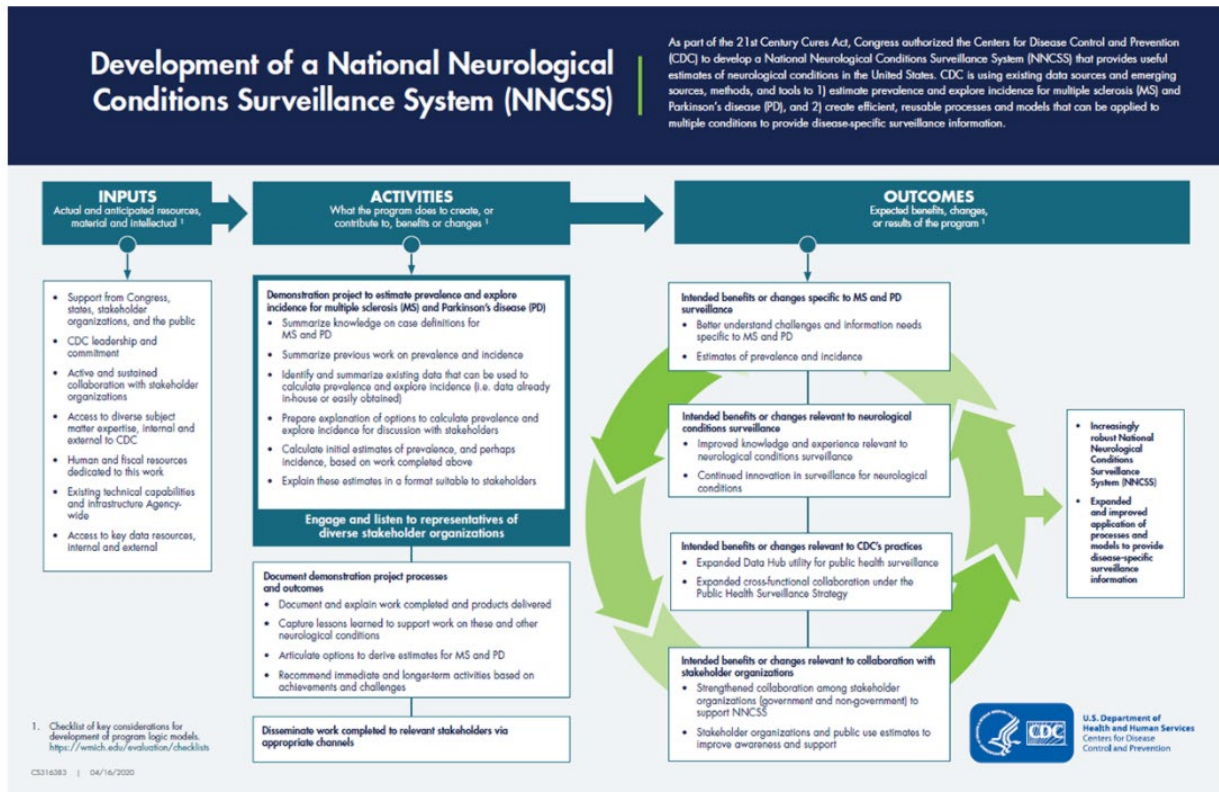# National Neurological Conditions Surveillance System (NNCSS) Logic Model

The National Neurological Conditions Surveillance System (NNCSS) aims to provide useful estimates of neurological conditions in the United States. In 2016, the United States Congress authorized the Centers for Disease Control and Prevention (CDC) to develop and implement NNCSS as part of the 21st Century Cures Act. The logic model depicts resources dedicated to the project, key domains of activity, and desired contributions to meaningful changes or results. CDC developed this logic model to summarize and depict how stakeholders understand project components and the relationships between and among the components. This logic model includes inputs, activities, and outcomes presented in boxes; lines and arrows connect these boxes in a purposeful progression from use of resources (inputs and activities) to results (outcomes).

In calendar year 2019, NNCSS focuses on estimating incidence and prevalence for multiple sclerosis (MS) and Parkinson's disease (PD). As a starting point, the logic model presents the actual and anticipated resources dedicated to this work as inputs in column one. These *inputs* include the material and intellectual contributions to this project: interest and support from Congress, states, stakeholder organizations, and the public; CDC leadership of this project and commitment to the work; active and sustained collaboration with stakeholder organizations nationwide; access to diverse subject matter expertise, internal and external to CDC; human and fiscal resources dedicated to this work; existing technical capabilities and infrastructure within CDC; and access to a range of data resources that can be used to develop sound estimates of incidence and prevalence for MS and PD. A large arrow connects these inputs to activities in the second column to show how resources will be used to achieve the project's intended outcomes in the third column.

Activities presented in a logic model depict what is done to create, or contribute to, desired benefits or changes (i.e., outcomes). (Centers for Disease Control and Prevention, 1999) This logic model includes three boxes of related activities: (a) demonstration project to estimate incidence and prevalence for MS and PD, (b) document demonstration project processes and outcomes, and (c) disseminate work completed to relevant stakeholders via appropriate channels. We intend to summarize knowledge on case definitions for MS and PD; summarize previous work on incidence and prevalence for these conditions; identify and summarize existing data that can be used to calculate incidence and prevalence (i.e., data already in-house or easily obtained); prepare an explanation of options to calculate incidence and prevalence for discussion with stakeholders; calculate initial estimates of prevalence and, to the extent possible, incidence; and explain these estimates in a format suitable to stakeholders. As presented in the graphic, each of these tasks includes meaningful collaboration with diverse stakeholder organizations, government and non-government.

The second box of activities provides information on how and why CDC will document project processes and outcomes. In public health and allied fields, the ability to identify the key components of an activity or intervention that are effective, and under what conditions, can help us to disentangle the factors that enable or support progress toward desired outcomes. (Linnan, 2002) CDC personnel will work with stakeholders to document and explain work completed and products delivered; articulate options to derive estimates for MS and PD; capture lessons learned to support future work on these and other neurological conditions; and recommend immediate and longer-term activities based on documented achievements and challenges.

The third box of activities focuses on dissemination of work completed to relevant stakeholders via appropriate channels. Given the importance of this project to a wide range of stakeholders, it is especially important to ensure that products reach intended users and other audiences.

The last section of the logic model includes the intended outcomes of this project over time. Outcomes refer to the expected benefits, changes, or results of the program or project. (MacDonald, 2018)(A.W. Frye, 2012) In this case, the logic model includes four boxes of proximal or short-term outcomes: benefits or changes specific to MS and PD surveillance; benefits or changes relevant to neurological conditions surveillance more generally (i.e., not limited to MS or PD); benefits or changes relevant to CDC surveillance practices or processes; and benefits or changes relevant to collaboration with stakeholder organizations on neurological conditions surveillance. Each of these boxes includes more detailed statements regarding the specific benefits or changes desired. In the first box, benefits or changes specific to MS and PD surveillance, stakeholders expect the activities in the second column to contribute to a better understanding of challenges and information needs specific to MS and PD. And, the project aims to produce usable and useful estimates of incidence and prevalence for the two conditions before the end of year two. The second box in this column includes intended benefits or changes relevant to neurological conditions surveillance more generally: (a) improved knowledge and experience relevant to this work, and (b) innovation in data sources and surveillance methods for neurological conditions. The third box includes benefits or changes specific to CDC practices or processes relevant to public health surveillance. Stakeholders internal to CDC expect that this project will contribute to expanded use of the Agency's internal data hub capabilities to support public health surveillance. For example, this data hub includes multiple data sets and analytic tools that can be used

Agency-wide. In addition, collaboration as part of this demonstration project will produce expanded, cross-functional collaboration that contributes to the agency's Public Health Surveillance Strategy. The fourth box of outcomes includes benefits or changes relevant to stakeholder collaboration. Specifically, this project is expected to strengthen collaboration among stakeholder organizations to advance and support neurological conditions surveillance. As this collaboration continues, and the products of this work are disseminated widely, stakeholder organizations and the public are expected to use the estimates generated via the demonstration project.

The logic models presents these four boxes of outcomes vertically, connected via straight lines. The circle of arrows behind the boxes is intended to represent that these benefits and changes are not isolated and static—each outcome is related to the others in meaningful ways. Cumulatively, these outcomes contribute to progress toward 2 longer-term benefits or changes presented in the logic model: (a) an increasingly robust National Neurological Conditions Surveillance System, and (b) expanded and improved application of processes and models to provide disease-specific surveillance information for neurological conditions.

As the demonstration project continues to evolve, and additional stakeholders contribute to activities, this logic model can be updated to reflect what is learned over time.

References

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