



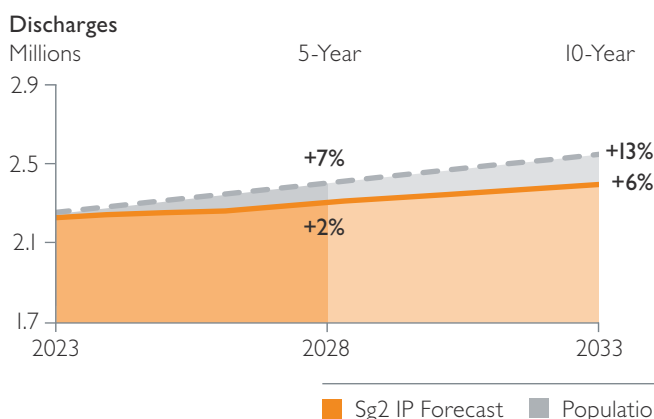
Snapshot 2023

NEUROSCIENCES

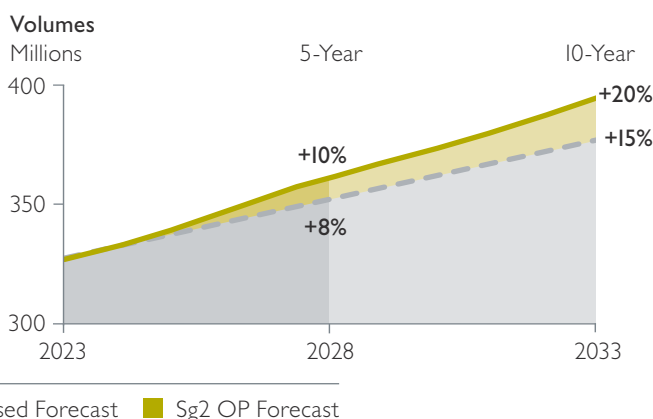
LANDSCAPE

Today's neurosciences programs face a tough balancing act: return to the growth mindset required to meet demand while navigating market pressures and increased complexity fueled by the aftermath of COVID-19. Efforts to improve operational efficiency and manage patients in lower-acuity settings continue to dampen IP volumes for some conditions. Although growth opportunities remain for many procedures, a notable portion that traditionally have been financially favorable IP volumes are shifting to less invasive approaches or are likely to shift OP within the next 10 years. High-volume post-acute and rehab services impact OP demand. To prepare for site-of-care shifts, programs should focus on improving clinical and operational performance in the short term while rethinking strategic investment needed to lay the groundwork for long-term sustainability.

Inpatient Neurosciences Forecast, US Market, 2023–2033



Outpatient Neurosciences Forecast, US Market, 2023–2033



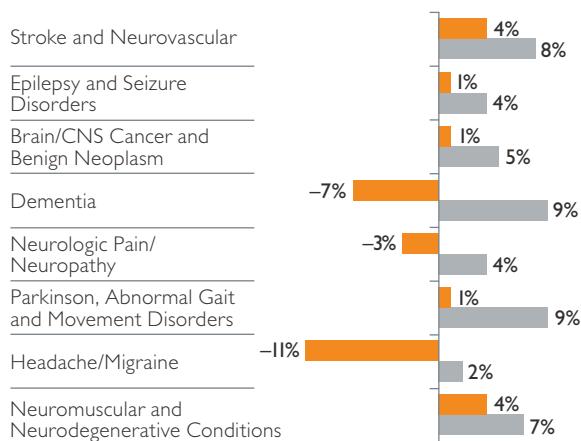
TOP TRENDS

- AI-enabled technology applications have soared, expanding across conditions (eg, brain tumor, aneurysm) and uses (eg, clinical trial enrollment, outcome/complication prediction).
- Acuity is rising across sites as patients' conditions become increasingly complex and advances enable more treatment to occur in lower-acuity or nontraditional settings (eg, ambulatory/home-based EEG, virtual visits).
- Rising costs are further complicating workforce challenges and burnout exacerbated by the COVID-19 pandemic.
- Payment updates, such as additions to the CMS list of HOPD procedures requiring prior authorization (eg, spinal cord stimulation, facet joint interventions), elevate the case for a comprehensive, continuum-wide approach to care.
- Diagnostic advances (eg, computational and portable imaging) extend access and support efficient resource use.
- New pharmacologic options create opportunities but also can threaten traditional volumes (eg, MS infusion vs self-administered injection). In neurosurgery, treatment is increasingly individualized. Recent research findings on stroke care indicate expanding eligibility for thrombectomy in patients with large stroke and the benefits of Tenecteplase and a novel neuroprotectant medication.
- Urgency for AD/dementia care has reached new heights due to the aging population, increasingly accessible diagnostics and the first therapeutic to gain full traditional [FDA approval](#) (with another therapeutic in the pipeline showing [promising results](#)). These factors will drive demand for upstream diagnostic and monitoring services, however, unknowns still remain.

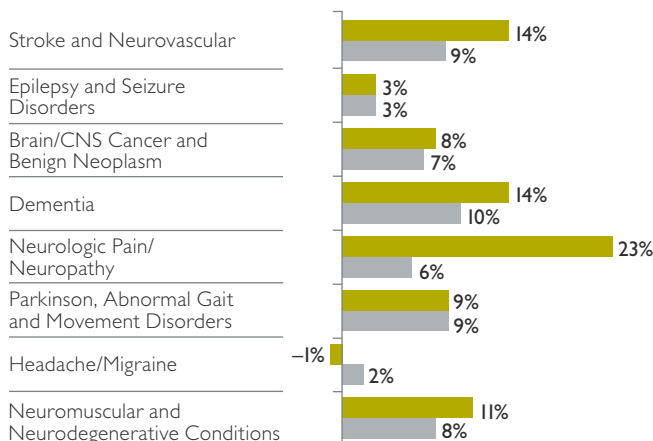
Note: Analysis excludes 0–17 age group and includes the neurosciences service line and the Brain/CNS Cancer CARE Family. AD = Alzheimer disease; AI = artificial intelligence; CARE = Clinical Alignment and Resource Effectiveness; CNS = central nervous system; EEG = electroencephalogram; HOPD = hospital outpatient department; MS = multiple sclerosis; NCD = national coverage determination. **Sources:** Sarraj A et al. *N Engl J Med*. 2023;388:1259–1271; University Hospitals Cleveland Medical Center. New major international study finds thrombectomy highly effective treatment for large strokes [press release]. February 10, 2023; Phend C. Tenecteplase on par with Alteplase, randomized trial affirms. *MedPage Today*. February 9, 2023; Phend C. Stroke neuroprotection drug passes early-phase hurdle. *MedPage Today*. February 8, 2023; American Heart Association. Medication that protects brain tissue linked to improved stroke survival [press release]. February 8, 2023; Heidt A. FDA Adcomm to vote on traditional approval of Eisai and Biogen's Lecanemab in June. *BioSpace*. April 11, 2023; FDA. FDA converts novel Alzheimer's disease treatment to traditional approval [press release]. July 6, 2023; Sims JR et al. *JAMA*. July 17, 2023 [Epub ahead of print]; Impact of Change®, 2023; HCUP National Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP) 2019. Agency for Healthcare Research and Quality, Rockville, MD; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

NEUROSCIENCES SNAPSHOT 2023

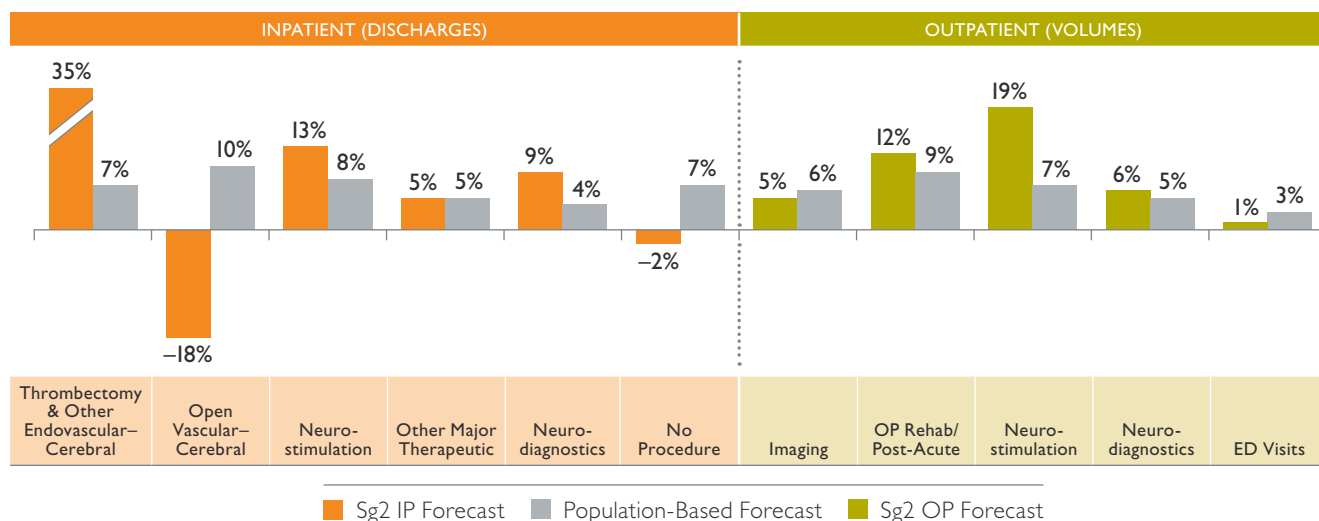
Inpatient Neurosciences Forecast for Select CARE Families US Market, 2023–2028



Outpatient Neurosciences Forecast for Select CARE Families US Market, 2023–2028



Neurosciences Forecast for Select Procedures, US Market, 2023–2028



ACTION STEPS TO DRIVE VALUE

- ▶ Evaluate market dynamics and engage clinicians to prepare for potential outpatient/ambulatory shifts (surgical and nonsurgical).
- ▶ Build community partnerships (eg, with wellness/fitness centers) to broaden the program funnel, better meet complex patient and caregiver needs, and address care gaps (eg, social determinants of health, risk factor modification, education for stroke prevention).
- ▶ Encourage physician-led multidisciplinary teams to develop clinical care paths, support new technology adoption and implement effective resource deployment.
- ▶ Engage staff and other stakeholders in care delivery pathways (eg, Enhanced Recovery After Surgery, interdisciplinary case review for treatment selection) to improve decision making and care continuity. Implement navigation and triage protocols to expedite evaluation and treatment and improve efficiency.
- ▶ Offer in-house technician training or selectively outsource to build skills in EEG, sleep and intraoperative monitoring.
- ▶ Establish mechanisms to support connectivity across post-acute sites, including patients' homes (eg, via stroke navigators, remote monitoring).

Note: Analysis excludes 0–17 age group and includes the neurosciences service line and the Brain/CNS Cancer CARE Family. Stroke and Neurovascular includes the Ischemic Stroke, Hemorrhagic Strokes (SAH, ICH, SDH), Transient Ischemic Attack and Neurovascular Diseases CARE Families; Brain/CNS Cancer and Benign Neoplasm includes brain/CNS cancer from the cancer service line and benign neoplasm—neuro from the neurosciences service line; Parkinson, Abnormal Gait and Movement Disorders includes Parkinson disease, abnormal gait and movement disorders; Neurologic Pain/Neuropathy includes neurologic pain and neuropathy (excluding median nerve). Imaging includes advanced and standard imaging. OP rehab/post-acute includes all rehab and post-acute services. OP neurodiagnostics includes ambulatory EEG, neurodiagnostics and neurodiagnostics EEG. ED visits includes both urgent and emergent visits. ICH = intracerebral hemorrhage; SAH = subarachnoid hemorrhage; SDH = subdural hemorrhage. **Sources:** Impact of Change®, 2023; HCUP National Inpatient Sample (NIS), Healthcare Cost and Utilization Project (HCUP) 2019. Agency for Healthcare Research and Quality, Rockville, MD; Proprietary Sg2 All-Payer Claims Data Set, 2021; The following 2021 CMS Limited Data Sets (LDS): Carrier, Denominator, Home Health Agency, Hospice, Outpatient, Skilled Nursing Facility; Claritas Pop-Facts®, 2023; Sg2 Analysis, 2023.

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