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<GuidelineTitle id="1" source="inferred">Adult Urodynamics: American Urological Association (AUA)/Society of Urodynamics, Female Pelvic Medicine &amp; Urogenital Reconstruction (SUFU) Guideline</GuidelineTitle>

<Citation id="1" source="inferred">Winters JC, Dmochowski RR, Goldman HB, Herndon CD, Kobashi KC, Kraus SR, Lemack GE, Nitti VW, Rovner ES, Wein AJ. Adult urodynamics: American Urological Association (AUA)/Society of Urodynamics, Female Pelvic Medicine &amp; Urogenital Reconstruction (SUFU) guideline. Linthicum (MD): American Urological Association (AUA); 2012 Apr. 30 p. [119 references]<GuidelineLength id="1" source="nd"/>

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<Developer id="1" source="nd">

<DeveloperName id="1" source="explicit">American Urological Association</DeveloperName>

<CommitteeName id="1" source="nd">

<CommitteeExpertise id="1" source="nd"/>

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</Developer>

<Purpose id="1" source="nd">

<MainFocus id="1" source="nd"/>

<Rationale id="1" source="nd"/>

<Objective id="1" source="inferred">This guideline is intended to review the literature regarding the use of urodynamic testing in common LUT conditions and present the clinician with principles of application and technique. As UDS is only one part of the comprehensive evaluation of LUTS, these findings are intended to assist the clinician in the appropriate selection of urodynamic tests following an appropriate evaluation and symptom characterization. At this point, the clinician may utilize the principles in these guidelines to formulate urodynamic questions and select the appropriate urodynamic tests. The literature is inconclusive and “pure” symptomatalogy is rare; therefore, this guideline will not specify whether UDS testing should be done routinely in SUI or LUTS. The intent of this guideline is to identify concurrent factors and conditions in these patients and make recommendations regarding appropriate urodynamic techniques in these settings.</Objective>

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<Exception id="1" source="nd"/>

</Purpose>

<IntendedAudience id="1" source="nd">

<Users id="1" source="inferred">urologists</Users>

<Users id="1" source="inferred">urogynecologists</Users>

<CareSetting id="1" source="nd"/>

</IntendedAudience>

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<QualifyingStatement id="1" source="nd"/>

<MethodsToReachJudgment id="1" source="nd"/>

<RatingScheme id="1" source="nd">

<EvidenceQualityRatingScheme id="1" source="inferred">The AUA categorizes body of evidence strength as Grade A (well-conducted RCTs or exceptionally strong observational studies), Grade B (RCTs with some weaknesses of procedure or generalizability or generally strong observational studies) or Grade C (observational studies that are inconsistent, have small sample sizes or have other problems that potentially confound interpretation of data).</EvidenceQualityRatingScheme>

<RecommendationStrengthRatingScheme id="1" source="inferred">STANDARDS are directive statements that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be undertaken based on Grade A or Grade B evidence. RECOMMENDATIONS are directive statements that an action should (benefits outweigh risks/burdens) or should not (risks/burdens outweigh benefits) be undertaken based on Grade C evidence. OPTIONS are non-directive statements that leave the decision to take an action up to the individual clinician and patient because the balance between benefits and risks/burdens appears relatively equal or unclear; the decision is based on full consideration of the patient‘s prior clinical history, current quality of life, preferences and values. Options may be supported by Grade A, B, or C evidence. In some instances, the review revealed insufficient publications to address certain questions from an evidence basis; therefore, some statements are provided as Clinical Principles or as Expert Opinion with consensus achieved using a modified Delphi technique if differences of opinion emerged. A Clinical Principle is a statement about a component of clinical care that is widely agreed upon by urologists or other clinicians for which there may or may not be evidence in the medical literature. Expert Opinion refers to a statement, achieved by consensus of the Panel, that is based on members' clinical training, experience, knowledge and judgment for which there may be no evidence.</RecommendationStrengthRatingScheme>

</RatingScheme>

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</InclusionCriterion>

<InclusionCriterion id="1" source="inferred">lower urinary tract symptoms (LUTS)<InclusionCriterionCode id="1" source="nd"/>

</InclusionCriterion>

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<DecisionVariable id="4" source="inferred">urodynamic stress incontinence demonstrated<Value id="4" source="inferred">true</Value>

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<ActionCode codeset="" id="1" source="nd"/>

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<ActionDeonticTerm id="1" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="1" source="inferred">urethral function using Valsalva leak point pressure/abdominal leak point pressure (VLPP/ALPP)</ActionVerbComplement>

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<ActionType id="1" source="nd"/>

</Action>

<Action id="3" source="inferred">assess urethral function using lower cough leak point pressure (CLPP)<ActionActor id="3" source="inferred">clinicians</ActionActor>

<ActionCode id="3" source="nd"/>

<ActionVerb id="3" source="inferred">assess</ActionVerb>

<ActionDeonticTerm id="3" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="3" source="inferred">urethral function using lower cough leak point pressure (CLPP)</ActionVerbComplement>

<ActionBenefit id="3" source="nd"/>

<ActionRiskHarm id="3" source="nd"/>

<ActionDescription id="3" source="nd">

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</ActionDescription>

<ActionCost id="3" source="nd"/>

<ActionValue id="3" source="nd"/>

<ActionType id="3" source="nd"/>

</Action>

<Action id="2" source="inferred">assess urethral function using maximal urethral closure pressure (MUCP)<ActionActor id="2" source="inferred">clinicians</ActionActor>

<ActionCode id="2" source="nd"/>

<ActionVerb id="2" source="inferred">assess</ActionVerb>

<ActionDeonticTerm id="2" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="2" source="inferred">urethral function using maximal urethral closure pressure (MUCP)</ActionVerbComplement>

<ActionBenefit id="2" source="nd"/>

<ActionRiskHarm id="2" source="nd"/>

<ActionDescription id="2" source="nd">

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</ActionDescription>

<ActionCost id="2" source="nd"/>

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<Reason id="1" source="inferred">During invasive UDS testing, the clinical tools necessary for assessment of urethral function (e.g., intravesical catheter) are already in place and, in patients with urodynamic SUI, a quantitative assessment such as VLPP should be performed synchronously with the demonstration of urodynamic SUI. Although the clinical utility of such a measurement is controversial, it may provide useful information in certain situations.

Although not a universal finding, poor urethral function, as suggested by lower cough leak point pressure (CLPP), Valsalva leak point pressure/abdominal leak point pressure (VLPP/ALPP), and/or maximal urethral closure pressure (MUCP) tends to predict less optimal outcomes with some types of therapy. Some clinicians may utilize information about urethral function obtained from an invasive UDS exam to guide surgical treatment decisions. In such situations, an assessment of urethral function such as VLPP testing has clinical value and should be performed. For example, some clinical data suggest that certain anti-incontinence surgical procedures may have inferior outcomes in patients with low VLPP and/or low MUCP. In such cases, urethral function testing will potentially influence the choice of surgery.

While CLPP has been reported to be superior in demonstrating urodynamic SUI as compared to VLPP/ ALPP both maneuvers can easily be performed to provide maximal information during routine invasive UDS.</Reason>

<EvidenceQuality id="1" source="inferred">Grade C<EvidenceQualityDescription id="1" source="nd"/>

<Disagreement id="1" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="1" source="explicit">Recommendation<RecommendationStrengthCode id="1" source="nd"/>

</RecommendationStrength>

<Flexibility id="1" source="nd"/>

<Logic id="1" source="inferred">If &#13;

performing invasive urodynamics testing is [true] &#13;

AND&#13;

urodynamic stress incontinence demonstrated is [true] &#13;

Then &#13;

assess urethral function using Valsalva leak point pressure/abdominal leak point pressure (VLPP/ALPP)&#13;

OR&#13;

assess urethral function using lower cough leak point pressure (CLPP)&#13;

OR&#13;

assess urethral function using maximal urethral closure pressure (MUCP)</Logic>

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<RecommendationNotes id="1" source="inferred"/>

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<Recommendation id="1" source="inferred">2<StatementOfFact id="1" source="nd"/>

<Conditional id="2" source="explicit">Surgeons considering invasive therapy in patients with SUI should assess PVR urine volume.<BenefitHarmAssessment id="2" source="nd"/>

<DecisionVariable id="5" source="inferred">stress urinary incontinence<Value id="5" source="inferred">true</Value>

<DecisionVariableCode id="5" source="nd"/>

<DecisionVariableDescription id="5" source="nd">

<IntentionalVagueness id="8" source="nd"/>

</DecisionVariableDescription>

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<DecisionVariable id="6" source="inferred">considering invasive therapy<Value id="6" source="inferred">true</Value>

<DecisionVariableCode id="6" source="nd"/>

<DecisionVariableDescription id="6" source="inferred">urethral bulking injection therapy or SUI surgery<IntentionalVagueness id="11" source="nd"/>

</DecisionVariableDescription>

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<Specificity id="6" source="nd"/>

<PredictiveValue id="6" source="nd"/>

</TestParameter>

<DecisionVariableCost id="6" source="nd"/>

</DecisionVariable>

<Action id="4" source="inferred">assess post-void residual (PVR) urine volume<ActionActor id="4" source="inferred">surgeon</ActionActor>

<ActionCode id="4" source="nd"/>

<ActionVerb id="4" source="inferred">assess</ActionVerb>

<ActionDeonticTerm id="4" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="4" source="inferred">post-void residual (PVR) urine volume</ActionVerbComplement>

<ActionBenefit id="4" source="nd"/>

<ActionRiskHarm id="4" source="nd"/>

<ActionDescription id="4" source="inferred">A PVR can be obtained in the office by bladder ultrasound or urethral catheterization. Ultrasound is less invasive and painful than catheterization and does not introduce the risk of infection or urethral trauma. However, portable office ultrasound bladder scanners have a measure of operator independence and can be inaccurate in several clinical circumstances including obesity, prior lower abdominal surgery, cystic pelvic pathology, pregnancy, peritoneal dialysis and in the setting of ascites.<IntentionalVagueness id="9" source="nd"/>

</ActionDescription>

<ActionDescription id="38" source="inferred">Assessment of PVR is generally safe and inexpensive but can be associated with several pitfalls. A single elevated PVR should not be considered a satisfactory assessment of bladder emptying ability. For example, a falsely elevated PVR may result from rapid diuresis or psychogenic inhibition (e.g., patient difficulty with emptying due to environmental factors), amongst other factors. Thus, an elevated PVR should be confirmed with a second measurement at a subsequent office visit.<IntentionalVagueness id="215" source="nd"/>

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<ActionCost id="4" source="nd"/>

<ActionValue id="4" source="nd"/>

<ActionType id="4" source="nd"/>

</Action>

<Reason id="2" source="inferred">Although most studies have not demonstrated a clear association between PVR and treatment outcomes, PVR assessment is important for several reasons. PVR assessment, particularly if the PVR is elevated, can provide valuable information to the clinician and patients during consideration of treatment options. An elevated PVR is suggestive of detrusor underactivity, bladder outlet obstruction (BOO) or a combination of both. The exact clinical definition of “elevated” PVR volume remains unclear as does the optimal method of measurement (e.g., catheter, ultrasound). Nevertheless, patients with elevated preoperative PVR may be at an increased risk for transient or permanent postoperative voiding difficulties following urethral bulking injection therapy or SUI surgery. Additionally, postoperative urinary retention is not well defined, particularly regarding the volume and timing of urination in the postoperative period. Individuals who chronically carry an elevated residual volume or remain in chronic urinary retention are at increased risk of sequelae related to incomplete emptying such as ongoing voiding dysfunction, stone disease and recurrent UTIs.</Reason>

<Reason id="4" source="inferred">Assessment of postoperative PVR can be helpful in evaluating new onset postoperative voiding dysfunction, and, ideally, a preoperative PVR should be available for comparison. For example, if patients present with new obstructive or OAB symptoms after anti-incontinence surgery that are suggestive of BOO, an elevated PVR (as compared to the preoperative value) may be one of the findings that supports such a diagnosis. Although de novo postoperative BOO may not be associated with an elevated PVR in all cases, this finding can be helpful in directing further diagnostic testing and/or treatment.</Reason>

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<EvidenceQualityDescription id="2" source="nd"/>

<Disagreement id="2" source="nd"/>

</EvidenceQuality>

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<Flexibility id="2" source="nd"/>

<Logic id="2" source="inferred">If &#13;

stress urinary incontinence is [true] &#13;&#13;

AND&#13;&#13;

considering invasive therapy is [true] &#13;

Then &#13;

assess post-void residual (PVR) urine volume</Logic>

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<RecommendationNotes id="1" source="inferred"/>

</Recommendation>

<Recommendation id="2" source="inferred">3<StatementOfFact id="2" source="nd"/>

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<DecisionVariableCode codeset="" id="9" source="nd"/>

<DecisionVariableDescription id="9" source="nd">

<IntentionalVagueness id="15" source="nd"/>

</DecisionVariableDescription>

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<PredictiveValue id="9" source="nd"/>

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<DecisionVariable id="11" source="inferred">physical findings of stress incontinence<Value id="11" source="inferred">true</Value>

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<DecisionVariableDescription id="11" source="nd">

<IntentionalVagueness id="19" source="nd"/>

</DecisionVariableDescription>

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<DecisionVariableCost id="11" source="nd"/>

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<DecisionVariable id="10" source="inferred">considering invasive, potentially morbid or irreversible treatment<Value id="10" source="inferred">true</Value>

<DecisionVariableCode id="10" source="nd"/>

<DecisionVariableDescription id="10" source="inferred">surgical therapy; bulking agent therapy<IntentionalVagueness id="18" source="nd"/>

</DecisionVariableDescription>

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<ActionCode id="6" source="nd"/>

<ActionVerb id="6" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="6" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="6" source="explicit">multi-channel urodynamics</ActionVerbComplement>

<ActionBenefit id="6" source="nd"/>

<ActionRiskHarm id="6" source="nd"/>

<ActionDescription id="6" source="nd">

<IntentionalVagueness id="16" source="nd"/>

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<ActionValue id="6" source="nd"/>

<ActionType id="6" source="nd"/>

</Action>

<Reason id="6" source="inferred">While urodynamic assessment may provide valuable information for some clinicians in stress incontinent patients who are considering "definitive" therapy, UDS are not absolutely necessary as a component of the preoperative evaluation in uncomplicated patients. In such patients (previously defined as one who has symptoms and signs of SUI with no relevant prior surgery, no neurological history or symptoms, no major health concerns and no other pelvic pathology (e.g., POP) or other LUTS such as frequency, urgency, UUI, or nocturia), direct observation of urinary leakage with coughing or straining on physical examination may provide an adequate urethral assessment. UDS can be considered an option in the evaluation of such patients.</Reason>

<Reason id="8" source="inferred">Information obtained from a multichannel UDS study may confirm or refute a diagnosis made based on history, physical examination and stress test alone. UDS may also facilitate specific treatment selection and provide important data that promotes full and accurate preoperative counseling of patients.</Reason>

<Reason id="9" source="inferred">Multichannel UDS has not been shown to correlate with outcomes of various interventions for SUI. However, UDS may alter the choice of therapy or provide guidance in patient selection to minimize the incidence of some postoperative voiding symptoms. With the addition of fluoroscopy to the UDS (VUDS), the reliability of the study for diagnosis of SUI and in assessing for concurrent conditions (e.g., BOO secondary to POP) may be enhanced. Although the literature is mixed with regard to specific treatment selection based on UDS parameters, clinicians may need to adjust the treatment plans if the UDS studies suggest findings other than those which were expected based on history and physical examination alone, such as lack of SUI, DO or incomplete emptying.</Reason>

<EvidenceQuality id="5" source="inferred">Grade C<EvidenceQualityDescription id="5" source="nd"/>

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<RecommendationStrength id="5" source="inferred">Option<RecommendationStrengthCode id="5" source="nd"/>

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<Flexibility id="5" source="nd"/>

<Logic id="5" source="inferred">If &#13;

symptoms of stress incontinence is [true] &#13;&#13;

AND&#13;&#13;

physical findings of stress incontinence is [true] &#13;&#13;

AND&#13;&#13;

considering invasive, potentially morbid or irreversible treatment is [true] &#13;

Then &#13;

clinicians may perform multi-channel urodynamics</Logic>

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<Flexibility id="6" source="nd"/>

<Logic id="6" source="nd"/>

<Cost id="6" source="nd"/>

<Linkage id="6" source="nd"/>

<Reference id="6" source="nd"/>

<Certainty id="6" source="nd"/>

<Goal id="6" source="nd"/>

</Imperative>

<RecommendationNotes id="2" source="inferred"/>

</Recommendation>

<Recommendation id="3" source="inferred">4<StatementOfFact id="3" source="nd"/>

<Conditional id="5" source="inferred">Clinicians should perform repeat stress testing with the urethral catheter removed in patients suspected of having SUI who do not demonstrate this finding with the catheter in place during urodynamic testing.<BenefitHarmAssessment id="7" source="nd"/>

<DecisionVariable id="20" source="inferred">complain of SUI symptoms<Value id="20" source="inferred">true</Value>

<DecisionVariableCode id="20" source="nd"/>

<DecisionVariableDescription id="20" source="nd">

<IntentionalVagueness id="31" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="20" source="nd">

<Sensitivity id="20" source="nd"/>

<Specificity id="20" source="nd"/>

<PredictiveValue id="20" source="nd"/>

</TestParameter>

<DecisionVariableCost id="20" source="nd"/>

</DecisionVariable>

<DecisionVariable id="19" source="inferred">SUI is suspected based on history<Value id="19" source="inferred">true</Value>

<DecisionVariableCode id="19" source="nd"/>

<DecisionVariableDescription id="19" source="nd">

<IntentionalVagueness id="30" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="19" source="nd">

<Sensitivity id="19" source="nd"/>

<Specificity id="19" source="nd"/>

<PredictiveValue id="19" source="nd"/>

</TestParameter>

<DecisionVariableCost id="19" source="nd"/>

</DecisionVariable>

<DecisionVariable id="18" source="inferred">the presence of documented SUI would change management<Value id="18" source="inferred">true</Value>

<DecisionVariableCode id="18" source="nd"/>

<DecisionVariableDescription id="18" source="nd">

<IntentionalVagueness id="29" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="18" source="nd">

<Sensitivity id="18" source="nd"/>

<Specificity id="18" source="nd"/>

<PredictiveValue id="18" source="nd"/>

</TestParameter>

<DecisionVariableCost id="18" source="nd"/>

</DecisionVariable>

<DecisionVariable id="24" source="inferred">SUI demonstrated during Valsalva maneuvers<Value id="24" source="inferred">false</Value>

<DecisionVariableCode codeset="" id="24" source="inferred"/>

<DecisionVariableDescription id="24" source="nd">

<IntentionalVagueness id="35" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="24" source="nd">

<Sensitivity id="24" source="nd"/>

<Specificity id="24" source="nd"/>

<PredictiveValue id="24" source="nd"/>

</TestParameter>

<DecisionVariableCost id="24" source="nd"/>

</DecisionVariable>

<DecisionVariable id="25" source="inferred">SUI demonstrated during cough testing<Value id="25" source="inferred">false</Value>

<DecisionVariableCode id="25" source="nd"/>

<DecisionVariableDescription id="25" source="nd">

<IntentionalVagueness id="36" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="25" source="nd">

<Sensitivity id="25" source="nd"/>

<Specificity id="25" source="nd"/>

<PredictiveValue id="25" source="nd"/>

</TestParameter>

<DecisionVariableCost id="25" source="nd"/>

</DecisionVariable>

<DecisionVariable id="16" source="inferred">urodynamic testing with urethral catheter in place demonstrates SUI<Value id="16" source="inferred">false</Value>

<DecisionVariableCode id="16" source="nd"/>

<DecisionVariableDescription id="16" source="nd">

<IntentionalVagueness id="26" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="16" source="nd">

<Sensitivity id="16" source="nd"/>

<Specificity id="16" source="nd"/>

<PredictiveValue id="16" source="nd"/>

</TestParameter>

<DecisionVariableCost id="16" source="nd"/>

</DecisionVariable>

<Action id="7" source="inferred">remove urethral catheter<ActionActor id="7" source="nd"/>

<ActionCode id="7" source="nd"/>

<ActionVerb id="7" source="inferred">remove</ActionVerb>

<ActionDeonticTerm id="7" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="7" source="inferred">urethral catheter</ActionVerbComplement>

<ActionBenefit id="7" source="nd"/>

<ActionRiskHarm id="7" source="nd"/>

<ActionDescription id="7" source="nd">

<IntentionalVagueness id="23" source="nd"/>

</ActionDescription>

<ActionCost id="7" source="nd"/>

<ActionValue id="7" source="nd"/>

<ActionType id="7" source="nd"/>

</Action>

<Action id="8" source="inferred">perform repeat stress testing<ActionActor id="8" source="nd"/>

<ActionCode id="8" source="nd"/>

<ActionVerb id="10" source="inferred">repeat</ActionVerb>

<ActionDeonticTerm id="8" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="8" source="inferred">stress test</ActionVerbComplement>

<ActionBenefit id="8" source="nd"/>

<ActionRiskHarm id="8" source="nd"/>

<ActionDescription id="8" source="nd">

<IntentionalVagueness id="28" source="nd"/>

</ActionDescription>

<ActionCost id="8" source="nd"/>

<ActionValue id="8" source="nd"/>

<ActionType id="8" source="nd"/>

</Action>

<Reason id="10" source="inferred">A fundamental tenet of good urodynamic practice is to ensure that testing reproduces the patients’ symptoms. If urodynamic testing does not demonstrate SUI in patients who complain of the symptom of SUI, it may not necessarily indicate that they do not have SUI, but may in fact suggest that the testing did not fully replicate symptoms.</Reason>

<Reason id="12" source="inferred">Some patients with SUI demonstrated during physical examination will not have such findings during UDS with the urethral catheter in place. Removal of the urethral catheter will allow demonstration or “unmasking” of SUI in many of these individuals with repeat stress maneuvers. Over 50% of women with symptoms of SUI who do not demonstrate SUI with the urethral catheter in place will do so when it is removed. One study found that 35% of men with post -prostatectomy incontinence did not demonstrate SUI until after catheter removal. Removal of the urethral/ intravesical catheter renders the measured LPP to be based on the true intraabdominal pressure, which in most cases should very closely approximate the intravesical pressure.</Reason>

<EvidenceQuality id="7" source="nd">

<EvidenceQualityDescription id="7" source="nd"/>

<Disagreement id="7" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="7" source="nd">

<RecommendationStrengthCode id="7" source="nd"/>

</RecommendationStrength>

<Flexibility id="7" source="nd"/>

<Logic id="7" source="inferred">If &#13;

(complain of SUI symptoms is [true] &#13;&#13;

OR&#13;&#13;

SUI is suspected based on history is [true] &#13;&#13;

OR&#13;&#13;

the presence of documented SUI would change management is [true] ) &#13;&#13;

AND&#13;&#13;

SUI demonstrated during Valsalva maneuvers is [false] &#13;&#13;

AND&#13;&#13;

SUI demonstrated during cough testing is [false] &#13;&#13;

AND&#13;&#13;

urodynamic testing with urethral catheter in place demonstrates SUI is [false] &#13;

Then &#13;

remove urethral catheter&#13;

AND&#13;

perform repeat stress testing</Logic>

<Cost id="7" source="nd"/>

<Linkage id="7" source="nd"/>

<Reference id="7" source="nd"/>

<Certainty id="7" source="nd"/>

<Goal id="7" source="nd"/>

</Conditional>

<Imperative id="3" source="nd">

<BenefitHarmAssessment id="8" source="nd"/>

<Scope id="3" source="nd">

<ScopeCode id="3" source="nd"/>

</Scope>

<Directive id="3" source="nd">

<DirectiveActor id="3" source="nd"/>

<DirectiveCode id="3" source="nd"/>

<DirectiveVerb id="3" source="nd"/>

<DirectiveDeonticTerm id="3" source="nd"/>

<DirectiveVerbComplement id="3" source="nd"/>

<DirectiveBenefit id="3" source="nd"/>

<DirectiveRiskHarm id="3" source="nd"/>

<DirectiveDescription id="3" source="nd">

<IntentionalVagueness id="24" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="3" source="nd"/>

<DirectiveValue id="3" source="nd"/>

<DirectiveType id="3" source="nd"/>

</Directive>

<Reason id="11" source="nd"/>

<EvidenceQuality id="8" source="nd">

<EvidenceQualityDescription id="8" source="nd"/>

<Disagreement id="8" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="8" source="nd">

<RecommendationStrengthCode id="8" source="nd"/>

</RecommendationStrength>

<Flexibility id="8" source="nd"/>

<Logic id="8" source="nd"/>

<Cost id="8" source="nd"/>

<Linkage id="8" source="nd"/>

<Reference id="8" source="nd"/>

<Certainty id="8" source="nd"/>

<Goal id="8" source="nd"/>

</Imperative>

<RecommendationNotes id="3" source="inferred"/>

</Recommendation>

<Recommendation id="4" source="inferred">5<StatementOfFact id="4" source="nd"/>

<Conditional id="7" source="inferred">In women with high grade pelvic organ prolapse (POP) but without the symptom of SUI, clinicians should perform stress testing with reduction of the prolapse.<BenefitHarmAssessment id="10" source="nd"/>

<DecisionVariable id="27" source="inferred">high grade pelvic organ prolapse (POP)<Value id="27" source="inferred">true</Value>

<DecisionVariableCode id="27" source="nd"/>

<DecisionVariableDescription id="27" source="nd">

<IntentionalVagueness id="39" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="27" source="nd">

<Sensitivity id="27" source="nd"/>

<Specificity id="27" source="nd"/>

<PredictiveValue id="27" source="nd"/>

</TestParameter>

<DecisionVariableCost id="27" source="nd"/>

</DecisionVariable>

<DecisionVariable id="29" source="inferred">symptom of SUI<Value id="29" source="inferred">false</Value>

<DecisionVariableCode id="29" source="nd"/>

<DecisionVariableDescription id="29" source="nd">

<IntentionalVagueness id="43" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="29" source="nd">

<Sensitivity id="29" source="nd"/>

<Specificity id="29" source="nd"/>

<PredictiveValue id="29" source="nd"/>

</TestParameter>

<DecisionVariableCost id="29" source="nd"/>

</DecisionVariable>

<DecisionVariable id="30" source="inferred">presence of SUI would change the surgical treatment plan<Value id="30" source="inferred">true</Value>

<DecisionVariableCode id="30" source="nd"/>

<DecisionVariableDescription id="30" source="nd">

<IntentionalVagueness id="44" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="30" source="nd">

<Sensitivity id="30" source="nd"/>

<Specificity id="30" source="nd"/>

<PredictiveValue id="30" source="nd"/>

</TestParameter>

<DecisionVariableCost id="30" source="nd"/>

</DecisionVariable>

<Action id="10" source="inferred">perform stress testing with reduction of the prolapse to evaluate for occult SUI<ActionActor id="10" source="inferred">clinicians</ActionActor>

<ActionCode id="10" source="nd"/>

<ActionVerb id="12" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="10" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="10" source="inferred">stress testing with reduction of the prolapse to evaluate for occult SUI</ActionVerbComplement>

<ActionBenefit id="10" source="nd"/>

<ActionRiskHarm id="10" source="nd"/>

<ActionDescription id="10" source="inferred">This can be done independently or during urodynamic testing. Prolapse can be reduced with a number of tools including but not limited to a pessary, a ring forceps or a vaginal pack. Manual prolapse reduction during stress testing is not recommended as this will inaccurately assess VLPP. During such testing, the investigator should be aware that the instrument utilized for POP reduction may also obstruct the urethra creating a falsely elevated VLPP or prevent the demonstration of SUI.<IntentionalVagueness id="40" source="nd"/>

</ActionDescription>

<ActionCost id="10" source="nd"/>

<ActionValue id="10" source="nd"/>

<ActionType id="10" source="nd"/>

</Action>

<Reason id="14" source="inferred">Occult SUI is defined as stress incontinence observed only after the reduction of co-existent prolapse. A significant proportion of women with high grade POP who do not have the symptom of SUI will be found to have occult SUI. If the presence of SUI would change the surgical treatment plan, stress testing with reduction of the prolapse to evaluate for occult SUI should be performed.</Reason>

<EvidenceQuality id="10" source="inferred">Grade C<EvidenceQualityDescription id="10" source="nd"/>

<Disagreement id="10" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="10" source="inferred">Option<RecommendationStrengthCode id="10" source="nd"/>

</RecommendationStrength>

<Flexibility id="10" source="nd"/>

<Logic id="10" source="inferred">If &#13;

high grade pelvic organ prolapse (POP) is [true] &#13;&#13;

AND&#13;&#13;

symptom of SUI is [false] &#13;&#13;

AND&#13;&#13;

presence of SUI would change the surgical treatment plan is [true] &#13;

Then &#13;

perform stress testing with reduction of the prolapse to evaluate for occult SUI</Logic>

<Cost id="10" source="nd"/>

<Linkage id="10" source="nd"/>

<Reference id="10" source="nd"/>

<Certainty id="10" source="nd"/>

<Goal id="10" source="nd"/>

</Conditional>

<Conditional id="26" source="inferred">Multichannel urodynamics with prolapse reduction may be used to assess for occult stress incontinence and detrusor dysfunction in these women with associated LUTS.<BenefitHarmAssessment id="47" source="nd"/>

<DecisionVariable id="141" source="inferred">high-grade pelvic organ prolapse (POP)<Value id="141" source="inferred">true</Value>

<DecisionVariableCode id="141" source="nd"/>

<DecisionVariableDescription id="141" source="nd">

<IntentionalVagueness id="195" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="141" source="nd">

<Sensitivity id="141" source="nd"/>

<Specificity id="141" source="nd"/>

<PredictiveValue id="141" source="nd"/>

</TestParameter>

<DecisionVariableCost id="141" source="nd"/>

</DecisionVariable>

<DecisionVariable id="142" source="inferred">associated lower urinary tract symptoms (LUTS)<Value id="142" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="142" source="nd"/>

<DecisionVariableDescription id="142" source="inferred">Such as elevated PVR or urinary retention<IntentionalVagueness id="197" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="142" source="nd">

<Sensitivity id="142" source="nd"/>

<Specificity id="142" source="nd"/>

<PredictiveValue id="142" source="nd"/>

</TestParameter>

<DecisionVariableCost id="142" source="nd"/>

</DecisionVariable>

<Action id="36" source="inferred">multichannel urodynamics with prolapse reduction may be used to assess for occult stress incontinence<ActionActor id="36" source="inferred">clinicians</ActionActor>

<ActionCode codeset="" id="36" source="nd"/>

<ActionVerb id="38" source="inferred">use</ActionVerb>

<ActionDeonticTerm id="36" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="36" source="inferred">multichannel urodynamics with prolapse to assess for occult stress incontinence</ActionVerbComplement>

<ActionBenefit id="36" source="nd"/>

<ActionRiskHarm id="36" source="nd"/>

<ActionDescription id="36" source="nd">

<IntentionalVagueness id="196" source="nd"/>

</ActionDescription>

<ActionCost id="36" source="nd"/>

<ActionValue id="36" source="nd"/>

<ActionType id="36" source="nd"/>

</Action>

<Reason id="61" source="inferred">Multi-channel UDS can also assess for the presence of detrusor dysfunction in women with high grade POP. Some patients with high grade POP may have an elevated PVR or be in urinary retention. UDS with the POP reduced may facilitate evaluation of detrusor function and thus determine if the elevated PVR/ retention is due to detrusor underactivity, outlet obstruction or a combination of both. Invasive UDS may be performed both with and without reduction of the POP to evaluate bladder function. This may be helpful in the prediction of postoperative bladder function once the POP has been surgically repaired.</Reason>

<EvidenceQuality id="45" source="nd">

<EvidenceQualityDescription id="45" source="nd"/>

<Disagreement id="45" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="45" source="nd">

<RecommendationStrengthCode id="45" source="nd"/>

</RecommendationStrength>

<Flexibility id="45" source="nd"/>

<Logic id="45" source="inferred">If &#13;

high-grade pelvic organ prolapse (POP) is [true] &#13;&#13;

AND&#13;&#13;

associated lower urinary tract symptoms (LUTS) is [true] &#13;

Then &#13;

multichannel urodynamics with prolapse reduction may be used to assess for occult stress incontinence</Logic>

<Cost id="45" source="nd"/>

<Linkage id="45" source="nd"/>

<Reference id="45" source="nd"/>

<Certainty id="45" source="nd"/>

<Goal id="45" source="nd"/>

</Conditional>

<Imperative id="4" source="nd">

<BenefitHarmAssessment id="11" source="nd"/>

<Scope id="4" source="nd">

<ScopeCode id="4" source="nd"/>

</Scope>

<Directive id="4" source="nd">

<DirectiveActor id="4" source="nd"/>

<DirectiveCode id="4" source="nd"/>

<DirectiveVerb id="4" source="nd"/>

<DirectiveDeonticTerm id="4" source="nd"/>

<DirectiveVerbComplement id="4" source="nd"/>

<DirectiveBenefit id="4" source="nd"/>

<DirectiveRiskHarm id="4" source="nd"/>

<DirectiveDescription id="4" source="nd">

<IntentionalVagueness id="41" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="4" source="nd"/>

<DirectiveValue id="4" source="nd"/>

<DirectiveType id="4" source="nd"/>

</Directive>

<Reason id="15" source="nd"/>

<EvidenceQuality id="11" source="nd">

<EvidenceQualityDescription id="11" source="nd"/>

<Disagreement id="11" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="11" source="nd">

<RecommendationStrengthCode id="11" source="nd"/>

</RecommendationStrength>

<Flexibility id="11" source="nd"/>

<Logic id="11" source="nd"/>

<Cost id="11" source="nd"/>

<Linkage id="11" source="nd"/>

<Reference id="11" source="nd"/>

<Certainty id="11" source="nd"/>

<Goal id="11" source="nd"/>

</Imperative>

<RecommendationNotes id="4" source="nd"/>

</Recommendation>

<Recommendation id="5" source="inferred">6<StatementOfFact id="5" source="nd"/>

<Conditional id="8" source="inferred">Clinicians may perform multi-channel filling cystometry when it is important to determine if altered compliance, detrusor overactivity or other urodynamic abnormalities are present (or not) in patients with urgency incontinence in whom invasive, potentially morbid or irreversible treatments are considered.<BenefitHarmAssessment id="12" source="nd"/>

<DecisionVariable id="31" source="explicit">urgency incontinence<Value id="31" source="inferred">true</Value>

<DecisionVariableCode id="31" source="nd"/>

<DecisionVariableDescription id="31" source="nd">

<IntentionalVagueness id="45" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="31" source="nd">

<Sensitivity id="31" source="nd"/>

<Specificity id="31" source="nd"/>

<PredictiveValue id="31" source="nd"/>

</TestParameter>

<DecisionVariableCost id="31" source="nd"/>

</DecisionVariable>

<DecisionVariable id="33" source="inferred">invasive treatment is being considered<Value id="33" source="inferred">true</Value>

<DecisionVariableCode id="33" source="nd"/>

<DecisionVariableDescription id="33" source="nd">

<IntentionalVagueness id="49" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="33" source="nd">

<Sensitivity id="33" source="nd"/>

<Specificity id="33" source="nd"/>

<PredictiveValue id="33" source="nd"/>

</TestParameter>

<DecisionVariableCost id="33" source="nd"/>

</DecisionVariable>

<DecisionVariable id="32" source="inferred">potentially morbid treatment is being considered<Value id="32" source="inferred">true</Value>

<DecisionVariableCode id="32" source="nd"/>

<DecisionVariableDescription id="32" source="nd">

<IntentionalVagueness id="48" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="32" source="nd">

<Sensitivity id="32" source="nd"/>

<Specificity id="32" source="nd"/>

<PredictiveValue id="32" source="nd"/>

</TestParameter>

<DecisionVariableCost id="32" source="nd"/>

</DecisionVariable>

<DecisionVariable id="34" source="inferred">irreversible treatment is being considered<Value id="34" source="inferred">true</Value>

<DecisionVariableCode id="34" source="nd"/>

<DecisionVariableDescription id="34" source="nd">

<IntentionalVagueness id="50" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="34" source="nd">

<Sensitivity id="34" source="nd"/>

<Specificity id="34" source="nd"/>

<PredictiveValue id="34" source="nd"/>

</TestParameter>

<DecisionVariableCost id="34" source="nd"/>

</DecisionVariable>

<Action id="11" source="explicit">Clinicians may perform multi-channel filling cystometry<ActionActor id="11" source="nd"/>

<ActionCode id="11" source="nd"/>

<ActionVerb id="13" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="11" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="11" source="inferred">multi-channel filling cystometry</ActionVerbComplement>

<ActionBenefit id="11" source="nd"/>

<ActionRiskHarm id="11" source="nd"/>

<ActionDescription id="11" source="nd">

<IntentionalVagueness id="46" source="nd"/>

</ActionDescription>

<ActionCost id="11" source="nd"/>

<ActionValue id="11" source="nd"/>

<ActionType id="11" source="nd"/>

</Action>

<Reason id="16" source="inferred">Cystometry is the foundation in the assessment of urinary storage. When performing filling cystometry, a multi-channel subtracted pressure is preferred over a single-channel cystometrogram, which is subject to significant artifacts of abdominal pressure. In many uncomplicated cases, employing conservative treatments and empiric medical therapy for OAB without a urodynamic diagnosis is common and prudent practice. In patients with urinary urgency and/or urgency incontinence, filling cystometry, which provides subtracted pressure measurements, is the most accurate method in determining bladder pressure. channel filling cystometry offers the most precise method of evaluating bladder storage pressures. The main urodynamic findings of OAB are DO (phasic and tonic) and increased filling sensation. DO is characterized by involuntary phasic rises in detrusor pressure during filling, which may be associated with urinary leakage. Tonic abnormalities of compliance are fortunately easier to measure and do appear on cystometry more readily. Compliance assessment is a very important measurement in patients with neurogenic conditions at risk for upper urinary tract complications as a result of high-pressure urinary storage.</Reason>

<EvidenceQuality id="12" source="inferred">Grade C<EvidenceQualityDescription id="12" source="nd"/>

<Disagreement id="12" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="12" source="inferred">Option<RecommendationStrengthCode id="12" source="nd"/>

</RecommendationStrength>

<Flexibility id="12" source="nd"/>

<Logic id="12" source="inferred">If &#13;

urgency incontinence is [true] &#13;&#13;

AND&#13;&#13;

(invasive treatment is being considered is [true] &#13;&#13;

OR&#13;&#13;

potentially morbid treatment is being considered is [true] &#13;&#13;

OR&#13;&#13;

irreversible treatment is being considered is [true] ) &#13;

Then &#13;

Clinicians may perform multi-channel filling cystometry</Logic>

<Cost id="12" source="nd"/>

<Linkage id="12" source="nd"/>

<Reference id="12" source="nd"/>

<Certainty id="12" source="nd"/>

<Goal id="12" source="nd"/>

</Conditional>

<Imperative id="5" source="nd">

<BenefitHarmAssessment id="13" source="nd"/>

<Scope id="5" source="nd">

<ScopeCode id="5" source="nd"/>

</Scope>

<Directive id="5" source="nd">

<DirectiveActor id="5" source="nd"/>

<DirectiveCode id="5" source="nd"/>

<DirectiveVerb id="5" source="nd"/>

<DirectiveDeonticTerm id="5" source="nd"/>

<DirectiveVerbComplement id="5" source="nd"/>

<DirectiveBenefit id="5" source="nd"/>

<DirectiveRiskHarm id="5" source="nd"/>

<DirectiveDescription id="5" source="nd">

<IntentionalVagueness id="47" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="5" source="nd"/>

<DirectiveValue id="5" source="nd"/>

<DirectiveType id="5" source="nd"/>

</Directive>

<Reason id="17" source="nd"/>

<EvidenceQuality id="13" source="nd">

<EvidenceQualityDescription id="13" source="nd"/>

<Disagreement id="13" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="13" source="nd">

<RecommendationStrengthCode id="13" source="nd"/>

</RecommendationStrength>

<Flexibility id="13" source="nd"/>

<Logic id="13" source="nd"/>

<Cost id="13" source="nd"/>

<Linkage id="13" source="nd"/>

<Reference id="13" source="nd"/>

<Certainty id="13" source="nd"/>

<Goal id="13" source="nd"/>

</Imperative>

<RecommendationNotes id="5" source="nd"/>

</Recommendation>

<Recommendation id="6" source="inferred">7<StatementOfFact id="6" source="nd"/>

<Conditional id="9" source="inferred">Clinicians may perform pressure flow studies (PFS) in patients with urgency incontinence after bladder outlet procedures to evaluate for bladder outlet obstruction (BOO).<BenefitHarmAssessment id="14" source="nd"/>

<DecisionVariable id="36" source="inferred">bladder outlet procedure performed<Value id="36" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="36" source="nd"/>

<DecisionVariableDescription id="36" source="nd">

<IntentionalVagueness id="54" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="36" source="nd">

<Sensitivity id="36" source="nd"/>

<Specificity id="36" source="nd"/>

<PredictiveValue id="36" source="nd"/>

</TestParameter>

<DecisionVariableCost id="36" source="nd"/>

</DecisionVariable>

<DecisionVariable id="37" source="inferred">post-procedure refractory urgency incontinence<Value id="37" source="inferred">true</Value>

<DecisionVariableCode id="37" source="nd"/>

<DecisionVariableDescription id="37" source="nd">

<IntentionalVagueness id="55" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="37" source="nd">

<Sensitivity id="37" source="nd"/>

<Specificity id="37" source="nd"/>

<PredictiveValue id="37" source="nd"/>

</TestParameter>

<DecisionVariableCost id="37" source="nd"/>

</DecisionVariable>

<Action id="12" source="inferred">Clinicians may perform PFS to evaluate for bladder outlet obstruction (BOO)<ActionActor id="12" source="inferred">clinicians</ActionActor>

<ActionCode id="12" source="nd"/>

<ActionVerb id="14" source="nd"/>

<ActionDeonticTerm id="12" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="12" source="inferred">pressure flow studies (PFS) to evaluate for bladder outlet obstruction</ActionVerbComplement>

<ActionBenefit id="12" source="nd"/>

<ActionRiskHarm id="12" source="nd"/>

<ActionDescription id="12" source="nd">

<IntentionalVagueness id="52" source="nd"/>

</ActionDescription>

<ActionCost id="12" source="nd"/>

<ActionValue id="12" source="nd"/>

<ActionType id="12" source="nd"/>

</Action>

<Reason id="19" source="explicit">Symptoms of bladder storage failure are a source of decreased patient satisfaction following treatment for SUI. It is imperative to determine the etiology of these symptoms as urinary obstruction, urethral injury, bladder injury and urethral erosion may present with storage symptoms. In addition to a comprehensive assessment and endoscopic examination, urodynamic testing may be useful. PVR volumes alone cannot diagnose outlet obstruction. The clinician should consider pressure flow testing to assess for BOO in patients with refractory urgency symptoms after a bladder outlet procedure. Although there is no urodynamic standard for obstruction and the classical “high pressure/low flow” pattern characteristic of male BOO may not be found in obstructed women, the finding of an elevated detrusor voiding pressure in association with low flow may suggest obstruction, particularly in the presence of new onset filling/storage or emptying symptoms after surgery. In patients found to be obstructed, sling incision or urethrolysis may be beneficial and is frequently associated with symptom resolution. In women with significant elevations in PVR, urinary retention or definite alterations in voiding symptoms following an anti-incontinence procedure, these findings strongly imply BOO, and urodynamics may not be necessary before intervention.</Reason>

<EvidenceQuality id="14" source="nd">

<EvidenceQualityDescription id="14" source="nd"/>

<Disagreement id="14" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="14" source="inferred">Expert Opinion<RecommendationStrengthCode id="14" source="nd"/>

</RecommendationStrength>

<Flexibility id="14" source="nd"/>

<Logic id="14" source="inferred">If &#13;

bladder outlet procedure performed is [true] &#13;

AND&#13;

post-procedure refractory urgency incontinence is [true] &#13;

Then &#13;

Clinicians may perform PFS to evaluate for bladder outlet obstruction (BOO)</Logic>

<Cost id="14" source="nd"/>

<Linkage id="14" source="nd"/>

<Reference id="14" source="nd"/>

<Certainty id="14" source="nd"/>

<Goal id="14" source="nd"/>

</Conditional>

<Imperative id="6" source="nd">

<BenefitHarmAssessment id="15" source="nd"/>

<Scope id="6" source="nd">

<ScopeCode id="6" source="nd"/>

</Scope>

<Directive id="6" source="nd">

<DirectiveActor id="6" source="nd"/>

<DirectiveCode id="6" source="nd"/>

<DirectiveVerb id="6" source="nd"/>

<DirectiveDeonticTerm id="6" source="nd"/>

<DirectiveVerbComplement id="6" source="nd"/>

<DirectiveBenefit id="6" source="nd"/>

<DirectiveRiskHarm id="6" source="nd"/>

<DirectiveDescription id="6" source="nd">

<IntentionalVagueness id="53" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="6" source="nd"/>

<DirectiveValue id="6" source="nd"/>

<DirectiveType id="6" source="nd"/>

</Directive>

<Reason id="20" source="nd"/>

<EvidenceQuality id="15" source="nd">

<EvidenceQualityDescription id="15" source="nd"/>

<Disagreement id="15" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="15" source="nd">

<RecommendationStrengthCode id="15" source="nd"/>

</RecommendationStrength>

<Flexibility id="15" source="nd"/>

<Logic id="15" source="nd"/>

<Cost id="15" source="nd"/>

<Linkage id="15" source="nd"/>

<Reference id="15" source="nd"/>

<Certainty id="15" source="nd"/>

<Goal id="15" source="nd"/>

</Imperative>

<RecommendationNotes id="6" source="nd"/>

</Recommendation>

<Recommendation id="7" source="inferred">8<StatementOfFact id="7" source="nd"/>

<Conditional id="10" source="inferred">Clinicians should counsel patients with urgency incontinence and mixed incontinence that the absence of detrusor overactivity (DO) on a single urodynamic study does not exclude it as a causative agent for their symptoms.<BenefitHarmAssessment id="16" source="nd"/>

<DecisionVariable id="38" source="inferred">urgency incontinence<Value id="38" source="inferred">true</Value>

<DecisionVariableCode id="38" source="nd"/>

<DecisionVariableDescription id="38" source="nd">

<IntentionalVagueness id="56" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="38" source="nd">

<Sensitivity id="38" source="nd"/>

<Specificity id="38" source="nd"/>

<PredictiveValue id="38" source="nd"/>

</TestParameter>

<DecisionVariableCost id="38" source="nd"/>

</DecisionVariable>

<DecisionVariable id="39" source="inferred">mixed incontinence<Value id="39" source="inferred">true</Value>

<DecisionVariableCode id="39" source="nd"/>

<DecisionVariableDescription id="39" source="nd">

<IntentionalVagueness id="59" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="39" source="nd">

<Sensitivity id="39" source="nd"/>

<Specificity id="39" source="nd"/>

<PredictiveValue id="39" source="nd"/>

</TestParameter>

<DecisionVariableCost id="39" source="nd"/>

</DecisionVariable>

<DecisionVariable id="40" source="inferred">detrusor overactivity demonstrated on UDS<Value id="40" source="inferred">false</Value>

<DecisionVariableCode id="40" source="nd"/>

<DecisionVariableDescription id="40" source="nd">

<IntentionalVagueness id="60" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="40" source="nd">

<Sensitivity id="40" source="nd"/>

<Specificity id="40" source="nd"/>

<PredictiveValue id="40" source="nd"/>

</TestParameter>

<DecisionVariableCost id="40" source="nd"/>

</DecisionVariable>

<Action id="13" source="inferred">Clinicians should counsel patients that DO is not excluded as a causative agent for their symptoms.<ActionActor id="13" source="inferred">clinicians</ActionActor>

<ActionCode id="13" source="nd"/>

<ActionVerb id="15" source="inferred">counsel</ActionVerb>

<ActionDeonticTerm id="13" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="13" source="inferred">patients that DO is not excluded as a causative agent for their symptoms.</ActionVerbComplement>

<ActionBenefit id="13" source="nd"/>

<ActionRiskHarm id="13" source="nd"/>

<ActionDescription id="13" source="explicit">Urodynamic findings should be interpreted in the context of the global assessment, including examination, diaries and residual urine as well as other pertinent information. Additionally, it is equally prudent in many cases to reserve urodynamic testing until after a failed empiric treatment or following consideration of a form of invasive therapy. In these situations, UDS is equally important in determining the presence or absence of other factors (e.g., SUI, BOO) that could influence treatment decisions.<IntentionalVagueness id="57" source="nd"/>

</ActionDescription>

<ActionCost id="13" source="nd"/>

<ActionValue id="13" source="nd"/>

<ActionType id="13" source="nd"/>

</Action>

<Reason id="21" source="inferred">The technical reasons for the inability to elicit the finding of DO in certain individuals, whether spontaneous or provoked, are unclear. Thus, it is very important to attempt to replicate symptoms as precisely as possible. Despite this, UDS may not diagnose DO even in patients who are very symptomatic.</Reason>

<EvidenceQuality id="16" source="nd">

<EvidenceQualityDescription id="16" source="nd"/>

<Disagreement id="16" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="16" source="inferred">Clinical Principle<RecommendationStrengthCode id="16" source="nd"/>

</RecommendationStrength>

<Flexibility id="16" source="nd"/>

<Logic id="16" source="inferred">If &#13;

(urgency incontinence is [true] &#13;&#13;

OR&#13;&#13;

mixed incontinence is [true] &#13;) &#13;

AND&#13;&#13;

detrusor overactivity demonstrated on UDS is [false] &#13;

Then &#13;

Clinicians should counsel patients that DO is not excluded as a causative agent for their symptoms.</Logic>

<Cost id="16" source="nd"/>

<Linkage id="16" source="nd"/>

<Reference id="16" source="nd"/>

<Certainty id="16" source="nd"/>

<Goal id="16" source="nd"/>

</Conditional>

<Imperative id="7" source="nd">

<BenefitHarmAssessment id="17" source="nd"/>

<Scope id="7" source="nd">

<ScopeCode id="7" source="nd"/>

</Scope>

<Directive id="7" source="nd">

<DirectiveActor id="7" source="nd"/>

<DirectiveCode id="7" source="nd"/>

<DirectiveVerb id="7" source="nd"/>

<DirectiveDeonticTerm id="7" source="nd"/>

<DirectiveVerbComplement id="7" source="nd"/>

<DirectiveBenefit id="7" source="nd"/>

<DirectiveRiskHarm id="7" source="nd"/>

<DirectiveDescription id="7" source="nd">

<IntentionalVagueness id="58" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="7" source="nd"/>

<DirectiveValue id="7" source="nd"/>

<DirectiveType id="7" source="nd"/>

</Directive>

<Reason id="22" source="nd"/>

<EvidenceQuality id="17" source="nd">

<EvidenceQualityDescription id="17" source="nd"/>

<Disagreement id="17" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="17" source="nd">

<RecommendationStrengthCode id="17" source="nd"/>

</RecommendationStrength>

<Flexibility id="17" source="nd"/>

<Logic id="17" source="nd"/>

<Cost id="17" source="nd"/>

<Linkage id="17" source="nd"/>

<Reference id="17" source="nd"/>

<Certainty id="17" source="nd"/>

<Goal id="17" source="nd"/>

</Imperative>

<RecommendationNotes id="7" source="nd"/>

</Recommendation>

<Recommendation id="8" source="inferred">9<StatementOfFact id="8" source="nd"/>

<Conditional id="11" source="inferred">Clinicians should perform post-void residual (PVR) assessment, either as part of complete urodynamic study or separately, during the initial urological evaluation of patients with relevant neurological conditions (such as spinal cord injury and myelomeningocele) and as part of ongoing follow -up when appropriate.<BenefitHarmAssessment id="18" source="nd"/>

<DecisionVariable id="43" source="inferred">spinal cord injury (SCI)<Value id="43" source="inferred">true</Value>

<DecisionVariableCode id="43" source="nd"/>

<DecisionVariableDescription id="43" source="nd">

<IntentionalVagueness id="65" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="43" source="nd">

<Sensitivity id="43" source="nd"/>

<Specificity id="43" source="nd"/>

<PredictiveValue id="43" source="nd"/>

</TestParameter>

<DecisionVariableCost id="43" source="nd"/>

</DecisionVariable>

<DecisionVariable id="42" source="inferred">myelomeningocele (MMC)<Value id="42" source="inferred">true</Value>

<DecisionVariableCode id="42" source="nd"/>

<DecisionVariableDescription id="42" source="nd">

<IntentionalVagueness id="64" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="42" source="nd">

<Sensitivity id="42" source="nd"/>

<Specificity id="42" source="nd"/>

<PredictiveValue id="42" source="nd"/>

</TestParameter>

<DecisionVariableCost id="42" source="nd"/>

</DecisionVariable>

<DecisionVariable id="46" source="inferred">multiple sclerosis (MS)<Value id="46" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="46" source="nd"/>

<DecisionVariableDescription id="46" source="nd">

<IntentionalVagueness id="69" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="46" source="nd">

<Sensitivity id="46" source="nd"/>

<Specificity id="46" source="nd"/>

<PredictiveValue id="46" source="nd"/>

</TestParameter>

<DecisionVariableCost id="46" source="nd"/>

</DecisionVariable>

<DecisionVariable id="45" source="inferred">Parkinson’s disease (PD)<Value id="45" source="inferred">true</Value>

<DecisionVariableCode id="45" source="nd"/>

<DecisionVariableDescription id="45" source="nd">

<IntentionalVagueness id="68" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="45" source="nd">

<Sensitivity id="45" source="nd"/>

<Specificity id="45" source="nd"/>

<PredictiveValue id="45" source="nd"/>

</TestParameter>

<DecisionVariableCost id="45" source="nd"/>

</DecisionVariable>

<DecisionVariable id="44" source="inferred">stroke/cerebrovascular accident<Value id="44" source="inferred">true</Value>

<DecisionVariableCode id="44" source="nd"/>

<DecisionVariableDescription id="44" source="nd">

<IntentionalVagueness id="67" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="44" source="nd">

<Sensitivity id="44" source="nd"/>

<Specificity id="44" source="nd"/>

<PredictiveValue id="44" source="nd"/>

</TestParameter>

<DecisionVariableCost id="44" source="nd"/>

</DecisionVariable>

<DecisionVariable id="52" source="inferred">traumatic brain injury (TBI)<Value id="52" source="inferred">true</Value>

<DecisionVariableCode id="52" source="nd"/>

<DecisionVariableDescription id="52" source="nd">

<IntentionalVagueness id="75" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="52" source="nd">

<Sensitivity id="52" source="nd"/>

<Specificity id="52" source="nd"/>

<PredictiveValue id="52" source="nd"/>

</TestParameter>

<DecisionVariableCost id="52" source="nd"/>

</DecisionVariable>

<DecisionVariable id="53" source="inferred">brain tumor<Value id="53" source="inferred">true</Value>

<DecisionVariableCode id="53" source="nd"/>

<DecisionVariableDescription id="53" source="nd">

<IntentionalVagueness id="76" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="53" source="nd">

<Sensitivity id="53" source="nd"/>

<Specificity id="53" source="nd"/>

<PredictiveValue id="53" source="nd"/>

</TestParameter>

<DecisionVariableCost id="53" source="nd"/>

</DecisionVariable>

<DecisionVariable id="54" source="inferred">spinal cord tumor<Value id="54" source="inferred">true</Value>

<DecisionVariableCode id="54" source="nd"/>

<DecisionVariableDescription id="54" source="nd">

<IntentionalVagueness id="77" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="54" source="nd">

<Sensitivity id="54" source="nd"/>

<Specificity id="54" source="nd"/>

<PredictiveValue id="54" source="nd"/>

</TestParameter>

<DecisionVariableCost id="54" source="nd"/>

</DecisionVariable>

<DecisionVariable id="55" source="inferred">transverse myelitis<Value id="55" source="inferred">true</Value>

<DecisionVariableCode id="55" source="nd"/>

<DecisionVariableDescription id="55" source="nd">

<IntentionalVagueness id="78" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="55" source="nd">

<Sensitivity id="55" source="nd"/>

<Specificity id="55" source="nd"/>

<PredictiveValue id="55" source="nd"/>

</TestParameter>

<DecisionVariableCost id="55" source="nd"/>

</DecisionVariable>

<DecisionVariable id="59" source="inferred">cauda equina syndrome<Value id="59" source="inferred">true</Value>

<DecisionVariableCode id="59" source="nd"/>

<DecisionVariableDescription id="59" source="nd">

<IntentionalVagueness id="82" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="59" source="nd">

<Sensitivity id="59" source="nd"/>

<Specificity id="59" source="nd"/>

<PredictiveValue id="59" source="nd"/>

</TestParameter>

<DecisionVariableCost id="59" source="nd"/>

</DecisionVariable>

<DecisionVariable id="60" source="inferred">herniated disk<Value id="60" source="inferred">true</Value>

<DecisionVariableCode id="60" source="nd"/>

<DecisionVariableDescription id="60" source="nd">

<IntentionalVagueness id="83" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="60" source="nd">

<Sensitivity id="60" source="nd"/>

<Specificity id="60" source="nd"/>

<PredictiveValue id="60" source="nd"/>

</TestParameter>

<DecisionVariableCost id="60" source="nd"/>

</DecisionVariable>

<DecisionVariable id="56" source="inferred">other back or spine disease<Value id="56" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="56" source="nd"/>

<DecisionVariableDescription id="56" source="inferred">

<IntentionalVagueness id="79" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="56" source="nd">

<Sensitivity id="56" source="nd"/>

<Specificity id="56" source="nd"/>

<PredictiveValue id="56" source="nd"/>

</TestParameter>

<DecisionVariableCost id="56" source="nd"/>

</DecisionVariable>

<DecisionVariable id="58" source="inferred">diabetes<Value id="58" source="inferred">true</Value>

<DecisionVariableCode id="58" source="nd"/>

<DecisionVariableDescription id="58" source="nd">

<IntentionalVagueness id="81" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="58" source="nd">

<Sensitivity id="58" source="nd"/>

<Specificity id="58" source="nd"/>

<PredictiveValue id="58" source="nd"/>

</TestParameter>

<DecisionVariableCost id="58" source="nd"/>

</DecisionVariable>

<DecisionVariable id="57" source="inferred">peripheral nerve injury<Value id="57" source="inferred">true</Value>

<DecisionVariableCode id="57" source="nd"/>

<DecisionVariableDescription id="57" source="nd">

<IntentionalVagueness id="80" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="57" source="nd">

<Sensitivity id="57" source="nd"/>

<Specificity id="57" source="nd"/>

<PredictiveValue id="57" source="nd"/>

</TestParameter>

<DecisionVariableCost id="57" source="nd"/>

</DecisionVariable>

<DecisionVariable id="48" source="inferred">cervical myelopathy<Value id="48" source="inferred">true</Value>

<DecisionVariableCode id="48" source="nd"/>

<DecisionVariableDescription id="48" source="nd">

<IntentionalVagueness id="71" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="48" source="nd">

<Sensitivity id="48" source="nd"/>

<Specificity id="48" source="nd"/>

<PredictiveValue id="48" source="nd"/>

</TestParameter>

<DecisionVariableCost id="48" source="nd"/>

</DecisionVariable>

<DecisionVariable id="47" source="inferred">childhood history of posterior urethral valves<Value id="47" source="inferred">true</Value>

<DecisionVariableCode id="47" source="nd"/>

<DecisionVariableDescription id="47" source="nd">

<IntentionalVagueness id="70" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="47" source="nd">

<Sensitivity id="47" source="nd"/>

<Specificity id="47" source="nd"/>

<PredictiveValue id="47" source="nd"/>

</TestParameter>

<DecisionVariableCost id="47" source="nd"/>

</DecisionVariable>

<DecisionVariable id="143" source="inferred">multiple systems atrophy<Value id="143" source="inferred">true</Value>

<DecisionVariableCode id="143" source="nd"/>

<DecisionVariableDescription id="143" source="nd">

<IntentionalVagueness id="199" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="143" source="nd">

<Sensitivity id="143" source="nd"/>

<Specificity id="143" source="nd"/>

<PredictiveValue id="143" source="nd"/>

</TestParameter>

<DecisionVariableCost id="143" source="nd"/>

</DecisionVariable>

<DecisionVariable id="51" source="inferred">other relevant neurological conditions<Value id="51" source="inferred">true</Value>

<DecisionVariableCode id="51" source="nd"/>

<DecisionVariableDescription id="51" source="nd">

<IntentionalVagueness id="74" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="51" source="nd">

<Sensitivity id="51" source="nd"/>

<Specificity id="51" source="nd"/>

<PredictiveValue id="51" source="nd"/>

</TestParameter>

<DecisionVariableCost id="51" source="nd"/>

</DecisionVariable>

<Action id="15" source="inferred">Clinicians should perform PVR assessment during the initial urological evaluation<ActionActor id="15" source="inferred">clinicians</ActionActor>

<ActionCode id="15" source="nd"/>

<ActionVerb id="17" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="15" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="15" source="inferred">PVR assessment during the initial urological evaluation</ActionVerbComplement>

<ActionBenefit id="15" source="nd"/>

<ActionRiskHarm id="15" source="nd"/>

<ActionDescription id="15" source="inferred">either as part of complete urodynamic study or separately<IntentionalVagueness id="66" source="nd"/>

</ActionDescription>

<ActionCost id="15" source="nd"/>

<ActionValue id="15" source="nd"/>

<ActionType id="15" source="nd"/>

</Action>

<Action id="16" source="inferred">Clinicians should perform PVR assessment as part of ongoing follow -up when appropriate<ActionActor id="16" source="inferred">clinicians</ActionActor>

<ActionCode id="16" source="nd"/>

<ActionVerb id="18" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="16" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="16" source="inferred">PVR assessment as part of ongoing follow -up when appropriate</ActionVerbComplement>

<ActionBenefit id="16" source="nd"/>

<ActionRiskHarm id="16" source="nd"/>

<ActionDescription id="16" source="nd">

<IntentionalVagueness id="84" source="nd"/>

</ActionDescription>

<ActionCost id="16" source="nd"/>

<ActionValue id="16" source="nd"/>

<ActionType id="16" source="nd"/>

</Action>

<Reason id="23" source="inferred">Patients with a variety of neurological conditions may develop bladder dysfunction either early in the course of the disease or as the disease progresses. In these patients, PVR is a useful tool for assessing the possibility of significant bladder and/or outlet dysfunction. In some cases such as SCI, the neurogenic bladder condition that ensues occurs abruptly, and after an initial period of stabilization (spinal shock), the resultant bladder function tends to be fairly fixed. In other cases, there tends to be progression of bladder dysfunction as the disease progresses (e.g., multiple sclerosis (MS), Parkinson’s disease (PD)), although there exists considerable variability. In some conditions, bladder dysfunction occurs early, often before other neurological sequelae (multiple systems atrophy). In many conditions, perhaps none more notable than cerebrovascular accident, the development of bladder dysfunction can be profound, but the additional presence of mobility disturbances often clouds the issue of those symptoms that are due to neurogenic bladder versus functional disturbances. Notably, patients with these conditions and others (e.g., MMC, cervical myelopathy, childhood history of posterior urethral valves, transverse myelitis, disc disease) may not have classic lower urinary tract symptoms. Therefore, evaluation with PVR assessment is appropriate both at the time of diagnosis and after to monitor for changes in bladder emptying ability periodically regardless of the symptoms or at the discretion of the physician. In addition to those mentioned, other systemic conditions/treatments may affect bladder function. Among those most commonly mentioned are diabetes mellitus, chronic alcohol use, AIDS and radical pelvic surgery.</Reason>

<Reason id="25" source="inferred">PVR assessment has been shown to influence treatment planning in a variety of neurological conditions. While the definition of elevated residual has varied (usually either a specific volume or proportion of overall bladder volume), the finding of elevated residual urine volume may influence decision making.53.53-55 The implications of an elevated PVR in neurogenic voiding dysfunction include the development of UTI’s, urosepsis, upper tract deterioration and stone disease. The implementation of intermittent catheterization or consideration for surgical intervention to reduce PVR may be appropriate once the cause of elevated residual is determined. In this regard, the use of PVR may serve as a useful screening tool in patients who have already undergone complete urodynamic testing to determine the need for reassessment and/or change in bladder management. Ultimately, PVR results alone may not be sufficient to make certain management decisions without additional information (e.g., bladder compliance or poor detrusor contractility) obtained from a multichannel urodynamic study.</Reason>

<EvidenceQuality id="18" source="explicit">Grade B<EvidenceQualityDescription id="18" source="nd"/>

<Disagreement id="18" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="18" source="inferred">Standard<RecommendationStrengthCode id="18" source="nd"/>

</RecommendationStrength>

<Flexibility id="18" source="nd"/>

<Logic id="18" source="inferred">If &#13;

spinal cord injury (SCI) is [true] &#13;

OR&#13;

myelomeningocele (MMC) is [true] &#13;

OR&#13;

multiple sclerosis (MS) is [true] &#13;

OR&#13;

Parkinson’s disease (PD) is [true] &#13;

OR&#13;

stroke/cerebrovascular accident is [true] &#13;

OR&#13;

traumatic brain injury (TBI) is [true] &#13;

OR&#13;

brain tumor is [true] &#13;

OR&#13;

spinal cord tumor is [true] &#13;

OR&#13;

transverse myelitis is [true] &#13;

OR&#13;

cauda equina syndrome is [true] &#13;

OR&#13;

herniated disk is [true] &#13;

OR&#13;

other back or spine disease is [true] &#13;

OR&#13;

diabetes is [true] &#13;

OR&#13;

peripheral nerve injury is [true] &#13;

OR&#13;

cervical myelopathy is [true] &#13;

OR&#13;

childhood history of posterior urethral valves is [true] &#13;

OR&#13;

multiple systems atrophy is [true] &#13;&#13;

OR&#13;&#13;

other relevant neurological conditions is [true] &#13;

Then &#13;

Clinicians should perform PVR assessment during the initial urological evaluation&#13;

AND&#13;

Clinicians should perform PVR assessment as part of ongoing follow -up when appropriate</Logic>

<Cost id="18" source="nd"/>

<Linkage id="18" source="nd"/>

<Reference id="18" source="nd"/>

<Certainty id="18" source="nd"/>

<Goal id="18" source="nd"/>

</Conditional>

<Imperative id="8" source="nd">

<BenefitHarmAssessment id="19" source="nd"/>

<Scope id="8" source="nd">

<ScopeCode id="8" source="nd"/>

</Scope>

<Directive id="8" source="nd">

<DirectiveActor id="8" source="nd"/>

<DirectiveCode id="8" source="nd"/>

<DirectiveVerb id="8" source="nd"/>

<DirectiveDeonticTerm id="8" source="nd"/>

<DirectiveVerbComplement id="8" source="nd"/>

<DirectiveBenefit id="8" source="nd"/>

<DirectiveRiskHarm id="8" source="nd"/>

<DirectiveDescription id="8" source="nd">

<IntentionalVagueness id="63" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="8" source="nd"/>

<DirectiveValue id="8" source="nd"/>

<DirectiveType id="8" source="nd"/>

</Directive>

<Reason id="24" source="nd"/>

<EvidenceQuality id="19" source="nd">

<EvidenceQualityDescription id="19" source="nd"/>

<Disagreement id="19" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="19" source="nd">

<RecommendationStrengthCode id="19" source="nd"/>

</RecommendationStrength>

<Flexibility id="19" source="nd"/>

<Logic id="19" source="nd"/>

<Cost id="19" source="nd"/>

<Linkage id="19" source="nd"/>

<Reference id="19" source="nd"/>

<Certainty id="19" source="nd"/>

<Goal id="19" source="nd"/>

</Imperative>

<RecommendationNotes id="8" source="inferred"/>

</Recommendation>

<Recommendation id="9" source="inferred">10<StatementOfFact id="9" source="nd"/>

<Conditional id="12" source="inferred">Clinicians should perform a complex cystometrogram (CMG) during initial urological evaluation of patients with relevant neurological conditions with or without symptoms and as part of ongoing follow-up when appropriate.<BenefitHarmAssessment id="20" source="nd"/>

<DecisionVariable id="146" source="inferred">spinal cord injury (SCI)<Value id="146" source="inferred">true</Value>

<DecisionVariableCode id="146" source="nd"/>

<DecisionVariableDescription id="146" source="nd">

<IntentionalVagueness id="202" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="146" source="nd">

<Sensitivity id="146" source="nd"/>

<Specificity id="146" source="nd"/>

<PredictiveValue id="146" source="nd"/>

</TestParameter>

<DecisionVariableCost id="146" source="nd"/>

</DecisionVariable>

<DecisionVariable id="145" source="inferred">myelomeningocele (MMC)<Value id="145" source="inferred">true</Value>

<DecisionVariableCode id="145" source="nd"/>

<DecisionVariableDescription id="145" source="nd">

<IntentionalVagueness id="201" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="145" source="nd">

<Sensitivity id="145" source="nd"/>

<Specificity id="145" source="nd"/>

<PredictiveValue id="145" source="nd"/>

</TestParameter>

<DecisionVariableCost id="145" source="nd"/>

</DecisionVariable>

<DecisionVariable id="144" source="inferred">at risk of renal impairment<Value id="144" source="inferred">true</Value>

<DecisionVariableCode id="144" source="nd"/>

<DecisionVariableDescription id="144" source="nd">

<IntentionalVagueness id="200" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="144" source="nd">

<Sensitivity id="144" source="nd"/>

<Specificity id="144" source="nd"/>

<PredictiveValue id="144" source="nd"/>

</TestParameter>

<DecisionVariableCost id="144" source="nd"/>

</DecisionVariable>

<Action id="17" source="inferred">Clinicians should perform a complex cystometrogram (CMG) during initial urological evaluation<ActionActor id="17" source="inferred">clinicians</ActionActor>

<ActionCode codeset="" id="17" source="nd"/>

<ActionVerb id="19" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="17" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="17" source="inferred">a complex cystometrogram during initial urological evaluation</ActionVerbComplement>

<ActionBenefit id="17" source="nd"/>

<ActionRiskHarm id="17" source="inferred">While UDS typically carry risks of bleeding, discomfort and infection, the patient with NGB may be particularly prone to risk of infection due to the voiding disorder itself, which might be exacerbated by CMG. Perhaps more important is the concern of causing AD, which is well known in the NGB patient due to SCI and can be life threatening. The panel’s consensus is that the clinician who performs CMG in the patient at risk for AD be adept in its detection and prompt management, including having necessary monitoring equipment and the ability to provide quick drainage and pharmacologic intervention when necessary.</ActionRiskHarm>

<ActionDescription id="17" source="inferred">

<IntentionalVagueness id="86" source="nd"/>

</ActionDescription>

<ActionCost id="17" source="nd"/>

<ActionValue id="17" source="nd"/>

<ActionType id="17" source="nd"/>

</Action>

<Action id="35" source="inferred">Clinicians should perform a complex cystometrogram (CMG) as part of ongoing follow-up when appropriate.<ActionActor id="35" source="inferred">clinicians</ActionActor>

<ActionCode codeset="" id="35" source="nd"/>

<ActionVerb id="37" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="35" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="35" source="inferred">a complex cystometrogram (CMG) as part of ongoing follow-up when appropriate.</ActionVerbComplement>

<ActionBenefit id="35" source="nd"/>

<ActionRiskHarm id="35" source="nd"/>

<ActionDescription id="35" source="nd">

<IntentionalVagueness id="194" source="nd"/>

</ActionDescription>

<ActionCost id="35" source="nd"/>

<ActionValue id="35" source="nd"/>

<ActionType id="35" source="nd"/>

</Action>

<Reason id="27" source="inferred">Patients with a variety of neurological conditions can develop significant bladder dysfunction that may dramatically impact quality of life and renal function. While the interval of repeated CMG testing is debatable and often dependent on the findings of initial testing and/or patients’ responses to initial interventions, CMG is recommended at the time of initial consultation (or after the spinal shock phase in the case of SCI) of patients for neurogenic bladder conditions due to SCI and MMC and others thought to be at risk for the development of renal impairment. Performance of a CMG in patients with these and other neurological conditions will give an accurate assessment of detrusor dysfunction (e.g., neurogenic DO, hyporeflexia, areflexia, altered compliance) and may provide guidance as to appropriate management strategies. The maintenance of low intravesical pressures is a clinical tenet initially reported in MMC patients that has been adopted for other neurological conditions such as SCI. As such, CMG provides diagnostic, therapeutic and prognostic information in patients with SCI and MMC.</Reason>

<EvidenceQuality id="20" source="inferred">Grade C<EvidenceQualityDescription id="20" source="nd"/>

<Disagreement id="20" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="20" source="inferred">Recommendation<RecommendationStrengthCode id="20" source="nd"/>

</RecommendationStrength>

<Flexibility id="20" source="nd"/>

<Logic id="20" source="inferred">If &#13;

(spinal cord injury (SCI) is [true] &#13;&#13;

OR&#13;&#13;

myelomeningocele (MMC) is [true] ) &#13;&#13;

AND&#13;&#13;

at risk of renal impairment is [true] &#13;

Then &#13;

Clinicians should perform a complex cystometrogram (CMG) during initial urological evaluation&#13;

AND&#13;

Clinicians should perform a complex cystometrogram (CMG) as part of ongoing follow-up when appropriate.</Logic>

<Cost id="20" source="nd"/>

<Linkage id="20" source="nd"/>

<Reference id="20" source="nd"/>

<Certainty id="20" source="nd"/>

<Goal id="20" source="nd"/>

</Conditional>

<Conditional id="25" source="inferred">In patients with other neurologic diseases, physicians may consider CMG as an option in the urological evaluation of patients with LUTS.<BenefitHarmAssessment id="46" source="nd"/>

<DecisionVariable id="152" source="inferred">multiple sclerosis (MS)<Value id="152" source="inferred">true</Value>

<DecisionVariableCode id="152" source="nd"/>

<DecisionVariableDescription id="152" source="nd">

<IntentionalVagueness id="208" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="152" source="nd">

<Sensitivity id="152" source="nd"/>

<Specificity id="152" source="nd"/>

<PredictiveValue id="152" source="nd"/>

</TestParameter>

<DecisionVariableCost id="152" source="nd"/>

</DecisionVariable>

<DecisionVariable id="151" source="inferred">Parkinson's disease (PD)<Value id="151" source="inferred">true</Value>

<DecisionVariableCode id="151" source="nd"/>

<DecisionVariableDescription id="151" source="nd">

<IntentionalVagueness id="207" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="151" source="nd">

<Sensitivity id="151" source="nd"/>

<Specificity id="151" source="nd"/>

<PredictiveValue id="151" source="nd"/>

</TestParameter>

<DecisionVariableCost id="151" source="nd"/>

</DecisionVariable>

<DecisionVariable id="153" source="inferred">cerebrovascular accident (CVA)<Value id="153" source="inferred">true</Value>

<DecisionVariableCode id="153" source="nd"/>

<DecisionVariableDescription id="153" source="nd">

<IntentionalVagueness id="209" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="153" source="nd">

<Sensitivity id="153" source="nd"/>

<Specificity id="153" source="nd"/>

<PredictiveValue id="153" source="nd"/>

</TestParameter>

<DecisionVariableCost id="153" source="nd"/>

</DecisionVariable>

<DecisionVariable id="140" source="inferred">lower urinary tract symptoms (LUTS)<Value id="140" source="inferred">true</Value>

<DecisionVariableCode id="140" source="nd"/>

<DecisionVariableDescription id="140" source="nd">

<IntentionalVagueness id="193" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="140" source="nd">

<Sensitivity id="140" source="nd"/>

<Specificity id="140" source="nd"/>

<PredictiveValue id="140" source="nd"/>

</TestParameter>

<DecisionVariableCost id="140" source="nd"/>

</DecisionVariable>

<Action id="34" source="inferred">physicians may consider CMG as an option in the urological evaluation<ActionActor id="34" source="inferred">physicians</ActionActor>

<ActionCode codeset="" id="34" source="nd"/>

<ActionVerb id="36" source="inferred">consider</ActionVerb>

<ActionDeonticTerm id="34" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="34" source="inferred">CMG as an option in the urological evaluation</ActionVerbComplement>

<ActionBenefit id="34" source="nd"/>

<ActionRiskHarm id="34" source="nd"/>

<ActionDescription id="34" source="nd">

<IntentionalVagueness id="192" source="nd"/>

</ActionDescription>

<ActionCost id="34" source="nd"/>

<ActionValue id="34" source="nd"/>

<ActionType id="34" source="nd"/>

</Action>

<Reason id="60" source="inferred">The utility of CMG in other neurological conditions (e.g., MS, PD, and CVA) is less clear, specifically regarding preservation of renal function. However, CMG remains an option for the better evaluation of detrusor dysfunction in these disease processes and has been shown to accurately diagnose detrusor dysfunction in these subgroups. Patients with neurological diseases such as MS, PD, and CVA who do not respond symptomatically to initial medical management or who develop voiding dysfunction/ impaired bladder emptying as a result of the disease process or treatments for bladder dysfunction may benefit from CMG testing, which allows for better diagnostic acumen and appropriate therapeutic intervention.</Reason>

<EvidenceQuality id="44" source="inferred">Grade C<EvidenceQualityDescription id="44" source="nd"/>

<Disagreement id="44" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="44" source="inferred">Recommendation<RecommendationStrengthCode id="44" source="nd"/>

</RecommendationStrength>

<Flexibility id="44" source="nd"/>

<Logic id="44" source="inferred">If &#13;

(multiple sclerosis (MS) is [true] &#13;&#13;

OR&#13;&#13;

Parkinson's disease (PD) is [true] &#13;&#13;

OR&#13;&#13;

cerebrovascular accident (CVA) is [true] ) &#13;&#13;

AND&#13;&#13;

lower urinary tract symptoms (LUTS) is [true] &#13;

Then &#13;

physicians may consider CMG as an option in the urological evaluation</Logic>

<Cost id="44" source="nd"/>

<Linkage id="44" source="nd"/>

<Reference id="44" source="nd"/>

<Certainty id="44" source="nd"/>

<Goal id="44" source="nd"/>

</Conditional>

<Imperative id="9" source="nd">

<BenefitHarmAssessment id="21" source="nd"/>

<Scope id="9" source="nd">

<ScopeCode id="9" source="nd"/>

</Scope>

<Directive id="9" source="nd">

<DirectiveActor id="9" source="nd"/>

<DirectiveCode id="9" source="nd"/>

<DirectiveVerb id="9" source="nd"/>

<DirectiveDeonticTerm id="9" source="nd"/>

<DirectiveVerbComplement id="9" source="nd"/>

<DirectiveBenefit id="9" source="nd"/>

<DirectiveRiskHarm id="9" source="nd"/>

<DirectiveDescription id="9" source="nd">

<IntentionalVagueness id="87" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="9" source="nd"/>

<DirectiveValue id="9" source="nd"/>

<DirectiveType id="9" source="nd"/>

</Directive>

<Reason id="28" source="nd"/>

<EvidenceQuality id="21" source="nd">

<EvidenceQualityDescription id="21" source="nd"/>

<Disagreement id="21" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="21" source="nd">

<RecommendationStrengthCode id="21" source="nd"/>

</RecommendationStrength>

<Flexibility id="21" source="nd"/>

<Logic id="21" source="nd"/>

<Cost id="21" source="nd"/>

<Linkage id="21" source="nd"/>

<Reference id="21" source="nd"/>

<Certainty id="21" source="nd"/>

<Goal id="21" source="nd"/>

</Imperative>

<RecommendationNotes id="9" source="inferred"/>

</Recommendation>

<Recommendation id="19" source="inferred">11<StatementOfFact id="19" source="nd"/>

<Conditional id="24" source="inferred">Clinicians should perform pressure flow analysis in patients with relevant neurologic disease with or without symptoms, or in patients with other neurologic disease and elevated PVR or urinary symptoms.<BenefitHarmAssessment id="44" source="nd"/>

<DecisionVariable id="138" source="inferred">relevant neurological disease<Value id="138" source="inferred">true</Value>

<DecisionVariableCode id="138" source="nd"/>

<DecisionVariableDescription id="138" source="nd">

<IntentionalVagueness id="188" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="138" source="nd">

<Sensitivity id="138" source="nd"/>

<Specificity id="138" source="nd"/>

<PredictiveValue id="138" source="nd"/>

</TestParameter>

<DecisionVariableCost id="138" source="nd"/>

</DecisionVariable>

<DecisionVariable id="157" source="inferred">other neurologic disease<Value id="157" source="inferred">true</Value>

<DecisionVariableCode id="157" source="nd"/>

<DecisionVariableDescription id="157" source="nd">

<IntentionalVagueness id="213" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="157" source="nd">

<Sensitivity id="157" source="nd"/>

<Specificity id="157" source="nd"/>

<PredictiveValue id="157" source="nd"/>

</TestParameter>

<DecisionVariableCost id="157" source="nd"/>

</DecisionVariable>

<DecisionVariable id="156" source="inferred">elevated post-void residual (PVR)<Value id="156" source="inferred">true</Value>

<DecisionVariableCode id="156" source="nd"/>

<DecisionVariableDescription id="156" source="nd">

<IntentionalVagueness id="212" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="156" source="nd">

<Sensitivity id="156" source="nd"/>

<Specificity id="156" source="nd"/>

<PredictiveValue id="156" source="nd"/>

</TestParameter>

<DecisionVariableCost id="156" source="nd"/>

</DecisionVariable>

<DecisionVariable id="158" source="inferred">urinary symptoms<Value id="158" source="inferred">true</Value>

<DecisionVariableCode id="158" source="nd"/>

<DecisionVariableDescription id="158" source="nd">

<IntentionalVagueness id="214" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="158" source="nd">

<Sensitivity id="158" source="nd"/>

<Specificity id="158" source="nd"/>

<PredictiveValue id="158" source="nd"/>

</TestParameter>

<DecisionVariableCost id="158" source="nd"/>

</DecisionVariable>

<Action id="33" source="inferred">Clinicians should perform pressure flow analysis<ActionActor id="33" source="inferred">clinicians</ActionActor>

<ActionCode id="33" source="nd"/>

<ActionVerb id="35" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="33" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="33" source="inferred">pressure flow analysis</ActionVerbComplement>

<ActionBenefit id="33" source="nd"/>

<ActionRiskHarm id="33" source="inferred">The benefits of PFS must be weighed against the potential risks imposed especially in this population. While UDS typically carry risks of bleeding, discomfort and infection, patients with NGB may be particularly prone to risk of infection, which might be exacerbated by PFS. Perhaps more important is the concern of causing AD, which is well known in the NGB patient due to SCI and can be life threatening. The panel’s consensus is that the clinician who performs PFS in the patient at risk for AD be adept in its detection and prompt management, including having necessary monitoring equipment and the ability to provide quick drainage and pharmacologic intervention when necessary.</ActionRiskHarm>

<ActionDescription id="33" source="nd">

<IntentionalVagueness id="189" source="nd"/>

</ActionDescription>

<ActionCost id="33" source="nd"/>

<ActionValue id="33" source="nd"/>

<ActionType id="33" source="nd"/>

</Action>

<Reason id="56" source="inferred">Pressure flow studies (PFS) are an appropriate component of the work-up of NGB. This is especially true for those patients thought to be at risk for or found to have elevated PVR, hydronephrosis, pyelonephritis, complicated UTIs and frequent episodes of AD. This study can accurately distinguish between BOO and detrusor hypocontractility/acontractility. It is also valid for those patients who seek management for voiding disorders caused by NGB as a means to help delineate possible treatment options as well as monitor treatment outcomes.</Reason>

<Reason id="58" source="inferred">Voiding disorders in this patient population can be caused by a variety of factors due to the NGB. Complicating matters even further is the possibility that “normal” pathophysiologic processes (e.g., BPH, OAB, incontinence) can often co-exist in the patient with NGB. Use of PFS for diagnostic purposes is especially pertinent in this population as the underlying neurologic disease could impact or obscure patient symptomology. The assessment of whether the voiding disorder is due to BOO versus weakened or absent detrusor function can be readily determined by PFS. PFS was also reported to be beneficial in the assessment of LUTS when NGB was present along with co-existing OAB and/or diabetes.</Reason>

<EvidenceQuality id="42" source="inferred">Grade C<EvidenceQualityDescription id="42" source="nd"/>

<Disagreement id="42" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="42" source="inferred">Recommendation<RecommendationStrengthCode id="42" source="nd"/>

</RecommendationStrength>

<Flexibility id="42" source="nd"/>

<Logic id="42" source="inferred">If &#13;

relevant neurological disease is [true] &#13;

OR&#13;

(other neurologic disease is [true] &#13;

AND&#13;

elevated post-void residual (PVR) is [true] ) &#13;

OR&#13;

(other neurologic disease is [true] &#13;&#13;

AND&#13;&#13;

lower urinary tract symptoms is [true] ) &#13;

Then &#13;

Clinicians should perform pressure flow analysis</Logic>

<Cost id="42" source="nd"/>

<Linkage id="42" source="nd"/>

<Reference id="42" source="nd"/>

<Certainty id="42" source="nd"/>

<Goal id="42" source="nd"/>

</Conditional>

<Imperative id="19" source="nd">

<BenefitHarmAssessment id="45" source="nd"/>

<Scope id="19" source="nd">

<ScopeCode id="19" source="nd"/>

</Scope>

<Directive id="19" source="nd">

<DirectiveActor id="19" source="nd"/>

<DirectiveCode id="19" source="nd"/>

<DirectiveVerb id="19" source="nd"/>

<DirectiveDeonticTerm id="19" source="nd"/>

<DirectiveVerbComplement id="19" source="nd"/>

<DirectiveBenefit id="19" source="nd"/>

<DirectiveRiskHarm id="19" source="nd"/>

<DirectiveDescription id="19" source="nd">

<IntentionalVagueness id="190" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="19" source="nd"/>

<DirectiveValue id="19" source="nd"/>

<DirectiveType id="19" source="nd"/>

</Directive>

<Reason id="57" source="nd"/>

<EvidenceQuality id="43" source="nd">

<EvidenceQualityDescription id="43" source="nd"/>

<Disagreement id="43" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="43" source="nd">

<RecommendationStrengthCode id="43" source="nd"/>

</RecommendationStrength>

<Flexibility id="43" source="nd"/>

<Logic id="43" source="nd"/>

<Cost id="43" source="nd"/>

<Linkage id="43" source="nd"/>

<Reference id="43" source="nd"/>

<Certainty id="43" source="nd"/>

<Goal id="43" source="nd"/>

</Imperative>

<RecommendationNotes id="19" source="nd"/>

</Recommendation>

<Recommendation id="13" source="inferred">12<StatementOfFact id="13" source="nd"/>

<Conditional id="16" source="inferred">When available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics) in patients with relevant neurologic disease at risk for neurogenic bladder, or in patients with other neurologic disease and elevated PVR or urinary symptoms.<BenefitHarmAssessment id="28" source="nd"/>

<DecisionVariable id="110" source="inferred">spinal cord injury (SCI)<Value id="110" source="inferred">true</Value>

<DecisionVariableCode id="110" source="nd"/>

<DecisionVariableDescription id="110" source="nd">

<IntentionalVagueness id="159" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="110" source="nd">

<Sensitivity id="110" source="nd"/>

<Specificity id="110" source="nd"/>

<PredictiveValue id="110" source="nd"/>

</TestParameter>

<DecisionVariableCost id="110" source="nd"/>

</DecisionVariable>

<DecisionVariable id="119" source="inferred">myelomeningocele (MMC)<Value id="119" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="119" source="nd"/>

<DecisionVariableDescription id="119" source="nd">

<IntentionalVagueness id="168" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="119" source="nd">

<Sensitivity id="119" source="nd"/>

<Specificity id="119" source="nd"/>

<PredictiveValue id="119" source="nd"/>

</TestParameter>

<DecisionVariableCost id="119" source="nd"/>

</DecisionVariable>

<DecisionVariable id="120" source="inferred">multiple sclerosis (MS)<Value id="120" source="inferred">true</Value>

<DecisionVariableCode id="120" source="nd"/>

<DecisionVariableDescription id="120" source="nd">

<IntentionalVagueness id="169" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="120" source="nd">

<Sensitivity id="120" source="nd"/>

<Specificity id="120" source="nd"/>

<PredictiveValue id="120" source="nd"/>

</TestParameter>

<DecisionVariableCost id="120" source="nd"/>

</DecisionVariable>

<DecisionVariable id="121" source="inferred">Parkinson’s disease (PD)<Value id="121" source="inferred">true</Value>

<DecisionVariableCode id="121" source="nd"/>

<DecisionVariableDescription id="121" source="nd">

<IntentionalVagueness id="170" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="121" source="nd">

<Sensitivity id="121" source="nd"/>

<Specificity id="121" source="nd"/>

<PredictiveValue id="121" source="nd"/>

</TestParameter>

<DecisionVariableCost id="121" source="nd"/>

</DecisionVariable>

<DecisionVariable id="122" source="inferred">stroke/cerebrovascular accident<Value id="122" source="inferred">true</Value>

<DecisionVariableCode id="122" source="nd"/>

<DecisionVariableDescription id="122" source="nd">

<IntentionalVagueness id="171" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="122" source="nd">

<Sensitivity id="122" source="nd"/>

<Specificity id="122" source="nd"/>

<PredictiveValue id="122" source="nd"/>

</TestParameter>

<DecisionVariableCost id="122" source="nd"/>

</DecisionVariable>

<DecisionVariable id="123" source="inferred">traumatic brain injury (TBI)<Value id="123" source="inferred">true</Value>

<DecisionVariableCode id="123" source="nd"/>

<DecisionVariableDescription id="123" source="nd">

<IntentionalVagueness id="172" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="123" source="nd">

<Sensitivity id="123" source="nd"/>

<Specificity id="123" source="nd"/>

<PredictiveValue id="123" source="nd"/>

</TestParameter>

<DecisionVariableCost id="123" source="nd"/>

</DecisionVariable>

<DecisionVariable id="124" source="inferred">brain tumor<Value id="124" source="inferred">true</Value>

<DecisionVariableCode id="124" source="nd"/>

<DecisionVariableDescription id="124" source="nd">

<IntentionalVagueness id="173" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="124" source="nd">

<Sensitivity id="124" source="nd"/>

<Specificity id="124" source="nd"/>

<PredictiveValue id="124" source="nd"/>

</TestParameter>

<DecisionVariableCost id="124" source="nd"/>

</DecisionVariable>

<DecisionVariable id="125" source="inferred">spinal cord tumor<Value id="125" source="inferred">true</Value>

<DecisionVariableCode id="125" source="nd"/>

<DecisionVariableDescription id="125" source="nd">

<IntentionalVagueness id="174" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="125" source="nd">

<Sensitivity id="125" source="nd"/>

<Specificity id="125" source="nd"/>

<PredictiveValue id="125" source="nd"/>

</TestParameter>

<DecisionVariableCost id="125" source="nd"/>

</DecisionVariable>

<DecisionVariable id="126" source="inferred">transverse myelitis<Value id="126" source="inferred">true</Value>

<DecisionVariableCode id="126" source="nd"/>

<DecisionVariableDescription id="126" source="nd">

<IntentionalVagueness id="175" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="126" source="nd">

<Sensitivity id="126" source="nd"/>

<Specificity id="126" source="nd"/>

<PredictiveValue id="126" source="nd"/>

</TestParameter>

<DecisionVariableCost id="126" source="nd"/>

</DecisionVariable>

<DecisionVariable id="127" source="inferred">cauda equina syndrome<Value id="127" source="inferred">true</Value>

<DecisionVariableCode id="127" source="nd"/>

<DecisionVariableDescription id="127" source="nd">

<IntentionalVagueness id="176" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="127" source="nd">

<Sensitivity id="127" source="nd"/>

<Specificity id="127" source="nd"/>

<PredictiveValue id="127" source="nd"/>

</TestParameter>

<DecisionVariableCost id="127" source="nd"/>

</DecisionVariable>

<DecisionVariable id="128" source="inferred">herniated disk<Value id="128" source="inferred">true</Value>

<DecisionVariableCode id="128" source="nd"/>

<DecisionVariableDescription id="128" source="nd">

<IntentionalVagueness id="177" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="128" source="nd">

<Sensitivity id="128" source="nd"/>

<Specificity id="128" source="nd"/>

<PredictiveValue id="128" source="nd"/>

</TestParameter>

<DecisionVariableCost id="128" source="nd"/>

</DecisionVariable>

<DecisionVariable id="129" source="inferred">other back or spine disease<Value id="129" source="inferred">true</Value>

<DecisionVariableCode id="129" source="nd"/>

<DecisionVariableDescription id="129" source="nd">

<IntentionalVagueness id="178" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="129" source="nd">

<Sensitivity id="129" source="nd"/>

<Specificity id="129" source="nd"/>

<PredictiveValue id="129" source="nd"/>

</TestParameter>

<DecisionVariableCost id="129" source="nd"/>

</DecisionVariable>

<DecisionVariable id="130" source="inferred">diabetes<Value id="130" source="inferred">true</Value>

<DecisionVariableCode id="130" source="nd"/>

<DecisionVariableDescription id="130" source="nd">

<IntentionalVagueness id="179" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="130" source="nd">

<Sensitivity id="130" source="nd"/>

<Specificity id="130" source="nd"/>

<PredictiveValue id="130" source="nd"/>

</TestParameter>

<DecisionVariableCost id="130" source="nd"/>

</DecisionVariable>

<DecisionVariable id="131" source="inferred">peripheral nerve injury<Value id="131" source="inferred">true</Value>

<DecisionVariableCode id="131" source="nd"/>

<DecisionVariableDescription id="131" source="nd">

<IntentionalVagueness id="180" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="131" source="nd">

<Sensitivity id="131" source="nd"/>

<Specificity id="131" source="nd"/>

<PredictiveValue id="131" source="nd"/>

</TestParameter>

<DecisionVariableCost id="131" source="nd"/>

</DecisionVariable>

<DecisionVariable id="132" source="inferred">cervical myelopathy<Value id="132" source="inferred">true</Value>

<DecisionVariableCode id="132" source="nd"/>

<DecisionVariableDescription id="132" source="nd">

<IntentionalVagueness id="181" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="132" source="nd">

<Sensitivity id="132" source="nd"/>

<Specificity id="132" source="nd"/>

<PredictiveValue id="132" source="nd"/>

</TestParameter>

<DecisionVariableCost id="132" source="nd"/>

</DecisionVariable>

<DecisionVariable id="133" source="inferred">childhood history of posterior urethral valves<Value id="133" source="inferred">true</Value>

<DecisionVariableCode id="133" source="nd"/>

<DecisionVariableDescription id="133" source="nd">

<IntentionalVagueness id="182" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="133" source="nd">

<Sensitivity id="133" source="nd"/>

<Specificity id="133" source="nd"/>

<PredictiveValue id="133" source="nd"/>

</TestParameter>

<DecisionVariableCost id="133" source="nd"/>

</DecisionVariable>

<DecisionVariable id="134" source="inferred">at risk for neurogenic bladder<Value id="134" source="inferred">true</Value>

<DecisionVariableCode id="134" source="nd"/>

<DecisionVariableDescription id="134" source="nd">

<IntentionalVagueness id="183" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="134" source="nd">

<Sensitivity id="134" source="nd"/>

<Specificity id="134" source="nd"/>

<PredictiveValue id="134" source="nd"/>

</TestParameter>

<DecisionVariableCost id="134" source="nd"/>

</DecisionVariable>

<Action id="21" source="inferred">when available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics)<ActionActor id="21" source="inferred">clinicians</ActionActor>

<ActionCode id="21" source="nd"/>

<ActionVerb id="23" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="21" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="21" source="inferred">fluoroscopy (when available) at the time of urodynamics (videourodynamics)</ActionVerbComplement>

<ActionBenefit id="21" source="nd"/>

<ActionRiskHarm id="21" source="explicit">The benefits of VUDS must be weighed against the potential risks, especially in this population. The risks of infection, bleeding, discomfort and especially AD have been previously mentioned. It is believed that these risks are more likely related to the other components of urodynamic testing, and the addition of fluoroscopic studies does not increase these risks. Although the radiation dosage of videourodynamic studies is low, radiation exposure is additive. These studies should be done in a manner which provides the desired clinical information at the lowest possible radiation dose to the patient.</ActionRiskHarm>

<ActionDescription id="21" source="nd">

<IntentionalVagueness id="98" source="nd"/>

</ActionDescription>

<ActionCost id="21" source="nd"/>

<ActionValue id="21" source="nd"/>

<ActionType id="21" source="nd"/>

</Action>

<Reason id="35" source="inferred">The use of simultaneous fluoroscopy with contrast-based UDS is an appropriate component in the urodynamic assessment of patients with NGB. The ability to assess the lower and upper urinary tract with simultaneous fluoroscopic imaging improves the clinician’s ability to detect and understand underlying pathologies. Visual assessment aids clinicians in their ability to delineate specific sites of obstruction, identify the presence and grade of vesicoureteral reflux as well as the urodynamic parameters that are present at the time of reflux, identify anatomic and physical abnormalities of the bladder such as bladder diverticula, bladder outlet abnormalities, and bladder stones and provide a more accurate means to diagnose DESD, detrusor bladder neck dyssynergia, and specific conditions (e.g., primary bladder neck obstruction (PBNO) and dysfunctional voiding).</Reason>

<Reason id="55" source="inferred">VUDS has been found to improve the diagnostic evaluation of patients with NGB. VUDS permits diagnosis of bladder neck abnormalities in patients with NGB due to a variety of different neurologic conditions and in some cases may help distinguish the etiology of NGB with respect to the underlying neurological disease.</Reason>

<Reason id="54" source="explicit">No relevant studies were found either supporting or refuting the use of VUDS to improve prognosis, clinical decision making or patient outcomes. Consensus amongst the panel confirmed that the addition of simultaneous fluoroscopy during CMG and PFS provided additional worthwhile information regarding the diagnosis beyond what either study alone could provide. Therefore, VUDS should be considered by the clinician when evaluating the patient with NGB. For example, in a patient with NGB, high PVR, urinary incontinence and hydronephrosis, the use of VUDS could delineate if vesicoureteral reflux was present and causing the hydronephrosis, if leakage was occurring due to storage problems or an incompetent outlet, whether obstruction was present or not and if so, specifically where the obstruction was localized and whether the obstruction was caused by DESD.</Reason>

<EvidenceQuality id="28" source="inferred">Grade C<EvidenceQualityDescription id="28" source="nd"/>

<Disagreement id="28" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="28" source="inferred">Recommendation<RecommendationStrengthCode id="28" source="nd"/>

</RecommendationStrength>

<Flexibility id="28" source="nd"/>

<Logic id="28" source="inferred">If &#13;

(spinal cord injury (SCI) is [true] &#13;

OR&#13;

myelomeningocele (MMC) is [true] &#13;

OR&#13;

multiple sclerosis (MS) is [true] &#13;

OR&#13;

Parkinson’s disease (PD) is [true] &#13;

OR&#13;

stroke/cerebrovascular accident is [true] &#13;

OR&#13;

traumatic brain injury (TBI) is [true] &#13;

OR&#13;

brain tumor is [true] &#13;

OR&#13;

spinal cord tumor is [true] &#13;

OR&#13;

transverse myelitis is [true] &#13;

OR&#13;

cauda equina syndrome is [true] &#13;

OR&#13;

herniated disk is [true] &#13;

OR&#13;

other back or spine disease is [true] &#13;

OR&#13;

diabetes is [true] &#13;

OR&#13;

peripheral nerve injury is [true] &#13;

OR&#13;

cervical myelopathy is [true] &#13;

OR&#13;

childhood history of posterior urethral valves is [true] ) &#13;

AND&#13;

at risk for neurogenic bladder is [true] &#13;

Then &#13;

when available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics)</Logic>

<Cost id="28" source="nd"/>

<Linkage id="28" source="nd"/>

<Reference id="28" source="nd"/>

<Certainty id="28" source="nd"/>

<Goal id="28" source="nd"/>

</Conditional>

<Conditional id="23" source="inferred">When available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics) in patients with relevant neurologic disease at risk for neurogenic bladder, or in patients with other neurologic disease and elevated PVR or urinary symptoms.<BenefitHarmAssessment id="43" source="nd"/>

<DecisionVariable id="135" source="inferred">other neurologic disease<Value id="135" source="inferred">true</Value>

<DecisionVariableCode id="135" source="nd"/>

<DecisionVariableDescription id="135" source="nd">

<IntentionalVagueness id="184" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="135" source="nd">

<Sensitivity id="135" source="nd"/>

<Specificity id="135" source="nd"/>

<PredictiveValue id="135" source="nd"/>

</TestParameter>

<DecisionVariableCost id="135" source="nd"/>

</DecisionVariable>

<DecisionVariable id="137" source="inferred">post-void residual (PVR)<Value id="137" source="inferred">true</Value>

<DecisionVariableCode id="137" source="nd"/>

<DecisionVariableDescription id="137" source="nd">

<IntentionalVagueness id="187" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="137" source="nd">

<Sensitivity id="137" source="nd"/>

<Specificity id="137" source="nd"/>

<PredictiveValue id="137" source="nd"/>

</TestParameter>

<DecisionVariableCost id="137" source="nd"/>

</DecisionVariable>

<DecisionVariable id="136" source="inferred">urinary symptoms<Value id="136" source="inferred">true</Value>

<DecisionVariableCode id="136" source="nd"/>

<DecisionVariableDescription id="136" source="nd">

<IntentionalVagueness id="186" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="136" source="nd">

<Sensitivity id="136" source="nd"/>

<Specificity id="136" source="nd"/>

<PredictiveValue id="136" source="nd"/>

</TestParameter>

<DecisionVariableCost id="136" source="nd"/>

</DecisionVariable>

<Action id="32" source="inferred">when available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics)<ActionActor id="32" source="inferred">clinicians</ActionActor>

<ActionCode id="32" source="nd"/>

<ActionVerb id="34" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="32" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="32" source="inferred">perform fluoroscopy (when available) at the time of urodynamics (videourodynamics)</ActionVerbComplement>

<ActionBenefit id="32" source="nd"/>

<ActionRiskHarm id="32" source="nd"/>

<ActionDescription id="32" source="nd">

<IntentionalVagueness id="185" source="nd"/>

</ActionDescription>

<ActionCost id="32" source="nd"/>

<ActionValue id="32" source="nd"/>

<ActionType id="32" source="nd"/>

</Action>

<Reason id="53" source="nd"/>

<EvidenceQuality id="41" source="nd">

<EvidenceQualityDescription id="41" source="nd"/>

<Disagreement id="41" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="41" source="nd">

<RecommendationStrengthCode id="41" source="nd"/>

</RecommendationStrength>

<Flexibility id="41" source="nd"/>

<Logic id="41" source="inferred">If &#13;

other neurologic disease is [true] &#13;

AND&#13;

(post-void residual (PVR) is [true] &#13;

OR&#13;

urinary symptoms is [true] ) &#13;

Then &#13;

when available, clinicians may perform fluoroscopy at the time of urodynamics (videourodynamics)</Logic>

<Cost id="41" source="nd"/>

<Linkage id="41" source="nd"/>

<Reference id="41" source="nd"/>

<Certainty id="41" source="nd"/>

<Goal id="41" source="nd"/>

</Conditional>

<Imperative id="13" source="nd">

<BenefitHarmAssessment id="29" source="nd"/>

<Scope id="13" source="nd">

<ScopeCode id="13" source="nd"/>

</Scope>

<Directive id="13" source="nd">

<DirectiveActor id="13" source="nd"/>

<DirectiveCode id="13" source="nd"/>

<DirectiveVerb id="13" source="nd"/>

<DirectiveDeonticTerm id="13" source="nd"/>

<DirectiveVerbComplement id="13" source="nd"/>

<DirectiveBenefit id="13" source="nd"/>

<DirectiveRiskHarm id="13" source="nd"/>

<DirectiveDescription id="13" source="nd">

<IntentionalVagueness id="99" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="13" source="nd"/>

<DirectiveValue id="13" source="nd"/>

<DirectiveType id="13" source="nd"/>

</Directive>

<Reason id="36" source="nd"/>

<EvidenceQuality id="29" source="nd">

<EvidenceQualityDescription id="29" source="nd"/>

<Disagreement id="29" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="29" source="nd">

<RecommendationStrengthCode id="29" source="nd"/>

</RecommendationStrength>

<Flexibility id="29" source="nd"/>

<Logic id="29" source="nd"/>

<Cost id="29" source="nd"/>

<Linkage id="29" source="nd"/>

<Reference id="29" source="nd"/>

<Certainty id="29" source="nd"/>

<Goal id="29" source="nd"/>

</Imperative>

<RecommendationNotes id="13" source="inferred"/>

</Recommendation>

<Recommendation id="12" source="inferred">13<StatementOfFact id="12" source="nd"/>

<Conditional id="15" source="inferred">Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS in patients with relevant neurologic disease at risk for neurogenic bladder, or in patients with other neurologic disease and elevated post-void residual (PVR) or urinary symptoms.<BenefitHarmAssessment id="26" source="nd"/>

<DecisionVariable id="64" source="inferred">spinal cord injury (SCI)<Value id="64" source="inferred">true</Value>

<DecisionVariableCode id="64" source="nd"/>

<DecisionVariableDescription id="64" source="nd">

<IntentionalVagueness id="94" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="64" source="nd">

<Sensitivity id="64" source="nd"/>

<Specificity id="64" source="nd"/>

<PredictiveValue id="64" source="nd"/>

</TestParameter>

<DecisionVariableCost id="64" source="nd"/>

</DecisionVariable>

<DecisionVariable id="90" source="inferred">myelomeningocele (MMC)<Value id="90" source="inferred">true</Value>

<DecisionVariableCode id="90" source="nd"/>

<DecisionVariableDescription id="90" source="nd">

<IntentionalVagueness id="136" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="90" source="nd">

<Sensitivity id="90" source="nd"/>

<Specificity id="90" source="nd"/>

<PredictiveValue id="90" source="nd"/>

</TestParameter>

<DecisionVariableCost id="90" source="nd"/>

</DecisionVariable>

<DecisionVariable id="89" source="inferred">multiple sclerosis (MS)<Value id="89" source="inferred">true</Value>

<DecisionVariableCode id="89" source="nd"/>

<DecisionVariableDescription id="89" source="nd">

<IntentionalVagueness id="135" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="89" source="nd">

<Sensitivity id="89" source="nd"/>

<Specificity id="89" source="nd"/>

<PredictiveValue id="89" source="nd"/>

</TestParameter>

<DecisionVariableCost id="89" source="nd"/>

</DecisionVariable>

<DecisionVariable id="97" source="inferred">Parkinson’s disease (PD)<Value id="97" source="inferred">true</Value>

<DecisionVariableCode id="97" source="nd"/>

<DecisionVariableDescription id="97" source="nd">

<IntentionalVagueness id="143" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="97" source="nd">

<Sensitivity id="97" source="nd"/>

<Specificity id="97" source="nd"/>

<PredictiveValue id="97" source="nd"/>

</TestParameter>

<DecisionVariableCost id="97" source="nd"/>

</DecisionVariable>

<DecisionVariable id="96" source="inferred">stroke/cerebrovascular accident<Value id="96" source="inferred">true</Value>

<DecisionVariableCode id="96" source="nd"/>

<DecisionVariableDescription id="96" source="nd">

<IntentionalVagueness id="142" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="96" source="nd">

<Sensitivity id="96" source="nd"/>

<Specificity id="96" source="nd"/>

<PredictiveValue id="96" source="nd"/>

</TestParameter>

<DecisionVariableCost id="96" source="nd"/>

</DecisionVariable>

<DecisionVariable id="95" source="inferred">traumatic brain injury (TBI)<Value id="95" source="inferred">true</Value>

<DecisionVariableCode id="95" source="nd"/>

<DecisionVariableDescription id="95" source="nd">

<IntentionalVagueness id="141" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="95" source="nd">

<Sensitivity id="95" source="nd"/>

<Specificity id="95" source="nd"/>

<PredictiveValue id="95" source="nd"/>

</TestParameter>

<DecisionVariableCost id="95" source="nd"/>

</DecisionVariable>

<DecisionVariable id="94" source="inferred">brain tumor<Value id="94" source="inferred">true</Value>

<DecisionVariableCode id="94" source="nd"/>

<DecisionVariableDescription id="94" source="nd">

<IntentionalVagueness id="140" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="94" source="nd">

<Sensitivity id="94" source="nd"/>

<Specificity id="94" source="nd"/>

<PredictiveValue id="94" source="nd"/>

</TestParameter>

<DecisionVariableCost id="94" source="nd"/>

</DecisionVariable>

<DecisionVariable id="93" source="inferred">spinal cord tumor<Value id="93" source="inferred">true</Value>

<DecisionVariableCode id="93" source="nd"/>

<DecisionVariableDescription id="93" source="nd">

<IntentionalVagueness id="139" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="93" source="nd">

<Sensitivity id="93" source="nd"/>

<Specificity id="93" source="nd"/>

<PredictiveValue id="93" source="nd"/>

</TestParameter>

<DecisionVariableCost id="93" source="nd"/>

</DecisionVariable>

<DecisionVariable id="92" source="inferred">transverse myelitis<Value id="92" source="inferred">true</Value>

<DecisionVariableCode id="92" source="nd"/>

<DecisionVariableDescription id="92" source="nd">

<IntentionalVagueness id="138" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="92" source="nd">

<Sensitivity id="92" source="nd"/>

<Specificity id="92" source="nd"/>

<PredictiveValue id="92" source="nd"/>

</TestParameter>

<DecisionVariableCost id="92" source="nd"/>

</DecisionVariable>

<DecisionVariable id="100" source="inferred">cauda equina syndrome<Value id="100" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="100" source="nd"/>

<DecisionVariableDescription id="100" source="nd">

<IntentionalVagueness id="146" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="100" source="nd">

<Sensitivity id="100" source="nd"/>

<Specificity id="100" source="nd"/>

<PredictiveValue id="100" source="nd"/>

</TestParameter>

<DecisionVariableCost id="100" source="nd"/>

</DecisionVariable>

<DecisionVariable id="99" source="inferred">herniated disk<Value id="99" source="inferred">true</Value>

<DecisionVariableCode id="99" source="nd"/>

<DecisionVariableDescription id="99" source="nd">

<IntentionalVagueness id="145" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="99" source="nd">

<Sensitivity id="99" source="nd"/>

<Specificity id="99" source="nd"/>

<PredictiveValue id="99" source="nd"/>

</TestParameter>

<DecisionVariableCost id="99" source="nd"/>

</DecisionVariable>

<DecisionVariable id="98" source="inferred">other back or spine disease<Value id="98" source="inferred">true</Value>

<DecisionVariableCode id="98" source="nd"/>

<DecisionVariableDescription id="98" source="nd">

<IntentionalVagueness id="144" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="98" source="nd">

<Sensitivity id="98" source="nd"/>

<Specificity id="98" source="nd"/>

<PredictiveValue id="98" source="nd"/>

</TestParameter>

<DecisionVariableCost id="98" source="nd"/>

</DecisionVariable>

<DecisionVariable id="102" source="inferred">diabetes<Value id="102" source="inferred">true</Value>

<DecisionVariableCode id="102" source="nd"/>

<DecisionVariableDescription id="102" source="nd">

<IntentionalVagueness id="148" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="102" source="nd">

<Sensitivity id="102" source="nd"/>

<Specificity id="102" source="nd"/>

<PredictiveValue id="102" source="nd"/>

</TestParameter>

<DecisionVariableCost id="102" source="nd"/>

</DecisionVariable>

<DecisionVariable id="101" source="inferred">peripheral nerve injury<Value id="101" source="inferred">true</Value>

<DecisionVariableCode id="101" source="nd"/>

<DecisionVariableDescription id="101" source="nd">

<IntentionalVagueness id="147" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="101" source="nd">

<Sensitivity id="101" source="nd"/>

<Specificity id="101" source="nd"/>

<PredictiveValue id="101" source="nd"/>

</TestParameter>

<DecisionVariableCost id="101" source="nd"/>

</DecisionVariable>

<DecisionVariable id="91" source="inferred">cervical myelopathy<Value id="91" source="inferred">true</Value>

<DecisionVariableCode id="91" source="nd"/>

<DecisionVariableDescription id="91" source="nd">

<IntentionalVagueness id="137" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="91" source="nd">

<Sensitivity id="91" source="nd"/>

<Specificity id="91" source="nd"/>

<PredictiveValue id="91" source="nd"/>

</TestParameter>

<DecisionVariableCost id="91" source="nd"/>

</DecisionVariable>

<DecisionVariable id="103" source="inferred">childhood history of posterior urethral valves<Value id="103" source="inferred">true</Value>

<DecisionVariableCode id="103" source="nd"/>

<DecisionVariableDescription id="103" source="nd">

<IntentionalVagueness id="149" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="103" source="nd">

<Sensitivity id="103" source="nd"/>

<Specificity id="103" source="nd"/>

<PredictiveValue id="103" source="nd"/>

</TestParameter>

<DecisionVariableCost id="103" source="nd"/>

</DecisionVariable>

<DecisionVariable id="105" source="inferred">at risk for neurogenic bladder<Value id="105" source="inferred">true</Value>

<DecisionVariableCode id="105" source="nd"/>

<DecisionVariableDescription id="105" source="nd">

<IntentionalVagueness id="151" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="105" source="nd">

<Sensitivity id="105" source="nd"/>

<Specificity id="105" source="nd"/>

<PredictiveValue id="105" source="nd"/>

</TestParameter>

<DecisionVariableCost id="105" source="nd"/>

</DecisionVariable>

<Action id="20" source="inferred">Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS<ActionActor id="20" source="inferred">clinicians</ActionActor>

<ActionCode id="20" source="nd"/>

<ActionVerb id="22" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="20" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="20" source="inferred">EMG in combination with CMG with or without PFS</ActionVerbComplement>

<ActionBenefit id="20" source="nd"/>

<ActionRiskHarm id="20" source="nd"/>

<ActionDescription id="20" source="inferred">The signal source for measurement of EMG activity is the activity of the external urethral sphincter, the external anal sphincter and the pelvic floor musculature. The two most commonly used sources of measurement are surface electrodes and concentric needle electrodes. Needle placement may be a significant source of discomfort for patients, and reproducibility may be an issue without significant operator experience. The surface electrode has the advantage of ease (reproducibility) of placement and patient comfort. Although the signal source is less specific, surface electrodes can provide a good quality signal if properly used. The practical application of EMG involves determination of whether the perineal muscles are relaxed or contracting. The most important information provided by the EMG is the determination of whether perineal contractions are coordinated or uncoordinated with detrusor contractions.

The major limitation of EMG testing is that this is a technically challenging, non-specific component of urodynamic testing. Artifacts are common, and interpretation of EMG requires close interaction between the clinician and the patient. The clinician must have a clear understanding of the history and any relevant physical findings. EMG alone rarely makes the diagnosis of an uncoordinated sphincter. The EMG diagnosis is taken into context with fluoroscopy, cystometry and flow rate in order to obtain the most accurate diagnosis.<IntentionalVagueness id="95" source="nd"/>

</ActionDescription>

<ActionCost id="20" source="nd"/>

<ActionValue id="20" source="nd"/>

<ActionType id="20" source="nd"/>

</Action>

<Reason id="33" source="inferred">Preservation of urinary tract integrity remains a primary goal in the long-term management of patients with neurogenic bladder. Patients presenting with abnormal compliance, detrusor external sphincter dyssynergia (DESD) and hydronephrosis are at higher risk for developing deterioration of renal function. EMG testing is a useful modality to assist in the diagnosis of DESD, which is characterized by involuntary contractions of the external sphincter during detrusor contraction. The most important information provided by the EMG is the determination of whether perineal contractions are coordinated or uncoordinated with detrusor contractions. Knowledge of this condition is important, as management should be initiated to lower urinary storage pressures and assure adequate bladder emptying.</Reason>

<EvidenceQuality id="26" source="inferred">Grade C<EvidenceQualityDescription id="26" source="nd"/>

<Disagreement id="26" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="26" source="inferred">Recommendation<RecommendationStrengthCode id="26" source="nd"/>

</RecommendationStrength>

<Flexibility id="26" source="nd"/>

<Logic id="26" source="inferred">If &#13;

(spinal cord injury (SCI) is [true] &#13;

OR&#13;

myelomeningocele (MMC) is [true] &#13;

OR&#13;

multiple sclerosis (MS) is [true] &#13;

OR&#13;

Parkinson’s disease (PD) is [true] &#13;

OR&#13;

stroke/cerebrovascular accident is [true] &#13;

OR&#13;

traumatic brain injury (TBI) is [true] &#13;

OR&#13;

brain tumor is [true] &#13;

OR&#13;

spinal cord tumor is [true] &#13;

OR&#13;

transverse myelitis is [true] &#13;

OR&#13;

cauda equina syndrome is [true] &#13;

OR&#13;

herniated disk is [true] &#13;

OR&#13;

other back or spine disease is [true] &#13;

OR&#13;

diabetes is [true] &#13;

OR&#13;

peripheral nerve injury is [true] &#13;

OR&#13;

cervical myelopathy is [true] &#13;

OR&#13;

childhood history of posterior urethral valves is [true] ) &#13;

AND&#13;

at risk for neurogenic bladder is [true] &#13;

Then &#13;

Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS</Logic>

<Cost id="26" source="nd"/>

<Linkage id="26" source="nd"/>

<Reference id="26" source="nd"/>

<Certainty id="26" source="nd"/>

<Goal id="26" source="nd"/>

</Conditional>

<Conditional id="22" source="inferred">Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS in patients with relevant neurologic disease at risk for neurogenic bladder, or in patients with other neurologic disease and elevated post-void residual (PVR) or urinary symptoms.<BenefitHarmAssessment id="42" source="nd"/>

<DecisionVariable id="106" source="inferred">other neurologic disease<Value id="106" source="inferred">true</Value>

<DecisionVariableCode id="106" source="nd"/>

<DecisionVariableDescription id="106" source="nd">

<IntentionalVagueness id="152" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="106" source="nd">

<Sensitivity id="106" source="nd"/>

<Specificity id="106" source="nd"/>

<PredictiveValue id="106" source="nd"/>

</TestParameter>

<DecisionVariableCost id="106" source="nd"/>

</DecisionVariable>

<DecisionVariable id="109" source="inferred">post-void residual (PVR)<Value id="109" source="inferred">elevated</Value>

<DecisionVariableCode id="109" source="nd"/>

<DecisionVariableDescription id="109" source="nd">

<IntentionalVagueness id="156" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="109" source="nd">

<Sensitivity id="109" source="nd"/>

<Specificity id="109" source="nd"/>

<PredictiveValue id="109" source="nd"/>

</TestParameter>

<DecisionVariableCost id="109" source="nd"/>

</DecisionVariable>

<DecisionVariable id="108" source="inferred">urinary symptoms<Value id="108" source="inferred">true</Value>

<DecisionVariableCode id="108" source="nd"/>

<DecisionVariableDescription id="108" source="nd">

<IntentionalVagueness id="155" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="108" source="nd">

<Sensitivity id="108" source="nd"/>

<Specificity id="108" source="nd"/>

<PredictiveValue id="108" source="nd"/>

</TestParameter>

<DecisionVariableCost id="108" source="nd"/>

</DecisionVariable>

<Action id="29" source="inferred">Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS<ActionActor id="29" source="nd"/>

<ActionCode id="29" source="nd"/>

<ActionVerb id="31" source="nd"/>

<ActionDeonticTerm id="29" source="nd"/>

<ActionVerbComplement id="29" source="nd"/>

<ActionBenefit id="29" source="nd"/>

<ActionRiskHarm id="29" source="nd"/>

<ActionDescription id="29" source="nd">

<IntentionalVagueness id="153" source="nd"/>

</ActionDescription>

<ActionCost id="29" source="nd"/>

<ActionValue id="29" source="nd"/>

<ActionType id="29" source="nd"/>

</Action>

<Reason id="52" source="inferred">Preservation of urinary tract integrity remains a primary goal in the long-term management of patients with neurogenic bladder. Patients presenting with abnormal compliance, detrusor external sphincter dyssynergia (DESD) and hydronephrosis are at higher risk for developing deterioration of renal function. EMG testing is a useful modality to assist in the diagnosis of DESD, which is characterized by involuntary contractions of the external sphincter during detrusor contraction. The most important information provided by the EMG is the determination of whether perineal contractions are coordinated or uncoordinated with detrusor contractions. Knowledge of this condition is important, as management should be initiated to lower urinary storage pressures and assure adequate bladder emptying.</Reason>

<EvidenceQuality id="40" source="inferred">Grade C<EvidenceQualityDescription id="40" source="nd"/>

<Disagreement id="40" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="40" source="inferred">Recommendation<RecommendationStrengthCode id="40" source="nd"/>

</RecommendationStrength>

<Flexibility id="40" source="nd"/>

<Logic id="40" source="inferred">If &#13;

other neurologic disease is [true] &#13;&#13;

AND&#13;&#13;

(post-void residual (PVR) is [elevated] &#13;&#13;

OR&#13;&#13;

urinary symptoms is [true] ) &#13;

Then &#13;

Clinicians should perform electromyography (EMG) in combination with cystometry (CMG) with or without pressure flow studies PFS</Logic>

<Cost id="40" source="nd"/>

<Linkage id="40" source="nd"/>

<Reference id="40" source="nd"/>

<Certainty id="40" source="nd"/>

<Goal id="40" source="nd"/>

</Conditional>

<Imperative id="12" source="nd">

<BenefitHarmAssessment id="27" source="nd"/>

<Scope id="12" source="nd">

<ScopeCode id="12" source="nd"/>

</Scope>

<Directive id="12" source="nd">

<DirectiveActor id="12" source="nd"/>

<DirectiveCode id="12" source="nd"/>

<DirectiveVerb id="12" source="nd"/>

<DirectiveDeonticTerm id="12" source="nd"/>

<DirectiveVerbComplement id="12" source="nd"/>

<DirectiveBenefit id="12" source="nd"/>

<DirectiveRiskHarm id="12" source="nd"/>

<DirectiveDescription id="12" source="nd">

<IntentionalVagueness id="96" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="12" source="nd"/>

<DirectiveValue id="12" source="nd"/>

<DirectiveType id="12" source="nd"/>

</Directive>

<Reason id="34" source="nd"/>

<EvidenceQuality id="27" source="nd">

<EvidenceQualityDescription id="27" source="nd"/>

<Disagreement id="27" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="27" source="nd">

<RecommendationStrengthCode id="27" source="nd"/>

</RecommendationStrength>

<Flexibility id="27" source="nd"/>

<Logic id="27" source="nd"/>

<Cost id="27" source="nd"/>

<Linkage id="27" source="nd"/>

<Reference id="27" source="nd"/>

<Certainty id="27" source="nd"/>

<Goal id="27" source="nd"/>

</Imperative>

<RecommendationNotes id="12" source="nd"/>

</Recommendation>

<Recommendation id="11" source="inferred">14<StatementOfFact id="11" source="nd"/>

<Conditional id="14" source="inferred">Clinicians may perform post-void residual (PVR) in patients with lower urinary tract symptoms (LUTS) as a safety measure to rule out significant urinary retention both initially and during follow up.<BenefitHarmAssessment id="24" source="nd"/>

<DecisionVariable id="63" source="inferred">LUTS<Value id="63" source="inferred">true</Value>

<DecisionVariableCode id="63" source="nd"/>

<DecisionVariableDescription id="63" source="nd">

<IntentionalVagueness id="91" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="63" source="nd">

<Sensitivity id="63" source="nd"/>

<Specificity id="63" source="nd"/>

<PredictiveValue id="63" source="nd"/>

</TestParameter>

<DecisionVariableCost id="63" source="nd"/>

</DecisionVariable>

<Action id="19" source="inferred">Clinicians may perform PVR initially as a safety measure to rule out significant urinary retention<ActionActor id="19" source="inferred">clinicians</ActionActor>

<ActionCode id="19" source="nd"/>

<ActionVerb id="21" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="19" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="19" source="inferred">PVR initially as a safety measure to rule out significant urinary retention</ActionVerbComplement>

<ActionBenefit id="19" source="inferred">The potential benefits of measuring PVR include the identification of patients with significant urinary retention and decreasing potential morbidity, including UTIs and upper tract damage. In such patients, the identification of an elevated PVR can facilitate selection and implementation of treatment as well as monitor treatment outcomes. While no conclusive evidence exists to support or refute the use of PVR to predict the outcome of LUTS treatment, it may be used on the basis of expert opinion as a safety measure to evaluate for significant urinary retention both initially and during subsequent monitoring.</ActionBenefit>

<ActionRiskHarm id="19" source="inferred">The risks/harms of assessing PVR using catheterization are low and include UTI or urethral trauma. These risks can be eliminated with ultrasound determination of PVR. However, measurement of PVR may be associated with false positives and negatives and thus could lead to inappropriate treatment. Therefore, it is recommended that decisions not be based on a single measurement.</ActionRiskHarm>

<ActionDescription id="19" source="nd">

<IntentionalVagueness id="92" source="nd"/>

</ActionDescription>

<ActionCost id="19" source="nd"/>

<ActionValue id="19" source="nd"/>

<ActionType id="19" source="nd"/>

</Action>

<Action id="22" source="inferred">Clinicians may perform PVR during follow-up as a safety measure to rule out significant urinary retention<ActionActor id="22" source="inferred">clinicians</ActionActor>

<ActionCode codeset="" id="22" source="nd"/>

<ActionVerb id="24" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="22" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="22" source="inferred">PVR as a safety measure to rule out significant urinary retention during follow up.</ActionVerbComplement>

<ActionBenefit id="22" source="inferred">The potential benefits of measuring PVR include the identification of patients with significant urinary retention and decreasing potential morbidity, including UTIs and upper tract damage. In such patients, the identification of an elevated PVR can facilitate selection and implementation of treatment as well as monitor treatment outcomes. While no conclusive evidence exists to support or refute the use of PVR to predict the outcome of LUTS treatment, it may be used on the basis of expert opinion as a safety measure to evaluate for significant urinary retention both initially and during subsequent monitoring.</ActionBenefit>

<ActionRiskHarm id="22" source="inferred">The risks/harms of assessing PVR using catheterization are low and include UTI or urethral trauma. These risks can be eliminated with ultrasound determination of PVR. However, measurement of PVR may be associated with false positives and negatives and thus could lead to inappropriate treatment. Therefore, it is recommended that decisions not be based on a single measurement.</ActionRiskHarm>

<ActionDescription id="22" source="nd">

<IntentionalVagueness id="100" source="nd"/>

</ActionDescription>

<ActionCost id="22" source="nd"/>

<ActionValue id="22" source="nd"/>

<ActionType id="22" source="nd"/>

</Action>

<Reason id="31" source="explicit">PVR may be elevated due to detrusor underactivity, BOO or a combination thereof. Thus, an elevated PVR is a non-specific indication of poor bladder emptying. For example, while men with LUTS and benign prostatic obstruction (BPO) may have an elevated PVR, an elevated PVR in isolation does not necessarily predict the presence of obstruction.50, .50,69 PVR alone cannot be used to differentiate between obstructed and nonobstructed patients. Furthermore, there is no agreed upon standard definition of exactly what constitutes an elevated PVR.</Reason>

<Reason id="37" source="explicit">In general, urologists agree that in some patients an elevated PVR may be harmful. The potentially harmful impact of a large PVR has been derived from the experience in the pediatric population, the elderly, diabetics and neurogenic patients. It is not clear which patients with an elevated PVR and LUTS without any of these conditions are predisposed to harm. Furthermore, there are no relevant studies that have identified the usefulness of PVR for guiding clinical management, improving patient outcomes in patients with LUTS or predicting treatment outcomes in men and women.</Reason>

<EvidenceQuality id="24" source="inferred">N/A<EvidenceQualityDescription id="24" source="nd"/>

<Disagreement id="24" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="24" source="inferred">Clinical Principle<RecommendationStrengthCode id="24" source="nd"/>

</RecommendationStrength>

<Flexibility id="24" source="nd"/>

<Logic id="24" source="inferred">If &#13;

LUTS is [true] &#13;

Then &#13;

Clinicians may perform PVR initially as a safety measure to rule out significant urinary retention&#13;

AND&#13;

Clinicians may perform PVR during follow-up as a safety measure to rule out significant urinary retention</Logic>

<Cost id="24" source="nd"/>

<Linkage id="24" source="nd"/>

<Reference id="24" source="nd"/>

<Certainty id="24" source="nd"/>

<Goal id="24" source="nd"/>

</Conditional>

<Imperative id="11" source="nd">

<BenefitHarmAssessment id="25" source="nd"/>

<Scope id="11" source="nd">

<ScopeCode id="11" source="nd"/>

</Scope>

<Directive id="11" source="nd">

<DirectiveActor id="11" source="nd"/>

<DirectiveCode id="11" source="nd"/>

<DirectiveVerb id="11" source="nd"/>

<DirectiveDeonticTerm id="11" source="nd"/>

<DirectiveVerbComplement id="11" source="nd"/>

<DirectiveBenefit id="11" source="nd"/>

<DirectiveRiskHarm id="11" source="nd"/>

<DirectiveDescription id="11" source="nd">

<IntentionalVagueness id="93" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="11" source="nd"/>

<DirectiveValue id="11" source="nd"/>

<DirectiveType id="11" source="nd"/>

</Directive>

<Reason id="32" source="nd"/>

<EvidenceQuality id="25" source="nd">

<EvidenceQualityDescription id="25" source="nd"/>

<Disagreement id="25" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="25" source="nd">

<RecommendationStrengthCode id="25" source="nd"/>

</RecommendationStrength>

<Flexibility id="25" source="nd"/>

<Logic id="25" source="nd"/>

<Cost id="25" source="nd"/>

<Linkage id="25" source="nd"/>

<Reference id="25" source="nd"/>

<Certainty id="25" source="nd"/>

<Goal id="25" source="nd"/>

</Imperative>

<RecommendationNotes id="11" source="nd"/>

</Recommendation>

<Recommendation id="10" source="inferred">15<StatementOfFact id="10" source="nd"/>

<Conditional id="13" source="inferred">Uroflow may be used by clinicians in the initial and ongoing evaluation of male patients with LUTS that suggest an abnormality of voiding/ emptying.<BenefitHarmAssessment id="22" source="nd"/>

<DecisionVariable id="62" source="inferred">male<Value id="62" source="inferred">true</Value>

<DecisionVariableCode id="62" source="nd"/>

<DecisionVariableDescription id="62" source="nd">

<IntentionalVagueness id="88" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="62" source="nd">

<Sensitivity id="62" source="nd"/>

<Specificity id="62" source="nd"/>

<PredictiveValue id="62" source="nd"/>

</TestParameter>

<DecisionVariableCost id="62" source="nd"/>

</DecisionVariable>

<DecisionVariable id="66" source="inferred">lower urinary tract symptoms (LUTS) suggest an abnormality of voiding/ emptying<Value id="66" source="inferred">true</Value>

<DecisionVariableCode id="66" source="nd"/>

<DecisionVariableDescription id="66" source="nd">

<IntentionalVagueness id="101" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="66" source="nd">

<Sensitivity id="66" source="nd"/>

<Specificity id="66" source="nd"/>

<PredictiveValue id="66" source="nd"/>

</TestParameter>

<DecisionVariableCost id="66" source="nd"/>

</DecisionVariable>

<Action id="18" source="inferred">Uroflow may be used by clinicians in the initial evaluation<ActionActor id="18" source="inferred">clinicians</ActionActor>

<ActionCode id="18" source="nd"/>

<ActionVerb id="20" source="inferred">use</ActionVerb>

<ActionDeonticTerm id="18" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="18" source="inferred">uroflow in the initial evaluation</ActionVerbComplement>

<ActionBenefit id="18" source="nd"/>

<ActionRiskHarm id="18" source="inferred">Risks/harms of uroflowmetry include false positives and negatives, which may lead to inappropriate treatment.</ActionRiskHarm>

<ActionDescription id="18" source="inferred">Uroflow results should be interpreted in light of the potential effects of artifact. Clinicians should be aware that uroflow studies (both peak and mean) can be affected by the volume voided and the circumstances of the test. Serial uroflowmetry measurements which are consistent, similar and comparable provide the most valuable information for the clinician. Furthermore, uroflowmetry should ideally correlate with the patient’s symptomatology.<IntentionalVagueness id="89" source="nd"/>

</ActionDescription>

<ActionCost id="18" source="nd"/>

<ActionValue id="18" source="nd"/>

<ActionType id="18" source="nd"/>

</Action>

<Action id="23" source="inferred">Uroflow may be used by clinicians in the ongoing evaluation<ActionActor id="23" source="inferred">clinicians</ActionActor>

<ActionCode id="23" source="nd"/>

<ActionVerb id="25" source="inferred">use</ActionVerb>

<ActionDeonticTerm id="23" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="23" source="inferred">uroflow in the ongoing evaluation</ActionVerbComplement>

<ActionBenefit id="23" source="nd"/>

<ActionRiskHarm id="23" source="inferred">Risks/harms of uroflowmetry include false positives and negatives, which may lead to inappropriate treatment.</ActionRiskHarm>

<ActionDescription id="23" source="inferred">Uroflow results should be interpreted in light of the potential effects of artifact. Clinicians should be aware that uroflow studies (both peak and mean) can be affected by the volume voided and the circumstances of the test. Serial uroflowmetry measurements which are consistent, similar and comparable provide the most valuable information for the clinician. Furthermore, uroflowmetry should ideally correlate with the patient’s symptomatology.<IntentionalVagueness id="102" source="nd"/>

</ActionDescription>

<ActionCost id="23" source="nd"/>

<ActionValue id="23" source="nd"/>

<ActionType id="23" source="nd"/>

</Action>

<Reason id="29" source="inferred">Significant abnormalities in uroflow are indicative of a dysfunction in the voiding phase of the micturition cycle. In addition, because uroflow is dependent on voided volume, there may be significant variability of measured uroflows in the same patient. In males different studies have shown variability in the diagnostic accuracy of uroflow for detecting BOO ranging from moderately high to low. The reported variability may be due to the variety of Qmax thresholds and reference standards used in the literature with no clear answer regarding the ideal threshold and reference standard.</Reason>

<Reason id="38" source="inferred">Although the literature reviewed fails to specifically identify clinical scenarios when uroflowmetry is useful, the panel believes that this test has value in the evaluation of disorders of voiding, even if further testing is required to make a specific diagnosis. Uroflowmetry can also be used for monitoring treatment outcomes and correlating symptoms with objective findings.

Based on the current literature and the relative ease of measurement of uroflow, the panel supports the use of uroflowmetry in the initial diagnosis and follow-up of LUTS in men. The correlation of urinary symptoms and uroflow in women is not as well understood.</Reason>

<EvidenceQuality id="22" source="inferred">Grade C<EvidenceQualityDescription id="22" source="nd"/>

<Disagreement id="22" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="22" source="inferred">Recommendation<RecommendationStrengthCode id="22" source="nd"/>

</RecommendationStrength>

<Flexibility id="22" source="nd"/>

<Logic id="22" source="inferred">If &#13;

male is [true] &#13;&#13;

AND&#13;&#13;

lower urinary tract symptoms (LUTS) suggest an abnormality of voiding/ emptying is [true] &#13;

Then &#13;

Uroflow may be used by clinicians in the initial evaluation&#13;&#13;

AND&#13;&#13;

Uroflow may be used by clinicians in the ongoing evaluation</Logic>

<Cost id="22" source="nd"/>

<Linkage id="22" source="nd"/>

<Reference id="22" source="nd"/>

<Certainty id="22" source="nd"/>

<Goal id="22" source="nd"/>

</Conditional>

<Imperative id="10" source="nd">

<BenefitHarmAssessment id="23" source="nd"/>

<Scope id="10" source="nd">

<ScopeCode id="10" source="nd"/>

</Scope>

<Directive id="10" source="nd">

<DirectiveActor id="10" source="nd"/>

<DirectiveCode id="10" source="nd"/>

<DirectiveVerb id="10" source="nd"/>

<DirectiveDeonticTerm id="10" source="nd"/>

<DirectiveVerbComplement id="10" source="nd"/>

<DirectiveBenefit id="10" source="nd"/>

<DirectiveRiskHarm id="10" source="nd"/>

<DirectiveDescription id="10" source="nd">

<IntentionalVagueness id="90" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="10" source="nd"/>

<DirectiveValue id="10" source="nd"/>

<DirectiveType id="10" source="nd"/>

</Directive>

<Reason id="30" source="nd"/>

<EvidenceQuality id="23" source="nd">

<EvidenceQualityDescription id="23" source="nd"/>

<Disagreement id="23" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="23" source="nd">

<RecommendationStrengthCode id="23" source="nd"/>

</RecommendationStrength>

<Flexibility id="23" source="nd"/>

<Logic id="23" source="nd"/>

<Cost id="23" source="nd"/>

<Linkage id="23" source="nd"/>

<Reference id="23" source="nd"/>

<Certainty id="23" source="nd"/>

<Goal id="23" source="nd"/>

</Imperative>

<RecommendationNotes id="10" source="nd"/>

</Recommendation>

<Recommendation id="14" source="inferred">16<StatementOfFact id="14" source="nd"/>

<Conditional id="17" source="explicit">Clinicians may perform multi-channel filling cystometry when it is important to determine if DO or other abnormalities of bladder filling/urine storage are present in patients with LUTS, particularly when invasive, potentially morbid or irreversible treatments are considered.<BenefitHarmAssessment id="30" source="nd"/>

<DecisionVariable id="67" source="inferred">lower urinary tract symptoms (LUTS)<Value id="67" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="67" source="nd"/>

<DecisionVariableDescription id="67" source="nd">

<IntentionalVagueness id="103" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="67" source="nd">

<Sensitivity id="67" source="nd"/>

<Specificity id="67" source="nd"/>

<PredictiveValue id="67" source="nd"/>

</TestParameter>

<DecisionVariableCost id="67" source="nd"/>

</DecisionVariable>

<Action id="24" source="inferred">Clinicians may perform multi-channel filling cystometry, particularly when invasive, potentially moribd or irreversible treatments are considered.<ActionActor id="24" source="inferred">clinicians</ActionActor>

<ActionCode id="24" source="nd"/>

<ActionVerb id="26" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="24" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="24" source="explicit">multi-channel filling cystometry</ActionVerbComplement>

<ActionBenefit id="24" source="nd"/>

<ActionRiskHarm id="24" source="nd"/>

<ActionDescription id="24" source="nd">

<IntentionalVagueness id="104" source="nd"/>

</ActionDescription>

<ActionCost id="24" source="nd"/>

<ActionValue id="24" source="nd"/>

<ActionType id="24" source="nd"/>

</Action>

<Reason id="39" source="explicit">The role of filling cystometry and the finding of DO in predicting treatment outcomes remain controversial. No relevant studies that met the inclusion criteria were identified regarding the usefulness of cystometry for guiding clinical management in patients with LUTS. For some conditions associated with LUTS (e.g., DO), cystometry is the diagnostic standard. However, cystometry often fails to explain symptoms, and the reproducibility of finding DO from one study to another in the same patient can vary if the studies are performed consecutively56 56 or on different days.83 .83 Many studies have attempted to use cystometry to help determine prognosis after various treatments for LUTS in men and women.84.84-91 However, there is considerable variation in these studies with respect to the central thesis, and the findings revealed no apparent trends. Although the presence or absence of DO has not been shown to consistently predict specific treatment outcomes, the panel believes that there are instances when a particular treatment for LUTS might be chosen or avoided based on the presence of DO and, more importantly, impaired compliance. The panel felt that this could be particularly important when invasive or irreversible treatment is planned as it could aid in patient counseling. While there are no data to support or refute this recommendation, the panel believes that for many clinicians the presence of DO or impaired compliance remains an important piece of information in dictating treatment.</Reason>

<EvidenceQuality id="30" source="inferred">N/A<EvidenceQualityDescription id="30" source="nd"/>

<Disagreement id="30" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="30" source="inferred">Expert Opinion<RecommendationStrengthCode id="30" source="nd"/>

</RecommendationStrength>

<Flexibility id="30" source="nd"/>

<Logic id="30" source="inferred">If &#13;

lower urinary tract symptoms (LUTS) is [true] &#13;

Then &#13;

Clinicians may perform multi-channel filling cystometry, particularly when invasive, potentially moribd or irreversible treatments are considered.</Logic>

<Cost id="30" source="nd"/>

<Linkage id="30" source="nd"/>

<Reference id="30" source="nd"/>

<Certainty id="30" source="nd"/>

<Goal id="30" source="nd"/>

</Conditional>

<Imperative id="14" source="nd">

<BenefitHarmAssessment id="31" source="nd"/>

<Scope id="14" source="nd">

<ScopeCode id="14" source="nd"/>

</Scope>

<Directive id="14" source="nd">

<DirectiveActor id="14" source="nd"/>

<DirectiveCode id="14" source="nd"/>

<DirectiveVerb id="14" source="nd"/>

<DirectiveDeonticTerm id="14" source="nd"/>

<DirectiveVerbComplement id="14" source="nd"/>

<DirectiveBenefit id="14" source="nd"/>

<DirectiveRiskHarm id="14" source="nd"/>

<DirectiveDescription id="14" source="nd">

<IntentionalVagueness id="105" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="14" source="nd"/>

<DirectiveValue id="14" source="nd"/>

<DirectiveType id="14" source="nd"/>

</Directive>

<Reason id="40" source="nd"/>

<EvidenceQuality id="31" source="nd">

<EvidenceQualityDescription id="31" source="nd"/>

<Disagreement id="31" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="31" source="nd">

<RecommendationStrengthCode id="31" source="nd"/>

</RecommendationStrength>

<Flexibility id="31" source="nd"/>

<Logic id="31" source="nd"/>

<Cost id="31" source="nd"/>

<Linkage id="31" source="nd"/>

<Reference id="31" source="nd"/>

<Certainty id="31" source="nd"/>

<Goal id="31" source="nd"/>

</Imperative>

<RecommendationNotes id="14" source="nd"/>

</Recommendation>

<Recommendation id="18" source="inferred">17<StatementOfFact id="18" source="nd"/>

<Conditional id="21" source="inferred">Clinicians should perform pressure flow studies (PFS) in men when it is important to determine if urodynamic obstruction is present in men with LUTS, particularly when invasive, potentially morbid or irreversible treatments are considered.<BenefitHarmAssessment id="40" source="nd"/>

<DecisionVariable id="82" source="inferred">sex<Value id="82" source="inferred">male</Value>

<DecisionVariableCode id="82" source="nd"/>

<DecisionVariableDescription id="82" source="nd">

<IntentionalVagueness id="126" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="82" source="nd">

<Sensitivity id="82" source="nd"/>

<Specificity id="82" source="nd"/>

<PredictiveValue id="82" source="nd"/>

</TestParameter>

<DecisionVariableCost id="82" source="nd"/>

</DecisionVariable>

<DecisionVariable id="85" source="inferred">suspected BOO<Value id="85" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="85" source="nd"/>

<DecisionVariableDescription id="85" source="nd">

<IntentionalVagueness id="131" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="85" source="nd">

<Sensitivity id="85" source="nd"/>

<Specificity id="85" source="nd"/>

<PredictiveValue id="85" source="nd"/>

</TestParameter>

<DecisionVariableCost id="85" source="nd"/>

</DecisionVariable>

<DecisionVariable id="84" source="inferred">lower urinary tract symptoms (LUTS)<Value id="84" source="inferred">true</Value>

<DecisionVariableCode codeset="" id="84" source="nd"/>

<DecisionVariableDescription id="84" source="nd">

<IntentionalVagueness id="130" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="84" source="nd">

<Sensitivity id="84" source="nd"/>

<Specificity id="84" source="nd"/>

<PredictiveValue id="84" source="nd"/>

</TestParameter>

<DecisionVariableCost id="84" source="nd"/>

</DecisionVariable>

<Action id="28" source="inferred">Clinicians should perform PFS when it is important to determine if urodynamic obstruction is present<ActionActor id="28" source="inferred">clinicians</ActionActor>

<ActionCode id="28" source="nd"/>

<ActionVerb id="30" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="28" source="inferred">should</ActionDeonticTerm>

<ActionVerbComplement id="28" source="inferred">PFS when it is important to determine if urodynamic obstruction is present</ActionVerbComplement>

<ActionBenefit id="28" source="nd"/>

<ActionRiskHarm id="28" source="explicit">Patients should also be made aware of the risks of PFS, which include hematuria, UTI and dysuria as well as some of the diagnostic pitfalls of the studies.</ActionRiskHarm>

<ActionDescription id="28" source="inferred">particularly when invasive, potentially morbid or irreversible treatments are considered<IntentionalVagueness id="127" source="nd"/>

</ActionDescription>

<ActionCost id="28" source="nd"/>

<ActionValue id="28" source="nd"/>

<ActionType id="28" source="nd"/>

</Action>

<Reason id="48" source="explicit">BOO in men is a urodynamic diagnosis. This may or may not be associated with obstruction from benign prostatic enlargement. The voiding PFS is the current reference standard for the diagnosis of BOO in men. To be useable, a PFS study must be well performed with minimal artifacts. Many studies assessed the use of PFS to predict outcomes of men with LUTS treated with surgical procedures to reduce outlet resistance.95.95-108 While the results of these studies showed variability regarding the ability of PFS to predict outcomes of surgical procedures to treat benign prostatic obstruction (BPO), the panel concluded that the preponderance of evidence suggests that a diagnosis of obstruction on a PFS predicts a better outcome from surgery than a diagnosis of no obstruction. Therefore, it can be recommended as part of the evaluation of LUTS in men. The panel also believes that despite some limitations, PFS remain the only means of definitively establishing or ruling out the presence of BOO in men. However, it may not always be necessary to confirm urodynamic obstruction prior to proceeding with invasive therapy.</Reason>

<EvidenceQuality id="38" source="inferred">Grade B<EvidenceQualityDescription id="38" source="nd"/>

<Disagreement id="38" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="38" source="inferred">Standard<RecommendationStrengthCode id="38" source="nd"/>

</RecommendationStrength>

<Flexibility id="38" source="nd"/>

<Logic id="38" source="inferred">If &#13;

sex is [male] &#13;&#13;

AND&#13;&#13;

suspected BOO is [true] &#13;&#13;

AND&#13;&#13;

lower urinary tract symptoms (LUTS) is [true] &#13;

Then &#13;

Clinicians should perform PFS when it is important to determine if urodynamic obstruction is present</Logic>

<Cost id="38" source="nd"/>

<Linkage id="38" source="nd"/>

<Reference id="38" source="nd"/>

<Certainty id="38" source="nd"/>

<Goal id="38" source="nd"/>

</Conditional>

<Imperative id="18" source="nd">

<BenefitHarmAssessment id="39" source="nd"/>

<Scope id="18" source="nd">

<ScopeCode id="18" source="nd"/>

</Scope>

<Directive id="18" source="nd">

<DirectiveActor id="18" source="nd"/>

<DirectiveCode id="18" source="nd"/>

<DirectiveVerb id="18" source="nd"/>

<DirectiveDeonticTerm id="18" source="nd"/>

<DirectiveVerbComplement id="18" source="nd"/>

<DirectiveBenefit id="18" source="nd"/>

<DirectiveRiskHarm id="18" source="nd"/>

<DirectiveDescription id="18" source="nd">

<IntentionalVagueness id="128" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="18" source="nd"/>

<DirectiveValue id="18" source="nd"/>

<DirectiveType id="18" source="nd"/>

</Directive>

<Reason id="49" source="nd"/>

<EvidenceQuality id="39" source="nd">

<EvidenceQualityDescription id="39" source="nd"/>

<Disagreement id="39" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="39" source="nd">

<RecommendationStrengthCode id="39" source="nd"/>

</RecommendationStrength>

<Flexibility id="39" source="nd"/>

<Logic id="39" source="nd"/>

<Cost id="39" source="nd"/>

<Linkage id="39" source="nd"/>

<Reference id="39" source="nd"/>

<Certainty id="39" source="nd"/>

<Goal id="39" source="nd"/>

</Imperative>

<RecommendationNotes id="18" source="nd"/>

</Recommendation>

<Recommendation id="17" source="inferred">18<StatementOfFact id="17" source="nd"/>

<Conditional id="20" source="inferred">Clinicians may perform pressure flow studies (PFS) in women when it is important to determine if obstruction is present.<BenefitHarmAssessment id="36" source="nd"/>

<DecisionVariable id="70" source="inferred">sex<Value id="70" source="inferred">female</Value>

<DecisionVariableCode id="70" source="nd"/>

<DecisionVariableDescription id="70" source="nd">

<IntentionalVagueness id="112" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="70" source="nd">

<Sensitivity id="70" source="nd"/>

<Specificity id="70" source="nd"/>

<PredictiveValue id="70" source="nd"/>

</TestParameter>

<DecisionVariableCost id="70" source="nd"/>

</DecisionVariable>

<DecisionVariable id="83" source="inferred">suspected bladder outlet obstruction (BOO)<Value id="83" source="inferred">true</Value>

<DecisionVariableCode id="83" source="nd"/>

<DecisionVariableDescription id="83" source="nd">

<IntentionalVagueness id="129" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="83" source="nd">

<Sensitivity id="83" source="nd"/>

<Specificity id="83" source="nd"/>

<PredictiveValue id="83" source="nd"/>

</TestParameter>

<DecisionVariableCost id="83" source="nd"/>

</DecisionVariable>

<Action id="27" source="inferred">Clinicians may perform pressure flow studies (PFS) when it is important to determine if obstruction is present.<ActionActor id="27" source="inferred">clinicians</ActionActor>

<ActionCode id="27" source="nd"/>

<ActionVerb id="29" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="27" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="27" source="inferred">pressure flow studies (PFS) when it is important to determine if obstruction is present.</ActionVerbComplement>

<ActionBenefit id="27" source="nd"/>

<ActionRiskHarm id="27" source="nd"/>

<ActionDescription id="27" source="explicit">particularly if invasive treatment is planned<IntentionalVagueness id="113" source="nd"/>

</ActionDescription>

<ActionCost id="27" source="nd"/>

<ActionValue id="27" source="nd"/>

<ActionType id="27" source="nd"/>

</Action>

<Reason id="45" source="inferred">The urodynamic diagnosis of obstruction in females is not as well established as in men. Various diagnostic criteria have been used to define obstruction. One inherent problem with the diagnosis of female BOO is the number of conditions that may cause it and the lack of a highly prevalent condition, such as BPO in men, on which to base a nomogram. While definitions of female BOO vary, all studies have shown differences in pressure (higher in obstructed women) and flow rate (lower in obstructed women) though there tends to be tremendous overlap. Another limitation of PFS in women is the lack of literature correlating PFS findings with outcomes. The only study that evaluated a treatment response in “obstructed women” was for urethral dilation, a procedure not advocated by many experts. Other studies evaluating outcomes of stress incontinence surgery found no significant correlations.</Reason>

<Reason id="50" source="inferred">Based on the current body of evidence, the panel supports the use of PFS as an option in women for the evaluation of potential BOO, particularly if invasive treatment is planned. We realize that diagnostic criteria are not standardized, and this is an area for current and future research. However, as there is no consistent evidence that shows the lack of value of PFS, it should remain as part of the diagnostic armamentarium. In addition, the documentation of obstruction will likely influence treatment decisions, and PFS is a useful modality to aid in the diagnosis. Due to the limitations of PFS in women, the panel believes that the results of PFS should always be correlated with patient symptoms and other diagnostic tests to make the most accurate diagnosis of female BOO.</Reason>

<EvidenceQuality id="36" source="inferred">Grade C<EvidenceQualityDescription id="36" source="nd"/>

<Disagreement id="36" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="36" source="inferred">Recommendation<RecommendationStrengthCode id="36" source="nd"/>

</RecommendationStrength>

<Flexibility id="36" source="nd"/>

<Logic id="36" source="inferred">If &#13;

sex is [female] &#13;&#13;

AND&#13;&#13;

suspected bladder outlet obstruction (BOO) is [true] &#13;

Then &#13;

Clinicians may perform pressure flow studies (PFS) when it is important to determine if obstruction is present.</Logic>

<Cost id="36" source="nd"/>

<Linkage id="36" source="nd"/>

<Reference id="36" source="nd"/>

<Certainty id="36" source="nd"/>

<Goal id="36" source="nd"/>

</Conditional>

<Imperative id="17" source="nd">

<BenefitHarmAssessment id="37" source="nd"/>

<Scope id="17" source="nd">

<ScopeCode id="17" source="nd"/>

</Scope>

<Directive id="17" source="nd">

<DirectiveActor id="17" source="nd"/>

<DirectiveCode id="17" source="nd"/>

<DirectiveVerb id="17" source="nd"/>

<DirectiveDeonticTerm id="17" source="nd"/>

<DirectiveVerbComplement id="17" source="nd"/>

<DirectiveBenefit id="17" source="nd"/>

<DirectiveRiskHarm id="17" source="nd"/>

<DirectiveDescription id="17" source="nd">

<IntentionalVagueness id="114" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="17" source="nd"/>

<DirectiveValue id="17" source="nd"/>

<DirectiveType id="17" source="nd"/>

</Directive>

<Reason id="46" source="nd"/>

<EvidenceQuality id="37" source="nd">

<EvidenceQualityDescription id="37" source="nd"/>

<Disagreement id="37" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="37" source="nd">

<RecommendationStrengthCode id="37" source="nd"/>

</RecommendationStrength>

<Flexibility id="37" source="nd"/>

<Logic id="37" source="nd"/>

<Cost id="37" source="nd"/>

<Linkage id="37" source="nd"/>

<Reference id="37" source="nd"/>

<Certainty id="37" source="nd"/>

<Goal id="37" source="nd"/>

</Imperative>

<RecommendationNotes id="17" source="nd"/>

</Recommendation>

<Recommendation id="15" source="inferred">19<StatementOfFact id="15" source="nd"/>

<Conditional id="18" source="inferred">Clinicians may perform videourodynamics (VUDS) in properly selected patients to localize the level of obstruction particularly for the diagnosis of primary bladder neck obstruction (PBNO).<BenefitHarmAssessment id="32" source="nd"/>

<DecisionVariable id="73" source="inferred">obvious anatomic cause of obstruction<Value id="73" source="inferred">false</Value>

<DecisionVariableCode id="73" source="nd"/>

<DecisionVariableDescription id="73" source="inferred">like BPO in men or POP in women<IntentionalVagueness id="117" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="73" source="nd">

<Sensitivity id="73" source="nd"/>

<Specificity id="73" source="nd"/>

<PredictiveValue id="73" source="nd"/>

</TestParameter>

<DecisionVariableCost id="73" source="nd"/>

</DecisionVariable>

<DecisionVariable id="72" source="inferred">suspected bladder outlet obstruction (BOO)<Value id="72" source="inferred">true</Value>

<DecisionVariableCode id="72" source="nd"/>

<DecisionVariableDescription id="72" source="nd">

<IntentionalVagueness id="116" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="72" source="nd">

<Sensitivity id="72" source="nd"/>

<Specificity id="72" source="nd"/>

<PredictiveValue id="72" source="nd"/>

</TestParameter>

<DecisionVariableCost id="72" source="nd"/>

</DecisionVariable>

<DecisionVariable id="77" source="inferred">sex<Value id="77" source="inferred">male</Value>

<DecisionVariableCode id="77" source="nd"/>

<DecisionVariableDescription id="77" source="nd">

<IntentionalVagueness id="121" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="77" source="nd">

<Sensitivity id="77" source="nd"/>

<Specificity id="77" source="nd"/>

<PredictiveValue id="77" source="nd"/>

</TestParameter>

<DecisionVariableCost id="77" source="nd"/>

</DecisionVariable>

<DecisionVariable id="78" source="inferred">age<Value id="78" source="inferred">young</Value>

<DecisionVariableCode id="78" source="nd"/>

<DecisionVariableDescription id="78" source="inferred">generally 20 to 50 years<IntentionalVagueness id="122" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="78" source="nd">

<Sensitivity id="78" source="nd"/>

<Specificity id="78" source="nd"/>

<PredictiveValue id="78" source="nd"/>

</TestParameter>

<DecisionVariableCost id="78" source="nd"/>

</DecisionVariable>

<DecisionVariable id="80" source="inferred">sex<Value id="80" source="inferred">female</Value>

<DecisionVariableCode id="80" source="nd"/>

<DecisionVariableDescription id="80" source="nd">

<IntentionalVagueness id="124" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="80" source="nd">

<Sensitivity id="80" source="nd"/>

<Specificity id="80" source="nd"/>

<PredictiveValue id="80" source="nd"/>

</TestParameter>

<DecisionVariableCost id="80" source="nd"/>

</DecisionVariable>

<DecisionVariable id="79" source="inferred">age<Value id="79" source="inferred">any</Value>

<DecisionVariableCode id="79" source="nd"/>

<DecisionVariableDescription id="79" source="nd">

<IntentionalVagueness id="123" source="nd"/>

</DecisionVariableDescription>

<TestParameter id="79" source="nd">

<Sensitivity id="79" source="nd"/>

<Specificity id="79" source="nd"/>

<PredictiveValue id="79" source="nd"/>

</TestParameter>

<DecisionVariableCost id="79" source="nd"/>

</DecisionVariable>

<Action id="25" source="inferred">Clinicians may perform videourodynamics (VUDS) to localize the level of obstruction particularly for the diagnosis of primary bladder neck obstruction (PBNO).<ActionActor id="25" source="inferred">clinicians</ActionActor>

<ActionCode id="25" source="nd"/>

<ActionVerb id="27" source="inferred">perform</ActionVerb>

<ActionDeonticTerm id="25" source="inferred">may</ActionDeonticTerm>

<ActionVerbComplement id="25" source="inferred">videourodynamics to localize the level of obstruction particularly for the diagnosis of primary bladder neck obstruction.</ActionVerbComplement>

<ActionBenefit id="25" source="nd"/>

<ActionRiskHarm id="25" source="explicit">The risks of VUDS include those related to the PFS study itself as well as those associated with radiation exposure.</ActionRiskHarm>

<ActionDescription id="25" source="nd">

<IntentionalVagueness id="107" source="nd"/>

</ActionDescription>

<ActionCost id="25" source="nd"/>

<ActionValue id="25" source="nd"/>

<ActionType id="25" source="nd"/>

</Action>

<Reason id="41" source="inferred">In young men and women without an obvious anatomic cause of obstruction like BPO in men or POP in women, VUDS can differentiate between functional causes of obstruction like PBNO and dysfunctional voiding. PBNO is a videourodynamic diagnosis whose hallmark is relatively high detrusor pressures in association with low flow and radiographic evidence of obstruction at the bladder neck with relaxation of the striated sphincter and no evidence of distal obstruction. Videourodynamic evaluation is the only diagnostic tool that can document pressure/flow parameters and localize functional obstruction of the bladder neck. To date, there are no studies comparing treatment of PBNO on men or women diagnosed with VUDS versus those who had treatment but no VUDS. Since the perceived standard of diagnosis is VUDS and the condition is relatively rare, it is unlikely that such studies will be done. Therefore, the panel feels that VUDS remains the standard test in which to diagnose PBNO and should be an option for any young male or for a female patient in whom the condition is suspected.</Reason>

<EvidenceQuality id="32" source="nd">

<EvidenceQualityDescription id="32" source="nd"/>

<Disagreement id="32" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="32" source="inferred">Expert Opinion<RecommendationStrengthCode id="32" source="nd"/>

</RecommendationStrength>

<Flexibility id="32" source="nd"/>

<Logic id="32" source="inferred">If &#13;

(sex is [male] &#13;

AND&#13;

age is [young] ) &#13;

OR&#13;

(sex is [female] &#13;

AND&#13;

age is [any] ) &#13;

AND&#13;

obvious anatomic cause of obstruction is [false] &#13;

AND&#13;

suspected bladder outlet obstruction (BOO) is [true] &#13;

Then &#13;

Clinicians may perform videourodynamics (VUDS) to localize the level of obstruction particularly for the diagnosis of primary bladder neck obstruction (PBNO).</Logic>

<Cost id="32" source="inferred"/>

<Linkage id="32" source="nd"/>

<Reference id="32" source="nd"/>

<Certainty id="32" source="nd"/>

<Goal id="32" source="nd"/>

</Conditional>

<Imperative id="15" source="nd">

<BenefitHarmAssessment id="33" source="nd"/>

<Scope id="15" source="nd">

<ScopeCode id="15" source="nd"/>

</Scope>

<Directive id="15" source="nd">

<DirectiveActor id="15" source="nd"/>

<DirectiveCode id="15" source="nd"/>

<DirectiveVerb id="15" source="nd"/>

<DirectiveDeonticTerm id="15" source="nd"/>

<DirectiveVerbComplement id="15" source="nd"/>

<DirectiveBenefit id="15" source="nd"/>

<DirectiveRiskHarm id="15" source="nd"/>

<DirectiveDescription id="15" source="nd">

<IntentionalVagueness id="108" source="nd"/>

</DirectiveDescription>

<DirectiveCost id="15" source="nd"/>

<DirectiveValue id="15" source="nd"/>

<DirectiveType id="15" source="nd"/>

</Directive>

<Reason id="42" source="nd"/>

<EvidenceQuality id="33" source="nd">

<EvidenceQualityDescription id="33" source="nd"/>

<Disagreement id="33" source="nd"/>

</EvidenceQuality>

<RecommendationStrength id="33" source="nd">

<RecommendationStrengthCode id="33" source="nd"/>

</RecommendationStrength>

<Flexibility id="33" source="nd"/>

<Logic id="33" source="nd"/>

<Cost id="33" source="nd"/>

<Linkage id="33" source="nd"/>

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<Goal id="33" source="nd"/>

</Imperative>

<RecommendationNotes id="15" source="inferred"/>

</Recommendation>

<Definition id="1" source="nd">

<Term id="1" source="inferred">occult SUI<TermMeaning id="1" source="inferred">stress incontinence observed only after the reduction of co-existent prolapse.</TermMeaning>

</Term>

</Definition>

<Algorithm id="1" source="nd">

<ActionStep id="1" source="nd"/>

<ConditionalStep id="1" source="nd"/>

<BranchStep id="1" source="nd"/>

<SynchronizationStep id="1" source="nd"/>

</Algorithm>

<ResearchAgenda id="1" source="nd"/>

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</KnowledgeComponents>

<Testing id="1" source="nd">

<ExternalReview id="1" source="nd"/>

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<RevisionPlan id="1" source="nd">

<Expiration id="1" source="nd"/>

<ScheduledReview id="1" source="nd"/>

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<ImplementationPlan id="1" source="nd">

<ImplementationStrategy id="1" source="nd"/>

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