptive pain

Lower pain scores—and especially less interference with daily activities—track with better QoL.

Burke et al., 2018; Sturm et al., 2021

Fewer complications

Fewer secondary health problems, including bowel dysfunction, are linked with better QoL.

Barker et al., 2009; Sturm et al., 2021

Meaningful participation

Work, leisure and social participation track with better QoL. Support valued roles, including parenting.

Halvorsen et al., 2021;
Rasul & Biering-Sørensen, 2016

Supportive relationships

Social support tracks with higher life satisfaction. Marriage is associated with benefit in some, not all, studies.

van Leeuwen et al., 2010; Holicky & Charlifue, 1999; Kalpakjian et al., 2011

Resources & autonomy

Equipment access is linked with higher QoL. People with high tetraplegia also emphasize control over daily life.

Sturm et al., 2021; Hammell, 2004

The day starts before the day

Before leaving home

Transfers and personal care

Bowel/bladder routine

Skin and positioning

Equipment and transport

During the day

Pressure management

Personal care access

Medication, pain, and fatigue

Assistance when needed

At the end of the day

Transfers and evening care

Skin and equipment checks

Recovery time

Planning for tomorrow

A schedule is only realistic when the care around it also works.

“Can do it” is not the same as “can sustain it”

One successful attempt

Best conditions

A quiet setting

A therapist available

No competing demands

Reliable performance

Actual home or workplace

Repeated across the day

The support that will really be there

A plan for fatigue and disruption

Document the conditions—not just whether the task was completed.

Illustrative teaching contrast; grounded in the functional-reliability framing of the original deck.

With brain injury, knowing how may not mean doing it

COGNITIVE DOMAIN	QUESTION FOR THE PLAN
Memory	Will the person remember a routine or precaution?
Initiation and sequencing	Will the task start—and be completed in order?
Insight and judgment	Will the person recognize risk and ask for help?
Regulation and fatigue	Will performance remain safe as demands increase?

Evaluate the support required for reliable action—not only physical ability.

Cognitive domains adapted from MSKTC TBI education; examples are illustrative. [6]

Less assistance is not always the best whole-day outcome

A narrow measure

Completes the morning routine with less help.

But the routine uses most of the available time or energy.

A whole-day measure

Uses targeted help or an appropriate adaptation.

Can then take part in a chosen activity more reliably.

Ask what the help makes possible—not only how much help is needed.

Illustrative teaching example; no measured times or outcomes are implied. See also [5].

The rehabilitation window is shorter—not the task list

Average inpatient rehabilitation stay



Start home, equipment, training, and support planning before discharge.

What progress can look like with the same neurological level

DOMAIN	AN OBSERVABLE FUNCTIONAL MILESTONE
Transfers	Correct equipment and trained help are demonstrated in the actual setting.
Skin and positioning	The person and team can carry out the prescribed protection plan.
Bowel and bladder	The routine is usable within the person’s intended daily schedule.
Care direction	Preferences and instructions are communicated with needed cognitive support.
Community access	An actual trip or activity is completed with the planned support.

Success is a change in real-world capability—not only a change in the exam.

A complication can derail much more than a medical visit

29%

Rehospitalized at least once in a given year

18 days

Average stay when rehospitalized

GU + skin

Leading categories of rehospitalization

Medical disruption → Lost routines and time → Interrupted therapy, life and work goals

Prevention protects participation. Not every complication is avoidable.

Evaluate the function—not the gadget

PROPOSED INTERVENTION	FUNCTION OR BARRIER TO ADDRESS
Power mobility and seating	Mobility, positioning, and an individualized pressure-management plan
Lift plus training	A safe transfer method that the actual helpers can perform
Computer or environmental access	Communication, control, and access to selected tasks
Home access	The ability to use the planned discharge environment

A prescription needs a purpose, a fit, a usable plan, and a way to assess benefit.

A good plan must survive an ordinary bad day

The expected helper is unavailable.

Who provides the necessary care—and can they do it safely?

Essential equipment stops working.

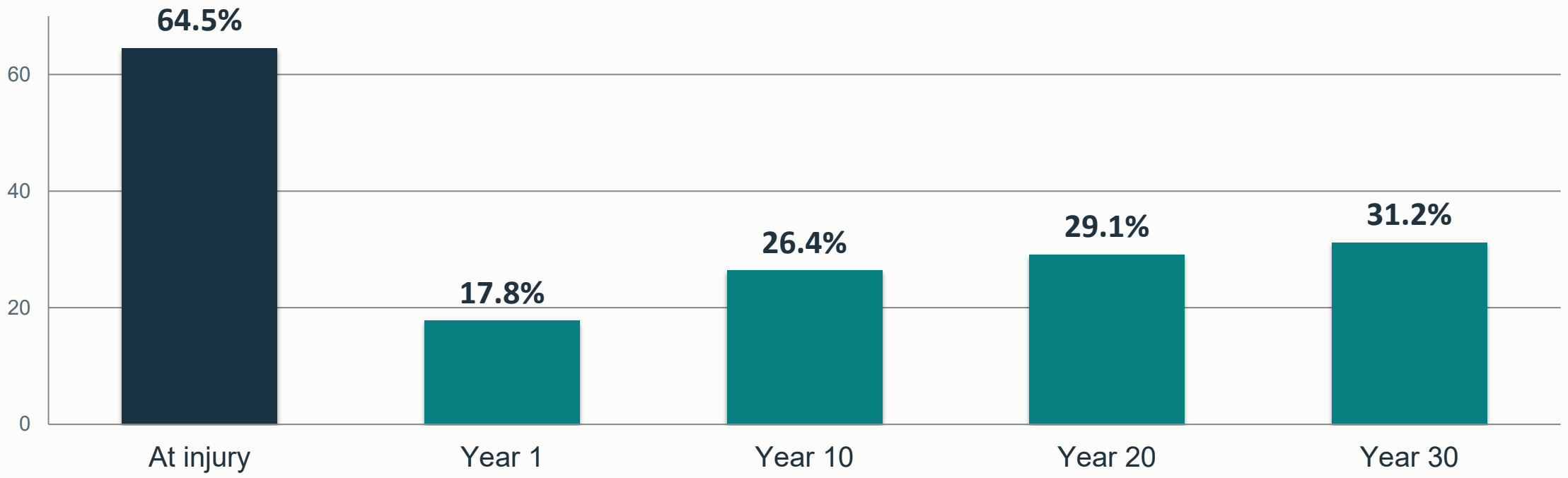
What is the repair pathway and interim plan?

Transportation falls through.

How are treatment and important activities maintained?

“Family should be available” is not a complete care plan.

Employment is a long-term outcome—not a healing deadline



Build the prerequisites for work. Do not turn a population rate into a ceiling.

NSCISC, 2026: employment at listed follow-up intervals; not one person's trajectory or a WC-only cohort. [4]

Ask about the actual job—not “work” in the abstract

ASSESSMENT DOMAIN	SPECIFIC QUESTION
Actual tasks	What physical, cognitive, social, and productivity demands exist?
Workday reliability	Can health needs and care routines fit the schedule?
Access and transport	Can the person reach and use the workplace consistently?
Supports and flexibility	What assistance, equipment, pacing, or accommodations are workable?

The original job may not fit. That does not answer every vocational question.

Adapted from MSKTC employment-after-SCI guidance and the original presentation. [5]

Five questions for any proposed intervention

1	**Goal**	What meaningful function, participation, or safety outcome?
2	**Barrier**	What prevents it—or what risk needs to be addressed?
3	**Fit and evidence**	What evaluation, alternatives, or trial support this choice?
4	**Implementation**	Who will train, maintain, repair, and provide backup?
5	**Outcome**	What observable change will show whether it is useful?

A useful progress update tells you what changed in life

Instead of: “No neurological change; remains dependent.”

Current performance: Uses the prescribed lift with trained assistance in a home trial.

What changed: The transfer plan was demonstrated with the intended caregivers.

Remaining barrier: The backup caregiver has not yet completed training.

Next action: Complete training and reassess the full daily-care plan before discharge.

Baseline → current performance → remaining barrier → next action and owner

Different injuries. The same functional questions.

CLINICAL EXAMPLE	THE FUNCTIONAL QUESTION
Brain injury	Can the person initiate and complete a task safely without the therapist present?
Major burns	Can the person use the affected limb for a meaningful task with tolerable symptoms?
Limb loss	Does the mobility plan work for the actual home, commute, and job?

Diagnosis → daily task → real environment → meaningful participation

Return to the case: what needs to happen next?

REQUEST OR PLAN COMPONENT	QUESTION TO RESOLVE
Mobility and seating	What movement, positioning, and daily access must this enable?
Lift, training, and home access	Can the intended support team deliver a safe daily plan?
Computer / home controls	Which communication, safety, or participation task is blocked?
FES cycling	What are the goal, safety assessment, and trial results?
Vocational assessment	Which skills, tasks, and supports should be explored now?

Choose the next step—and state what evidence would change your plan.

Same fictional case. This is a clinical-planning exercise, not a coverage determination.

Needing hands-on help does not erase autonomy

Physical assistance

Who performs the task?

How much help is required?

Autonomy

Whose preferences guide the plan?

How is choice and care direction supported?

Do not make "does everything alone" the only picture of success.

Clinical and patient-centered framing; apply cognitive supports and decision support as needed.

Four questions to carry into the next conversation

01 What matters to this person now?

02 What prevents it in everyday life?

03 What would make it safe and sustainable?

04 How will we know the plan is helping?

Once an injured worker reaches maximum medical improvement (MMI), they will never need additional treatment or interventions.

True or False

Treat the injury.
Build the life.

Neurological recovery matters.

So does what becomes possible in the person’s day.



Questions?

Supporting detail and references

Costs provide context—not an individual reserve estimate

INJURY GROUP	FIRST YEAR	LATER YEAR	LIFETIME: INJURY AT 25
C1–C4, AIS A–C	$1,446,827	$251,246	$6,419,617
C5–C8, AIS A–C	$1,045,459	$154,128	$4,690,573
Paraplegia, AIS A–C	$705,131	$93,409	$3,139,165
Motor functional, AIS D	$472,190	$57,353	$2,144,693

Direct health care and living expenses; indirect costs excluded. Group averages are not a price for a particular person’s life or care plan.

NSCISC 2026, historical estimates in 2025 dollars; lifetime estimates discounted at 2%. [4]

Quality of life: connect symptoms, participation, and context

Pain and participation

Müller et al., 2017

1,549 community-dwelling people with SCI

Pain, depressive symptoms, participation, and quality of life were related in the study models.

Work context

van Dinter et al., 2025

Work hours, work control, work stress, and quality of life were examined together.

Consider work conditions—not only employment status.

Observational research; associations do not establish that a particular intervention will improve quality of life. [8,9]

Selected references

[1] Albrecht GL, Devlieger PJ. The disability paradox: high quality of life against all odds. Soc Sci Med. 1999;48(8):977–988. doi:10.1016/S0277-9536(98)00411-0.

Source / full text

[2] Iezzoni LI, Rao SR, Ressalam J, et al. Physicians' perceptions of people with disability and their health care. Health Aff. 2021;40(2):297–306. doi:10.1377/hlthaff.2020.01452.

Source / full text

[3] Samejima S, Miyashita H, Yamashita T, et al. Gaps in recovery priorities between individuals with spinal cord injury and healthcare professionals. npj Health Syst. 2026;3:19. doi:10.1038/s44401-026-00073-4.

Source / full text

Selected references

[4] National Spinal Cord Injury Statistical Center. Traumatic Spinal Cord Injury Facts and Figures at a Glance. Birmingham, AL: University of Alabama at Birmingham; 2026. March 25, 2026 accessible edition.

Source / full text

[5] Model Systems Knowledge Translation Center. Employment After Spinal Cord Injury. SCI factsheet.

Source / full text

[6] Model Systems Knowledge Translation Center. Cognitive Problems After Traumatic Brain Injury. TBI factsheet.

Source / full text

Selected references

[7] Ottomanelli L, Goetz LL, Barnett SD, et al. Individual Placement and Support in spinal cord injury: a longitudinal observational study of employment outcomes. Arch Phys Med Rehabil. 2017;98(8):1567–1575.e1. doi:10.1016/j.apmr.2016.12.010.

Source / full text

[8] Müller R, Landmann G, Béchir M, et al. Chronic pain, depression and quality of life in individuals with spinal cord injury: mediating role of participation. J Rehabil Med. 2017;49(6):489–496. doi:10.2340/16501977-2241.

Source / full text

[9] van Dinter R, Reneman MF, Post MWM. Relation between work hours, work control, work stress, and quality of life in persons with spinal cord injury. Disabil Health J. 2025;18(1):101682. doi:10.1016/j.dhjo.2024.101682.

Source / full text

[10] World Health Organization. International Classification of Functioning, Disability and Health (ICF). Geneva: WHO; 2001. Framework and terminology retained from the source presentation.

Supported employment: promising, not a universal benchmark

43.2%

92 of 213 participants obtained competitive employment during 24 months.

How to interpret it

Selected veteran cohort

Participants wanted employment

Integrated vocational support

Observational—not a causal estimate

Use the study to support continued exploration—not to promise an outcome.

Ottomanelli et al., 2017: 24-month, single-arm observational study of veterans seeking employment. [7]