

Managed Care Aspects of Managing Neurogenic Bladder/ Neurogenic Detrusor Overactivity

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The Problem of Neurogenic Bladder and Neurogenic Detrusor Overactivity

Neurogenic bladder (NGB) is a form of lower urinary tract dysfunction created by a loss of voluntary control of bladder function due to nervous system injury or neurologic disease such as multiple sclerosis (MS), Parkinson's disease (PD), spinal cord injury (SCI), or spina bifida.¹ This loss of bladder control may result from involuntary bladder contractions during the filling and storage phases of the process of urination, a phenomenon termed neurogenic detrusor overactivity (NDO).² NDO results in sustained high bladder pressure and urinary incontinence (UI) or sphincter-detrusor dyssynergia, leading to a loss of coordination of bladder function.^{1,3} Among the substantial complications patients with NGB can experience are urinary tract infections (UTIs) with risk of progression to sepsis, urinary retention, chronic vesicoureteral reflux, and kidney hydronephrosis with risk of progression to overt renal failure due to high intravesical pressures. Secondary changes of the bladder wall may occur. UI itself can be difficult to manage in patients with NGB as a result of restricted mobility created by their underlying neurologic disease.¹ NDO and accompanying UI can create physical complications such as skin decubiti, urethral erosions, and upper urinary tract damage. UI itself can result in diminished quality of life (QoL) for patients with NGB/NDO, manifesting as embarrassment, depression, and social isolation and sexual dysfunction. UI can create significant health and lifestyle burdens for patients with neurologic disorders.⁴

Overactive bladder (OAB) develops in a variety of patient types, including the elderly, women post-childbirth or who are post-menopausal, and men with prostatic enlargement.^{1,5} Although patients with NGB and OAB share some characteristics and symptoms, the economic burden and impact on QoL of OAB have been well studied and characterized, whereas those of NGB are not as well known and understood. Because of their underlying neurologic abnormalities, patients with NGB and NDO and related UI may view their urinary symptoms differently from their healthy counterparts. A better understanding of the negative effects of lower urinary tract dysfunction on the healthcare utilization, economic outcomes, and QoL in patients with neurologic disorders is crucial to assist clinicians in optimizing patient assessment and therapy, leading to better outcomes and health-related quality of life (HRQoL) for these patients.^{1,2}

Abstract

Neurogenic bladder (NGB) and neurogenic detrusor overactivity (NDO) manifesting in urinary incontinence (UI) can present substantial treatment challenges to clinicians managing patients with underlying neurologic disorders such as multiple sclerosis, Parkinson's disease, spinal cord injury, spina bifida, and stroke. Although the clinical disease burden alone is difficult for patients and those managing their disorders, the significant negative impact that NGB/NDO and UI can have on health-related quality of life and the economic costs surrounding these disorders can be devastating for patients already burdened with neurologic disorders. Careful clinician assessment of these quality-of-life issues and the economic impact of NGB/NDO with UI is needed to appropriately assess the burden these disorders place on patients and their management and to assist clinicians to design the most clinically, socially, and economically effective individualized management plans to optimize patient outcomes.

(Am J Manag Care. 2013;19:S205-S208)

For author information and disclosures, see end of text.

The Healthcare Utilization Impact of Neurogenic Bladder

Manack and colleagues published a study in 2011 evaluating the epidemiology and healthcare utilization patterns of patients with NGB dysfunction related to incontinence using a United States insurance claims database. The purpose of the study was to characterize the profile of patients with NGB, their medication utilization, and their healthcare visits/encounters surrounding NGB dysfunction specifically related to incontinence. A total of 46,271 patients were in the main NGB cohort. Subcohorts including 9315 patients with MS and 4168 patients with SCI were also assessed. Medical and pharmacy claims were retrospectively analyzed for a 1-year period. Demographic data, concomitant diseases, and use of oral medications for bladder overactivity (OAB drugs) were summarized as part of the study. The mean age of the patients studied was 62.5 years.¹

Results of the study demonstrated a high frequency of UTIs (range of 29% to 36% of patients), obstructive uropathies (6% to 11%), and urinary retention (9% to 14%) in the patients with NGB. A smaller proportion of patients were diagnosed with upper urinary tract infections (1.4% to 2.2%). Some serious systemic conditions were found, specifically sepsis (including septicemia, range of 2.6% to 4.7%) and episodes of acute renal failure (0.8% to 2.2%). Approximately 33,100 patients (71.5%) studied were using an oral OAB medication, with oxybutynin and tolterodine the drugs most frequently used (39.0% and 36.9% of patients, respectively). The mean number of days on OAB drug calculated to 201.9 days, with the average length of time on drug at 209.1 days. The percentage of patients using OAB drugs who discontinued their medications and did not restart them was 30.5%.

Analysis of use of healthcare resources demonstrated that during the 1-year follow-up period, 39% of patients with NGB visited a urologist, and 31.7% underwent consultation with a neurologist. More than half of patients with MS and almost one-fifth of those with SCI visited a neurologist (52.6% and 18.5%, respectively). Healthcare encounters were measured using the number of patients with NGB who were hospitalized (33.3%), treated in the emergency department (ED) (23.4%), or who resided in a nursing home (14.4%). More patients in the SCI subcohort (42.3%) were hospitalized than in the overall NGB cohort (33.3%) and the MS subcohort (21.4%). Similarly, more patients with SCI underwent ED treatment than in the main cohort or MS subcohort (25.9% vs 23.4% and 19.9%, respectively) and resided in nursing care facilities (15.0% vs 14.4% and 6.8%, respectively). More than 21% of those patients hospitalized in all cohorts were diagnosed with lower UTIs, with approximately

8% being treated for sepsis/septicemia. Of those hospitalized, 5.6% were diagnosed with urinary retention, and 5.4% were found to have obstructive uropathies. Overall, patients with NGB averaged 16 office and 0.5 ED visits annually.¹

The authors of the study commented that the most striking finding was the high frequency of lower UTIs, urinary obstruction, and retention in all of the NGB cohorts, all of which led to increased healthcare services utilization. UTIs and urinary retention are of special concern because they can progress to upper tract involvement and serious renal and systemic complications and hospitalization.^{1,6} Obstructive uropathies can also lead to severe kidney damage, including renal failure.^{1,7} In this study, 22% of patients with NGB and lower UTIs were hospitalized, as were 46% of patients with upper UTIs. Approximately 17% of those with obstructive uropathies underwent hospitalization, and although there were proportionally fewer patients diagnosed with acute renal failure, more than 66% of these patients were hospitalized. The fact that these statistics represent only a 1-year period must be taken into consideration, as it is probable that more serious chronic and systemic complications would develop over a longer period of time.¹ Patients with NGB were noted to have multiple diagnoses on record and were receiving several different classes of medications, suggesting a substantial level of other comorbidities associated with their primary disorder. Although overall and indirect costs have been calculated for patients with OAB (cost data from the year 2000 were calculated at approximately \$12.02 billion), a direct comparison of healthcare utilization and costs has not been performed surrounding NGB.^{1,8} However, the high number of complications, comorbidities, specialist consultations, and medication usage in the Manack epidemiologic study suggests a proportionately higher cost per patient for management of NGB compared with OAB.¹

One other important factor surrounding healthcare utilization in NGB is patient adherence to therapy. One retrospective analysis of a pharmacy claims database evaluated therapy adherence in 515 patients taking immediate-release oxybutynin and 505 patients using tolterodine, common antimuscarinic therapies approved by the US Food and Drug Administration and prescribed for NDO. The results demonstrated that less than one-third of patients on either treatment had 6 months of continuous therapy. Prescriptions were not refilled by 68% of those taking oxybutynin and 55% of those prescribed tolterodine.^{1,9} Considering that 71.5% of patients studied in Manack et al received 1 or more OAB oral agent, data strongly suggest that patients with NGB are not managing their disorder optimally considering the high rate of discontinuation of first-line therapies.¹ Another study

showed that patients on extended-release medication actually had a higher nonpersistence rate than those on immediate-release drugs.¹⁰ Adherence is an important factor in therapy and patient management, especially when considering that combination therapy using 2 or more drugs may be needed in many patients with NGB to improve outcomes.¹¹

One could speculate that the reason for this lack of adherence is related to the undesirable adverse effects associated with OAB agents, including dry mouth, constipation, and blurred vision. It also might be related to the patient's perceived benefit of therapy (or lack thereof).¹² Another consideration is the patient's out-of-pocket cost, although even the elimination of copays does not seem to have a positive effect on adherence.¹⁰

Manack et al conducted a large observational study to characterize the epidemiology and healthcare utilization of patients with NGB. The results demonstrated the high rates of comorbidities and complications these patients experience and their high utilization of healthcare resources. The data suggest that these patients are experiencing suboptimal management of their NGB, indicated by both their excessive rate of urinary tract complications and high rates of hospitalization. Future studies will be needed to assist in developing more effective treatment pathways for these patients to assist clinicians in optimizing their management and adherence to therapy.¹

The Health-Related and Economic Impact of Urinary Incontinence Associated With Neurogenic Detrusor Overactivity

In a study by Tapia et al, published in 2013, the primary objective was to assess HRQoL and economic burden in patients with neurologic disorders and urgency UI due to NDO in countries in North America, the European Union, Asia, and Australia. Systematic literature searches and review of English language articles published between January 2000 and February 2011 were performed. Studies assessing the impact of UI on HRQoL in patients with underlying neurologic disorders (MS, PD, SCI, spina bifida, and stroke) were included in the analysis. Economic studies in urgency UI were also included. Final delineation of sources provided a total of 27 relevant articles, of which 16 presented HRQoL data and 11 information on economic burden in these patients.²

The overall analysis revealed that the studies included generally indicated that UI negatively impacts HRQoL in the patients with neurologic disorders studied. UI in individuals with MS, SCI, PD, and stroke was found to have significant negative impact. Although methods of assessment differed,

in general the analyses revealed that physical, mental, and psychological impairments were consistently observed in these patients. Patients reported detriments in their physical functions, social relationships, and overall emotional well-being.² For example, in 1 included study's assessment of patients with MS using disease-specific measures including the Incontinence Impact Questionnaire, Urogenital Distress Inventory, and American Urological Association (AUA) Symptom Index, approximately 96% of patients reported bladder problems, with 41% moderately or greatly bothered by frequent urination, 39% by urgency-associated UI, and 26% by bladder problems associated with physical activity. Bladder and urinary problems significantly impacted emotional health (31% of patients), ability to perform household chores (22%), and physical recreational activities (28%). Nearly half of patients assessed reported that they would feel "mostly dissatisfied," "unhappy," or "terrible" if their current urinary condition became a lifelong disorder. The results indicated that UI associated with NDO not only is troublesome to patients with MS but also may lead to significant disability over time.^{2,13} UI also had significant negative impact on the sexual lives of patients with neurologic diseases, potentially adversely affecting their long-term outcomes.²

Evaluation of the economic burden of UI in this study was difficult because there is not much economic information available. Within the small amount of data available, the authors did find a variety of publications in terms of perspective (eg, provider, patient), type of data used, cost components assessed (office visits, labor costs, medications, surgery, etc), and country of origin. Although the studies could not be directly compared, their results demonstrated that UI results in substantial economic burden from the point of view of patients, providers, payers, and society in general.² One study in the United States assessed costs from the payer perspective, finding that payer expenditures can be as high as \$12,357.43 per female patient with UI annually for hospitalizations, clinician office visits, outpatient, and ED services. Hospitalization accounted for the majority of overall costs.^{2,14} Another US study reported that 6-month nursing staff costs alone were \$2,416.94 per patient with UI in the long-term care setting.^{2,15} One may consider how these costs may impact healthcare in these patient populations; for example, if one assumes 72% of the estimated 400,000 patients with MS in the United States have UI, the estimated direct costs of this incontinence attributable to MS for payers could be as high as \$3.5 billion per year. This could add substantial incremental costs to a disorder that alone already has astronomical costs of approximately \$10 billion annually.² Direct healthcare costs in general for UI have previously been estimated

Reports

at \$16.3 billion per year, and this does not take into account the indirect economic impact of UI, including payment of disability claims for those unable to work and lost wages related to terminating jobs or retiring prematurely because of the disability caused by UI. Estimation of these indirect costs is complex and difficult, but they are estimated to be hundreds of millions of dollars annually.¹⁶ Overall, data suggest a need for urgency UI treatments to both improve HRQoL for these patients and reduce the economic burden associated with UI in NDO. As economic data are limited surrounding UI related to NDO in patients with neurologic conditions, further research will need to be done to better assess overall economic burden in these populations to assist in therapy decisions and management plans on the parts of providers, patients, and payers.² Economic analysis may potentially justify increased financial resources for medical research aimed at decreasing the number of patients with UI and limiting the number of incontinent episodes they endure. Such advances will better serve both the medical and emotional needs of these patients while lowering the economic burden of UI.¹⁶

Conclusion

NGB and NDO with UI present serious clinical issues for patients with neurologic disorders and their clinicians; however, they also can have substantial negative impact on the HRQoL of these patients and lead to very high management costs and general economic burden for patients, care providers, and payers. Clinicians managing these patients are challenged to not only treat conditions such as UI and other symptoms that can occur with NGB and NDO, but to also find cost-effective pathways for treatment and design management plans that improve social functioning and lifestyle for these patients. Improving management of patients with NGB using treatments that reduce UI and other urinary symptoms may decrease the incidence of urinary tract complications and need for urgent care and/or hospitalization while reducing healthcare costs and the economic burden associated with NGB/NDO in patients with neurologic disorders.

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Funding source: This activity is supported by an educational grant from Allergan, Inc.

Author disclosure: Dr Cardarelli has no relevant financial relationships with commercial interests to disclose.

Authorship information: Acquisition of data; analysis and interpretation of data; drafting of the manuscript; and critical revision of the manuscript for important intellectual content.

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