

Emerging Treatments: A Landscape Review of

Neurostimulation Patents granted in the USA (2016-2020)



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OBJECTIVE

To describe emerging neurostimulation therapies as represented by patents granted in the USA between 2016 and 2020.

BACKGROUND

- Neurostimulation for medical purposes alters pathologic neuronal activity to treat a range of conditions.
- Its expansion is driven by large-scale research partnerships and steep investments in translational research.
- Patents are filed to protect novel inventions during the development stage and market entry.
- The USA enables inventors to patent more widely in medicine than many other countries.

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METHODS

- 3,113 patents collected via algorithmic search of Lens.com, an online, open-access, patent database.
- Patents in neurostimulation identified via manual curation using filter tools developed in-house.
- Categorization of patents according to technologic characteristics and target therapies.

PATENT DATA

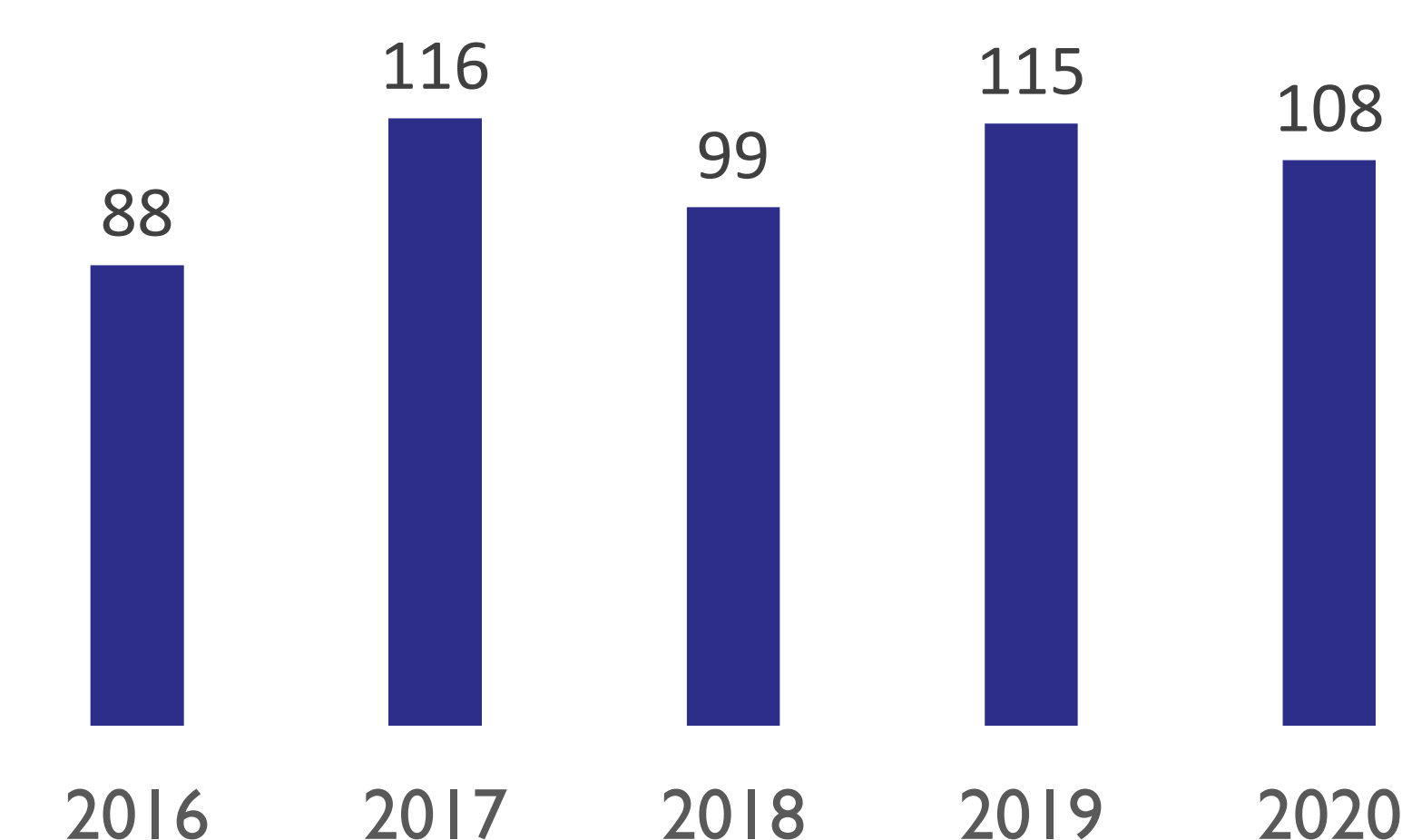


Fig. 1: Number of neurostimulation patents granted in the United States (2016-2020).

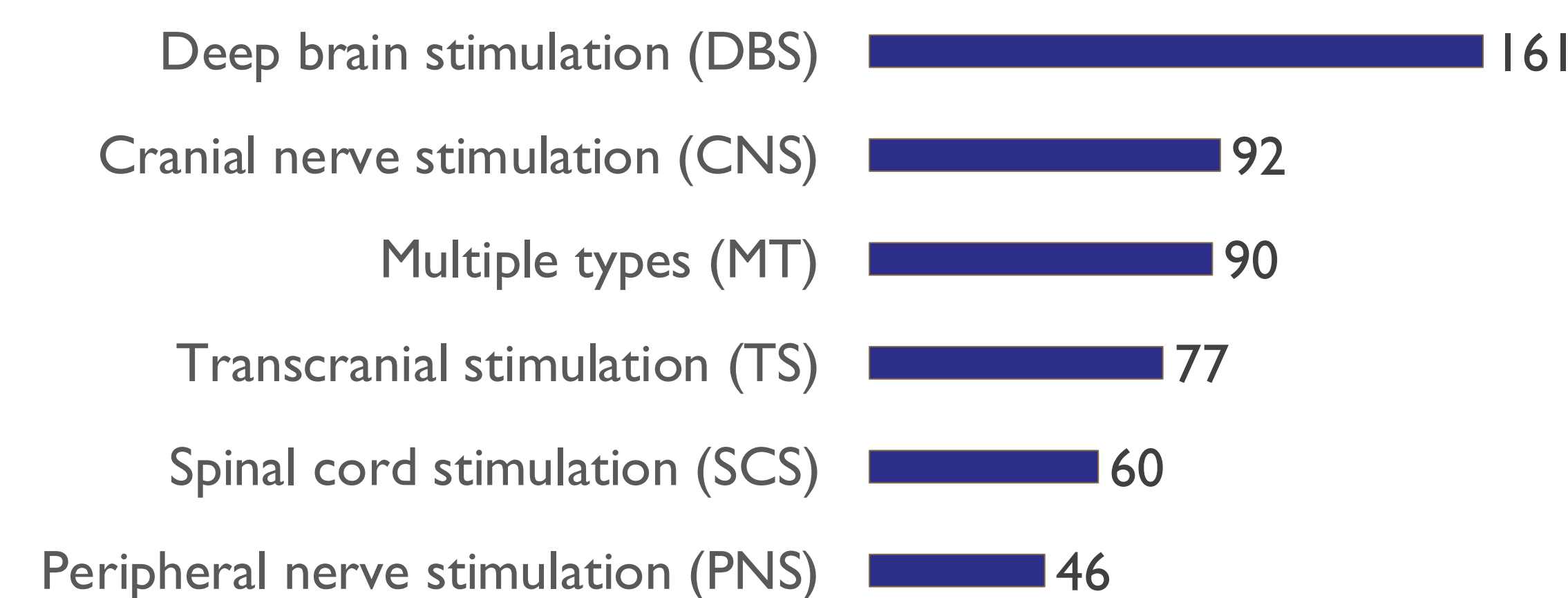


Fig. 2: Patented methods.

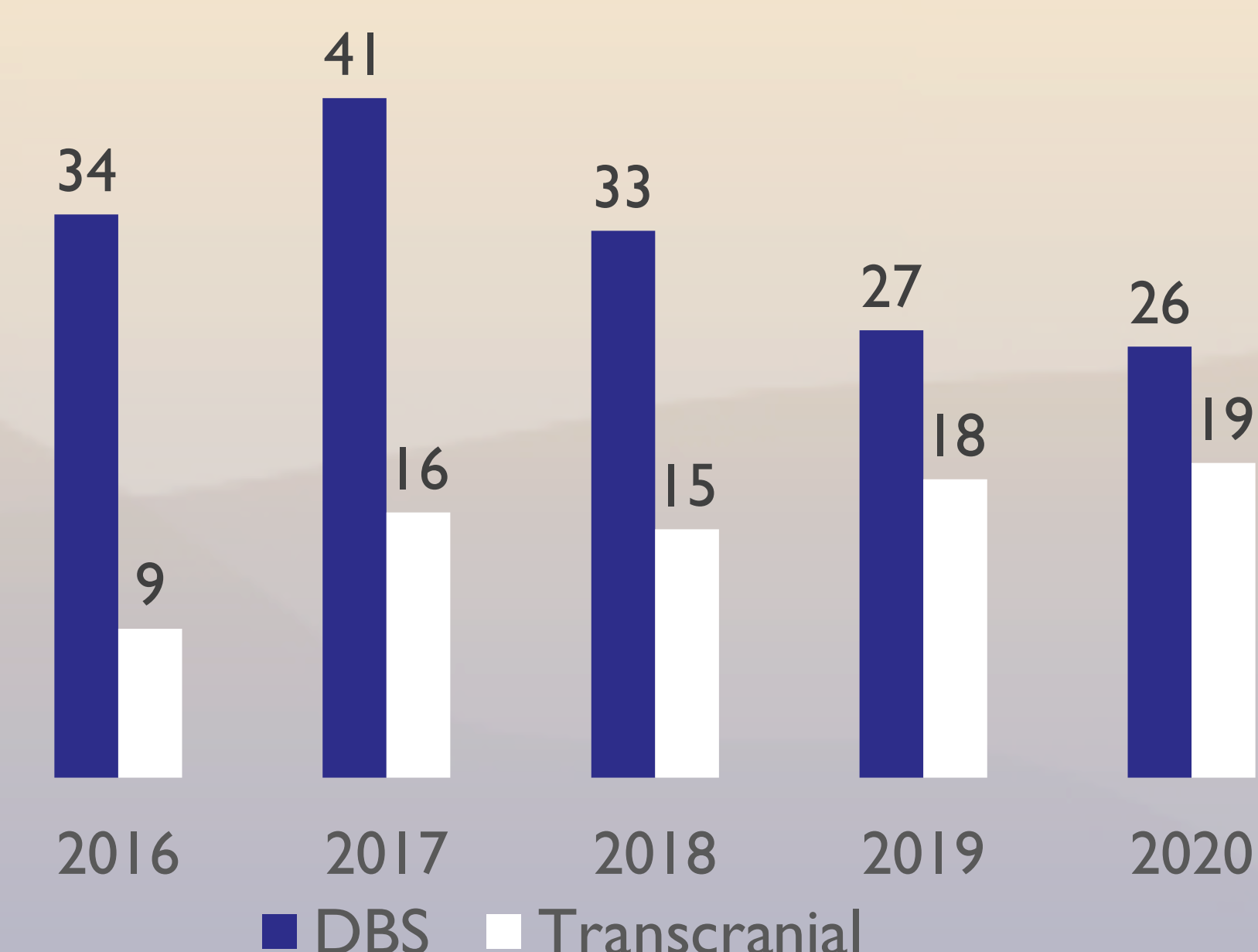


Fig. 3: Number of patents granted annually for invasive (DBS) and non-invasive (TS) neurostimulation methods.

Major Therapeutic Targets

Condition	N	%
Neuropathic pain	139	17
Neurodegenerative diseases	87	11
Epilepsy	54	7
Depression	53	7

Table 1: Neurologic and medical conditions most frequently targeted in neurostimulation patents.

RESULTS

526 patents were granted for novel neurostimulation methods.

- Numbers of relevant patents granted annually is relatively stable.
- DBS is the dominant method reflected in the patent landscape.
- Patents frequently protect multiple types of therapeutic targets; pain is a primary target.

DISCUSSION

- Neurostimulation patents cover a diverse range of neurologic and mental health conditions.
- Current innovation focuses on methods of stimulating the brain and cranial nerves.
- Innovation in non-invasive neurostimulation methods may soon outpace that of invasive methods.
- Trends toward non-invasive neurostimulation may anticipate widespread comfort with and rapid dissemination of neurotechnology.
- Major targets for treatment currently include disorders of pain, neurodegeneration, seizures, and mental health.