

Inclusion Criteria:

Patients undergoing the following surgeries:

- Placement of Temporary Deep Brain Stimulator (DBS) Electrodes
- Placement of Permanent Deep Brain Stimulator (DBS) Electrodes
- Placement of Neurogenerator(s)
- Revision of Permanent Deep Brain Stimulator (DBS) Electrodes

Additional Recommendations/Considerations

- Utilize DBS order set
- If patient with previously implanted DBS system, please include order for nursing to charge DBS daily and turn off in emergency (MD to RN communication)

Assessment

- Comprehensive history and physical
- Vital signs q1hr x 3 post-operative, then q4hr x 24 hours post-op
- Neuro check q1hr x 3 post-op, then q4hr x 24 hours post op
- Continue home medications except as otherwise directed
- Vital signs and assessment q4hr while awake
- Cluster care
- Routine intake and output

Interventions

- Interventions based on surgical stage – see attached
- Worsening movement symptoms – see Acute Movement Disorder Care Guideline
- Aggressive management of any possible chorea/tremor/dystonia triggers
- Order enteral, IV and nasal benzodiazepines PRN for nursing to have available if acute worsening of movement symptoms

Recommendations/Considerations

- Contact Neuro-Movement provider on call with any concerns at 323-647-5855. If no response, page neurology on call
- Clinician programming device in Neuro Resident Room and parent programming device in OR Nurse Manager office for any emergent concerns (Medtronic and movement provider can guide by phone)
- In emergent condition requiring MRI, surgery, or defibrillation - if possible, turn off DBS

Discharge Criteria

- Removal of any implanted temporary deep brain stimulation electrodes
- Completion of inpatient antibiotics as prescribed
- Absence of signs of symptoms of infection (fever, drainage/warmth at incision sites)
- Absence of symptoms of dystonic storm
- 24 hours of management with enteral medication only
- Tolerating enteral feeds

Patient Education

- Keep wound dry for 3 days after surgery, then can wash wound with soap and water but do not submerge in water. If there is a dressing on the wound keep it on until the follow-up appointment and keep it dry.
- Notify MD if worsened dystonia, new neurologic symptoms, visual changes, changes in speech, seizure. Return to ED for lethargy, vomiting, fever, redness/swelling/drainage from the wound site.
- Notify MD if difficulty with breathing persistent bleeding, and or drainage, persistent headaches/persistent pain, repeated vomiting, Temp >38°C, redness, and swelling
- If concerns regarding stimulation settings contact CHOC Movement Disorders Team, in urgent situation turn off device utilizing patient programmer (handout attached)
- Charge DBS neurogenerator(s) daily

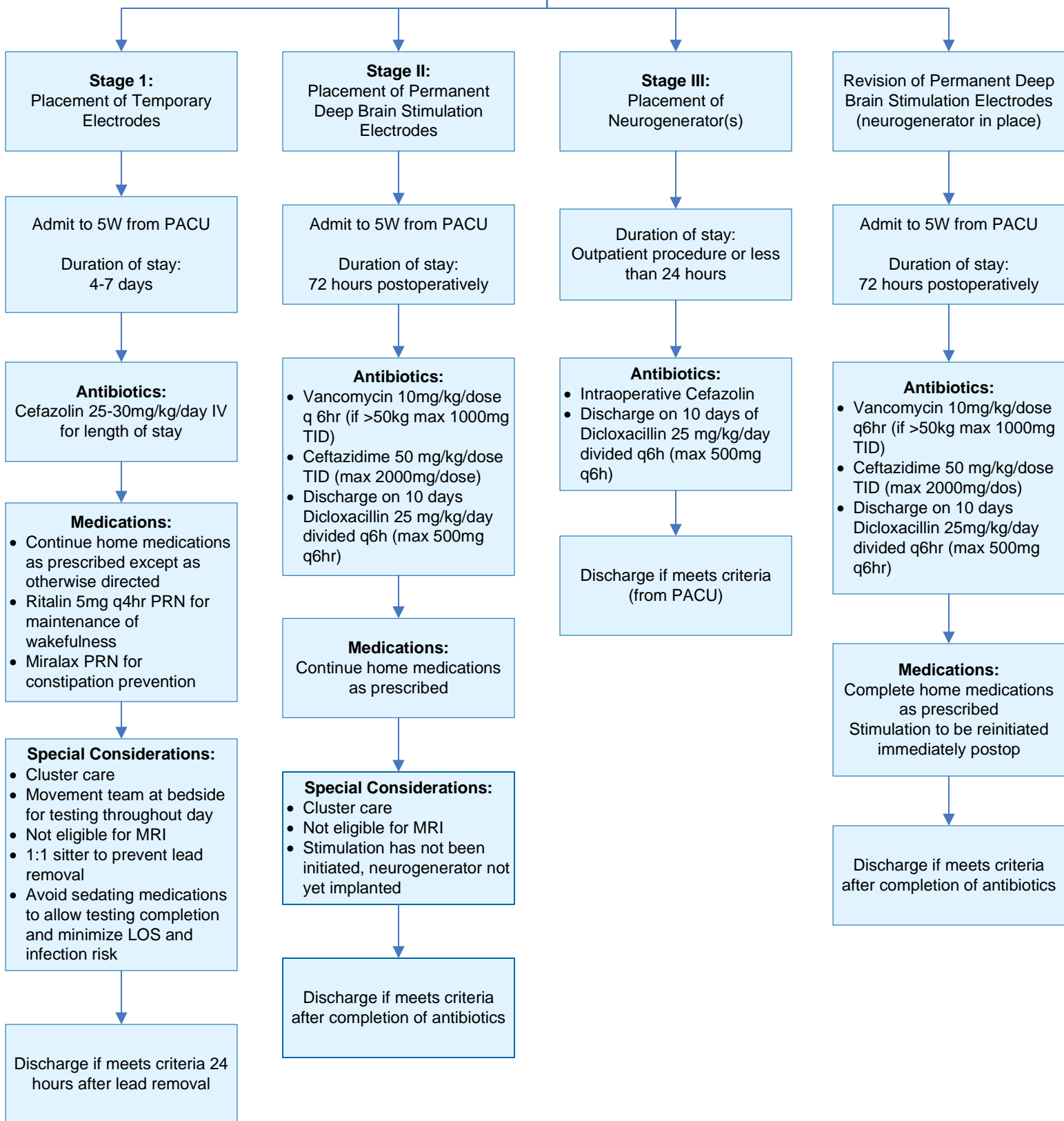
Handouts

- Deep Brain Stimulation Discharge

Deep Brain Stimulation Surgery Care Guideline



Post-operative care of scheduled deep brain stimulation surgical patients at CHOC



Deep Brain Stimulation Surgery Care Guideline References

- Bohn, E., Goren, K., Switzer, L., Falck-Ytter, Y., & Fehlings, D. (2021). Pharmacological and neurosurgical interventions for individuals with cerebral palsy and dystonia: a systematic review update and meta-analysis. *Developmental Medicine & Child Neurology*, *63*, 1038-1050. <https://doi.org/10.1111/dmcn.14874> (Level I)
- Humanitarian Device Exemption (HDE)*. Retrieved from U.S. Food and Drug Administration: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfhde/hde.cfm?id=375511>
- Kaminska, M., Perides, S., Lumsden, D. E., Nakou, V., Selway, R., Ashkan, K., & Lin, J.-P. (2017). Complications of deep brain stimulation (DBS) for dystonia in children - The challenges and 10 year experience in a large paediatric cohort. *European Journal of Paediatric Neurology*, *21*, 168-175. <https://doi.org/10.1016/j.ejpn.2016.07.024> (Level IV)
- Musleh, W., Yassari, R., Hecox, K., Kohrman, M., Chico, M., & Frim, D. (2006). Low incidence of subdural grid-related complications in prolonged pediatric EEG monitoring. *Pediatric Neurosurgery*, *42*, 284-287. <https://doi.org/10.1159/000094063> (Level IV)
- Olaya, J. E., Christian, E., Ferman, D., Luc, Q., Krieger, M. D., Sanger, T. D., & Liker, M. A. (2013). Deep brain stimulation in children and young adults with secondary dystonia: the Children's Hospital Los Angeles experience. *Neurosurgical Focus*, *35*, E7. <https://doi.org/10.3171/2013.8.FOCUS13300> (Level V)
- Sanger, T. D., Liker, M., Arguelles, E., Deshpande, R., Maskooki, A., Ferman, D., . . . Robinson, A. (2018). Pediatric deep brain stimulation using awake recording and stimulation for target selection in an inpatient neuromodulation monitoring unit. *Brain Sciences*, *8*(135). <https://doi.org/10.3390/brainsci8070135> (Level V)
- Skoch, J., Adelson, P. D., Bhatia, S., Greiner, H. M., Rydenhag, B., Scavarda, D., & Mangano, F. T. (2017). Subdural grid and depth electrode monitoring in pediatric patients. *Epilepsia*, *58*, 56-65. <https://doi.org/10.1111/epi.13685> (Level V)