SPECIAL ARTICLE

Philippine Clinical Practice Guidelines on the Management of Urolithiasis in Adults*

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Introduction: Urinary stone disease remains a significant global and national health concern. This underscores the need for measures to improve disease outcomes. The development and implementation of clinical practice guidelines for urolithiasis was deemed essential due to variations in practice, the evolving urologic field with its emerging interventions, which may have significant cost implications.
Methods: The CPG was developed following the GRADE Adolopment method, the CORE GRADE Approach and the GRADE Evidence to Decision framework, and utilized the Technical Manual for Clinical Practice Guideline Development of the Department of Health (2nd edition). The guideline development group was organized after review and management of the members' conflict of interest declarations. Clinical questions were prioritized and a systematic search and synthesis of the relevant literature to answer the questions was done. Considering the balance of benefits and harms, certainty of the evidence, cost and cost effectiveness, accessibility, acceptability and feasibility of the interventions, the guideline panel developed recommendations by consensus.
Results: The CPG addresses eleven priority clinical questions involving diagnosis and treatment of acute flank pain due to suspected urolithiasis among adults, minimally invasive treatment of nephrolithiasis measuring 1-2 cm and the use of alpha blockers after ESWL through twelve recommendations and one good practice statement.
Conclusion: The Philippine CPG on the management of urolithiasis in adults provides actionable recommendations to address important clinical questions on the diagnosis and management of urinary stone disease .The full text of the clinical practice guideline may be viewed and downloaded from https://doh.gov.ph/dpcb/doh-approved-cpg/

Key words: Clinical practice guidelines, urolithiasis

Introduction

Urolithiasis, commonly known as urinary stone disease, is the formation of stones in the urinary tract. This disease entity remains a significant global health concern. It has exerted a significant burden of disability, morbidity, mortality, and medical costs worldwide. In the Global Burden

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of Disease study in 2021, there were 106 million incident cases of urolithiasis, accounting for 17,700 deaths in both sexes. Urinary stone disease is also responsible for 694,000 disability adjusted life years (DALYs)[1]

In 2021, The Philippines accounted for 2,560,000 cases of urolithiasis, amounting to 20% of the total cases in Southeast Asia. This is second only to Indonesia in the region. Moreover, the Philippines recorded 22,600 age-standardized DALYs per 100,000, third highest in the world, and is also ranked fourth globally in age-standardized urolithiasis-related death rates at 0.7 per 100,000 cases, following Armenia, Kazakhstan, and Trinidad and Tobago.[1] This especially underscores the need for better preventive measures and standardization and a multidisciplinary initiative to improve disease outcomes.

National efforts include House resolutions urging legislation to facilitate comprehensive programs for prevention and treatment of urinary stone disease.[8] The development of local clinical practice guidelines is one such effort. Furthermore, the development and implementation of clinical practice guidelines for urolithiasis was essential due to several factors. Variations in clinical practice can lead to inconsistent patient outcomes. Evidence-based guidelines provide a standardized approach to diagnosis, treatment, and follow-up, ensuring uniform care of the highest quality. The field of urology is continually evolving, with new research introducing more effective diagnostic tools and treatment modalities. Regularly updated guidelines ensure that the latest evidence is integrated into clinical practice, optimizing patient outcomes. Certain interventions for urolithiasis can have significant cost implications. Guidelines help in making informed decisions about the most efficient use of resources, balancing efficacy and cost-effectiveness. Emerging interventions or those not previously covered necessitate the development of new guidelines to provide clear recommendations for clinicians.

The absence of local guidelines tailored to the specific epidemiological and socio-economic landscape of the country warranted an endeavor to factor in this context in patient management. Streamlined, appropriate, and accessible recommendations would address local practice variations, incorporate region-specific evidence, and provide direction on cost-effective interventions suitable for the country's healthcare system and patient demographic.

The Philippine Urological Association (PUA) in collaboration with various specialty societies and stakeholder organization, developed this clinical practice guidelines (CPGs) in the Philippines for the management of adult patients with urolithiasis across primary and specialty care settings, utilizing the best available scientific evidence and considering the economic implications of diagnostic tests and pharmacologic therapies.

Methods

In 2023, the PUA deputized its Clinical Practice Guideline Committee to spearhead the development of the CPG on Urolithiasis. In 2024, with the oversight of the PUA Executive Committee member in charge of CPGs, the Steering Committee Chair was appointed and the Conflict of Interest Review Committee (COIRC) was convened. The members of the different working groups were nominated and eventually appointed, after a review of the declarations of conflicts of interest by each nominee by the COIRC Committee. The working groups of the Guideline Development Group (GDG) included the Steering Committee (SC), the Technical Working Group (TWG), which included the Technical Lead (TL), the Evidence Reviewers (ERe) and the Technical Facilitator (TF), and the Guideline Panel (GP). The SC and GP were composed of representatives from the Philippine Urological Association, Philippine College of Emergency Medicine, Philippine Society of Nephrology, Philippine Academy of Family Physicians, Philippine Society of General Internal Medicine, Philippine Association of Nutritionists, Philippine Alliance of Patients Organizations and the Department of Health. The GDG received technical assistance from the Institute of Clinical Epidemiology of the University of the Philippines Manila – National Institutes of Health (ICE UPM-NIH).

The general methodology of the guideline development followed the provisions in the DOH Technical Manual for Clinical Practice Guidelines

Development, 2nd edition (https://doh.gov.ph/techmanual-for-cpg-development-2nd-edition)

A preliminary list of clinical questions on the diagnosis and management of urolithiasis was compiled during a CPG workshop attended by PUA and Philippine Urology Resident Association (PURA) members on May 25, 2024. The SC members representing non-urologic organizations also nominated clinical questions for possible inclusion in the CPG. The SC held prioritization meetings on March 20, 2025 and March 30, 2025 to short list the questions to 11, taking the following into consideration: uncertainty in practice / common question in practice, variation in practice, new evidence for consideration, cost considerations / significant resource use and clinical question not previously or sufficiently addressed in other guidelines. The guideline questions were converted to evidence review questions using the PICO (Population, Intervention, Comparator, Outcome) or PIRT (Population, Index Test, Reference Standard, Target Outcome) format.

A comprehensive list of outcomes across all clinical questions was generated. These outcomes were rated by the SC for their importance to decision-making using a 9-point GRADE scale, with scores 7 to 9 as critical for decision-making, 4 to 6 as important but not critical, and 1 to 3 being of low importance (REFERENCE). The thresholds for the minimally important benefit and the minimally important harm for each critical and important outcome was determined by consensus among the SC members. These thresholds were used in the interpretation of the pooled results. The ratings of the outcomes their thresholds for the minimally important differences were confirmed with the GP during the en banc meeting.

The protocol of the CPG was submitted to the DOH National Practice Guidelines Program (DOH NPGP) and was published in the Philippine Journal of Urology.[9]

The guideline was developed through the GRADE Adolopment approach.[10] An extensive search for existing clinical practice guidelines was undertaken in June 2024. Candidate CPGs were appraised using the AGREE II tool[11] by at least two independent reviewers who were members of the PUA and PURA, and the PUA-CPG Committee Chair. Guidelines were considered eligible if they demonstrated good quality (≥75% score) in at least five AGREE II domains, without any failing scores (≤40%) in the Scope and Purpose and Rigor of Development domains.

The guidelines assessed did not allow for adaptation for several reasons : (1) some of the questions were not included, (2) the evidence to decision issues taken into consideration in the drafting of the recommendations were not explicit or available, and (3) the evidence base used was not up to date. Likewise, no recent systematic reviews were identified for any of the questions. Hence, de novo systematic reviews and metanalyses were performed for all questions. Literature searches were performed in major international databases including MEDLINE (via PubMed), CENTRAL (Cochrane Central Register of Controlled Trials), and Google Scholar. Local databases such as HERDIN and the PCEDM registry of research outputs were also consulted to identify relevant Philippine-based studies. Searches were performed from April to September 2025.

Search strategies were designed around the structured PICO (Population, Intervention, Comparator, Outcome) or PIRT (Population, Index Test, Reference Standard, Diagnosis/Outcome; for diagnosis questions) framework of each guideline question. Search terms included both Medical Subject Headings (MeSH) and free-text keywords. Known researchers and authors of relevant articles, particularly local research, were contacted for full texts or clarifications.

Studies were included if they were aligned with the structured PICO or PIRT questions and reported patient-important outcomes identified as critical or important. Screening and selection of the studies were performed independently by two reviewers.

Quality and risk of bias assessments were conducted using validated tools appropriate to the study design: ROBUST RCT for randomized controlled trials, QUADAS-2 for diagnostic accuracy studies, and Newcastle-Ottawa Scale (NOS) for observational cohort and case-control studies. Two reviewers independently assessed the risk of bias for each included study. Discrepancies were resolved through consensus.

Separate literature searches were performed to identify relevant research on cost-effectiveness,

stakeholder values and preferences, acceptability and feasibility.

A customized data extraction form was used to systematically collect information on study characteristics and findings. The extracted data included the study design and setting, sample size and population characteristics, details of the intervention and comparator. Key outcomes such as stone-free rates, recurrence, and adverse events were recorded, along with the results, effect estimates, and corresponding confidence intervals. Two reviewers extracted the data independently, and any discrepancies were resolved through discussion.

Where appropriate, meta-analyses were performed using Review Manager (RevMan 5.4). Effect measures were expressed as risk ratios (RR), odds ratios (OR), mean differences (MD), and 95% confidence intervals (CI), depending on the outcome type. For diagnostic accuracy reviews, meta-analyses were performed using MetaDisc 2.0. Pooled sensitivity and specificity using bivariate analysis (or univariate analysis when less than 4 studies were included). In cases where meta-analysis was not appropriate due to heterogeneity in study design, populations, interventions, or outcome measurement, a narrative synthesis was conducted.

The Evidence Reviewers followed the CORE GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach11 to evaluate and summarize the certainty of the evidence across outcomes. Results were summarized in a Summary of Findings (SoF) table, supported by the GRADEpro online software (Evidence Prime, Ontario Canada), linking effect estimates, absolute effects, and certainty judgments to support transparent, patient-centered recommendations.

The guideline recommendations were developed using the GRADE Evidence-to-Decision (EtD) framework.[10] The EtD framework guided the panel in translating evidence into actionable recommendations, taking into account several key domains : Importance and rationale of the question, evidence of test accuracy (for diagnostic questions), evidence of benefit versus harm, including net benefit or harm, certainty of the evidence for benefit and harm, resource use, costs, and cost-effectiveness, availability and accessibility of the intervention, and values and preferences of patients and providers.

The GP members were furnished copies of the evidence summaries for all the guideline questions with corresponding GRADE EtD worksheets one week prior to the en banc meeting. The worksheet responses were collated and presented during the en banc meeting and used as touchpoints for discussion. The GP en banc session was held on October 11, 2025.

The recommendation for each question and its strength was determined through voting. A consensus decision was reached if 75% of all voting GP members agreed. When consensus was not reached in the first voting, questions and further discussions among the panel members were encouraged. A maximum of three rounds of voting was planned and If no consensus was still reached, a Delphi method of voting would have been implemented. None of the questions reached a third round of voting.

For one of the clinical questions, no direct evidence was found to provide quality scientific evidence to support a recommendation. The GP agreed to issue a Good Practice Statement after ascertaining that the requirements for the issuance of such a statement based on the criteria set by the GRADE group were met.[12] The Panel collectively believed that the public and the healthcare providers would undeniably benefit from a clear and actionable guidance for the clinical question.

Three independent external reviewers (a urologist, an emergency medicine physician and a family physician) were invited to evaluate the draft CPG using the AGREE-REX (Appraisal of Guidelines Research and Evaluation–Recommendation Excellence) tool and/or AGREE-II tool. All were not involved in the guideline development process. They were selected based on their professional expertise, independence from the CPG developers, and familiarity with clinical practice or health policy in the Philippine context.

All feedback from external reviewers were consolidated by the TWG and reviewed by the SC. Suggestions that improved the clarity, contextual relevance, or applicability of the recommendations were integrated into the final manuscript. For conflicting inputs, the SC deliberated and made consensus-based decisions grounded in evidence,

clinical judgment, and methodological standards. The final CPG manuscript was submitted to the DOH NPGP for review, approval and acceptance for inclusion into the DOH Compendium of Approved CPGs. The full text of this CPG is available at https://doh.gov.ph/dpcb/doh-approved-cpg/

This Guideline was developed with the financial support from the PUA. Logistical support to the GDG was provided by the PUA Secretariat and the PUA CPG Committee. Technical assistance was provided by the UPMNIH-ICE through a critical review of the CPG protocol, the evidence summaries and the final CPG manuscript. Training of some of the evidence reviewers was also provided by UPMNIH-ICE.

The PUA Executive Committee and the UPMNIH-ICE did not have any influence in the selection of the members of the CPG working groups, the prioritization of the guideline questions and in the formulation of the recommendations of the CPG.

Results

The CPG addresses eleven priority clinical questions involving diagnosis and treatment of acute flank pain due to suspected urolithiasis among adults, minimally invasive treatment of nephrolithiasis measuring 1-2 cm and the use of alpha blockers after ESWL through twelve recommendations and one good practice statement.

Guideline Question 1:

Should ultrasonography be used versus non-contrast computed tomography (NCCT or CT stonogram) in patients consulting for acute renal colic or flank pain suggestive of urolithiasis at the Emergency Department (ED)?

Recommendations

We suggest against the use of ultrasound alone to diagnose urolithiasis in patients with acute renal colic or flank pain suggestive of urolithiasis at the ED. (Low certainty, Weak strength rating)

We recommend the use of KUB xray with ultrasound rather than ultrasound alone to diagnose urolithiasis in the absence of CT scan in patients with acute renal colic or flank pain suggestive of urolithiasis at the ED. (Moderate certainty, Strong strength rating)

Key Findings and Statement of the Evidence

Eight studies evaluated imaging strategies for diagnosing urolithiasis in adults presenting to the emergency department, including one randomized controlled trial and seven observational diagnostic accuracy studies.

Ultrasound alone had variable sensitivity and was more likely to miss urolithiasis, while combining it with KUB X-ray improved detection but increased false positives. CT scan showed the highest diagnostic accuracy, consistently identifying stones with minimal missed diagnoses and false positives.

Ultrasound-based approaches were associated with shorter emergency department stays but higher return visits and may lead to more missed high-risk diagnoses, though these were rare.

The overall certainty of evidence was low for the use of ultrasound alone, and moderate for the use of KUB Xray with ultrasound versus ultrasound alone.

Key Considerations and Consensus Issues

For adult patients presenting at the emergency room with acute renal colic, the preferred initial imaging modality to diagnose urolithiasis is a non-contrast CT scan or CT stonogram. The consensus for this recommendation was met after the first round of voting, with a dissenting opinion due to the variability of diagnostic accuracy of ultrasound depending on stone location and the concomitant heterogeneity of included studies in this regard.

Although ultrasound is relatively more accessible, and its utility as a point-of-care diagnostic in the emergency room is increasing, training of technicians and ER doctors (in addition to radiologists) for POCUS (point-of-care ultrasound) is still in its infancy in the country. Although less costly and with a shorter turn-around time, a recommendation against the ultrasound as the sole diagnostic was based on a strong concern for missed diagnoses.

The Panel considered the evidence presented on the use of KUB X-ray in conjunction with a KUB ultrasound to strengthen the latter's diagnostic accuracy, for which the certainty of evidence was moderate. In the absence of CT scan, or for patients for whom computed tomography is contraindicated (pregnant women, children) it was a unanimous recommendation to use KUB X-ray (with or without an abdominal shield) in conjunction with a KUB ultrasound to diagnose urolithiasis with more certainty. Other options for pregnant women may be considered, depending on context, but is outside the scope of this guideline.

Guideline Question 2:

Should NSAIDs be used in patients consulting for acute renal colic at the emergency department?

Recommendation

We recommend the use of intravenous NSAIDs instead of opioids as the initial pain reliever in patients consulting for acute renal colic at the ED. (Very low certainty. Strong strength rating)

Key Findings and Statement of the Evidence

Fifteen (15) RCTs investigated the efficacy and safety of NSAIDs compared to opioids among adult patients presenting with acute renal colic. The studies were overall assessed to have moderate to high risk of bias.

Based on the available evidence, among adult patients with acute renal colic, NSAIDs, compared to opioids probably reduce the need for rescue analgesia slightly, may have little to no effect on total pain relief at 30 min but the evidence is very uncertain, reduce pain intensity measured by VAS pain score at 15 min but the degree is negligible, reduce pain intensity measured by VAS pain score at 30 min., may result in an at least 50% reduction in initial pain at 30 mins, may shorten the time to discharge slightly, may have little to no effect on total adverse events but the evidence is very uncertain, and likely reduces vomiting.

The overall certainty of the evidence is very low.

Key Considerations and Consensus Issues

On review of available evidence, NSAIDs as first-line therapy (when used as a single parenteral dose) appear to provide better pain reduction when compared to opioids, and decreased both the need for rescue analgesia and incidence of vomiting; however the certainty of the evidence was deemed to be low due to the risk of bias across the reviewed studies. The Guideline Panel unanimously strongly recommended NSAIDs despite overall low certainty of evidence, placing emphasis on overall favorable side-effect profile of NSAIDs over opioids. The panel also placed higher value on the shorter time to discharge associated with NSAIDs as compared to opioids particularly in high-turnover settings such as the Emergency Department. Furthermore, the panel emphasized the easier availability of NSAIDs in most healthcare settings, as special licensing is required for access to opioids.

The Panel also emphasizes that for patients with contraindications to NSAIDs, alternatives may be considered.

Guideline Question 3:

Should antispasmodics be used in patients consulting at the ED for acute renal colic or for flank pain suggestive of urolithiasis?

Recommendation

We suggest against giving intravenous hyoscine as an add-on to standard of care for patients consulting for acute renal colic or flank pain. (Low certainty. Weak strength rating)

Key Findings and Statement of the Evidence

Eight randomized controlled trials were included.

Based on the available evidence, among patients with acute renal colic, hyoscine, compared to placebo, may result in an increase in pain relief at 30 mins (VAS score). Hyoscine, compared to NSAIDs, probably results in lower proportions of patients achieving >50% pain reduction and may result in lower mean reductions in pain scores. Adding hyoscine to NSAIDs make little to no

difference in terms of achieving >50% reduction in pain, and makes little to no difference in terms of decreasing need for rescue medication. Hyoscine, when added to NSAID and opioid therapy, likely provides little to no additional benefit in reducing patient-reported pain scores and in reducing the use of rescue analgesia.

Overall, the certainty of the evidence is low.

Key Considerations and Consensus Issues

On review of the available evidence, the addition of hyoscine to NSAIDs and opioids provided little to no reduction in pain and need for rescue medication. Hyoscine-N-butylbromide specifically as monotherapy resulted in less pain reduction when compared to NSAIDs. However, the overall certainty of the evidence was low due to risk of bias and imprecision.

The dose of Hyoscine-N-butylbromide in most studies was 50mg given as a single parenteral dose. The panel emphasized the setting of the guideline question and subsequent recommendation as the emergency department wherein intravenous medications are available. Greater emphasis was placed on avoiding unnecessary additional medications that provide limited benefit. Issues about formulary availability, hidden costs of intravenous medication, and drug availability at different healthcare facility levels were also brought up. The question reached three rounds of voting before a consensus was met, with a dissenting opinion stating that any benefit, regardless of degree (i.e. even a difference of 1-2 VAS points), may be of significance in the acute setting; while some reinforced that ineffective adjunct medication may increase risk for additional treatment or may delay necessary surgery.

The Panel voted unanimously on the use of hyoscine in the setting where both NSAIDS and opioids are either contraindicated, or are unavailable. Similarly, the panel emphasized a step-wise approach to pain treatment (i.e. the pain ladder paradigm) as the standard of care in pain treatment. In this approach, step-up medication (rather than add-on medication) is the acceptable recourse for ineffective pain relief. It was also noted that step-up medications such as opioids may require special licenses limiting accessibility. Moreover, the panel emphasized that for pain refractory to medical treatment, a surgical consultation or referral may be considered.

Guideline Question 4:

Should propulsives be used in patients consulting for acute renal colic or for flank pain suggestive of urolithiases at the ED?

Recommendation

We recommend the use of intravenous metoclopramide as an add-on to NSAIDs in patients consulting for acute renal colic or flank pain suggestive of urolithiasis at the ED. (Low certainty. Strong strength rating)

Key Findings and Statement of the Evidence

Two randomized controlled trials with a total of 280 patients evaluated the use of metoclopramide for acute renal colic.

Based on the available evidence, in patients with acute renal colic, metoclopramide alone compared to NSAIDs likely results in little to no difference in reduction in pain scores (mm) and may slightly decrease need for rescue analgesia. Metoclopramide added to NSAIDs compared to NSAIDs alone may result in little to no difference in reduction in pain scores (mm) and probably results in a decrease in need for rescue medication. Metoclopramide alone versus combination/ spasmofen does not result in a reduction in pain scores (mm).

The overall certainty of evidence is low.

Key Considerations and Consensus Issues

On review of available evidence, metoclopramide monotherapy resulted in little or no pain reduction compared to NSAIDs, but reduced need for rescue medication when used with NSAIDs. The dose prescribed was 10mg as a single intravenous dose at the ED.

A consensus was reached after the first round of voting, with a dissenting opinion because of the availability of more effective step-up relief options and the low certainty of evidence of benefit. Hence, it was emphasized that the recommendation is

for metoclopramide as an add-on and not as a first line or step-up treatment for acute renal colic. A strong recommendation was given despite the low certainty of evidence due to a net benefit, particularly in the prevention of requiring additional medication for pain relief, the wide availability of metoclopramide, and the accepted beneficial effect of metoclopramide in addressing nausea and vomiting that is commonly seen among patients with acute renal colic.

Guideline Question 5:

Should uro-selective alphablockers be used in patients consulting for acute renal colic or flank pain suggestive of urolithiasis?

Recommendation

We suggest giving uroselective alpha blockers in patients consulting for acute renal colic. (Low certainty. Weak strength rating)

Key Findings and Statement of the Evidence

Fourteen RCTs were included with a total population of 3,622.

Based on the available evidence, it is uncertain if alphablockers reduce the risk of requiring analgesia and probably do not reduce the number of times requiring analgesia among patients with renal colic due to ureterolithiasis. Alphablockers may increase stone free rates and result in a slight decrease in the time to stone clearance. Alphablockers may result in little to no effect on orthostatic hypotension but probably increase abnormal ejaculation.

The overall certainty of the evidence is low

Key Considerations and Consensus Issues

On review of available evidence, uroselective alpha blockers increased stone-free rates and shortened time to stone passage but had little to no effect in reducing the need for analgesia. The certainty of evidence was deemed low due to imprecision and risk of bias. A unanimous consensus was reached after one round of voting for the direction of the recommendation. The Panel placed value on the significant benefit with comparatively minimal harm. The strength of the recommendation was weak, with one dissenting opinion for a strong recommendation in the context of consistent evidence of benefit with minimal harm.

The urologists in the panel emphasized the need for establishing a high degree of suspicion for the diagnosis of urolithiasis before starting alphablockers in the emergency room.

Guideline Question 6:

Should coconut water (i.e., buko juice) be used in patients consulting at the outpatient clinic for urolithiasis with a total stone burden less than 1cm?

Good Practice Statement

In patients with urolithiasis, clinicians should advise increased intake of water and low-sugar, noncarbonated drinks - which may include unprocessed and unsweetened coconut water - that will achieve a urine volume of at least 2.5L per day.

Key Findings and Statement of the Evidence

Only one small randomized crossover trial involving eight healthy volunteers was identified. The study reported that coconut water increased urinary citrate, potassium, and chloride, suggesting a possible biochemical benefit. However, it did not evaluate clinical outcomes such as stone-free rate, time to stone passage, recurrence, re-treatment, or adverse events. One additional randomized controlled trial (SLCTR/2019/031) on local fruits including coconut was registered in 2019, but results have not been published. There is no evidence on patient-important outcomes.

The certainty of the evidence is very low.

Key Considerations and Consensus Issues

The available evidence on coconut water for urolithiasis remains very limited. While small biochemical studies suggest increases in urinary citrate and potassium excretion, these surrogate markers have not been shown to translate into clinical outcomes such as stone passage, recurrence prevention, or reduction in stone size. Given its

composition and hydration-promoting properties, coconut water may be considered a safe and culturally acceptable component of adequate fluid intake.

Despite the absence of direct evidence on the effect of coconut water on patient important outcomes, the Panel had a strong collective belief that guidance regarding this clinical question is important. Patients often ask this question and given the relatively low health literacy rate in the country, physicians should be able to provide the proper advice to patients who often ask about this. Hence, the Panel agreed to issue a Good Practice Statement rather than a graded recommendation, after confirming that the situation met the criteria for the issuance of such.

The Panel agreed that clinicians should emphasize that coconut water should not replace medical therapy or guideline-based management. Its use should be framed as part of general hydration advice rather than as a therapeutic intervention. Acknowledging the minimal risk associated with its consumption, coconut water, when unprocessed and unsweetened, may be considered as a low-sugar, noncarbonated beverage that can help achieve a urine output of at least 2.5 liters per day. Clinicians are advised to exercise caution in recommending coconut water for patients with tenuous solute and electrolyte handling, for whom hyperkalemia may develop, and for those who are limiting sugar intake for other comorbidities.

Further local randomized controlled trials are encouraged to determine its true clinical benefit, optimal intake volume, and its role in the management of urolithiasis, within culturally relevant dietary practices among Filipino patients.

Guideline Question 7:

Should Sambong be used in patients consulting for urolithiasis with a total stone burden less than 1 cm?

Recommendation

We suggest the use of Sambong tablets in patients consulting for urolithiasis with a total stone burden less than 1 cm. (Low certainty. Weak strength rating)

Key Findings and Statement of the Evidence

Five (5) RCTs examined the effect of Sambong compared to standard care in patients with urolithiasis. These studies were generally assessed to have a high risk of bias.

Based on the available evidence, among adult patients with urolithiasis, Sambong may slightly increase the stone-free rate, may slightly decrease stone size/number, may slightly increase the stone dissolution rate, probably results in a faster time to stone passage (6 to 7 mm), probably results in a faster time to stone passage (8 to 10mm) and may result in little to no difference in adverse events.

The overall certainty of the evidence is low.

Key Considerations and Consensus Issues

A unanimous consensus was reached after one round of voting for the direction recommendation, with the Panel citing net benefit compared to possible harms. The Panel ascertained that no harms were reported in all the available studies and that the product insert declared no contraindications to the intake of Sambong. The panel was split, regarding the strength of the recommendation, with the final result in favor of a weak recommendation, citing that the low quality of the evidence and limited number of studies (as well as all studies not defining the comparator 'standard of care' in dietary advice and hydration) may have overestimated the effect.

The Panel emphasized that clinicians should prescribe the minimal required dosage of 40mg/kg/day for the duration of 4-16 weeks, as cited in the studies, in the use of Sambong for urolithiasis treatment. It should also be used only for non-obstructing stones.

Questions were raised regarding whether the effects may be extended to Sambong herbal tea, but the review of available evidence showed no information on non-tablet formulations and thus, the recommendation was limited to the tablet formulation. Patients should be informed of such lack of evidence of the effect of Sambong tea.

Another issue brought up was that some stones in the included studies were considered clinically insignificant but the decision of the steering committee was to cite clinical equipoise for the stone size that constitutes significance. Hence,

studies reporting on smaller stones were considered part of the evidence base.

Some Panel members brought up applicability for both outpatient and emergency settings, as the studies were largely heterogenous. It was thus emphasized that Sambong should only be used for non-obstructing stones.

One area of concern was that studies were not stratified according to stone location or composition. This may be a consideration for future studies.

Guideline Question 8:

Should terpene compounds be used in patients with urolithiasis?

Recommendation

We recommend against giving terpene compounds in patients with urolithiasis. (Very low certainty. Strong strength rating)

Key Findings and Statement of the Evidence

Evidence considered: One randomized control trial and two prospective cohort studies involving 303 participants were included in the review.

Based on the available evidence, among adults consulting for urolithiasis, terpene compounds, when compared to NSAIDs, have little to no effect in analgesic use, may slightly increase stone stone free rate and may reduce time to stone passage slightly. On the other hand, terpene compounds, when compared with alphablockers, may increase analgesic requirement slightly and may have little to no effect on the time to reach stone free status. They may lower stone passage rate but the evidence is uncertain. Mild gastrointestinal symptoms (e.g., dyspepsia, abdominal discomfort) were associated with terpene compounds. There were no serious or life-threatening adverse events reported.

The overall certainty of evidence is very low.

Key Considerations and Consensus Issues

The Panel issued a unanimous strong recommendation against the routine use of terpene compounds in patients with urolithiasis, because of the very low certainty of evidence. This indicated an uncertain benefit and reduced efficacy relative to alpha-blocker, signals toward harm particularly when compared to alphablocker use, the limited access due to non-inclusion in the national formulary, and the higher costs compared to standard therapy.

The Panel recognized the substantial research gap and emphasized the need for well-designed randomized controlled trials to clarify the role, if any, of terpene compounds in the management of urolithiasis.

Guideline Question 9:

Should sodium citrate be used instead of potassium citrate in patients consulting for urolithiasis?

Recommendation

We suggest against using sodium citrate instead of potassium citrate in patients with urolithiasis. (Very low certainty. Weak strength rating)

Key Findings and Statement of the Evidence

One randomized controlled trial compared a sodium citrate–based combination therapy with potassium citrate monotherapy, evaluating outcomes such as stone-free rate, probability and mean stone size reduction, and incidence of adverse events after 6 weeks of treatment.

Based on the available evidence, among patients consulting for urolithiasis, sodium citrate may result in little to no difference compared to potassium citrate in achieving stone-free status, may increase the probability of reducing stone size at 6 weeks. The evidence is very uncertain on the difference in the effect of sodium citrate on mean change in stone size when compared with potassium citrate, and may result in little to no difference on the occurrence of adverse events compared to potassium citrate but the evidence is very uncertain.

The overall certainty of the evidence is very low.

Key Considerations and Consensus Issues

Evidence directly comparing sodium citrate and potassium citrate for urolithiasis management is scarce and of very low certainty. Available data suggest that while both agents exert similar biochemical effects in alkalinizing urine, no study has demonstrated a clear clinical advantage for sodium citrate. Moreover, the additional sodium load may worsen hypertension, edema, or cardiovascular disease—conditions commonly observed among Filipino patients.

The Panel emphasized that most international guidelines recommend limiting sodium intake as part of non-pharmacologic management and recognize potassium citrate as the standard alkalinizing therapy. Because the guideline question involved a head-to-head comparison between sodium citrate (and not as a part of a mixture of compounds) and potassium citrate, and given the lack of compelling evidence of benefit for sodium citrate, the panel suggested a weak recommendation against its routine use in place of potassium citrate. Since only one brand of sodium citrate is available, access may be an issue and this was considered in suggesting against its routine prescription.

Nonetheless, sodium citrate may be considered in selected patients—particularly those with hyperkalemia (or at risk for hyperkalemia), with gastrointestinal intolerance to potassium citrate, or when potassium citrate is unavailable. Because of this limited utility, the strength of the recommendation was deemed weak. Clinicians should individualize therapy based on comorbid conditions, drug availability, and cost considerations.

Guideline Question 10:

Should extracorporeal shockwave lithotripsy (ESWL) be used in patients with nephrolithiasis with a total stone burden between 1 to 2 cm?

Recommendation

We suggest performing ESWL in patients with nephrolithiasis with a total stone burden of 1 to 2 cm. (Low certainty. Weak strength rating)

Key Findings and Statement of the Evidence

Twenty three randomized controlled trials compared ESWL to other minimally invasive procedures such as RIRS or PCNL and evaluated the outcomes such as stone-free rate at 3 months, retreatment rate, and adverse events for total stone burden of 1 to 2 cm. Subgroup analysis was also available for efficacy outcomes such as stone location (i.e., lower vs non-lower pole stones) and stone type (i.e., radio-opaque vs radiolucent stones).

Based on the available evidence, among patients with nephrolithiasis with a total stone burden of 1 to 2 cm, ESWL probably results in a lower stone-free rate at 3 months compared to PCNL or RIRS. ESWL probably increases the need for retreatment versus PCNL or RIRS procedures.

With respect to safety outcomes, ESWL results in lower bleeding risk or need for blood transfusion versus PCNL. ESWL, however, probably results in little to no difference in bleeding risk or need for blood transfusion when compared to RIRS. ESWL probably results in little to no difference in urinary tract infection or urosepsis incidence compared to PCNL and RIRS. Regarding postoperative pain, ESWL may result in little to no difference compared to PCNL and probably results in little to no difference compared to RIRS.

The overall certainty of evidence is low.

Key Considerations and Consensus Issues

The Panel voted unanimously in both direction and strength of recommendation after one round of voting. Despite the higher retreatment rate for ESWL and the low certainty of evidence in its benefit, the panel put higher value in its lower adverse event rate, its wider availability and the equivalence in attaining stone-free rate when compared to PCNL and RIRS.

The Panel emphasized the variability of patient preferences and values in voting for the strength of recommendation. A shared decision between the patient and doctor was stressed, and the following points may be emphasized: in patients who prefer a single treatment, the recommendation of RIRS or PCNL over ESWL may be more prudent; while in

those patients who prefer a shorter convalescence, less risk, and less cost, ESWL may be suggested.

Guideline Question 11:

Should uro-selective alpha-blockers (alfuzosin, silodosin, or tamsulosin) be used in patients undergoing extracorporeal shockwave lithotripsy?

Recommendation

We recommend the use of uroselective alphablockers in patients who underwent extracorporeal shockwave lithotripsy. (Low certainty. Strong strength rating)

Key Findings and Statement of the Evidence

Twenty-six randomized controlled trials with a total of 3045 participants investigated the effect of uro-selective alpha blockers in patients undergoing extracorporeal shockwave lithotripsy

Based on the current available evidence, uro-selective alphablockers may increase stone free rate, reduce the need for retreatment and decrease the risk of steinstrasse and has little to no effect on ER visit, on pain score measured by VAS and on the time to stone free status. The side effects with use of alpha blockers include ejaculatory dysfunction, dizziness and hypotension, but their occurrences are rare.

Overall certainty of the evidence is low.

Key Considerations and Consensus Issues

The Panel voted unanimously in both strength and direction of the recommendation after the first round of voting.

The certainty of evidence was deemed low due to risk of bias, imprecision, and inconsistency. The Panel made a strong recommendation despite a low certainty of evidence, due to the favorable benefit to risk ratio of the intervention. The Panel placed a high value on the benefits of increased stone free rate, retreatment reduction, and steinstrasse reduction, with the minimal possible harm due to a favorable side-effect profile with low incidence of associated adverse events. Other considerations of availability and inclusion in the national formulary contributed to the strength of the recommendation.

Discussion

Most recommendations are technically feasible within tertiary-level hospitals and urban centers. However, implementation at lower levels of care will require investment in diagnostic infrastructure, referral systems, and capacity building. Guideline Questions 1 and 10 entail infrastructure building and expansion of diagnostic capacity, including procurement of CT scan and ultrasound units and training of imaging personnel. Particularly in the Philippine setting, the majority of stand-alone ESWL centers are private-owned, and government efforts need to be strengthened to allay geographic and socioeconomic disparities.

Variations in the market availability and cost of key pharmacologic agents may limit access, particularly for those that are not yet included in the Philippine National Drug Formulary (PNDF). Some of the drugs mentioned in Guideline Questions 8 and 11 are not listed in the PNDF such as Silodosin. Similarly, although compounded costs are known and included in the guideline, there are no local cost-effectiveness or budget-impact analyses for several interventions (e.g., alpha-blocker use after ESWL and herbal therapies such as Sambong). Local data generation is necessary to guide resource allocation and reimbursement policies.

The recommended interventions align with current clinical practice trends and are perceived to be acceptable among urologists and other clinicians familiar with evidence-based management of urolithiasis. However, implementation strategies should prioritize equitable distribution of resources, training, and patient education across all regions.

The value of a clinical practice guideline is in its implementation. Incorporation of its recommendations into the clinical workflow is key (Figure 1). The anticipated facilitators for implementation of this CPG include the strong support and leadership from the PUA, the availability of trained specialists and increasing interest in guideline-concordant care, government programs that provide financial assistance for diagnostics and procedures, and the integration of

guideline content into residency training programs and institutional protocols.

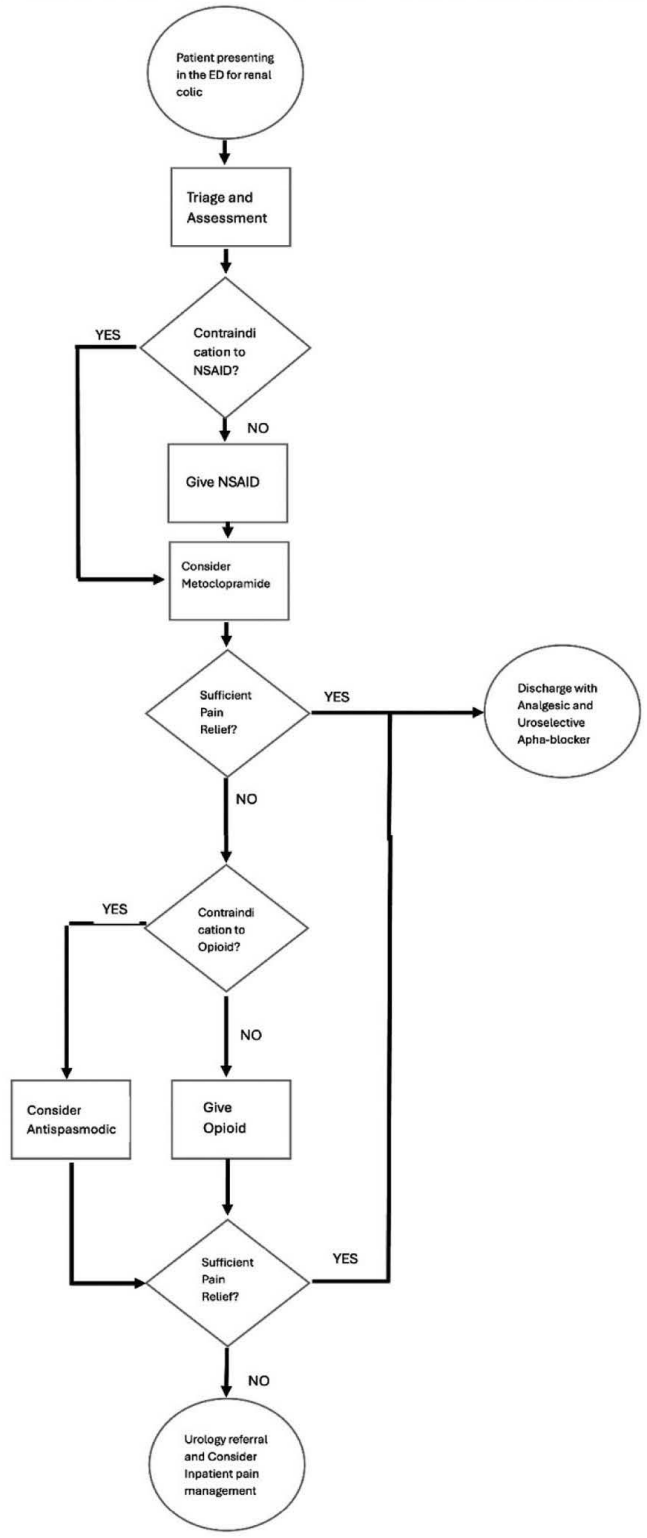

Figure 1. Algorithm for pain management at the emergency department.

On the other hand, several potential barriers to the adoption and implementation of this CPG's recommendations are present. One is diagnostic resource limitations. Access to key diagnostic tools such as non-contrast computed tomography (CT) scans, metabolic work-ups, and stone analysis laboratories remains limited in many primary and secondary care facilities, particularly in rural and underserved regions. This barrier may be addressed In the CPG, as alternative pathways are provided for limited-resource settings. Second, out-of-pocket expenses for diagnostic procedures, medications, and surgical interventions may hinder compliance, particularly among low-income patients and those without adequate insurance coverage. Inclusion in the Philippine National Drug Formulary and routine availability in subsidized local health centers may address this barrier. Third barrier is the variability in clinical practice and knowledge. Differences in practitioner familiarity with evidence-based recommendations and variations in management approaches contribute to inconsistent care, especially outside tertiary centers. Dissemination of the CPG and a multidisciplinary collaboration in guideline development may address this barrier. Systemic and logistical challenges in the current healthcare system may also prevent guideline implementation. Fragmented referral pathways, limited availability of urology specialists in non-urban areas, and lack of structured follow-up systems impede continuity of care and uniform implementation. Empowerment and involvement of frontline practitioners in the ED (Emergency Department) and primary care practitioners may help address this barrier. Finally, access to multidisciplinary care components such as nutrition counseling and long-term metabolic assessment remains suboptimal, reducing opportunities for preventive interventions. Incorporating proper health seeking behaviors, with the aid of specific guidelines at every level of care, with an emphasis on universal healthcare, may help address this barrier.

The Guideline Development Group identified several gaps in the current evidence base for the diagnosis and management of urolithiasis. Future research should aim to generate high-quality, locally relevant data to strengthen future updates of the CPG and guide clinical and policy decisions. In

this regard, research on the following topics should be pursued: economic evaluations on alpha-blocker use post-ESWL; cost-effectiveness of ESWL, RIRS, PCNL stratified according to stone hardness, size, location; optimal combination pain-regimens as initial, and step-up at emergency department and outpatient settings; high-quality studies on terpene compounds and Sambong that establishes causality, either with dose-response, reproducibility, strength of association, or comparison to a stated standard therapy; head-to-head trials of potassium citrate and sodium citrate. Lastly, evaluating the real-world uptake of the CPG recommendations across levels of healthcare is also recommended as part of guideline monitoring and evaluation.

Conclusion

The Philippine CPG on the management of urolithiasis in adults provides actionable recommendations to address important clinical questions on the diagnosis and management of urinary stone disease. The full text of the clinical practice guideline may be viewed and downloaded from https://doh.gov.ph/dpcb/doh-approved-cpg/

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