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# Clinical practice guidelines for the management of adult patients with neurogenic lower urinary tract dysfunction: a systematic review protocol

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## ABSTRACT

### Introduction

Neurogenic lower urinary tract dysfunction(NLUTD), as a urinary system dysfunction caused by nervous system diseases, not only seriously affects patients' quality of life (QoL) but also adversely affects their prognosis significantly and even the length of their life in extreme cases. At present, there are many clinical practice guidelines (CPGs) developed for NLUTD patients, but extant CPGs vary widely in terms of scope, quality, and content, which may confuse health care professionals or patients. This review aims to identify, assess the quality of and make an integrated analysis of the

CPGs published from 2012 to 2022 for the adult patients with NLUTD.

## Method and analysis

We will systematically search electronic healthcare databases, online clinical practice guideline repositories and relevant professional association websites to identify eligible CPGs. We will include the CPGs which were published in English or Chinese and of which the full texts are available. The Appraisal of Guidelines for Research and Evaluation (AGREE) II will be used to assess the quality of the included CPGs. According to the pre-designed data table, the general characteristics of the CPGs, proposed recommendations and their evidence levels, recommendation levels and other information will be extracted, and qualitative thematic analysis will be applied to the extracted recommendations. A summary of the proposed recommendations and their evidence levels, recommendation levels and other information will eventually be presented in a narrative table. This review is expected to identify gaps in extant CPGs and to identify the areas of the proposed recommendations derived from low-level evidence.

## Ethics and dissemination

This systematic review does not involve the participation of any subjects, and therefore no ethical approval is required. The findings of this study will be published in peer-reviewed journals and disseminated via conference presentations.

**PROSPERO registration number: CRD42022318180**

# ARTICLE SUMMARY

## Strengths and limitations of this study

- The strength of this systematic review lies in its broad coverage of the population. Our target population covers all adult patients with NLUTD, and to our knowledge, previous reviews only focused on a single population with NLUTD after spinal cord injury.
- Another strength of this systematic review is its broad range in terms of content. We will comprehensively and critically integrate the proposed recommendations related to adult patients with NLUTD in extant CPGs, involving diagnosis, assessment, conservative therapy, drug management, complication management, surveillance and follow-up, surgical management, etc.

- This systematic review will provide a tabular summary of clear and definite best-practice recommendations for the current NLUTD management, which is expected to promote evidence-based practice by healthcare professionals and ultimately optimize clinical outcomes for patients.
- Our research focuses on the CPGs composed over the past ten years and can reflect the recent development in the NLUTD management. It is expected that our research will clarify the knowledge gaps regarding the current NLUTD management and lay a foundation for the research community to design more studies to fill the gaps in the field.
- A limitation of this study is that, although we use a comprehensive search strategy to include the CPGs published in English and Chinese, we may not be able to include all CPGs. For example, we have no right to get access to some CPGs or those in other languages except Chinese and English.

# INTRODUCTION

Neurogenic Lower Urinary Tract Dysfunction (NLUTD), also known as "Neurogenic Bladder (NGB)", is defined by the International Continence Society (ICS) as "lower urinary tract dysfunction due to disturbance of the neurological control mechanism". [1] NLUTD can be caused by a variety of diseases. Studies show that 70%-84% of patients with spinal cord injury (SCI),[2] 53% of stroke patients,[3] 38%-71% of patients with Parkinson's disease, 32%-96% of patients with multiple sclerosis (MS), and more than 90% of children with spinal bifida suffer from NLUTD of varying severity. [4] In addition, NLUTD also arises in diabetes mellitus, unexpected sequelae after pelvic surgery, and cauda equina syndrome due to lumbar spine lesions. [4] NLUTD has a long course and the urinary system dysfunction progresses in a dynamic manner, which not only seriously affects patients' QoL,[5] but also easily leads to many complications that adversely affect the prognosis of patients, and even threaten the length of their life. [6] It is reported that 45.59% of the patients with NLUTD present urinary tract infections (UTI) in China,[7] 20%-80% of them may have ureterectasia, pyelonephritis, hydronephrosis, renal failure and other upper urinary tract damages,[8] and death may occur in severe cases. [6] Therefore, it is necessary to pay attention to the standardized and scientific management of patients with NLUTD to improve their prognosis and clinical outcomes.

CPGs are systematically developed statements to assist practitioners and patients to make

decisions about appropriate healthcare for specific clinical circumstances based on the best evidence available. [9] As CPGs have specified the nature, quantity, and quality of research evidence, they can improve decision-making, which in turn promotes best evidence-based practice by health care providers, and ultimately improves clinical outcomes for patients. [10 11] Although the number of CPGs for adult patients with NLUTD has increased rapidly in the past decade, the CPGs developed by different organizations vary in terms of scope, quality, content and proposed recommendations affected by factors such as different development purposes, development processes, organizational personnel and financial resources. [12 13] Jaggi et al [13](2018) compared the treatment recommendations for NLUTD patients proposed in the CPGs developed by National Institute for Health and Care Excellence(NICE), European Association of Urology (EAU) and International Consultation on Incontinence (ICI), respectively, and found that the proposed recommendations in terms of conservative treatment were consistent, but those for drug management and surgical management were significantly different. Due to these differences, it is difficult for healthcare professionals or patients to identify which proposed recommendations should be followed, thereby affecting standardized healthcare practice. Therefore, a systematic review study of CPGs for NLUTD patients may help assess the difference between and consistency of the proposed recommendations, and will present proposed recommendations in a clear, concise summary table, which is expected to promote best evidence-based practice by healthcare professionals and ultimately improve clinical outcomes of patients.

Nowadays more and more scholars have realized the importance of quality evaluation of CPGs for NLUTD patients, and have made some efforts in this field. However, extant systematic reviews still have certain limitations. For example, some focused on a single population with NLUTD (only those CPGs for NLUTD patients after SCI were reviewed),[14] or some focused on a single aspect of the NLUTD management (only the CPGs on the assessment and management of NLUTD were reviewed, and only the assessment of NLUTD patients and proposed recommendations for urethral catheterization management were integrated). [15] Bragg et al.[14](2019) conducted a comprehensive review and quality assessment of the CPGs for the management of NLUTD patients after SCI composed from 2011 to 2018 and performed a statistical analysis of the number of proposed recommendations in the CPGs. They found that there were 304 proposed recommendations in total, more than half of which were correlated with assessment, surgery or education, and that

most of the proposed surgical recommendations came from older CPGs, and that the most recent CPGs emphasized conservative treatment. However, their study only focused on a single population with NLUTD after SCI, only statistically analyzed the number of proposed recommendations and did not integrate the proposed recommendations to present them in a clear and definite summary table. The latest systematic review published in 2021 assessed the quality of the CPGs designed for the assessment and management of NLUTD, and integrated them to develop a summary table with 20 proposed recommendations under 5 themes, including NLUTD classification, medical history collection, related examinations, urethral catheterization recommendations and auxiliary bladder management measures. [15] However, the study only focused on examining CPGs for the assessment and management of NLUTD but ignored other aspects. In addition, it did not integrate the proposed recommendations on drug management, surgical management, follow-up management and surveillance, and therefore its integration of the proposed recommendations for the NLUTD management was incomplete.

By reason of the foregoing, the purpose of this study is to conduct a more comprehensive review of recent CPGs (composed within the past ten years) on the management of adult patients with NLUTD to identify, evaluate, and integrate the quality and content of the CPGs relevant to the management of adult patients with NLUTD. This review will more comprehensively integrate the proposed recommendations in extant CPGs for the NLUTD management, including NLUTD diagnosis, assessment, behavioral therapy, urethral catheterization management, drug management, surgical management, surveillance and follow-up, etc. to provide a clear and definite summary table of proposed recommendations for healthcare professionals and patients, and identify the proposed recommendations with deficiencies and those derived from low-level evidence in extant CPGs, thereby laying a foundation for the research community to design more studies to fill the gaps in the field in the future.

## Aim

This study aims to identify, assess, integrate and analyze the quality and content of the CPGs correlated with the management of adult patients with NLUTD published between January 2012 and March 2022.

### Objectives

1. To use AGREE II to assess the quality of the CPGs correlated with adult patients with NLUTD published from January 2012 to March 2022;
2. To comprehensively integrate the proposed recommendations related to the management of adult patients with NLUTD in the CPGs published from January 2012 to March 2022, mainly including NLUTD diagnosis, assessment, conservative management (behavioral therapy, urethral catheterization management), drug management, complication management, surveillance and follow-up, surgical management, etc. and develop a tabular summary.

## METHODS AND ANALYSIS

### Protocol and registration

This review protocol is registered in PROSPERO under CRD42022318180[16] and will be conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols (PRISMA-P).[17] The PRISMA-P checklist is available as an online supplement (Appendix 1). The results of the systematic review will also be reported according to the PRISMA statement.[18]

### Eligibility criteria

Guided by the PICAR framework (Population and Clinical Indications, Interventions，Comparators, Attributes of Eligible guidelines, Recommendation characteristics),[19] we identified eligibility criteria for CPGs in this review.

**Population and clinical indications** The population of interest for this review will be CPGs for the adult population with NLUTD.

**Interventions and comparators** For the purposes of this systematic review, our "Interventions" are various forms of NLUTD management, that is, CPGs that cover a wide range of issues related to NLUTD management (e.g., diagnosis, assessment, treatment, management, monitoring, follow-up, etc.) will be included. This systematic review does not involve "comparators".

**Attributes of eligible guidelines** We will include CPGs in this area that have been

developed by relevant professional organizations for the adult population with NLUTD from January 2012 to March 2022. The included CPGs must be identified as guidelines by the authors and comply with the definition of guidelines in AGREE II "a CPG is a systematically developed statement designed to help health professionals and patients make appropriate decisions about specific clinical situations."[20] The publication language is English or Chinese, with no restrictions on the region of publication and access to the full text. For revised or updated guidelines, the updated version is included if it is a content update; if it is a content supplement, both guidelines are included.

**Recommendation characteristics** This review is interested in the recommendations related to the management of NLUTD, mainly in the areas of diagnosis, evaluation, conservative management (behavioral therapy, catheterization management), pharmacological management, management of complications, monitoring and follow-up, and surgical management of NLUTD. We will extract relevant recommendations that address these elements. However, we will only extract recommendations that describe the strength of evidence or the level of recommendation.

**We will exclude：**

（1） The CPGs apply only to one pharmacological approach, surgical approach, or assessment approach for NLUTD (e.g., Botulinum toxin A in NLUTD and urodynamic monitoring guidelines)；

（2） Non-evidence-based guidelines (non-evidence-based guidelines can be operationally defined as guidelines with "no quality of evidence rating or strength of recommendation")；

（3） Directly translated guides, guide interpretations, guide excerpts, or guide evaluations；

（4） Normative documents or manuals.

## Search strategy

A systematic search of the following databases will be conducted independently by two reviewers(CZ, FH or XW) to identify CPGs related to NLUTD, including:

- medical electronic databases: covering nine English databases (i.e., PubMed, EMBASE, OVID, Scopus, Web of Science, Cochrane Library, CINAHL, UpToDate,

Best Practice and four Chinese databases (i.e., China National Knowledge Infrastructure, Wanfang Database, VIP Periodical Resource Integration Service Platform and SinoMed ).

- online guideline repositories: National Guidelines Clearinghouse (NGC), Guidelines International Network (GIN), New Zealand Guidelines Group (NZGG), Registered Nurses' Association of Ontario (RNAO), the Australian National Health and Medical Research Council (NHMRC), Queensland Coding Committee (QCC), Scottish Intercollegiate Guidelines Network(SIGN), National Institute for Health and Care Excellence (NICE), Canadian Medical Association Clinical Practice Guidelines Infobase(CMA Infobase), Royal Australian College of General Practitioners(RACGP), ClinicalKey for Nursing and Medlive;
- urological association websites: International Continence Society (ICS), American Urological Association (AUA), British Association of Urological Surgeons (BAUS), European Association of Urology (EAU), Canadian Urological Association (CUA), International Consultation on Incontinence (ICI) and the Chinese Urological Association(CUA).

We will use the search strategy of medical subject heading(MeSH) terms combined with free-text words related to NLUTD and CPGs for searching and personalizing the search to improve comprehensiveness and specificity of search according to the characteristics of different databases. The sample search strategy for PubMed is shown in table 1.

Table 1 Sample search strategy for PubMed

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|---|
| **#1** "Urinary Bladder, Neurogenic"[Mesh] |
| **#2** ((((((((((((((((((((((((Neurogenic Urinary Bladder[Title/Abstract]) OR (Bladder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder[Title/Abstract])) OR (Urinary Bladder Neurogenic Dysfunction[Title/Abstract])) OR (Neurogenic Dysfunction of the Urinary Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder Disorder[Title/Abstract])) OR (Neuropathic Bladder[Title/Abstract])) OR (Urinary Bladder Disorder, Neurogenic[Title/Abstract])) OR (Bladder Disorder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder Disorders[Title/Abstract])) OR (Neurogenic Bladder Disorder[Title/Abstract])) OR (Urinary Bladder Neurogenesis[Title/Abstract])) OR |

| |
|---|
| (Neurogenesis, Urinary Bladder[Title/Abstract])) OR (Bladder Neurogenesis[Title/Abstract])) OR (Neurogenesis, Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Atonic[Title/Abstract])) OR (Neurogenic Bladder, Atonic[Title/Abstract])) OR (Atonic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Spastic[Title/Abstract])) OR (Neurogenic Bladder, Spastic[Title/Abstract])) OR (Spastic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Uninhibited[Title/Abstract])) OR (Neurogenic Bladder, Uninhibited[Title/Abstract])) OR (Uninhibited Neurogenic Bladder[Title/Abstract])) OR (Neurogenic lower urinary tract dysfunction[Title/Abstract])) OR (Neurogenic urethra[Title/Abstract])) OR (Neurogenic urinary incontinence[Title/Abstract]) |
| **#3** #1 or #2 |
| **#4** "Practice Guideline" [Publication Type] |
| **#5** ((((((((((Clinical Practice Guideline[Title/Abstract]) OR (Clinical Guidelines[Title/Abstract])) OR (guide[Title/Abstract])) OR (guideline[Title/Abstract])) OR (guidance[Title/Abstract])) OR (best practice guideline[Title/Abstract])) OR (recommended practice[Title/Abstract])) OR (evidence-based[Title/Abstract])) OR (recommendation[Title/Abstract])) OR (recommendations[Title/Abstract])) OR (consensus[Title/Abstract])) OR (statement[Title/Abstract])) OR (best practice[Title/Abstract]) |
| **#6** #4 or #5 |
| **#7** #3 and #6 |

## Guideline selection

The search results for medical electronic databases will be imported into NoteExpress 3.5 reference manager, and duplicate documents will be deleted by the manager's automatic deduplication function. The screening will be done independently by 2 reviewers(YH，YW). The first step is to screen the literature titles and abstracts based on the eligibility criteria. When the abstracts could not be determined, they will proceed to the second step, which is to review the full text to determine. When conflicts of opinion arise, a third researcher(LC) will be consulted to minimize the risk of selection bias. Disagreements will be resolved through discussion.

Results from searches of online guideline repositories and urological association websites will be screened by two reviewers(CZ, FH) independently by title (abstracts not available），and the titles of potentially eligible literatures will be recorded. A full-text reading will then be

performed independently to determine inclusion by 2 reviewers(YH, YW). Any disagreements will be consulted with a third investigator(LC), and consensus will be reached through discussion.

The excluded literatures during the full-text review will be reported the reason for the exclusion, and the screening process will be presented in a PRISMA flow diagram (Figure 1).

**Quality assessment**

**Instrument**

AGREE II is an internationally recognized, validated and rigorous tool,[20] which be used to evaluate the quality of CPGs.[2122] We will use the translated and validated Chinese version of AGREE II for quality appraisal.[23] The instrument includes 6 domains with a total of 23 items, namely(1)scope and purpose (items 1-3); (2) stakeholder involvement(items 4-6); (3) rigor of development (items 7-14); (4) clarity of presentation (items 15-17); (5) applicability (items 18-21); and (6) editorial independence (items 22-23).Each item is scored on a 7-point Likert scale, where 7 points represent strongly agree and 1 point represents strongly disagree. Additionally, each CPG will also be given an overall assessment score. That is, each CPG will have two groups of scores, one for the domain scores and one for the overall score. AGREE II Score Sheet is available as an online supplement (Appendix 2).

**Appraisal and training**

The guideline evaluation team consists of 6 reviewers, including 4 quality reviewers(CZ, YH, FH and YW), 1 clinical nursing expert(WC) and 1 methodologist (LC). All quality reviewers must learn the AGREE II user manual in detail and complete the online training course on the My AGREE PLUS platform. Before the formal appraisal, two guidelines will be selected and independently pre-scored by four reviewers. After the scoring, a meeting will be held among reviewers to analyze each item one by one to ensure that the four quality reviewers have basically the same understanding of all items and uniform evaluation standards. Then they will independently conduct formal quality appraisal for included CPGs. Items with greater disagreement during the evaluation process will be discussed with the methodologist(LC) or the clinical nursing expert(WC).

**Scoring**

The score for each domain is the sum of the scores of all items under that domain. The final score for each domain of each guideline is expressed as a standardized percentage. The calculation formula of the standardized percentage is: (actual score - lowest possible score) / (highest possible score - lowest possible score) × 100%. Among them, the calculation formula of the highest possible score is : (the number of raters) × (the number of items) × 7. The calculation formula of the lowest possible score is : (the number of raters) × (the number of items) × 1. The higher the standardized percentage score, the better the methodological quality of the guideline.

**Interpreting domain scores**

The AGREE developers do not set fixed cut-offs for high-quality or low-quality guidelines, but recommend that evaluators set their own criteria based on the context of their appraisal project.[24] In this project, we decide to set cutoff values based on a quality appraisal project of CPGs related to intermittent catheterization by Li and colleagues.[25] If the scores in all 6 domains are ≥60%, the guideline is rated as Grade A, that is, the guideline can be directly recommended without changing; if the number of domains with scores ≥30% is ≥3, but there are domains with scores <60%, the guideline is rated as Grade B, that is, the guideline needs to be revised and improved to varying degrees; if the number of domains with scores <30% is ≥3, the guideline is rated as Grade C, that is, it is not recommended due to the poor quality of the guideline development method or evidence.

**Interpreting the overall guideline scores**

The overall score for the guideline will also be carefully recorded as supplementary data to the guideline quality assessment, but its score will not contribute anything to the final assessment of whether the guideline is high or low quality.

**Data management and analysis for quality scores**

After the evaluation is completed, all the quality evaluation data of the four reviewers will be entered into Excel 2019, and the final scores of included CPGs will be calculated according to the above scoring method of the AGREE II tool. The consistency of evaluation results among the 4 reviewers will be calculated by intraclass correlation coefficient (ICC) using IBM SPSS 23.0. Based on the 95% CI of the ICC estimate, ICC values greater than 0.90, between 0.75 and

0.9, between 0.5 and 0.75, and less than 0.5 are indicative of excellent, good, moderate, and poor reliability, respectively.[26]

## Data extraction

### General characteristics extraction

Data will be extracted independently according to a pre-designed data spreadsheet by two reviewers (CZ, YH) who are proficient in English literacy and have some clinical experience in NLUTD management. If necessary, we will contact the guide developers to confirm any questions. The following characteristics for each included guideline will be extracted: guideline title, first author, year of publication or update, country, guideline language, publishing institution, target users, type and scope of the guideline, number of references, the method for assessing the quality level of evidence, and the grading system for determining the strength of recommendations. Before the formal extraction, the datasheet will be used to pre-extract the 2 included guidelines in order to improve and revise the data spreadsheet in a timely manner.

### Recommendations extraction

In accordance with the study objective of this review, the study team will conduct a comprehensive extraction of recommendations related to NLUTD management, including recommendations for diagnosis, assessment, conservative management (behavioral therapy, catheterization management), pharmaceutical management, management of complications, monitoring and follow-up, self-management, education and information, and surgical management of NLUTD. We will only extract recommendations that clearly describe the level and strength of evidence. Because the grading system for the level of evidence on which different guidelines are based may differ, we will harmonize the grading scheme of evidence across guidelines to facilitate the process of data synthesis.

All extractions and coding will be performed independently in NVivo 12.0 software by two reviewers (CZ, YH). Prior to the formal extraction, two reviewers independently pre-extracted the two included guidelines to refine the relevant categories of the extracted content and standardize the extraction criteria. They then performed the formal extraction and coding independently, and compared the results when finished. In the case of any disagreement, a third investigator (LC or WC) will be consulted and agreement will be reached through discussion.

### Synthesis of recommendations

After the recommendations are extracted and cross-checked, the recommendations will be integrated according to the following integration principles, specifically:①for recommendations with the same or similar content, clear, concise and independent entries will be selected; ② for recommendations with complementary content, they will be combined according to logical relationships; ③for conflicting recommendations, we will give priority to evidence-based, high-quality evidence, and new publications, and trace the sources of different recommendations to find the reasons for conflicts; ④If a recommendation involves multiple aspects, it will be split.[27]

To ensure the scientific nature of the evidence synthesis process, which will be completed independently by 2 reviewers (CZ, YH）, the results will be checked against each other upon completion, and a third researcher (LC) will be consulted for a ruling in case of disagreement.

### Data management and presentation

Data on the general characteristics of the included CPGs will be collated into an Excel 2019 spreadsheet and submitted to the results section. Recommendations will be coded in NVivo 12.0 software using thematic analysis. Ultimately, a summary of the recommendations and their level of evidence, level of recommendation, and other information will be presented in a narrative format in the table.

## PATIENT AND PUBLIC INVOLVEMENT

No patients will be involved in this review. All data will be collected from medical electronic databases and related professional websites.

## ETHICS AND DISSEMINATION

This review protocol does not involve any patient participation and does not require ethical approval. The results of this research will be published in a peer-reviewed journal and disseminated through conference presentations and more.

## DISCUSSION

To our knowledge, this study is the first all-around systematic review of CPGs for adult patients with NLUTD. Our proposed systematic review will comprehensively identify and assess the quality of CPGs for the management of adult patients with NLUTD published between January 2012 and March 2022 (the last ten years), and we will also fully integrate the proposed recommendations correlated with the management of adult patients with NLUTD. This review will provide a clear and definite summary table of the proposed recommendations for best practice from current CPGs, and will elaborate them by category, mainly covering NLUTD diagnosis, assessment, behavioral therapy, urethral catheterization management, drug management, complication management, surveillance and follow-up management, surgical management and other aspects, which not only help to promote evidence-based practice by healthcare professionals, but also help to improve patients' capability of active management and participation in decision-making, and ultimately improve patients' prognosis. In addition, this review will identify the proposed recommendations with deficiencies and those derived from low-level evidence in extant CPGs, to clarify the knowledge gaps regarding the current NLUTD management, which will indicate a direction for developing more rigorous, reliable, and scientific CPGs in the future, and lay a foundation for the research community to design more targeted studies in the future to fill the gaps in the field.

The strength of this systematic review is that it covers a wide range in terms of content and is not limited to a single population with NLUTD or a single aspect of the management of NLUTD patients. Instead, this review is an exhaustive, comprehensive systematic study covering all aspects of the management of NLUTD patients and is also the first all-around review. A limitation of this study is that, although we use a comprehensive search strategy to include the CPGs published in English and Chinese as many as possible, we may not have access to all CPGs.

## Contributors

(LC) and WC devised the study. (CZ) and (YH) drafted the protocol. (CZ, XW and FH) designed inclusion/exclusion criteria and search resources and strategies. (YH) and (YW) designed the evaluation strategy for each included guide. All authors provided critical feedback and helped shape the research, analysis and draft manuscript. All authors read and agreed the final version of the manuscript. All authors are the guarantors of the review.

## Competing interests

WC presided over the development of 2 Chinese clinical care practice guidelines for neurogenic bladder and served as one of the main authors. Others: Not declared.

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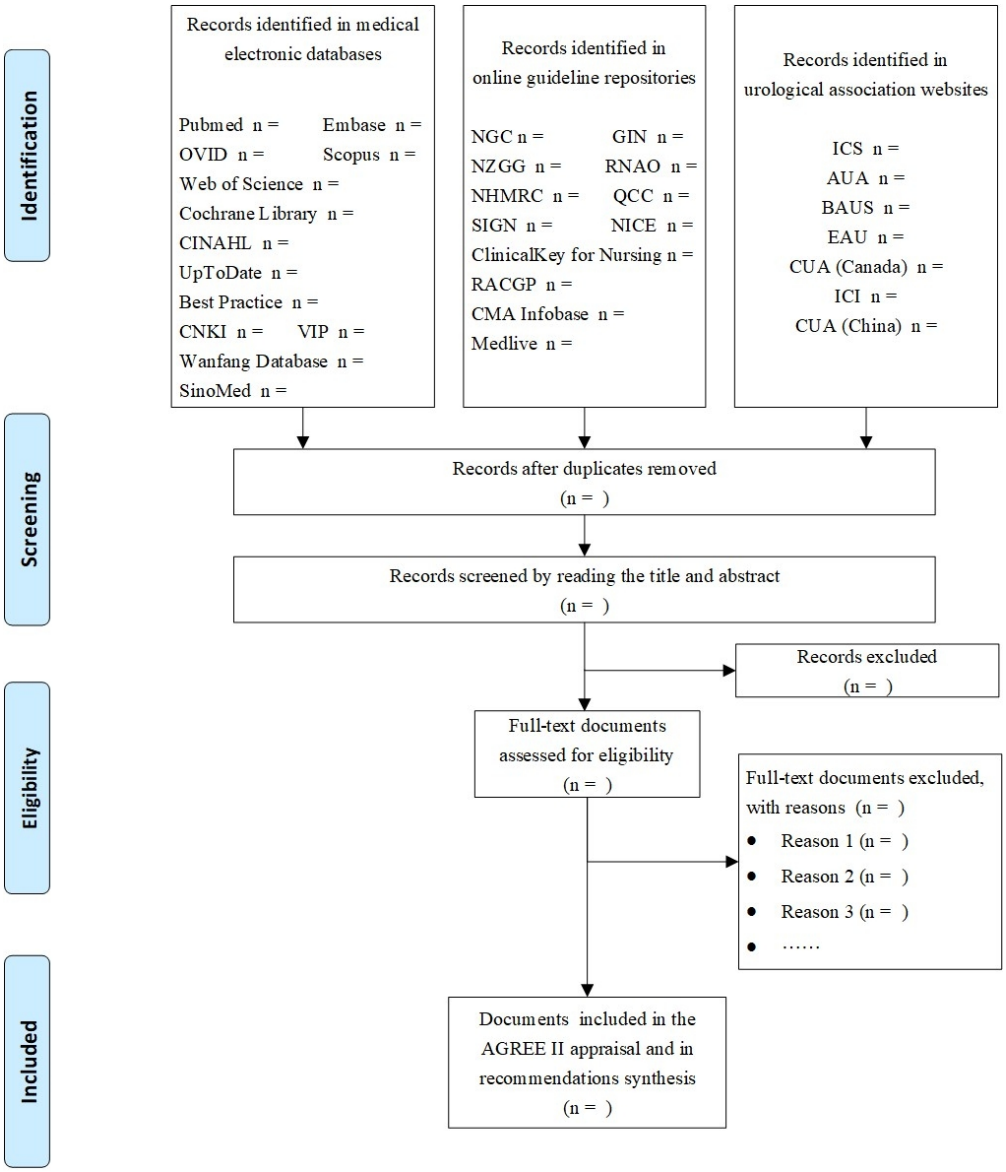
## Figure the title and legend

Figure 1：Flow diagram for screening process




268x313mm (96 x 96 DPI)

**Appendix 1：Preferred Reporting Items for Systematic review and Meta-Analysis Protocols（PRISMA-P）checklist**

| Section and topic | Item No | Checklist item | Section of manuscript reported |
|---|---|---|---|
| **ADMINISTRATIVE INFORMATION** | | | |
| **Title:** | | | |
| Identification | 1a | Identify the report as a protocol of a systematic review | Page 1, Title |
| Update | 1b | If the protocol is for an update of a previous systematic review, identify as such | na |
| **Registration** | 2 | If registered, provide the name of the registry (such as PROSPERO) and registration number | Page 2, PROSPERO registration number: CRD42022318180 |
| **Authors:** | | | |
| Contact | 3a | Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author | Page 1， Line 3-20 |
| Contributions | 3b | Describe contributions of protocol authors and identify the guarantor of the review | Page 14， Line 371-375 |
| **Amendments** | 4 | If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state | na |

| | | | |
|---|---|---|---|
| | | plan for documenting important protocol amendments | |
| **Support:** | | | |
| Sources | 5a | Indicate sources of financial or other support for the review | Page 15， Line 381-383 |
| Sponsor | 5b | Provide name for the review funder and/or sponsor | Page 15， Line 381-383 |
| Role of sponsor or funder | 5c | Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol | Page 15， Line 381-383 |
| **INTRODUCTION** | | | |
| **Rationale** | 6 | Describe the rationale for the review in the context of what is already known | Page 3-5，Introduction |
| **Objectives** | 7 | Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO) | Page 6, Objectives |
| **METHODS** | | | |
| **Eligibility criteria** | 8 | Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review | Page 6, Eligibility criteria |
| **Information** | 9 | Describe all intended information sources (such as electronic databases, | Page 7-8, Search strategy |

| | | | |
|---|---|---|---|
| **sources** | | contact with study authors, trial registers or other grey literature sources) with planned dates of coverage | |
| **Search strategy** | 10 | Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated | Page 8, Table 1 |
| **Study records:** | | | |
| Data management | 11a | Describe the mechanism(s) that will be used to manage records and data throughout the review | Page 11, Line 287-293 and Page 13, Line 334-338 |
| Selection process | 11b | State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis) | Page 9-10, Guideline selection and Page 18 Figure 1 |
| Data collection process | 11c | Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators | Page 12, Data extraction |
| **Data items** | 12 | List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications | Page 12, Data extraction |
| **Outcomes and prioritization** | 13 | List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale | Page 12, Recommendations extraction |
| **Risk of bias in** | 14 | Describe anticipated methods for assessing risk of bias of individual | Page 10, Quality assessment |

| | | | |
|---|---|---|---|
| **individual studies** | | studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis | |
| **Data synthesis** | 15a | Describe criteria under which study data will be quantitatively synthesised | na |
| | 15b | If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as $I^2$, Kendall's $\tau$) | na |
| | 15c | Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression) | na |
| | 15d | If quantitative synthesis is not appropriate, describe the type of summary planned | Page 13, Synthesis of recommendations |
| **Meta-bias(es)** | 16 | Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies) | na |
| **Confidence in cumulative evidence** | 17 | Describe how the strength of the body of evidence will be assessed (such as GRADE) | Page 11, Interpreting domain scores |

# Appendix 2: AGREE II Score Sheet

| Domain | | Item | AGREE II Rating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 Strongly Disagree | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree |
| Scope and purpose | 1 | *The overall objective(s) of the guideline is (are) specifically described.* | | | | | | | |
| | 2 | *The health question(s) covered by the guideline is (are) specifically described.* | | | | | | | |
| | 3 | *The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.* | | | | | | | |
| Stakeholder involvement | 4 | *The guideline development group includes individuals from all the relevant professional groups.* | | | | | | | |
| | 5 | *The views and preferences of the target population (patients, public, etc.) have been sought.* | | | | | | | |
| | 6 | *The target users of the guideline are clearly defined.* | | | | | | | |
| Rigor of development | 7 | *Systematic methods were used to search for evidence.* | | | | | | | |
| | 8 | *The criteria for selecting the evidence are clearly described.* | | | | | | | |
| | 9 | *The strengths and limitations of the body of evidence are clearly described.* | | | | | | | |
| | 10 | *The methods for formulating the recommendations are clearly described.* | | | | | | | |
| | 11 | *The health benefits, side effects and risks have been considered in formulating the recommendations.* | | | | | | | |
| | 12 | *There is an explicit link between the recommendations and the supporting evidence.* | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **13** | *The guideline has been externally reviewed by experts prior to its publication.* | | | | | | | |
| | **14** | *A procedure for updating the guideline is provided.* | | | | | | | |
| **Clarity of presentation** | **15** | *The recommendations are specific and unambiguous.* | | | | | | | |
| | **16** | *The different options for management of the condition or health issue are clearly presented.* | | | | | | | |
| | **17** | *Key recommendations are easily identifiable.* | | | | | | | |
| **Applicability** | **18** | *The guideline describes facilitators and barriers to its application.* | | | | | | | |
| | **19** | *The guideline provides advice and/or tools on how the recommendations can be put into practice.* | | | | | | | |
| | **20** | *The potential resource implications of applying the recommendations have been considered.* | | | | | | | |
| | **21** | *The guideline presents monitoring and/ or auditing criteria.* | | | | | | | |
| **Editorial independence** | **22** | *The views of the funding body have not influenced the content of the guideline.* | | | | | | | |
| | **23** | *Competing interests of guideline development group members have been recorded and addressed.* | | | | | | | |
| **Overall Guideline Assessment** | **1** | *Rate the overall quality of this guideline.* | **1** Lowest possible quality | **2** | **3** | **4** | **5** | **6** | **7** Highest possible quality |
| | **2** | *I would recommend this guideline for use.* | *Yes* | *Yes, with modification* | | | | | *No* |

BMJ Open

# Clinical practice guidelines for the management of adult patients with neurogenic lower urinary tract dysfunction: a systematic review protocol

| | |
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| | |

# Clinical practice guidelines for the management of adult patients with neurogenic lower urinary tract dysfunction: a systematic review protocol

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## ABSTRACT

### Introduction

Neurogenic lower urinary tract dysfunction (NLUTD) not only threatens the health of affected patients long-term but also has a significantly negative impact on the patients' quality of life (QoL). At present, many clinical practice guidelines (CPGs) have been developed for NLUTD patients, but these CPGs may confuse health care professionals and patients due to their great difference in terms

of scope, quality, and content. This review aims to identify the CPGs for NLUTD patients published from 2012 to 2022, assess their quality and then analyze them in an integrated manner.

## Methods and analysis

We will systematically search electronic healthcare databases(English databases including PubMed, EMBASE, OVID, Scopus, Web of Science, Cochrane Library, CINAHL, UpToDate, and Best Practice, and Chinese databases including China National Knowledge Infrastructure, Wanfang Database, VIP Periodical Resource Integration Service Platform, and SinoMed),online clinical practice guideline repositories, and relevant professional association websites to identify eligible CPGs. The CPGs published in English and Chinese with full texts available within the period from January 2012 to March 2022 will be included in this study. The Appraisal of Guidelines for Research and Evaluation (AGREE) II will be used to assess the quality of included CPGs. According to the pre-designed data table, the general characteristics of these CPGs, proposed recommendations and their quality of evidence, strength of recommendation and other information will be extracted. Qualitative thematic analysis will be applied to the extracted recommendations. A summary of the proposed recommendations, their quality of evidence, strength of recommendation and other information will eventually be described in a table. This review is expected to identify knowledge gaps in current CPGs and to identify the areas of the proposed recommendations derived from low-level evidence.

## Ethics and dissemination

This systematic review does not involve the participation of any subjects, and therefore no ethical approval is required. The findings of this review will be published in a peer-reviewed journal and disseminated via conference presentations.

**PROSPERO registration number: CRD42022318180**

# ARTICLE SUMMARY

## Strengths and limitations of this study

- This review is the first all-around systematic review of CPGs for adult patients with NLUTD, which will identify the CPGs that cover a range of issues, such as diagnosis, assessment, and

management.

- This review will comprehensively and critically integrate the proposed recommendations related to adult patients with NLUTD, involving diagnosis, assessment, conservative therapy, drug management, complication management, surveillance and follow-up, and surgical management.
- This systematic review will provide a tabular summary of clear and definite best practice recommendations for NLUTD management.
- One of the limitations of this review is that only the CPGs that were published in English and Chinese will be included.
- Due to the vast amount of information contained in CPGs, condensing them into clear and precise summaries can be a daunting and time-consuming process, and the loss of potentially important information may be unavoidable.

# INTRODUCTION

Neurogenic Lower Urinary Tract Dysfunction (NLUTD) is defined by the International Continence Society (ICS) as a "lower urinary tract dysfunction due to disturbance of the neurological control mechanism".[1] NLUTD can be caused by central or peripheral nervous system lesions involving the physiological regulation of urine storage and/or voiding. Diseases such as spinal cord injury, stroke, Parkinson's disease, and multiple sclerosis that affect the central nervous system can lead to NLUTD. It affects approximately 70%-84% of patients with spinal cord injury, 53% of those with stroke, 38%-71% of those with Parkinson's disease, and 32%-96% of those with multiple sclerosis.[2-4] In addition, diseases involving the peripheral nervous system, such as diabetes and post-pelvic surgery, can also cause NLUTD.[4] Neurogenic lower urinary tract dysfunction (NLUTD) not only threatens the health of affected patients long-term,[5] but also has a significantly negative impact on the patients' quality of life (QoL) .[6] It is reported that 46% of the patients with NLUTD suffer from urinary tract infections (UTI) in China,[7] 20%-80% of them may have ureterectasia, pyelonephritis, hydronephrosis, or renal failure,[8] and even death may occur in severe cases. [6] Therefore, it is necessary to pay close attention to adopting standardized and scientific management for NLUTD patients to improve their prognosis and clinical outcomes.

CPGs are systematically developed statements, aiming to assist practitioners and patients

in making decisions on appropriate healthcare for specific clinical circumstances based on the best evidence available. [9] As CPGs have specified the nature, quantity, and quality of research evidence, they can be used to improve decision-making, further promote best evidence-based practice by health care providers, and ultimately improve clinical outcomes for patients. [10 11] Although the number of CPGs for adult patients with NLUTD has increased rapidly in the past decade, the CPGs developed by different organizations vary greatly in terms of scope, quality, content and proposed recommendations. This may be affected by factors such as different development purposes, development processes, organizational personnel, and financial resources. [12 13] Jaggi et al. [13] compared the treatment recommendations for NLUTD patients proposed in CPGs developed by National Institute for Health and Care Excellence (NICE), European Association of Urology (EAU), and International Consultation on Incontinence (ICI), respectively. They found that the recommendations proposed for conservative treatment were consistent, but those for drug management and surgical management differ from each other significantly. Due to their differences, it is difficult for healthcare professionals or patients to identify which recommendations should be followed, hindering them to select standardized healthcare practice. Therefore, a systematic review of CPGs for NLUTD patients may help assess the similarities and differences of the proposed recommendations, and will provide a tabular summary of the proposed recommendations in a clear and concise manner. It is expected that the results will promote the best evidence-based practice by healthcare professionals and ultimately improve clinical outcomes of patients.

Nowadays, more and more scholars have recognized the significance of quality evaluation of CPGs for NLUTD patients, and some efforts have been made in this research field. However, current systematic reviews still have certain limitations. For example, some reviews focused on a single population with NLUTD (only those CPGs for NLUTD patients after spinal cord injury (SCI) were reviewed),[14] or some only dealt with a single aspect of NLUTD management (only CPGs on the assessment and management of NLUTD were reviewed and only the assessment of NLUTD patients and proposed recommendations for urethral catheterization management were integrated). [15] Bragg et al. [14] conducted a comprehensive review and quality assessment of the CPGs for the management of NLUTD patients after SCI developed in the period from 2011 to 2018. In their

study, they analyzed the number of proposed recommendations in those CPGs and recorded 304 proposed recommendations in total. According to their findings, more than half of the proposed recommendations were correlated with assessment, surgery or education, most of the proposed surgical recommendations came from older CPGs, and the most recent CPGs highlighted conservative treatment. However, their study only included a single population with NLUTD after SCI and statistically analyzed the number of proposed recommendations. They did not integrate such recommendations in a clear and definite summary table. In the latest systematic review published in 2021, the researcher(s) assessed the quality of the CPGs designed for the assessment and management of NLUTD and created a summary table with 20 proposed recommendations under five themes, including NLUTD classification, medical history collection, related examinations, urethral catheterization recommendations, and auxiliary bladder management measures. [15] However, it only included the CPGs for the assessment and management of NLUTD but excluded those for NLUTD patients with other problems. In addition, it did not integrate the proposed recommendations on drug management, surgical management, follow-up management and surveillance, and therefore the integration of these recommendations was incomplete.

By reasons of the foregoing, this review aims to make a more comprehensive review of CPGs relating to the management of adult patients with NLUTD published in the past decade to identify, evaluate, integrate and analyze the quality and content of such CPGs. This review will first comprehensively integrate the proposed recommendations in present CPGs relating to the NLUTD management, including NLUTD diagnosis, assessment, behavioral therapy, urethral catheterization management, drug management, surgical management, surveillance and follow-up, then provide a clear and definite tabular summary of the proposed recommendations for healthcare professionals and patients, and finally identify the proposed recommendations with deficiencies and those derived from low-level evidence in current CPGs. In this way, we hope to help the research community to design more studies to fill the gaps in the field in the future.

## Aim

This review aims to identify, assess, integrate and analyze the quality and content of the CPGs correlated with the management of adult patients with NLUTD published between January 2012

and March 2022.

### Objectives

1. To use AGREE II to assess the quality of the CPGs correlated with adult patients with NLUTD published from January 2012 to March 2022;
2. To comprehensively integrate the proposed recommendations related to the management of adult patients with NLUTD in the CPGs published from January 2012 to March 2022, mainly including NLUTD diagnosis, assessment, conservative management (behavioral therapy, urethral catheterization management), drug management, complication management, surveillance and follow-up, surgical management and develop a tabular summary.

## METHODS AND ANALYSIS

### Protocol and registration

This review protocol is registered in PROSPERO under CRD42022318180[16] and will be conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols (PRISMA-P).[17] The PRISMA-P checklist is available as an online supplement (Appendix 1). The results of the systematic review will also be reported according to the PRISMA statement.[18] This review is expected to start in January 2023 and is expected to end in August 2023.

### Eligibility criteria

Guided by the PICAR framework (Population and Clinical Indications, Interventions, Comparators, Attributes of Eligible guidelines, Recommendation characteristics),[19] we identified eligibility criteria for CPGs in this review.

### Population and clinical indications

The population of interest for this review will be CPGs for the adult patients with NLUTD.

### Interventions and comparators

For the purposes of this systematic review, our "Interventions" are various forms of NLUTD management, namely CPGs that cover a wide range of issues related to NLUTD management

(e.g., diagnosis, assessment, treatment, management, monitoring, follow-up) will be included. This systematic review does not involve "comparators".

**Attributes of eligible guidelines**

We will include CPGs that have been developed by relevant professional organizations for the adult patients with NLUTD from January 2012 to March 2022. The included CPGs must be identified as guidelines by the authors and comply with the definition of guidelines in AGREE II "a CPG is a systematically developed statement designed to help health professionals and patients make appropriate decisions about specific clinical situations."[20] The publication language is English or Chinese, with no restrictions on the region of publication and access to the full text. For revised or updated guidelines, the updated version will be included if it is a content update; if it is a content supplement, both guidelines will be included.

**Recommendation characteristics**

This review is interested in the recommendations related to the management of NLUTD, mainly in the areas of diagnosis, evaluation, conservative management (behavioral therapy, catheterization management), pharmacological management, management of complications, monitoring and follow-up, and surgical management of NLUTD. We will extract relevant recommendations that address these elements. However, we will only extract recommendations that describe the quality of evidence and the strength of recommendation.

**We will exclude：**

（1） The CPGs apply only to one pharmacological approach, surgical approach, or assessment approach for NLUTD (e.g., Botulinum toxin A in NLUTD and urodynamic monitoring guidelines)；

（2） Non-evidence-based guidelines (non-evidence-based guidelines can be operationally defined as guidelines with "no quality of evidence and strength of recommendation")；

（3） Guidelines that do not use systematic methods to depict the certainty in the evidence and the strength of recommendation.

（4） Directly translated guidelines, guideline interpretations, guideline excerpts, or

guideline evaluations;

(5) Normative documents or manuals.

## Search strategy

A systematic search of the following databases will be conducted independently by two reviewers (CZ, FH or XW) to identify CPGs related to NLUTD, including:

- medical electronic databases: covering nine English databases (PubMed, EMBASE, OVID, Scopus, Web of Science, Cochrane Library, CINAHL, UpToDate, Best Practice) and four Chinese databases (China National Knowledge Infrastructure, Wanfang Database, VIP Periodical Resource Integration Service Platform and SinoMed).
- online guideline repositories: National Guidelines Clearinghouse (NGC), Guidelines International Network (GIN), New Zealand Guidelines Group (NZGG), Registered Nurses' Association of Ontario (RNAO), the Australian National Health and Medical Research Council (NHMRC), Queensland Coding Committee (QCC), Scottish Intercollegiate Guidelines Network(SIGN), National Institute for Health and Care Excellence (NICE), Canadian Medical Association Clinical Practice Guidelines Infobase(CMA Infobase), Royal Australian College of General Practitioners(RACGP), ClinicalKey for Nursing and Medlive;
- urological association websites: International Continence Society (ICS), American Urological Association (AUA), British Association of Urological Surgeons (BAUS), European Association of Urology (EAU), Canadian Urological Association (CUA), International Consultation on Incontinence (ICI) and the Chinese Urological Association (CUA).

We will use medical subject heading (MeSH) terms combined with free-text words related to NLUTD and CPGs in our search strategy and personalize the search to improve comprehensiveness and specificity of search results according to the characteristics of different databases. The sample search strategy for PubMed is shown in table 1. The search strategies for all databases are detailed in Appendix 2.

| Table 1 Sample search strategy for PubMed |
|---|
| **#1** "Urinary Bladder, Neurogenic"[Mesh] |
| **#2** ((((((((((((((((((((((((Neurogenic Urinary Bladder[Title/Abstract]) OR (Bladder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder[Title/Abstract])) OR (Urinary Bladder Neurogenic Dysfunction[Title/Abstract])) OR (Neurogenic Dysfunction of the Urinary Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder Disorder[Title/Abstract])) OR (Neuropathic Bladder[Title/Abstract])) OR (Urinary Bladder Disorder, Neurogenic[Title/Abstract])) OR (Bladder Disorder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder Disorders[Title/Abstract])) OR (Neurogenic Bladder Disorder[Title/Abstract])) OR (Urinary Bladder Neurogenesis[Title/Abstract])) OR (Neurogenesis, Urinary Bladder[Title/Abstract])) OR (Bladder Neurogenesis[Title/Abstract])) OR (Neurogenesis, Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Atonic[Title/Abstract])) OR (Neurogenic Bladder, Atonic[Title/Abstract])) OR (Atonic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Spastic[Title/Abstract])) OR (Neurogenic Bladder, Spastic[Title/Abstract])) OR (Spastic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Uninhibited[Title/Abstract])) OR (Neurogenic Bladder, Uninhibited[Title/Abstract])) OR (Uninhibited Neurogenic Bladder[Title/Abstract])) OR (Neurogenic lower urinary tract dysfunction[Title/Abstract])) OR (Neurogenic urethra[Title/Abstract])) OR (Neurogenic urinary incontinence[Title/Abstract]) |
| **#3** #1 or #2 |
| **#4** "Practice Guideline" [Publication Type] |
| **#5** ((((((((((((((((Clinical Practice Guideline[Title/Abstract]) OR (Clinical Guidelines[Title/Abstract])) OR (guide[Title/Abstract])) OR (guideline[Title/Abstract])) OR (guidance[Title/Abstract])) OR (best practice guideline[Title/Abstract])) OR (recommended practice[Title/Abstract])) OR (evidence-based[Title/Abstract])) OR (recommendation[Title/Abstract])) OR (recommendations[Title/Abstract])) OR (consensus[Title/Abstract])) OR (statement[Title/Abstract])) OR (best practice[Title/Abstract]) |
| **#6** #4 or #5 |
| **#7** #3 and #6 |

## Guideline selection

The search results for medical electronic databases will be imported into NoteExpress 3.5

reference manager, and duplicate documents will be deleted by the manager's automatic deduplication function. The screening will be done independently by 2 reviewers (YH,YW). The first step is to screen the literature titles and abstracts based on the eligibility criteria. When the abstracts could not be determined, they will proceed to the second step, which is to review the full text to determine the inclusion. When conflicts of opinions arise, a third reviewer (LC) will be consulted to minimize the risk of selection bias. Disagreements will be resolved through discussion.

Results from searches of online guideline repositories and urological association websites will be screened by two reviewers (CZ, FH) independently by title (if abstracts not available), and the titles of potentially eligible literatures will be recorded. A full-text reading will then be performed independently to determine the inclusion by 2 reviewers (YH, YW). Any disagreements will be consulted with a third reviewer (LC), and consensus will be reached through discussion.

For the excluded literatures during the full-text review, the reason for the exclusion will be reported, and the screening process will be presented in a PRISMA flow diagram (Figure 1).

**Quality assessment**

**Instrument**

AGREE II is an internationally recognized, validated and rigorous tool,[20] which will be used to evaluate the quality of CPGs.[2122] The translated and validated Chinese version of AGREE II will be used for quality appraisal.[23] The instrument includes 6 domains with a total of 23 items, namely(1)scope and purpose (items 1-3); (2) stakeholder involvement (items 4-6); (3) rigor of development (items 7-14); (4) clarity of presentation (items 15-17); (5) applicability (items 18-21); and (6) editorial independence (items 22-23). Each item is scored on a 7-point Likert scale, where 7 points represents “strongly agree” and 1 point means “strongly disagree”. Additionally, each CPG will also be given an overall assessment score. That is, each CPG will have two groups of scores, one for the domain score and one for the overall score. AGREE II Score Sheet is available as an online supplement (Appendix 3).

**Appraisal and training**

The guideline evaluation team consists of 6 reviewers, including 4 quality reviewers (CZ, YH, FH and YW), 1 clinical nursing expert (WC) and 1 methodologist (LC). All quality reviewers must learn the AGREE II user manual in detail and complete the online training course on the My AGREE PLUS platform. Before the formal appraisal, two guidelines will be selected and independently pre-scored by four reviewers. After the scoring, a meeting will be held among the reviewers to analyze the items one by one to ensure that the four quality reviewers have basically the same understanding of all items and follow uniform evaluation standards. Then they will independently conduct formal quality appraisal for included CPGs. Items with greater disagreement during the evaluation process will be discussed with the methodologist (LC) or the clinical nursing expert (WC).

**Scoring**

The score for each domain is the sum of the scores of all items in such domain. The final score for each domain of each guideline is expressed as a standardized percentage. The calculation formula of the standardized percentage is: (actual score - lowest possible score) / (highest possible score - lowest possible score) × 100%. Among them, the calculation formula of the highest possible score is: (the number of raters) × (the number of items) × 7. The calculation formula of the lowest possible score is: (the number of raters) × (the number of items) × 1. The higher the standardized percentage score, the better the methodological quality of the guideline.

**Interpreting domain scores**

The AGREE developers do not set fixed cut-offs for high-quality or low-quality guidelines, but recommend that evaluators set their own criteria based on the context of their appraisal project.[24] In this project, we decide to set cutoff values based on a quality appraisal project of CPGs related to intermittent catheterization by Li and his colleagues.[25] If the scores in all 6 domains are ≥60%, the guideline is rated as Grade A. In other words, the guideline can be directly recommended without changing. If the number of domains with scores ≥30% is ≥3, but there are domains with scores <60%, the guideline is rated as Grade B. That means the guideline needs to be revised and improved to varying degrees. If the number of domains with scores <30%

is ≥3, the guideline is rated as Grade C. It will not be recommended due to the poor quality of the guideline development method or evidence.

### Interpreting the overall guideline scores

The overall score for the guideline will also be carefully recorded as supplementary data to the guideline quality assessment, but its score will not contribute anything to the final assessment of whether the guideline is of high or low quality.

### Data management and analysis of quality scores

After the evaluation is completed, all the quality evaluation data of the four reviewers will be loaded into Excel 2019, and the final scores of included CPGs will be calculated according to the above scoring method of the AGREE II tool. The consistency of evaluation results among the 4 reviewers will be calculated by intraclass correlation coefficient (ICC) using IBM SPSS 23.0. Based on the 95% CI of the ICC estimate, ICC values greater than 0.90, between 0.75 and 0.9, between 0.5 and 0.75, and less than 0.5 are indicative of excellent, good, moderate, and poor reliability, respectively.[26]

## Data extraction

### General characteristics extraction

Data will be extracted independently according to a pre-designed data spreadsheet by two reviewers (CZ, YH) who are proficient in English literacy and have some clinical experience in NLUTD management. If necessary, we will contact the guidline developers to confirm any questions. The following characteristics for each included guideline will be extracted: guideline title, first author, year of publication or update, country, guideline language, publishing institution, target users, type and scope of the guideline, number of references, the method for assessing the quality of evidence, and the grading system for determining the strength of recommendations. Before the formal extraction, the datasheet will be used to pre-extract the 2 included guidelines in order to improve and revise the data spreadsheet in a timely manner.

### Recommendations extraction

In accordance with the study objective of this review, the study team will conduct a

comprehensive extraction of recommendations related to NLUTD management, including recommendations for diagnosis, assessment, conservative management (behavioral therapy, catheterization management), pharmaceutical management, management of complications, monitoring and follow-up, self-management, education and information, and surgical management of NLUTD. We will only extract recommendations that clearly describe the quality of evidence and the strength of recommendation. Because the grading system for the level of evidence on which different guidelines are based may differ, we will harmonize the grading scheme of evidence across guidelines to facilitate the process of data synthesis.

All extractions and coding will be performed independently in NVivo 12.0 software by two reviewers (CZ, YH). Prior to the formal extraction, two reviewers independently pre-extracted the two included guidelines to refine the relevant categories of the extracted content and standardize the extraction criteria. They then performed the formal extraction and coding independently, and compared the results in the end. In the case of any disagreement, a third reviewer (LC or WC) will be consulted and agreement will be reached through discussion.

## Synthesis of recommendations

After the recommendations are extracted and cross-checked, the recommendations will be integrated according to the following integration principles, specifically: (a) for recommendations with the same or similar content, clear, concise and independent entries will be selected; (b) for recommendations with complementary content, they will be combined according to logical relationships; (c) for conflicting recommendations, we will give priority to evidence-based, high-quality evidenced recommendations, and new publications, and trace the sources of different recommendations to find the reasons of the conflicts; (d) if a recommendation involves multiple aspects, it will be split.[27]

To ensure the scientific nature of the evidence synthesis process, it will be completed independently by 2 reviewers (CZ, YH), and the results will be checked against each other upon completion. In case of disagreement, a third reviewer (LC) will be consulted for a ruling.

## Data management and presentation

Data on the general characteristics of the included CPGs will be collated into an Excel

2019 spreadsheet and submitted to the results section. Recommendations will be coded in NVivo 12.0 software using thematic analysis. Ultimately, a summary of the recommendations and their quality of evidence, strength of recommendation and other information will be presented in a narrative format in the table.

## PATIENT AND PUBLIC INVOLVEMENT

No patients will be involved in this review. All data will be collected from medical electronic databases and related professional websites.

## ETHICS AND DISSEMINATION

This review protocol does not involve any patient participation and does not require ethical approval. The results of this research will be published in a peer-reviewed journal and disseminated through conference presentations and more.

## DISCUSSION

To our knowledge, this review is the first all-around systematic review of CPGs for adult patients with NLUTD. Our proposed systematic review will comprehensively identify and assess the quality of CPGs for the management of adult patients with NLUTD published between January 2012 and March 2022 (the last ten years), and we will also fully integrate the proposed recommendations correlated with the management of adult patients with NLUTD. This review will provide a clear and definite summary table of the proposed recommendations for best practice from current CPGs, and will elaborate them by category, mainly covering NLUTD diagnosis, assessment, behavioral therapy, urethral catheterization management, drug management, complication management, surveillance and follow-up management, surgical management and other aspects, which not only help to promote evidence-based practice by healthcare professionals, but also help to improve patients' capability of active management and participation in decision-making, and ultimately improve patients' prognosis. In addition, this review will identify the proposed recommendations with deficiencies and those derived from low-level evidence in current CPGs, to clarify the knowledge gaps regarding the current NLUTD management, which will indicate a

direction for developing more rigorous, reliable, and scientific CPGs in the future, and lay a foundation for the research community to design more targeted studies in the future to fill the gaps in the field.

The strength of this systematic review is that it covers a wide range in terms of content and is not limited to a single population with NLUTD or a single aspect of the management of NLUTD patients. Instead, this review is an exhaustive, comprehensive systematic review covering all aspects of the management of NLUTD patients and is also the first all-around review. A limitation of this review is that we only include CPGs that published in English and Chinese.

## Contributors

(LC) and (WC) devised the study. (CZ) and (YH) drafted the protocol. (CZ, XW and FH) designed inclusion/exclusion criteria and search resources and strategies. (YH) and (YW) designed the evaluation strategy for each included guide. All authors provided critical feedback, helped shape the research and draft manuscript. All authors read and agreed the final version of the manuscript. All authors are the guarantors of the review.

## Competing interests

WC presided over the development of 2 Chinese clinical care practice guidelines for NLUTD and served as one of the main authors. Others: Not declared.

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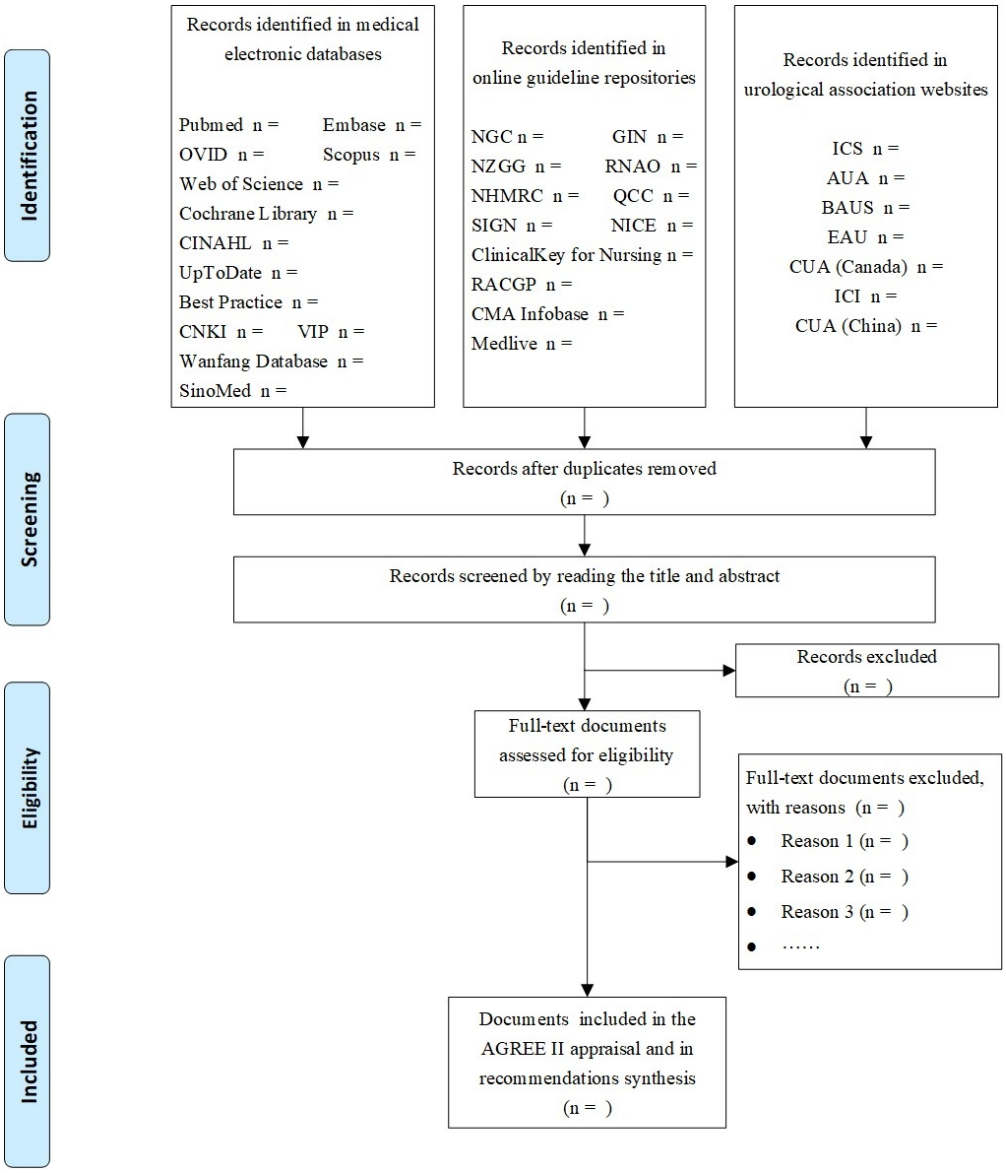
## Figure the title and legend

Figure 1：Flow diagram for screening process




268x313mm (96 x 96 DPI)

**Appendix 1：Preferred Reporting Items for Systematic review and Meta-Analysis Protocols（PRISMA-P）checklist**

| Section and topic | Item No | Checklist item | Section of manuscript reported |
|---|---|---|---|
| **ADMINISTRATIVE INFORMATION** | | | |
| **Title:** | | | |
| Identification | 1a | Identify the report as a protocol of a systematic review | Page 1, Title |
| Update | 1b | If the protocol is for an update of a previous systematic review, identify as such | na |
| **Registration** | 2 | If registered, provide the name of the registry (such as PROSPERO) and registration number | Page 2, PROSPERO registration number: CRD42022318180 |
| **Authors:** | | | |
| Contact | 3a | Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author | Page 1， Line 3-20 |
| Contributions | 3b | Describe contributions of protocol authors and identify the guarantor of the review | Page 14， Line 371-375 |
| **Amendments** | 4 | If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state | na |

| | | | |
|---|---|---|---|
| | | plan for documenting important protocol amendments | |
| **Support:** | | | |
| Sources | 5a | Indicate sources of financial or other support for the review | Page 15， Line 381-383 |
| Sponsor | 5b | Provide name for the review funder and/or sponsor | Page 15， Line 381-383 |
| Role of sponsor or funder | 5c | Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol | Page 15， Line 381-383 |
| **INTRODUCTION** | | | |
| **Rationale** | 6 | Describe the rationale for the review in the context of what is already known | Page 3-5，Introduction |
| **Objectives** | 7 | Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO) | Page 6, Objectives |
| **METHODS** | | | |
| **Eligibility criteria** | 8 | Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review | Page 6, Eligibility criteria |
| **Information** | 9 | Describe all intended information sources (such as electronic databases, | Page 7-8, Search strategy |

| | | | |
|---|---|---|---|
| **sources** | | contact with study authors, trial registers or other grey literature sources) with planned dates of coverage | |
| **Search strategy** | 10 | Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated | Page 8, Table 1 |
| **Study records:** | | | |
| Data management | 11a | Describe the mechanism(s) that will be used to manage records and data throughout the review | Page 11, Line 287-293 and Page 13, Line 334-338 |
| Selection process | 11b | State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis) | Page 9-10, Guideline selection and Page 18 Figure 1 |
| Data collection process | 11c | Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators | Page 12, Data extraction |
| **Data items** | 12 | List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications | Page 12, Data extraction |
| **Outcomes and prioritization** | 13 | List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale | Page 12, Recommendations extraction |
| **Risk of bias in** | 14 | Describe anticipated methods for assessing risk of bias of individual | Page 10, Quality assessment |

| | | | |
|---|---|---|---|
| **individual studies** | | studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis | |
| **Data synthesis** | 15a | Describe criteria under which study data will be quantitatively synthesised | na |
| | 15b | If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as $I^2$, Kendall's $\tau$) | na |
| | 15c | Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression) | na |
| | 15d | If quantitative synthesis is not appropriate, describe the type of summary planned | Page 13, Synthesis of recommendations |
| **Meta-bias(es)** | 16 | Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies) | na |
| **Confidence in cumulative evidence** | 17 | Describe how the strength of the body of evidence will be assessed (such as GRADE) | Page 11, Interpreting domain scores |

**APPENDIX 2. Search strategies**

# 1.English electronic databases

| Table 1 Search strategy for PubMed |
|---|
| **#1** "Urinary Bladder, Neurogenic"[Mesh] |
| **#2** ((((((((((((((((((((((((Neurogenic Urinary Bladder[Title/Abstract]) OR (Bladder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder[Title/Abstract])) OR (Urinary Bladder Neurogenic Dysfunction[Title/Abstract])) OR (Neurogenic Dysfunction of the Urinary Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder Disorder[Title/Abstract])) OR (Neuropathic Bladder[Title/Abstract])) OR (Urinary Bladder Disorder, Neurogenic[Title/Abstract])) OR (Bladder Disorder, Neurogenic[Title/Abstract])) OR (Neurogenic Bladder Disorders[Title/Abstract])) OR (Neurogenic Bladder Disorder[Title/Abstract])) OR (Urinary Bladder Neurogenesis[Title/Abstract])) OR (Neurogenesis, Urinary Bladder[Title/Abstract])) OR (Bladder Neurogenesis[Title/Abstract])) OR (Neurogenesis, Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Atonic[Title/Abstract])) OR (Neurogenic Bladder, Atonic[Title/Abstract])) OR (Atonic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Spastic[Title/Abstract])) OR (Neurogenic Bladder, Spastic[Title/Abstract])) OR (Spastic Neurogenic Bladder[Title/Abstract])) OR (Neurogenic Urinary Bladder, Uninhibited[Title/Abstract])) OR (Neurogenic Bladder, Uninhibited[Title/Abstract])) OR (Uninhibited Neurogenic Bladder[Title/Abstract])) OR (Neurogenic lower urinary tract dysfunction[Title/Abstract])) OR (Neurogenic urethra[Title/Abstract])) OR (Neurogenic urinary incontinence[Title/Abstract]) |
| **#3** #1 or #2 |
| **#4** "Practice Guideline" [Publication Type] |
| **#5** ((((((((((((((((Clinical Practice Guideline[Title/Abstract]) OR (Clinical Guidelines[Title/Abstract])) OR (guide[Title/Abstract])) OR (guideline[Title/Abstract])) OR (guidance[Title/Abstract])) OR (best practice guideline[Title/Abstract])) OR (recommended practice[Title/Abstract])) OR (evidence-based[Title/Abstract])) OR (recommendation[Title/Abstract])) OR (recommendations[Title/Abstract])) OR |

| |
|---|
| (consensus[Title/Abstract])) OR (statement[Title/Abstract])) OR (best practice[Title/Abstract]) |
| **#6** #4 or #5 |
| **#7** #3 and #6 and (2012:2022[pdat]) |

| Table 2 Search strategy for Embase |
|---|
| **#1** 'neurogenic bladder'/exp |
| **#2** 'Neurogenic Urinary Bladder':ab,ti OR 'Bladder, Neurogenic':ab,ti OR 'Neurogenic Bladder':ab,ti OR 'Urinary Bladder Neurogenic Dysfunction':ab,ti OR 'Neurogenic Dysfunction of the Urinary Bladder':ab,ti OR 'Neurogenic Urinary Bladder Disorder':ab,ti OR 'Neuropathic Bladder':ab,ti OR 'Urinary Bladder Disorder, Neurogenic':ab,ti OR 'Bladder Disorder, Neurogenic':ab,ti OR 'Neurogenic Bladder Disorders':ab,ti OR 'Neurogenic Bladder Disorder':ab,ti OR 'Urinary Bladder Neurogenesis':ab,ti OR 'Neurogenesis, Urinary Bladder':ab,ti OR 'Bladder Neurogenesis':ab,ti OR 'Neurogenesis, Bladder':ab,ti OR 'Neurogenic Urinary Bladder, Atonic':ab,ti OR 'Neurogenic Bladder, Atonic':ab,ti OR 'Atonic Neurogenic Bladder':ab,ti OR 'Neurogenic Urinary Bladder, Spastic':ab,ti OR 'Neurogenic Bladder, Spastic':ab,ti OR 'Spastic Neurogenic Bladder':ab,ti OR 'Neurogenic Urinary Bladder, Uninhibited':ab,ti OR 'Neurogenic Bladder, Uninhibited':ab,ti OR 'Uninhibited Neurogenic Bladder':ab,ti OR 'Neurogenic lower urinary tract dysfunction':ab,ti OR 'Neurogenic urethra':ab,ti OR 'Neurogenic urinary incontinence':ab,ti |
| **#3** #1 or #2 |
| **#4** 'practice guideline'/exp |
| **#5** 'Clinical Practice Guideline':ti OR 'Clinical Guidelines':ti OR 'guide ':ti OR 'guideline':ti OR 'guidance ':ti OR 'best practice guideline ':ti OR 'recommended practice ':ti OR 'evidence based':ti OR 'recommendation':ti OR 'recommendations':ti OR 'consensus ':ti OR 'statement':ti OR 'best practice':ti |
| **#6** #4 or #5 |
| **#7** [2012-2022]/py |

| | |
|---|---|
| **#8** | #3 and #6 and **#7** |

| Table 3 Search strategy for OVID |
|---|
| **#1** (Urinary Bladder, Neurogenic or Neurogenic Urinary Bladder or Bladder, Neurogenic or Neurogenic Bladder or Urinary Bladder Neurogenic Dysfunction or Neurogenic Dysfunction of the Urinary Bladder or Neurogenic Urinary Bladder Disorder or Neuropathic Bladder or Urinary Bladder Disorder, Neurogenic or Bladder Disorder, Neurogenic or Neurogenic Bladder Disorders or Neurogenic Bladder Disorder or Urinary Bladder Neurogenesis or Neurogenesis, Urinary Bladder or Bladder Neurogenesis or Neurogenesis, Bladder or Neurogenic Urinary Bladder, Atonic or Neurogenic Bladder, Atonic or Atonic Neurogenic Bladder or Neurogenic Urinary Bladder, Spastic or Neurogenic Bladder, Spastic or Spastic Neurogenic Bladder or Neurogenic Urinary Bladder, Uninhibited or Neurogenic Bladder, Uninhibited or Uninhibited Neurogenic Bladder or Neurogenic lower urinary tract dysfunction or Neurogenic urethra or Neurogenic urinary incontinence).ti,ab,kw. |
| **#2** (Practice Guideline or guideline or recommendations or statement or guidance or guide or best practice guideline or Clinical Practice Guideline or recommended practice or evidence based or recommendation or consensus or best practice).ti,ab,kw. |
| **#3** #1 and #2 |
| **#4** limit 3 to yr="2012 - 2022" |

| Table 4 Search strategy for Scopus |
|---|
| **#1** TITLE-ABS-KEY("Urinary Bladder, Neurogenic" OR "Neurogenic Urinary Bladder" OR "Bladder, Neurogenic" OR "Neurogenic Bladder" OR "Urinary Bladder Neurogenic Dysfunction" OR "Neurogenic Dysfunction of the Urinary Bladder" OR "Neurogenic Urinary Bladder Disorder" OR "Neuropathic Bladder" OR "Urinary Bladder Disorder, Neurogenic" OR "Bladder Disorder, Neurogenic" OR "Neurogenic Bladder Disorders" OR "Neurogenic Bladder Disorder" OR "Urinary Bladder Neurogenesis" OR "Neurogenesis, Urinary Bladder" OR "Bladder Neurogenesis" OR "Neurogenesis, Bladder" OR |

| |
|---|
| "Neurogenic Urinary Bladder, Atonic" OR "Neurogenic Bladder, Atonic" OR "Atonic Neurogenic Bladder" OR "Neurogenic Urinary Bladder, Spastic" OR "Neurogenic Bladder, Spastic" OR "Spastic Neurogenic Bladder" OR "Neurogenic Urinary Bladder, Uninhibited" OR "Neurogenic Bladder, Uninhibited" OR "Uninhibited Neurogenic Bladder" OR "Neurogenic lower urinary tract dysfunction" OR "Neurogenic urethra" OR "Neurogenic urinary incontinence") |
| **#2** TITLE-ABS-KEY("Practice Guideline" OR "Clinical Practice Guideline" OR "Clinical Guidelines" OR "guide " OR "guideline" OR "guidance " OR "best practice guideline " OR "recommended practice " OR "evidence based" OR "recommendation" OR "recommendations" OR "consensus " OR "statement" OR "best practice" ) |
| **#3** #1 and #2 and PUBYEAR > 2011 and PUBYEAR < 2023 |

Table 5 Search strategy for Web of Science

| |
|---|
| **#1** TS=(Urinary Bladder, Neurogenic or Neurogenic Urinary Bladder or Bladder, Neurogenic or Neurogenic Bladder or Urinary Bladder Neurogenic Dysfunction or Neurogenic Dysfunction of the Urinary Bladder or Neurogenic Urinary Bladder Disorder or Neuropathic Bladder or Urinary Bladder Disorder, Neurogenic or Bladder Disorder, Neurogenic or Neurogenic Bladder Disorders or Neurogenic Bladder Disorder or Urinary Bladder Neurogenesis or Neurogenesis, Urinary Bladder or Bladder Neurogenesis or Neurogenesis, Bladder or Neurogenic Urinary Bladder, Atonic or Neurogenic Bladder, Atonic or Atonic Neurogenic Bladder or Neurogenic Urinary Bladder, Spastic or Neurogenic Bladder, Spastic or Spastic Neurogenic Bladder or Neurogenic Urinary Bladder, Uninhibited or Neurogenic Bladder, Uninhibited or Uninhibited Neurogenic Bladder or Neurogenic lower urinary tract dysfunction or Neurogenic urethra or Neurogenic urinary incontinence) |
| **#2** TS=(Practice Guideline or guideline or recommendations or statement or guidance or guide or best practice guideline or Clinical Practice Guideline or recommended practice or evidence based or recommendation or consensus or best practice) |
| **#3** #1 and #2 |

| | |
|---|---|
| **#4** | PY=(2012-2022) |
| **#5** | #3 and #4 |

| Table 6 Search strategy for Cochrane Library | |
|---|---|
| **#1** | Urinary Bladder, Neurogenic[Mesh] |
| **#2** | ( Neurogenic Urinary Bladder):ab,ti,kw OR ( Bladder, Neurogenic):ab,ti,kw OR ( Neurogenic Bladder):ab,ti,kw OR ( Urinary Bladder Neurogenic Dysfunction):ab,ti,kw OR ( Neurogenic Dysfunction of the Urinary Bladder):ab,ti,kw OR ( Neurogenic Urinary Bladder Disorder):ab,ti,kw OR ( Neuropathic Bladder):ab,ti,kw OR ( Urinary Bladder Disorder, Neurogenic):ab,ti,kw OR ( Bladder Disorder, Neurogenic):ab,ti,kw OR ( Neurogenic Bladder Disorders):ab,ti,kw OR (Neurogenic Bladder Disorder):ab,ti,kw OR ( Urinary Bladder Neurogenesis):ab,ti,kw OR (Neurogenesis, Urinary Bladder):ab,ti,kw OR (Bladder Neurogenesis):ab,ti,kw OR (Neurogenesis, Bladder):ab,ti,kw OR (Neurogenic Urinary Bladder, Atonic):ab,ti,kw OR (Neurogenic Bladder, Atonic):ab,ti,kw OR (Atonic Neurogenic Bladder):ab,ti,kw OR (Neurogenic Urinary Bladder, Spastic):ab,ti,kw OR (Neurogenic Bladder, Spastic):ab,ti,kw OR (Spastic Neurogenic Bladder):ab,ti,kw OR (Neurogenic Urinary Bladder, Uninhibited):ab,ti,kw OR (Neurogenic Bladder, Uninhibited):ab,ti,kw OR (Uninhibited Neurogenic Bladder):ab,ti,kw OR (Neurogenic lower urinary tract dysfunction):ab,ti,kw OR (Neurogenic urethra):ab,ti,kw OR (Neurogenic urinary incontinence):ab,ti,kw |
| **#3** | #1 or #2 |
| **#4** | Practice Guideline[Mesh] |
| **#5** | (Clinical Practice Guideline):ab,ti,kw OR (Clinical Guidelines):ab,ti,kw OR (guide ):ab,ti,kw OR (guideline):ab,ti,kw OR (guidance ):ab,ti,kw OR (best practice guideline ):ab,ti,kw OR (recommended practice ):ab,ti,kw OR (evidence based):ab,ti,kw OR (recommendation):ab,ti,kw OR (recommendations):ab,ti,kw OR (consensus ):ab,ti,kw OR (statement):ab,ti,kw OR (best practice):ab,ti,kw |
| **#6** | #4 or #5 |
| **#7** | #3 and #6 |

| Table 7 Search strategy for CINAHL |
|---|
| **#1** TX Urinary Bladder, Neurogenic OR TX Neurogenic Urinary Bladder OR TX Bladder, Neurogenic OR TX Neurogenic Bladder OR TX Urinary Bladder Neurogenic Dysfunction OR TX Neurogenic Dysfunction of the Urinary Bladder OR TX Neurogenic Urinary Bladder Disorder OR TX Neuropathic Bladder OR TX Urinary Bladder Disorder, Neurogenic OR TX Neurogenic lower urinary tract dysfunction OR TX Neurogenic urethra OR TX Neurogenic urinary incontinence |
| **#2** TI Practice Guideline OR TI Clinical Practice Guideline OR TI Clinical Guidelines OR TI guide OR TI guideline OR TI guidance OR TI best practice guideline OR TI recommended practice OR TI evidence based OR TI recommendation OR TI consensus OR TI best practice |
| **#3** #1 and #2 |

| Table 8 Search strategy for UpToDate |
|---|
| **Combinations of the following keywords will be used for the search:** "neurogenic bladder", "neurogenic lower urinary tract dysfunction", "neuro-urology", "neurogenic urinary incontinence" |

| Table 9 Search strategy for Best Practice |
|---|
| **Combinations of the following keywords will be used for the search:** "neurogenic bladder", "neurogenic lower urinary tract dysfunction", "neuro-urology", "neurogenic urinary incontinence" |

## 2.Chinese electronic databases

| Table 1 Search strategy for China National Knowledge Infrastructure |
| --- |
| (主题: 膀胱, 神经原性(精确) ) OR (主题: 神经源性膀胱(精确) ) OR (主题: 神经源性下尿路功能障碍(精确) ) OR (主题: 神经源性尿道 (精确) ) OR (主题: 神经源性尿失禁(精确) ) AND ( (主题: 指南(精确) ) OR (主题: 实践指南(精确) ) OR (主题: 临床实践指南(精确) ) OR (主题:最佳实践指南(精确) ) OR (主题:推荐实践(精确) ) OR (主题:循证(精确) ) ) |

| Table 2 Search strategy for Wanfang Database |
| --- |
| 检索表达式（中英文扩展&主题词扩展）： 主题:(神经源性膀胱+神经源性下尿路功能障碍+神经源性尿道+神经源性尿失禁) and 主题:(指南+实践指南+临床实践指南+最佳实践指南+推荐实践+循证) and Date:2012-2022 |

| Table 3 Search strategy for VIP Periodical Resource Integration Service Platform |
| --- |
| (((((题名或关键词=膀胱，神经原性 OR 题名或关键词=神经源性膀胱) OR 题名或关键词=神经源性下尿路功能障碍) OR 题名或关键词=神经源性尿道) OR 题名或关键词=神经源性尿失禁) AND ((((((((题名或关键词=指南 OR 题名或关键词=实践指南) OR 题名或关键词=临床实践指南) OR 题名或关键词=最佳实践指南) OR 题名或关键词=推荐实践) OR 题名或关键词=循证)) AND (years:[2012 TO 2022]) |

| Table 4 Search strategy for SinoMed | |
| --- | --- |
| **#1** | "膀胱，神经原性"[不加权:扩展] |
| **#2** | 神经源性膀胱 |
| **#3** | 神经源性下尿路功能障碍 |
| **#4** | 神经源性尿道 |

| | |
|---|---|
| **#5** | 神经源性尿失禁 |
| **#6** | #1 or #2 or #3 or #4 or #5 |
| **#7** | "指南"[不加权:扩展] |
| **#8** | 实践指南 |
| **#9** | 临床实践指南 |
| **#10** | 最佳实践指南 |
| **#11** | 推荐实践 |
| **#12** | 循证 |
| **#13** | #7 or #8 or #9 or #10 or #11 or #12 |
| **#14** | #6 and #13 and 2012-2022[日期] |

# 3.Online guideline repositories

**Combinations of the following keywords will be used for the search:**

"neurogenic bladder", "neurogenic lower urinary tract dysfunction", "neuro-urology", "neurogenic urinary incontinence"

| Online guide repository name | Website |
|---|---|
| 1.National Guidelines Clearinghouse (NGC) | https://www.ahrq.gov/gam/index.html |
| 2.Guidelines International Network (GIN) | http://www.g-i-n.net/ |
| 3.New Zealand Guidelines Group (NZGG) | http://www.nzgg.org.nz/ |
| 4.Registered Nurses' Association of Ontario (RNAO) | https://communities.rnao.ca/ |
| 5.The Australian National Health and Medical Research Council (NHMRC) | https://www.nhmrc.gov.au/guidelines |
| 6.Queensland Coding Committee (QCC) | https://www.health.qld.gov.au/ |
| 7.Scottish Intercollegiate Guidelines Network(SIGN) | http://www.sign.ac.uk/ |
| 8.National Institute for Health and Care Excellence (NICE) | https://www.nice.org.uk/ |
| 9.Canadian Medical Association Clinical Practice | https://joulecma.ca/cpg/homepage |

| | |
|---|---|
| Guidelines Infobase(CMA Infobase) | |
| 10.Royal Australian College of General Practitioners(RACGP) | https://www.racgp.org.au/ |
| 11.ClinicalKey for Nursing | https://www.clinicalkey.com |
| 12.Medlive | https://guide.medlive.cn |

## 4. Urological association websites

**Combinations of the following keywords will be used for the search:**

**English keywords:** "neurogenic bladder", "neurogenic lower urinary tract dysfunction", "neuro-urology", "neurogenic urinary incontinence"

**Chinese keywords:** "神经源性膀胱"，"神经源性下尿路功能障碍"，"神经源性尿道"，"神经源性尿失禁"

| Urological association website Name | Website |
|---|---|
| 1.International Continence Society (ICS) | https://www.ics.org/ |
| 2.American Urological Association (AUA) | https://www.auanet.org/ |
| 3.British Association of Urological Surgeons (BAUS) | https://www.baus.org.uk/ |
| 4.European Association of Urology (EAU) | https://uroweb.org/guidelines/neuro-urology |
| 5.Canadian Urological Association (CUA) | https://www.cua.org/ |
| 6.International Consultation on Incontinence (ICI) | http://www.ici-rs.org/ |
| 7.The Chinese Urological Association(CUA) | https://cua.cma.org.cn/ |

# Appendix 3: AGREE II Score Sheet

| Domain | | Item | AGREE II Rating | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 1 Strongly Disagree | 2 | 3 | 4 | 5 | 6 | 7 Strongly Agree |
| **Scope and purpose** | **1** | *The overall objective(s) of the guideline is (are) specifically described.* | | | | | | | |
| | **2** | *The health question(s) covered by the guideline is (are) specifically described.* | | | | | | | |
| | **3** | *The population (patients, public, etc.) to whom the guideline is meant to apply is specifically described.* | | | | | | | |
| **Stakeholder involvement** | **4** | *The guideline development group includes individuals from all the relevant professional groups.* | | | | | | | |
| | **5** | *The views and preferences of the target population (patients, public, etc.) have been sought.* | | | | | | | |
| | **6** | *The target users of the guideline are clearly defined.* | | | | | | | |
| **Rigor of development** | **7** | *Systematic methods were used to search for evidence.* | | | | | | | |
| | **8** | *The criteria for selecting the evidence are clearly described.* | | | | | | | |
| | **9** | *The strengths and limitations of the body of evidence are clearly described.* | | | | | | | |
| | **10** | *The methods for formulating the recommendations are clearly described.* | | | | | | | |
| | **11** | *The health benefits, side effects and risks have been considered in formulating the recommendations.* | | | | | | | |
| | **12** | *There is an explicit link between the recommendations and the supporting evidence.* | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **13** | *The guideline has been externally reviewed by experts prior to its publication.* | | | | | | | |
| | **14** | *A procedure for updating the guideline is provided.* | | | | | | | |
| **Clarity of presentation** | **15** | *The recommendations are specific and unambiguous.* | | | | | | | |
| | **16** | *The different options for management of the condition or health issue are clearly presented.* | | | | | | | |
| | **17** | *Key recommendations are easily identifiable.* | | | | | | | |
| **Applicability** | **18** | *The guideline describes facilitators and barriers to its application.* | | | | | | | |
| | **19** | *The guideline provides advice and/or tools on how the recommendations can be put into practice.* | | | | | | | |
| | **20** | *The potential resource implications of applying the recommendations have been considered.* | | | | | | | |
| | **21** | *The guideline presents monitoring and/ or auditing criteria.* | | | | | | | |
| **Editorial independence** | **22** | *The views of the funding body have not influenced the content of the guideline.* | | | | | | | |
| | **23** | *Competing interests of guideline development group members have been recorded and addressed.* | | | | | | | |
| **Overall Guideline Assessment** | **1** | *Rate the overall quality of this guideline.* | **1** Lowest possible quality | **2** | **3** | **4** | **5** | **6** | **7** Highest possible quality |
| | **2** | *I would recommend this guideline for use.* | *Yes* | *Yes, with modification* | | | | | *No* |