**Supplemental Appendix 1:**

Spinal Cord Injury PGY-2 Learning Objectives

**History**

Effectively acquires a history relevant for the medical and functional management of the spinal cord injured patient which includes:

* Etiology and circumstances of injury
* Medical co-morbidities
* Prior functional history
* Pre-injury psycho-social history
* Psychosocial problems of spinal cord injured patients, including substance abuse and
* Societal maladaptation

**Physical Examination**

Efficiently performs a physical examination relevant to the medical and functional management of the spinal cord injured patient which includes:

* Performance of the ASIA International Standards for Neurological Classification of Spinal Cord Injury examination
* Identifying presence of spasticity
* Recognition of impaired respiratory function
* Identifying presenting signs of:
  + Heterotopic ossification
  + Dysesthetic pain
  + Dysfunctional thermos regulation
  + Syringomyelia
  + Reflex sweating
  + Co-existent brain injury

**Diagnostic Evaluation**

Based on history and physical examination this resident provides an accurate list of medical issues, differential diagnosis and functional loss which will direct appropriate treatment/testing to direct clinical care which could include:

* Voiding parameters including PVR’s, urodynamics
* Respiratory parameters including Vital Capacity and NIF
* Appropriate laboratory and imaging studies as needed for management of medical co-morbidities and secondary complications

**Medical Management**

Resident develops a treatment plan that identifies and addresses active medical issues, secondary issues and potential complications which would include:

* To diagnose, manage and implement prophylactic measures to prevent deep vein thrombosis and pulmonary emboli.
* To assess, classify and manage neurogenic bladder and bowel including long term management to prevent secondary complications.
* To diagnose, manage and implement strategies to prevent autonomic dysreflexia and orthostatic hypotension.
* To identify and manage sexual dysfunction in male and female SCI patients.
* To diagnose and manage respiratory complications.
* To diagnose and manage other secondary medical conditions and complications including spasticity, heterotopic ossification, dysesthetic pain, dysfunctional thermoregulation, syringomyelia, reflex sweating.
* To identify, manage, and implement strategies to prevent pressure sores.

**Rehabilitation Management**

This resident will prescribe appropriate rehabilitation interventions, orthotics, assistive technology, and mobility devices and:

* Identifies functional goals and outcomes as it relates to neurologic level, extent of injury and co-existent brain injury.

**Medical Knowledge**

Integrates knowledge into a comprehensive treatment plan, identifies reasonable achievable goals, predicts long term functional outcomes and care needs which includes:

* The mechanisms of injury and demographic data of spinal cord injury.
* The pathophysiology and incidence of thromboembolism following SCI.
* The pathophysiology and complications of neurogenic bowel, bladder, autonomic dysreflexia and orthostatic hypotension.
* The pathophysiology, treatment options (medical and surgical) and mechanism of actions for the treatment of spasticity.
* The pathophysiology, classification, risk factors and treatment options for pressure sores.
* The medical indications and social consequences of bladder management techniques including indwelling catheters, intermittent catheterization, suprapubic catheterization, sphincterotomy and ileoconduit and bowel management optimum.

**Professionalism**

Demonstrate compassion, integrity, and respect for others, as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, abilities and sexual orientation.

Demonstrates knowledge about, respect for, and adherence to the ethical principles (including informed consent, surrogate decision making, advance directives, beneficence, least harm, respect for autonomy, and justice) relevant to the practice of medicine.

Demonstrates professional behaviors and accountability to self, patients, society, and the profession which include:

* Awareness of personal health and wellness and ability to optimize personal and professional well-being
* Demonstration of professional behavior across situations and settings
* Recognize conflicts of interests and their potential impact on decision making, while managing ethical dilemmas using appropriate resources
* Practice of accountability in the timely completion of patient care tasks and communication

**Systems Based Practice**

Demonstrates awareness of and responsiveness to larger context and system of care, including:

* Improving patient safety by reporting safety events, participating in the analysis of patient safety events, identifying system errors, and offering prevention strategies or potential system solutions to enhance patient safety
* Coordinating the care of patients in complex clinical situations by effectively collaborating with
* members of the interprofessional teams.
* Performing safe and effective transitions of care/hand-offs in complex clinical situations
* Advocating for patient care needs with consideration of the limitations of each patient’s payment model

**Practice Based Learning and Improvement**

Demonstrates Self-Directed Learning and Teaching

* Locates, critically analyzes, and applies the best available evidence to patient care.
* Seeks and incorporates feedback into their development as a physiatrist
* Identify strengths, deficiencies and limits in one’s knowledge and expertise
* Participate in the education of students, residents, and other health professionals
* Incorporates feedback into clinical practice and professional behavior

**Interpersonal and Communication Skills**

* Sustains positive therapeutic relationship with families and health care providers
* Manages conflict effectively
* Minimizes personal biases with communication
* Effectively educates and counsels patients
* Coordinates recommendations and communication from different members of the health care team to optimize patient care
* Demonstrates timely, organized, and complete medical records
* Appropriately selects best form of communication based on clinical context (e.g., telephone, in-person, progress notes, email, or text-pages)

**Supervision**

All clinical care provided by the resident on this rotation will be done under Direct supervision or Indirect supervision with Direct Supervision immediately available by faculty members.

Based on the skills of the resident the supervising faculty will allow appropriate progressive authority and responsibility for decision making to the resident.

**Supplemental Appendix 2**

Finalized list of OPAs with comprehensive explanation of each component

After directly observing this resident, I trust this resident to...

1. Perform & collect a Spinal Cord Injury focused History and Physical Exam.
   1. Within this context, consider the resident’s ability to: Elicit the etiology and circumstances of the injury, comorbidities, prior functional history, psychosocial considerations, as well as living situation and barriers to accessibility; On exam to identify impairments related to the injury and comorbidities that will affect patient outcomes (including weakness, sensory deficits, spasticity, contractures, impaired respiratory function, presenting signs of heterotopic ossification, autonomic dysfunction, cognitive deficits, and presenting signs of syringomyelia).
2. Perform & interpret the International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) Examination.
   1. Within this context, consider the resident’s ability to: Assess and grade motor function; Assess and grade sensory function; Perform anorectal exam, Determine the neurologic level and ASIA impairment Scale grade.
3. To assess, classify, and manage neurogenic bladder including long-term management to prevent secondary complications.
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology (upper and lower motor neuron injuries); Design a management program which minimizes complications (incontinence, retention, detrusor sphincter dyssynergia, and infection); Prescribe medications (including identifying the mechanism of action); Weigh the social implications of different management methods options in anticipation of discharge home; Recognize the other methods considered while outpatient and when it would be appropriate to refer patients for procedures (suprapubic catheter placement, ileal conduit, botulinum toxin injection); Describe the long term evaluations and management to prevent complications (kidney ultrasound, urodynamic study, cystoscopy, and urology follow up).
4. To assess, classify, and manage neurogenic bowel including long-term management to prevent secondary complications.
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology (upper and lower motor neuron injuries); Design a bowel program; Prescribe medications (including identifying the mechanism of action); Describe strategies to manage complications (including changes in consistency, fecal incontinence, constipation, autonomic dysreflexia and hemorrhoids); Weigh the social implications of different management methods; Recognize the other methods considered while outpatient and appropriate to refer patients for procedures (MACE, peristeen, etc.).
5. To assess and manage the respiratory status of patients including preventing secondary complications.
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology; Interpret respiratory parameters (Vital Capacity & NIF); Manage tracheostomy (troubleshooting, trach weaning, when to refer for diaphragmatic pacing); Work with respiratory therapists to optimize pulmonary hygiene; Describe the equipment that is applied to assist with optimizing pulmonary hygiene and when they should be applied ( mechanical insufflation and exsufflation, acapella devices, chest vest, etc.); Catalog the use of medications and when they would be used (e.g., for copious secretions, for thick secretions, etc.).
6. To diagnose, manage, and implement strategies to prevent and treat autonomic dysreflexia (AD).
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology (including identifying potential triggers and complications); Clinically identify a patient experiencing an episode of AD; Appropriately respond to an episode of AD (including evaluation, work up, and treatment); Identify the long-term consequences of recurrent AD.
7. To diagnose, manage, and implement strategies to prevent and treat orthostatic hypotension.
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology (including identifying potential contributing factors and complications); Prescribe medications (including identifying mechanism of action); Treat non-pharmacologically; Identify parameters to implement both pharmacological and non-pharmacological interventions.
8. To identify, manage, and implement strategies to prevent and treat pressure injuries.
   1. Within this context, consider the resident’s ability to: Describe the mechanism of injury development; Develop strategies to prevent wounds (including identification of risk factors); Differentiate pressure injuries from other types of wounds or skin breakdown; Differentiate pressure injury stages; Design a treatment plan.
9. To diagnose and manage other secondary medical conditions and complications including deep vein thrombosis and pulmonary emboli, stress ulcers, heterotopic ossification, musculoskeletal pain, overuse injuries, neuropathic pain, dysfunctional thermoregulation, syringomyelia, spasticity, sexual dysfunction, and reflex sweating.
   1. Within this context, consider the resident’s ability to: Describe the pathophysiology of each condition; Prescribe medications to prevent; Recognize and respond to the onset.
10. Oversee and manage the rehabilitation strategies and adaptive tools of a patient with a spinal cord injury.
    1. Within this context, consider the resident’s ability to: Utilize the ISNCSCI results, concomitant injuries, and comorbidities to determine functional goals and prescribe interventions (including modalities), orthoses, assistive technology, and mobility devices.