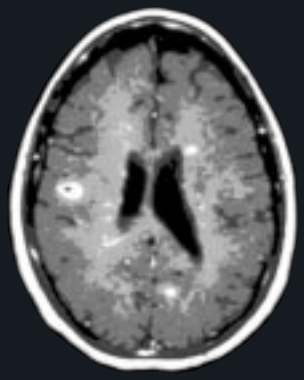
CLINICAL PRACTICE GUIDELINES



Urinary Dysfunction and MULTIPLE SCLEROSIS

Evidence-Based Management Strategies for Urinary Dysfunction in Multiple Sclerosis

Multiple Sclerosis Council for Clinical Practice Guidelines

Administrative and financial support provided by Paralyzed Veterans of America

URINARY DYSFUNCTION

Multiple Sclerosis Council
for Clinical Practice Guidelines

MEMBER ORGANIZATIONS

American Academy of Neurology

American Academy of Physical Medicine and Rehabilitation

American Congress of Rehabilitation Medicine

American Neurological Association

American Occupational Therapy Association

American Physical Therapy Association

American Psychological Association

American Society of Neuroradiology

American Society of Neurorehabilitation

American Speech-Language-Hearing Association

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Consortium of Multiple Sclerosis Centers

Eastern Paralyzed Veterans Association

International Federation of Multiple Sclerosis Societies

Kaiser-Permanente Health Maintenance Organization

National Institute of Neurological Disorder and Stroke

National Multiple Sclerosis Society

Paralyzed Veterans of America

Rehabilitation in Multiple Sclerosis

U.S. Department of Veterans Affairs

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Administrative and Financial Support from the Paralyzed Veterans of America

Other Publications:

Fatigue and Multiple Sclerosis

 March 1999

CONTENTS

FOREWORD

Professional organizations from all sectors of the health-care community have embraced the development, use, and evaluation of practice guidelines through which they collate and evaluate empirical evidence and expert opinion. Generally, the goals of these practice guidelines are to reduce inappropriate care and improve patient outcomes, reduce health-care costs, enhance quality assurance, and improve medical education. Their benefit is in documenting the advice of clinical experts, documenting the clinical research, and assessing the clinical significance of conflicting research findings.

Many public and private health-care organizations are involved in developing practice guidelines, and the scope of topics researched and methodologies used is quite diverse. The choices of topics and methods reflect each organization's major practice concerns, the empirical evidence available on those topics, and just as importantly, the resources available to the organization for developing the guidelines. Whenever possible, clinical practice guidelines are based on empirical evidence and in those cases the recommendations are graded on the quality of evidence. Nonetheless, expert opinion remains an integral part of guidelines development "because reliable scientific evidence is lacking for most clinical practices" (Woolf, 1992).

I am pleased to present these clinical practice guidelines on multiple sclerosis (MS) urinary dysfunction to the health-care community. These guidelines and others developed by the Multiple Sclerosis Council for Clinical Practice Guidelines reflect both the published research on this topic as well as the expert opinion of the panel members. That expert opinion has been supported in turn by the expert consensus of a broad range of clinicians who are MS specialists.

These guidelines are written for health-care professionals to assist them in clinical decision making. A consumer version will soon be available. We anticipate that the two documents will be useful to both consumers and clinicians in discussing MS and its symptoms and in making treatment decisions. We also expect the publications will be useful to individuals and organizations responsible for allocating health-care resources.

People with MS come from all walks of life and live with a broad range of disability. Their care is provided by many types of health-care professionals in varied settings. For this reason, the guidelines have been developed for a range of patients, clinicians, and treatment settings. Adaptability has been a guiding principle of the Multiple Sclerosis Council for Clinical Practice Guidelines, whose members represent the major professional and consumer MS groups, and of the members of the Guidelines Development Panel, who also reflect this provider and consumer diversity.

These guidelines will be of benefit only if they are studied, used, evaluated, and updated. The council welcomes the responsibility of ensuring the current and future value of these guidelines as part of its ongoing activities. However, we will be successful in this effort only with the participation of you, the health-care providers who use this document. We look forward to your comments on these guidelines.

We are grateful to the Paralyzed Veterans of America for convening and providing ongoing support to the representatives of the 22 organizations that constitute the Multiple Sclerosis Council for Clinical Practice Guidelines. PVA's concern for the well-being of people with MS and its commitment to ensuring that appropriate care is available to every person with MS is an example to us all.

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ACKNOWLEDGEMENTS

The chair and members of the Urinary Dysfunction Guidelines Development Panel wish to express special appreciation for the leadership and encouragement shown by the 22 individuals who make up the Multiple Sclerosis Council for Clinical Practice Guidelines and the organizations they represent. We especially appreciate the contributions of the 152 health-care professionals who participated in the consensus conference conducted at the 1997 annual meeting of the Consortium of Multiple Sclerosis Centers and the 30 professionals who provided expert review of the final draft. The efforts of all of these groups have been crucial in establishing the expert consensus that underpins these recommendations.

Assistance in conducting the literature review was provided by the staff of the Cleveland Clinic Foundation Medical Library, especially Judith Janes, BA, MSLS, AHIP, and Gretchen A. Hallerberg, MS, MSLS, AHIP. Their assistance was essential to the successful completion of these guidelines.

We greatly appreciate the early efforts of the American Academy of Neurology, the Consortium of Multiple Sclerosis Centers, and the National Multiple Sclerosis Society, especially June Halper, RN, MSN, CS, ANP, and Jay Rosenberg, MD, in initiating the MS guidelines development process. Financial support provided by the Eastern Paralyzed Veterans Association, Medtronics, Serono Laboratories, Inc., and Berlex through unrestricted educational grants was essential to the inauguration of this project.

The Guidelines Development Panel is indebted to the leaders and staff of the Paralyzed Veterans of America who provided organizational, administrative, and financial support. In particular, the panel recognizes Steve Shindell, PhD, program coordinator, and Jennifer Podulka, MPAff, project administrator of the Health Policy Department, who demonstrated their organizational and management skills throughout this project; John Carswell, associate executive director of that department, who championed the cause of PVA members who have MS; Fred Cowell, staff director of the Health Policy Department, who made sure that the project was appropriately staffed; James A. Angelo, Patricia E. Scully, and Nina Schwartz of the Communications and Information Services Department, who provided expert guidance in editing, formatting, and creating artwork; medical editor Joellen Talbot, who provided excellent technical and editorial review; and the PVA staff and consultants who developed the index and standardized the nomenclature. Finally, we are grateful for the steadfast commitment and advocacy of PVA's senior officers, including Immediate Past President Kenneth C. Huber, National President Homer S. Townsend, Jr., Executive Director Gordon H. Mansfield, Deputy Executive Director John C. Bollinger, and the entire PVA board of directors.

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THE MULTIPLE SCLEROSIS COUNCIL

Two separate organizational efforts stimulated the 1997 formation of the Multiple Sclerosis Council for Clinical Practice Guidelines. The first of these efforts was formalized in 1995 when the American Academy of Neurology, the Consortium of Multiple Sclerosis Centers, and the National Multiple Sclerosis Society established the interorganizational Collaborative Group for Multiple Sclerosis Management Strategies (CGMSMS). The term "management strategies" was used in this collaboration because of concern that although the recommendations would be based on all available empirical evidence, development of the recommendations would be largely dependent on expert consensus. In that same year CGMSMS formed a steering committee, which established criteria for topic selection and management strategy development, and convened management strategies development panels on two topics—fatigue and bladder dysfunction.

The second organizational effort was initiated by the Paralyzed Veterans of America. To better serve the approximately 25 percent of PVA members who experience multiple sclerosis, the organization made a board-level decision in 1997 to commit resources to the development of practice guidelines for MS. This commitment paralleled the guidelines support PVA had been providing to the spinal cord injury community since 1995, through the Spinal Cord Medicine Consortium. In making these resources available, PVA ensured that its only influence on the recommendations generated through the MS-guidelines effort would be through its one voting member on the council. In 1997 the two organizational efforts were integrated, and the Multiple Sclerosis Council for Clinical Practice Guidelines was established. This merger allowed a greater number of organizations to participate and a more ambitious schedule for producing the guidelines to be set.

The Multiple Sclerosis Council for Clinical Practice Guidelines is made up of 22 representatives from key MS professional and consumer organizations. A multidisciplinary group, it includes civilian and military representatives who have experience in fee-for-service and managed care payment systems as well as in academic, group, and individual practice settings. Each member organization is responsible for providing the following:

- Appointment to the council of one member with expertise in the topic area.
- High-level professional and technical peer review of the guidelines materials.
- Organizational endorsement of the completed practice guidelines and related products.
- Dissemination of the guidelines through the organization's educational offerings.

In addition, each member of the council participates in one of three advisory subcommittees: the Methodological and Scientific Review Advisory Subcommittee; the Topic Selection and Panel Recruitment Advisory Subcommittee; or the Peer Review, Dissemination, and Outcomes Evaluation Advisory Subcommittee. Preparation of individual guidelines is completed by a Guidelines Development Panel that includes multidisciplinary experts in the field.

Development of the Urinary Dysfunction Guidelines

The Urinary Dysfunction Guidelines Development Panel followed a process that integrates the methodologies of the Collaborative Group for MS Management Strategies and the Consortium for Spinal Cord Medicine. The first phase of the work process was setting the parameters of the guidelines. The framework for the guidelines was established when the panel developed a cause-and-effect diagram that allowed the panel to identify a comprehensive list of factors that can have either a positive or negative impact on the target condition (see Figure 1). This technique, taken from the continuous quality improvement literature, helped the Guidelines Development Panel to specify the scope of care for inclusion in the guidelines.

The next step in setting up the framework was specifying the direct, surrogate, and intermediate outcomes, both positive and negative, that were expected from the guidelines. The Guidelines Development Panel then constructed a proto-algorithm of the treatment process that members believed, based on their expert opinion, would maximize the preferred outcomes and minimize the negative ones.

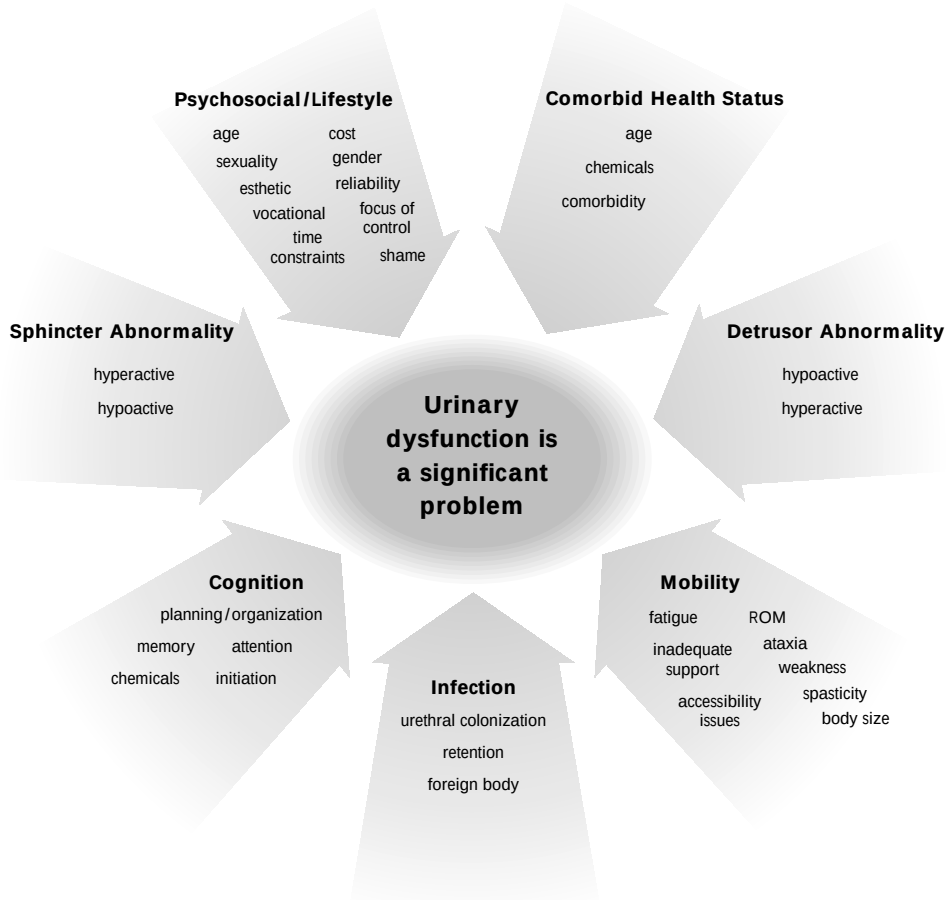
The literature review strategy was subsequently developed by the Guidelines Development Panel and by process methodologists who have expertise in medical literature review, data extraction, and data synthesis. Potentially relevant original research articles were collected through electronic search procedures, reviews of research and survey article bibliographies, and recommendations from experts in the field. Relevant original research articles were identified, and levels of evidence were assigned. The levels of evidence and strength of recommendations used in this process are listed in Table 1 (see page xii). All members of the Guidelines Development Panel reviewed all relevant articles.

The guidelines writing process occurred as the Guidelines Development Panel expanded the proto-algorithm and wrote the supporting annotations, based on the available literature. This process took several iterations between the Guidelines Development Panel and the process methodologist.

In the second phase of the development process, members of the Guidelines Development Panel identified aspects of care that were recommended based on experience, though not supported by empirical research. This documenting of the Guidelines Development Panel's expert opinion was the first step in the expert consensus process.

The second step was to present these expert opinions at a consensus conference held in conjunction with the 1997 annual meeting of the Consortium of Multiple Sclerosis Centers in Calgary, Alberta, Canada. A total of 152 MS specialists participated in this conference; 21 percent of them were physicians; 44 percent were nurses; 10 percent were mental health professionals; 14 percent were

Figure 1. Potential Causes and Effects of Urinary Dysfunction



rehabilitation therapists; and 11 percent worked in various fields. Only those recommendations that received a 90 percent endorsement rating at the consensus conference were retained.

The final step in the consensus process consisted of a review of the document by the 22 members of the Multiple Sclerosis Council for Clinical Practice Guidelines and by as many as 3 additional reviewers from each member organization. Endorsement of the guidelines was made by each organization of the Multiple Sclerosis Council for Clinical Practice Guidelines according to its rules of governance.

Dissemination of the guidelines will be through the member organizations and other key societies. Evaluation of the guidelines is the responsibility of the Multiple Sclerosis Council for Clinical Practice Guidelines, which will consider the guidelines' utility, their impact on clinical outcomes, and the need for revision as new information becomes available.

Literature Review Methodology

The professional literature review was performed based on the selected dimensions of urinary dysfunction identified in the cause-and-effect diagram (see Figure 1, page xi) and on the issues regarding evaluation and treatment identified in the proto-algorithm. This search identified 273 potentially relevant abstracts published between 1985 and 1996 for review by the entire committee. Full articles were selected for review if 70 percent of the committee voted in favor of the abstract. These articles were then assigned for review by individual members of the Urinary Dysfunction Guidelines Development Panel based on each member's area of expertise. In the process of reviewing an article, citations were designated for review if they were missed by the original search or if they were published prior to 1985 and felt to be important. Committee members scored every article reviewed by completing a standardized form, which assessed the type of study, the inclusion and exclusion criteria, the outcome measure(s), conduct of the study, results, statistical methods, and relevance. These forms were reviewed by the committee chair for completeness and accuracy prior to scoring.

Only studies of sufficient merit, which achieved a score of > 18 (out of a possible 26), were included in the recommendations. A few of the articles that did not satisfy this requirement were cited because they addressed a particular issue. However, these articles were not used in the development of the recommendations because they did not provide a sufficient level of evidence.

Following the literature review, those articles achieving scores >18 were categorized according to level of evidence (see Table 1).

Although the level of evidence provided by a study was an important determinant in the development of the algorithms, many aspects of the recommendations did not approach scientific evidence of level II significance (class A recommendation). Therefore, many of the recommendations were based on a few methodological review articles, on the expertise of committee members, and on the results of the consensus conference held in Calgary in September 1997.

Table 1. Grades of Recommendations and Levels of Evidence

Class A Recommendations require

one **Level I Study:** randomized control trial (RCT) with significant statistical power and duration

or

two or more **Level II Studies:** RCTs of smaller magnitude and/or duration

Class B Recommendations require

one or more **Level III Studies:** prospective cohort design

Class C Recommendations require

one or more **Level IV Studies:** cross-sectional controlled studies or retrospective cohort

or

two or more **Level V Studies:** Case series of any size

INTRODUCTION

Bladder dysfunction is present in the majority of people with multiple sclerosis (Goldstein et al., 1982) and contributes to significant disability in many. Urinary symptoms are often ignored or minimized; yet application of appropriate management strategies often has a favorable outcome.

Because of the large number and the diversity of factors that potentially contribute to the occurrence of urinary dysfunction and bladder symptoms (see Figure 1, page xi), successful management strategies must be similarly multifaceted and multidisciplinary. To minimize complexity, such strategies must be applied systematically and sequentially.

These guidelines offer a sequential pathway for management of bladder dysfunction in an office or clinic setting. They are intended to supplement the standard neurological assessment and presuppose prior exclusion of coexisting pelvic floor pathology. No attempt has been made to address the more complex issues of overwhelming infections, of various mechanical and surgical diversion techniques, or of upper tract complications, all generally deferred to urological and other consultations.

The algorithms should be considered as a whole, being mindful of the potential multiplicity of overlapping management issues. A recommendation to end should not preclude consideration of those factors. These are guidelines, not rules, so they are not intended to be absolutely universally applicable.

Goals of the Recommendations

The goals of these recommendations are:

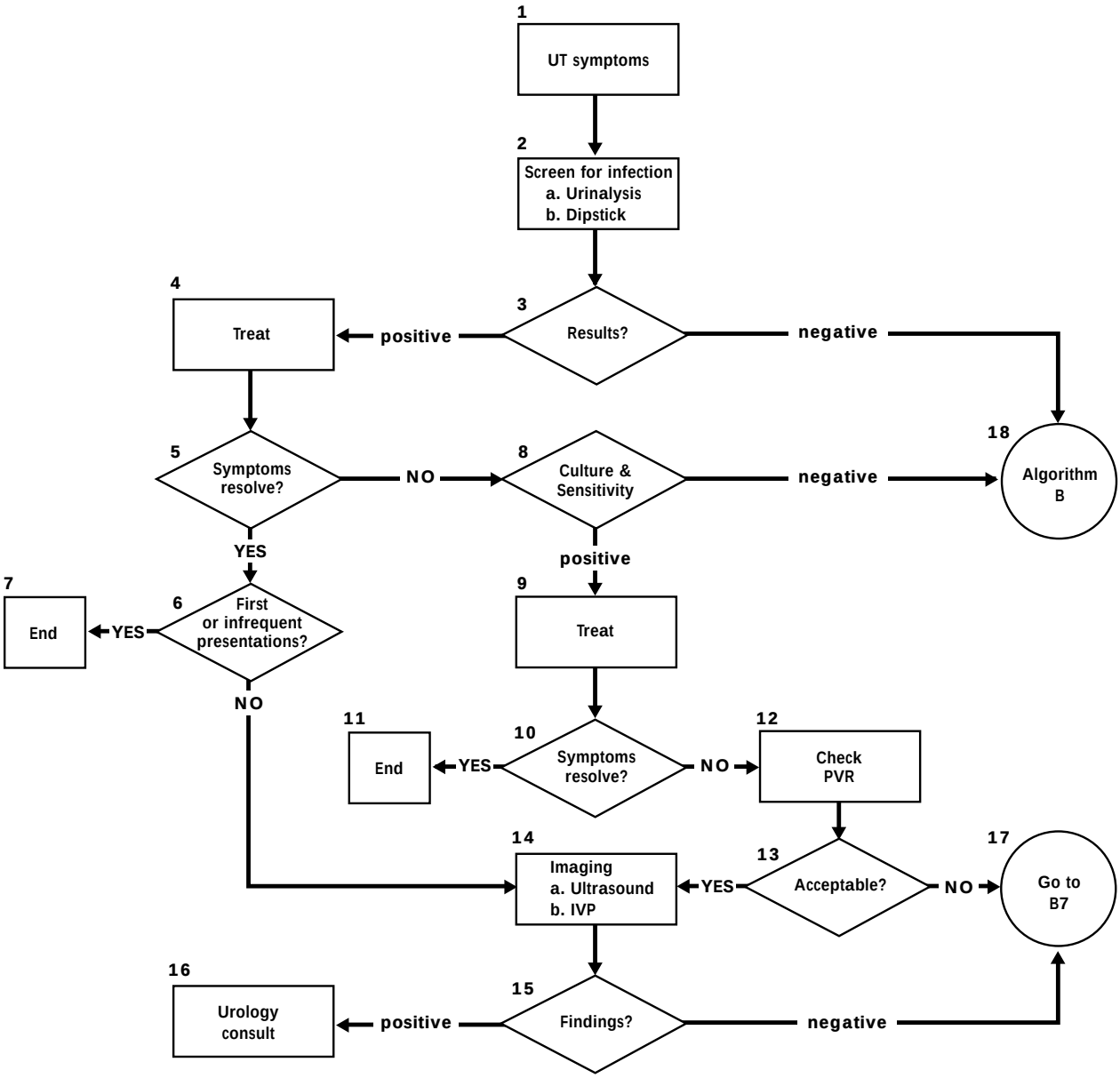
- To improve care for people with MS with urinary dysfunction.
- To provide guidelines for all MS health-care providers.
- To effectively utilize health-care resources.
- To stimulate further clinical research.

Desirable Outcomes

Desirable outcomes vary with each individual and must be determined in consultation with that individual. Some possible outcomes include the following:

- Proper treatment of symptomatic infections.
- Minimization of relapses of infections.
- Continence.
- Prevention, recognition, and effective treatment of upper tract complications.
- Reduction or elimination of urinary symptoms.
- Prevention of secondary complications, such as skin breakdown.

Algorithm A: Bladder Infection



ALGORITHM A: BLADDER INFECTION TREATMENT RECOMMENDATIONS

A1. Urinary tract (UT) symptoms. These can include any or all of the following:

- Frequency
- Nocturia
- Hesitancy
- Retention
- Urgency
- Incontinence
- Dysuria
- Change in color or odor
- Lower abdominal fullness
- Flank pain
- Hematuria
- Increased spasticity
- Fever
- Pseudo-relapse.

A2. Screen for infection: microscopic urinalysis or dipstick.
(Scientific evidence—two level I studies; grade of recommendation—A)

Microscopic urinalysis remains the gold standard for screening for infection. Dipstick techniques are quick, convenient, and amenable for use at home, although the method is less reliable than microscopic urinalysis (Anderson, Chambers, and Johnson, 1993; Tuel et al., 1990). And, screening with these techniques may not be applicable for individuals with histories of repeat infections, colonized bacteria, and indwelling catheters (Expert consensus).

A3. Results?
(Expert consensus)

A negative screen moves the provider to algorithm B. Treatment may be initiated without prior culture and sensitivities.

A4. Treat.
(Scientific evidence—one level I study, one level II study, two level IV/V studies; grade of recommendation —A)

Empiric treatment options include single dose or 3 to 7 days of treatment. A single dose of an antibiotic—trimethaprim sulfa, for example—may be effective for an isolated infection unassociated with fever or flank pain. Recurrence rates, however, are lower with 3 to 7 days of treatment. With certain antimicrobials, such as ciprofloxacin, a 3-day course may suffice. If the infection is recurrent or if fever is present, a 7- to 14-day course of antimicrobials is recommended. In individuals on intermittent catheterization or with indwelling catheters with no substantial change in symptoms, treatment may be deferred, if there is no change in baseline neurological status, fever, or flank pain (Osterberg et al., 1990; Stapleton et al., 1990; Kunin, 1987; Cardenas and Hooton, 1995).

A5. Symptoms resolve?
(Expert consensus)

If symptoms resolve with empiric treatment and if there have been few or no antecedent symptomatic infections, no further interventions are indicated.

A6. First or infrequent presentations?
(Scientific evidence—two level IV/V studies; grade of recommendation—C)

All males are considered to have complicated urinary tract infections (UTIs). In females, UTIs are considered recurrent if infections occur at least 3 times annually. Infrequent UTIs are 1 to 2 per year (Kunin, 1987; Rubin et al., 1992). For frequent presentations, some form of urinary tract imaging is recommended.

A7. End.
For first or infrequent presentations, no further interventions are required.

A8. Culture and sensitivity.
(Expert consensus)

If symptoms persist, a specimen should be sent for culture and sensitivity. If the urine culture has no significant growth, alternative causes for symptoms should be sought (algorithm B). A positive culture would indicate initiation of a specific treatment.

A9. Treat.
(Scientific evidence—one level I study, one level IV/V study; grade of recommendation—A)

If culture and sensitivity indicate specific treatment, a 7- to 14-day course of treatment is generally required (Osterberg et al., 1990; Kunin, 1987).

A10. Symptoms resolve?
(Expert consensus)

If symptoms resolve, no further interventions are needed. If symptoms do not resolve, assess post void residual (PVR).

A11. End.

A12. Check PVR.
(Expert consensus)

High post void residual is a common contributing factor of urological dysfunction in MS. PVR can be determined using straight catheter or ultrasound techniques.

A13. Acceptable?

(Expert consensus)

An acceptable amount of PVR is less than 100 ml. If PVR is not acceptable, move to B7.

A14. Imaging: ultrasound or intravenous pyelogram (IVP).

(Scientific evidence—two level V studies; grade of recommendation—C; expert consensus)

If the individual has presented with frequent recurrences of infection, or if the symptoms fail to resolve with specific antimicrobials (A9), underlying structural urinary tract abnormalities should be sought. The literature concerning the utility of urinary tract imaging in MS largely describes small case series. Prevalence of upper tract abnormality is reported in 3 percent to 21 percent of individuals. The 1992 consensus statement on spinal cord injury adopted by the National Institute on Disability and Rehabilitation Research recommends that "following a recent episode of febrile urinary tract infection, possible contributing prior events should be reviewed. The upper tracts should be evaluated (imaging studies) to identify possible abnormalities." Selection of imaging modality—ultrasound versus IVP—can be determined by local resources and personal preference (Sliwa et al., 1996; Porru et al., 1997).

A15. Findings?

(Expert consensus)

If imaging discloses no significant UT abnormality, other sources of symptoms should be considered (algorithm B, Step 7). If potentially significant abnormalities are found, refer the individual to a urologist.

A16. Urology consult.

(Expert consensus)

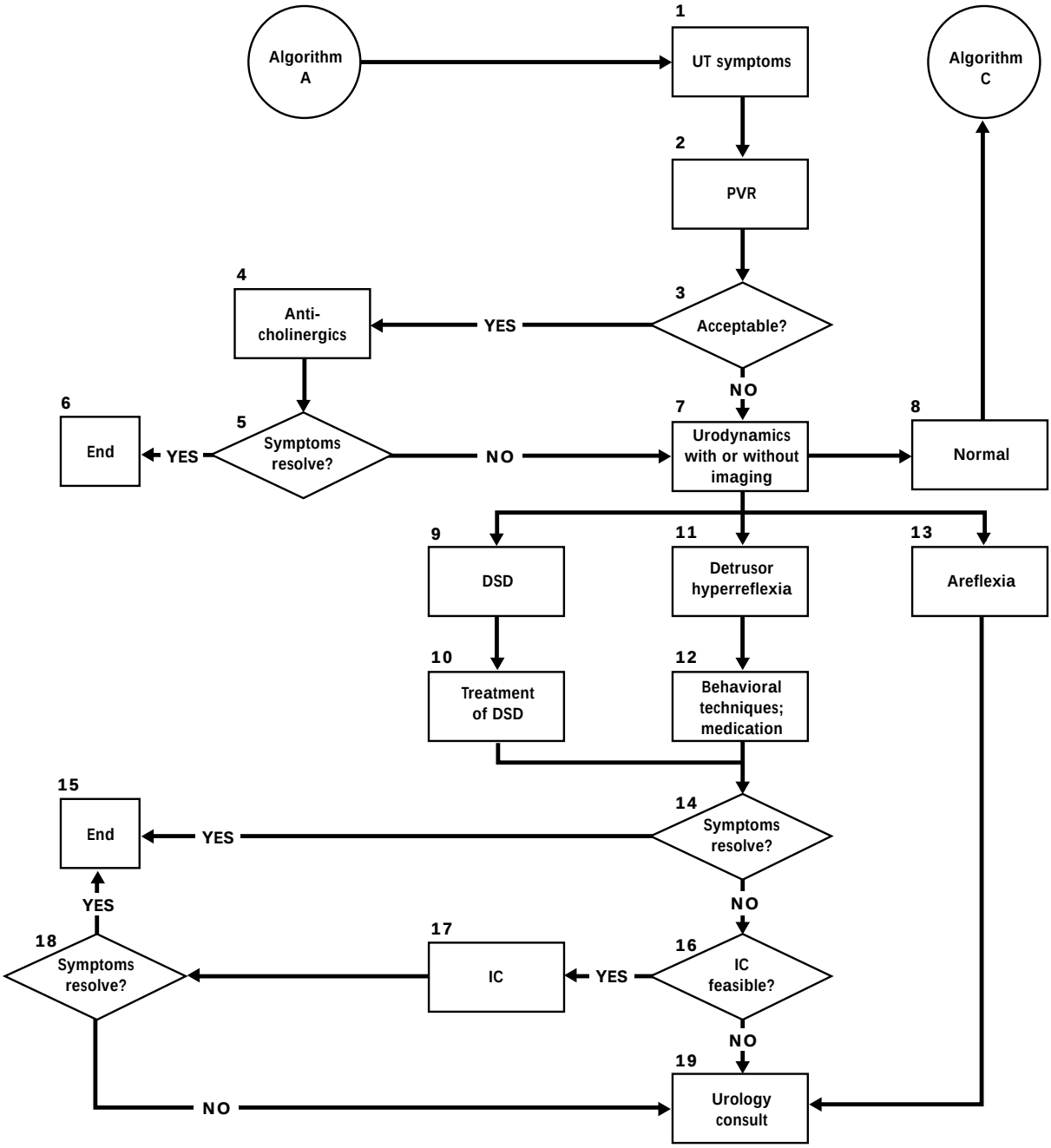
The individual should be referred to a urologist to pursue further diagnosis and treatment.

A17. Go to B7.

(Expert consensus)

Proceed to urodynamics box of Algorithm B.

Algorithm B: Voiding Dysfunction



ALGORITHM B: VOIDING DYSFUNCTION TREATMENT RECOMMENDATIONS

B1. UT symptoms. See A1.

B2. Post void residual.
(Expert consensus)

PVR can be determined using straight catheter or ultrasound techniques.

B3. Acceptable?
(Expert consensus)

An acceptable amount of PVR is less than 100 ml. If PVR is not acceptable, move to B7.

B4. Anticholinergics.
(Expert consensus)

With a PVR <10 ml, a trial of a systemic anticholinergic would be appropriate.

B5. Symptoms resolve?
(Scientific evidence—one level IV study; grade of recommendation—C)

The individual achieves the ability to empty the bladder comfortably with a normal urge and without experiencing frequency, urgency, or incontinence (Betts, D'Mellow, and Fowler, 1993).

B6. End.
If symptoms resolve, no further interventions are required.

B7. Urodynamics with or without imaging.
(Scientific evidence—one level IV study, five level V studies; grade of recommendation—C)

Urodynamics with or without imaging should be considered when the individual does not respond to anticholinergic medication, when an unacceptable PVR (>100 ml) is measured, or when urinary tract changes are noted on diagnostic imaging. If diagnostic imaging has not been done, perform it at this time (see A14). The goals of urodynamics are to confirm the diagnosis, to recognize changes in the diagnosis so that appropriate therapeutic measures can be initiated, and to help establish the prognosis of voiding dysfunction (Rackley and Appell, private communication). Urodynamic findings portray the type of voiding function more accurately than voiding symptoms alone and allow for a timely and effective means of improving voiding function and quality of life (Sirls, Zimmerman, and Leach, 1994; Blaivas and Barbalias, 1984; Chancellor, Kaplan, and Blaivas, 1990; Chancellor and Blaivas, 1991; Mayo and Chetner, 1992; McGuire and Savastano, 1984).

B8. Normal.
Normal urodynamics tends to exclude neurogenic vesicourethral voiding dysfunction. Move to algorithm C.

B9. Detrusor sphincter dyssynergia (DSD).
DSD occurs when the normal reflex relaxation of the bladder neck/sphincter preceding detrusor contraction is lost so that there is simultaneous contraction of sphincter and detrusor.

B10. Treatment of DSD.
(Scientific evidence—one level V study; grade of recommendation—expert consensus)

Treatment of DSD includes antispasticity agents (e.g., baclofen, tizanidine, or benzodiazapenes), alpha-adrenergic blocking agents, and anticholinergic agents with intermittent catheterization (Swierzewski et al., 1994; Appell, 1992).

B11. Detrusor hyperreflexia without DSD.
(Scientific evidence—one level III study; grade of recommendation—B)

This is the most common aberration detected by urodynamics (Giannantoni et al., 1998).

B12. Behavioral techniques; medication.
(Expert consensus)

Management of simple detrusor hyperreflexia (no outlet obstruction) is usually successful with anticholinergics alone. Additional techniques include scheduled fluid intake; scheduled or prompted voiding; avoidance of caffeine, alcohol, and aspartame; and other behavior modifications. Pelvic floor exercises are under investigation.

B13. Areflexia.
(Scientific evidence—one level III study; grade of recommendation—B)

Detrusor areflexia is an uncommon finding on urodynamic testing in MS (Giannantoni et al., 1998). Detrusor areflexia is unlikely to respond to crede, valsalva, or bethanechol (expert consensus).

B14. Symptoms resolve?
(Expert consensus)

If symptoms resolve with empiric treatment and if there have been few or no antecedent symptomatic infections, no further interventions are indicated.

B15. End.

B16. Intermittent catheterization (IC) feasible?
(Expert consensus)

Before proposing IC, it must first be established that IC is aesthetically acceptable to the person with MS. Feasibility is also influenced by a number of factors, including gender (the procedure is more difficult for females to perform); other impediments imposed by the disease (such as fatigue, cognitive impairment, limited manual dexterity, lower limb spasticity, and visual impairment); availability of assistance; and accessibility of public restrooms.

B17. Intermittent catheterization.

(Scientific evidence—one level III study, four level V studies; grade of recommendation—B)

If medical and behavioral interventions have failed to restore acceptable urinary drainage and storage, intermittent catheterization is the preferred management method. If poor bladder compliance with weak pressure (over 40 cm H_2O) persists, anticholinergics are prescribed in conjunction with IC (Lapides et al., 1974; Lapides et al., 1976; Betts, D'Mellow, and Fowler, 1993; Kuhn, Rist, and Zaech, 1991; Mohler, Cowen, and Flanigan, 1987).

B18. Symptoms resolve?

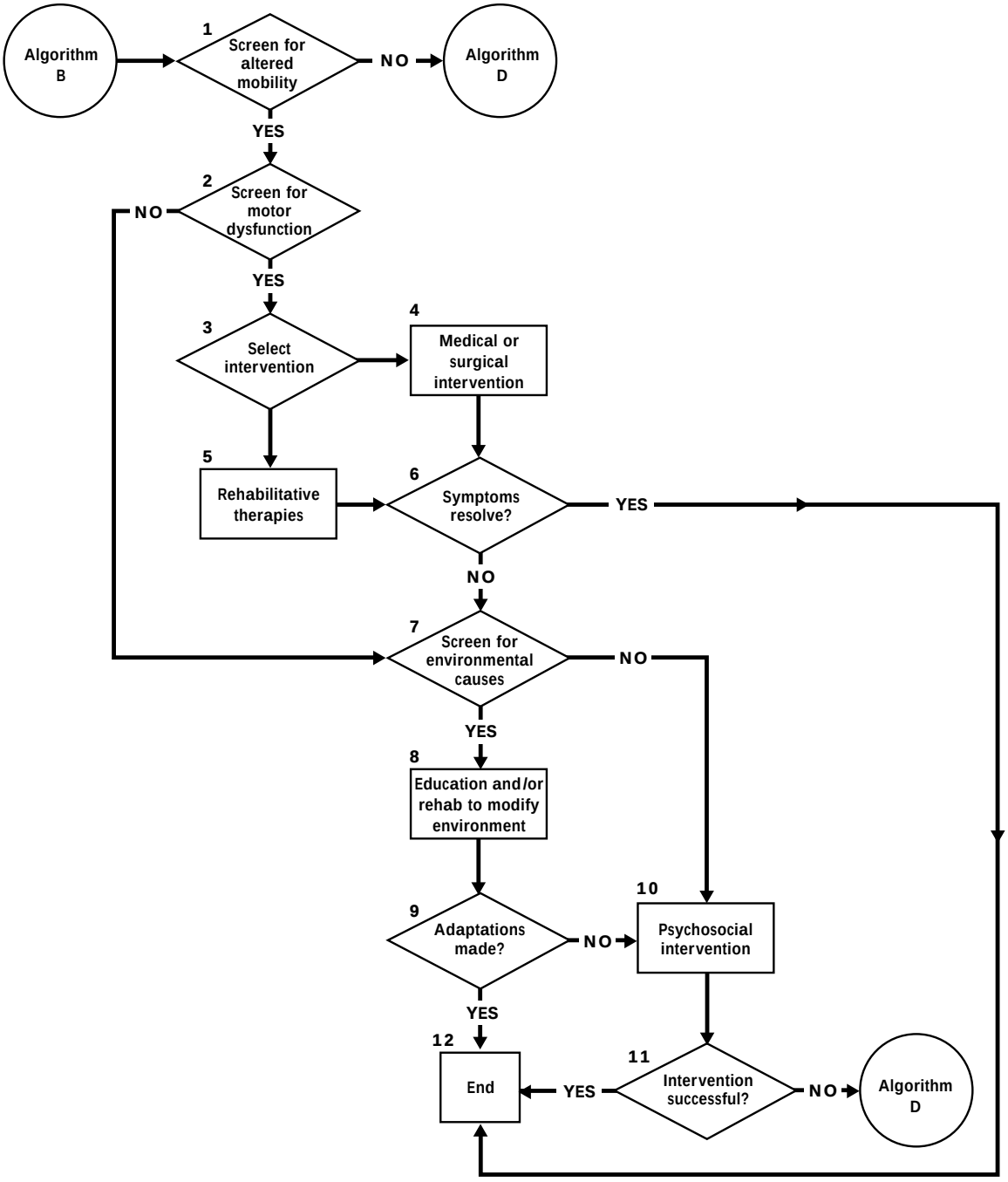
If symptoms resolve, no further interventions are indicated.

B19. Urology consult.

(Expert consensus)

When IC plus anticholinergics are unsuccessful or have not been a feasible option, urologic referral is recommended. Diagnostic changes and conclusions need to be reviewed and the options outlined above reconsidered. Other interventions, including indwelling catheters and surgical procedures, may prove appropriate and effective.

Algorithm C: Altered Mobility



ALGORITHM C: ALTERED MOBILITY TREATMENT RECOMMENDATIONS

Although these treatment options are presented sequentially, clinicians should modify treatment order based on the needs and characteristics of each individual. All of the recommendations in this section are based on expert consensus.

C1. Screen for altered mobility.

The assessment should include the individual's ability to ambulate either full or part time, with or without aids. Gait disturbances, spasticity, balance dysfunction, and the effects of heat and fatigue need to be examined, and the ability to transfer to the toilet, bed, and wheelchair needs to be evaluated.

C2. Screen for motor dysfunction.

This interdisciplinary neuromuscular evaluation should include assessments of upper and lower extremity strength, joint range of motion, sensation, spasticity, tremors, pain, endurance, and the effects of heat and fatigue on motor function.

C3. Select intervention.

Review options C4 and C5.

C4. Medical or surgical intervention.

Possible interventions include antispasticity agents, intrathecal baclofen pump, and other surgical procedures to reduce spasticity.

C5. Rehabilitative therapies.

If the individual has impaired mobility or function, physical therapy, occupational therapy, or nursing intervention may be required. Areas to be addressed include instruction in a home exercise program and in energy efficiency techniques (see *Fatigue and Multiple Sclerosis Clinical Practice Guidelines*), activities of daily living training, adaptive clothing, mobility training, balance training, or orthotic assessment.

C6. Symptoms resolve?

If symptoms resolve with improvement in mobility and/or motor function, the person will demonstrate performance of bladder regimen safely, within an acceptable time frame, without excessive fatigue, using the equipment prescribed.

C7. Screen for environmental causes.

If symptoms persist, then screen for environmental causes. The assessment should cover both the home and work environments, including distance to bathrooms; width, grade, and number of stairs; width of doorways and hallways; and other accessibility barriers. To increase independence and safety, assess the need for bathroom equipment, such as a tub bench, a raised toilet seat, grab bars, a bedside commode, and a rolling walker.

C8. Education and/or rehabilitation to modify environment.

If environmental barriers exist, educate the person on the ways in which environmental factors aggravate urinary management and prescribe appropriate home and work modifications.

C9. Adaptations made?

The environment is modified, and appropriate equipment is obtained.

C10. Psychosocial intervention.

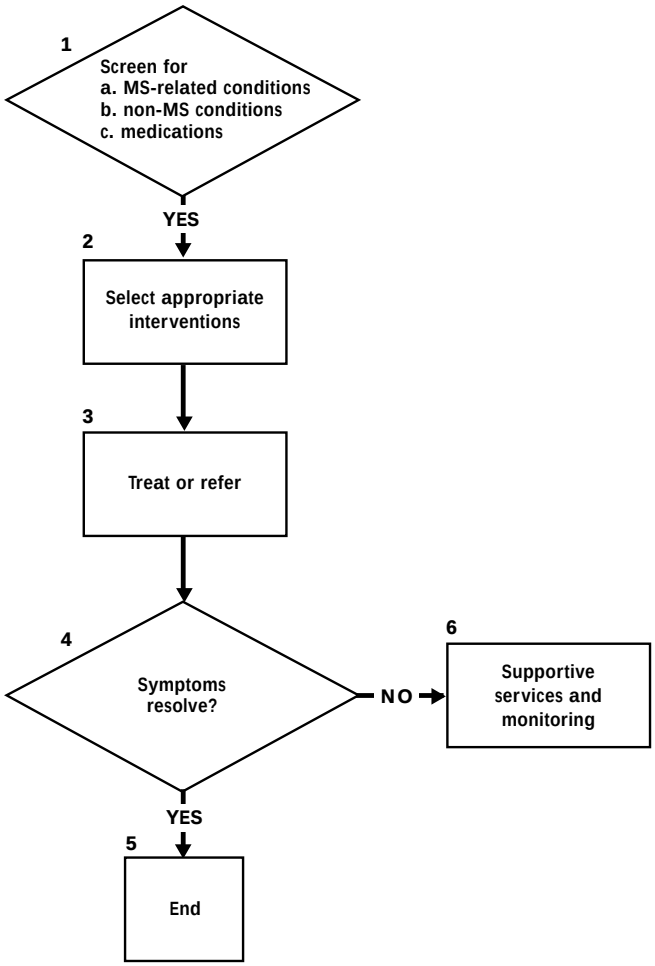
Evaluate for psychosocial factors, including age, gender, sexuality, finances, independence, self-esteem, mood disorders, aesthetics, shame or humiliation, and support network.

C11. Intervention successful?

Individual adheres to environmental adaptation and/or rehabilitation program.

C12. End.

Algorithm D: Other Conditions



ALGORITHM D: TREATMENT RECOMMENDATIONS FOR OTHER CONDITIONS

Bladder or urinary symptoms in persons with MS may be the result of conditions remote to the urinary tract. Conditions to consider include:

- MS-related conditions
- Non-MS conditions
- Medication effects

All of the recommendations in this section are based on expert consensus.

D1a. Screen for MS-related conditions.

Some common impairments can negatively impact a urinary management plan. These include, but are not limited to, changes in cognition, fatigue, and constipation.

D1b. Screen for non-MS-related conditions.

Such conditions include pregnancy, diabetes, prolapsed bladder, postmenopause, benign prostatic hypertrophy, and arthritis. All of these conditions can affect urinary function or limit physical function.

D1c. Screen for medication effects.

A number of medications, especially antihypertensives, can affect urinary function. Review all concurrent medications.

D2. Select appropriate interventions.

D3. Treat or refer.

D4. Symptoms resolve?

D5. End.

D6. Supportive services and monitoring.

Some people with MS will have unresolvable urinary symptoms. The clinician should refer such individuals and caregivers to appropriate supportive services (e.g., from a home health worker or personal assistant) and monitor the outcome.

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INDEX

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