

DOSE CYCLE: AN INTEGRAL PART OF THE PARKINSON'S DISEASE NURSE SPECIALIST'S COMPREHENSIVE HEALTH ASSESSMENT



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The motor component of the examination is built around the Unified Parkinson's Disease Rating Scale (UPDRS) that was revised by the Movement Disorders Society in 2008 (Goetz et. al. 2008) from the 1987 version (Fahn et. al. 1987). The UPDRS Part III is used to objectively score the severity of the patient's PD symptoms in their 'OFF' state then compare the repeated assessment result in their medicated state known as their 'ON' state. The difference in score forms a percentage to highlight the level of the improvement using the formula below.

$$[(\text{OFF score} - \text{ON score}) \div \text{OFF score}] \times 100 = \text{Improvement in \%}$$

Example: If the OFF score was 48 and the ON score improved to 25
 $[(48-25) \div 48] \times 100 = 47.9\%$ improvement

Other assessment tools of the motor examination include the 9-hole peg board test which records the time taken to place nine wooden pegs into nine holes in the patient's 'OFF' state versus their 'ON' state. This assessment tool has been criticised for its simplicity; however, other literature has proven its legitimacy in the assessment of PWP, particularly, their upper limb and cognitive function (Earhart et. al. 2011). In addition, a gait assessment is added to examine the nature, the velocity, the amplitude and mobility of the patient's walking. This is performed in both the patient's 'OFF' and 'ON' state to provide objective data to compare the patient's level of improvement.

To enhance the accuracy and reliability of the clinical records, video evidence of the assessment is recorded with the patient's signed informed consent.

Cognitive examination

PD is a multi-system disease with symptoms that affect motor function, non-motor function and cognitive function. Hence, it is vital for a PDNS to be able to assess the patient's multifaceted aspects of the patient's PD.

Glossary

Gait: The pattern of how a person walks

'OFF': the pre-medicated state of a person with PD characterised by poor or absent motor function, with increased PD signs and where mood may be negatively affected.

'ON': the optimally medicated state of a person with PD characterised by good or improved motor function and mood may also be improved.

A comprehensive health assessment (CHA) of the patient with Parkinson's disease (PD) performed by a Parkinson's disease nurse specialist's (PDNS) is often termed 'dose cycles' or 'Levodopa challenges'. The aim of a dose cycle may be to assist in diagnosis and/or investigation of symptoms by documenting the patient's degree of responsiveness to PD medications. It provides a detailed and objective assessment of a patient's motor, non-motor and any other psychosocial issues. Although the process of a dose cycle performed by a PDNS may vary between different hospitals or facilities, the nursing assessment takes a holistic approach and includes the use of various validated assessment tools to assess the different aspects of the patient's health based on the biopsychosocial model of health.

Referral and history

The process begins with a referral and patient history from the neurologist requesting a dose cycle. The rationale of the dose cycle is highlighted in the referral, and the type and dose of the challenge medication is prescribed.

The PDNS then acquires a background history of the patient's gender, age, past medical history and social living situations. More specifically to PD, the duration of disease, current PD medication regimen and presenting problem is examined.

Motor examination

Prior to the assessment, the patient with Parkinson's disease (PWP) is withheld from dopaminergic medications from the night prior, so they will attend the assessment initially in their pre-medicated state also known as their 'OFF' state and a baseline assessment is performed. A challenge dose of PD medication is then administered, usually at a slightly higher dose than the patient's normal regimen, and the changes in Parkinsonian symptoms throughout the medication cycle of the challenge dose are recorded.

To assess a patient's cognition, the Montreal Cognitive Assessment (MOCA) is used. The MOCA has been shown to be more sensitive in cognitive screening than the traditional and well-renowned Mini Mental State Examination in patients with PD (Dalrymple-Alford et. al. 2010). It is a simple 30 mark assessment that captures a glimpse of the patient's cognitive status in areas of executive and visuospatial abilities, memory, attention, language, abstract thinking and orientation. If the patient requires a more extensive examination of cognition, the more exhaustive Addenbrook's Cognitive Examination, which covers similar areas of cognitive function, is implemented (Crawford et al. 2012).

Psychosocial assessment

A PD quality of life questionnaire (PDQ-39) is the most commonly used questionnaire in PD. It consists of 39 questions that measures the eight areas a patient's health including mobility, activities of daily living, emotional well-being, stigma, social support, cognition, communication and bodily discomfort (Tan et al. 2004).

Depression and anxiety are a major component of a PWP's non-motor symptoms. These symptoms sometimes can be more troublesome than the motor symptoms of PD. A scale such as the Hospital Anxiety Depression Scale is used to screen and monitor the levels of depression and anxiety (Bjelland et al. 2002).

With the introduction of dopamine agonist medication, there is a risk of developing a detrimental side effect known as Impulse Control Disorder (ICD). ICD is a condition where the patient has an uncontrollable urge to engage in detrimental behaviour and can manifest in many ways such as compulsive gambling, hyper-sexuality, over-eating, over-spending, punting and other obsessive compulsions. To screen for the risk and of this serious side effect, a Questionnaire for Impulsive-Compulsive Disorders in Parkinson's Disease - Rating Scale is recorded (Weintraub et. al. 2012).

Due to the fact that PD is a chronic illness, often the stress of carers and spouses are extremely high and caring for the carers becomes part of the role of the PDNS. A carer's burden questionnaire known as Cambridge Behavioural Inventory (Wedderburn et. al. 2008) in conjunction with the Zarit Burden Interview (Zarit et. al. 1980) can be implemented to assess the carer's burden. This is an extremely helpful tool not just from a psychosocial perspective but also if a change in treatment strategies has been successful, a reduction in the carer burden score would be an excellent objective indicator of improvement rather than over dependence on a patient's subjective experience.

Finally, because the autonomic dysfunction and the use of PD medications can cause and exacerbate postural hypotension, a postural blood pressure in PWP's 'OFF' and 'ON' states is measured as this may impact on the titration of dosages and frequency prescribed by the neurologist.

Impressions and recommendations

The role of the PDNS is not to make a medical diagnosis. However, it is an important aspect of the PDNS role to collate the data from the history and examination and have the ability to interpret the results of the assessment to form a nursing diagnosis. Interpreting results require the expertise of the PDNS beyond just collating objective data but having the ability to report subjective observations that may be neglected from using assessment tools. These may encompass situations where the objective scoring of the assessment tools do not provide a true reflection of the patient's actual condition or functional improvement.

Based on the results of the assessment, the PDNS then provides the neurologist with an impression of the patient's condition and a summary of the assessment outcomes with a focus on the rationale for the referral. Providing an impression may include suggesting potential differential diagnosis and/or provide a conclusion to the nature of the symptom being investigated.

The neurologist then considers the results and recommendations made by the PDNS and potentially make changes in the management of the patient. These changes may include changes to medication regimen, treatment options, investigative procedures and even potentially altering a patient's original diagnosis.

The future of Parkinson's disease nurse specialists

The assessments performed by PDNS may vary from different hospitals and facilities. However, as reflected in an international audit performed in 2006 by the World Health Organization in conjunction with the European Parkinson's Disease Association and the International Council of Nurses, their consensus view recommends that there is a need for uniformity in the practice of PDNS both in Australia and internationally. It will be an important challenge for the current PDNS in Australia, as well as other countries, to establish an accreditation process and career pathways for the PDNS and to ensure that PDNS around Australia and internationally are practicing in a standardised, evidenced-based setting and providing appropriate recommendations for the wellbeing of the PWP (McFall-Austin 2009).

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