

Event: EAU24 39th Annual EAU Congress  
Submission: EAU24 Abstract Submission  
**Abstract ID:** AM24-3458  
Submitter: Dr. R. (Rhodri) Saunders

## Expert consensus on high intra-renal pressure during ureteroscopy: A pan-European Delphi panel

Topic Urolithiasis  
Clinical step Treatment  
Management tool Minimally Invasive Treatment

### Presentation mode

Poster

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### Introduction & Objectives

During ureteroscopy, e.g. for management of nephrolithiasis, surgeons need to maintain a balance between proper surgical visualization, procedure time, and patient safety. Irrigation can result in increased intra-renal pressure (IRP), potentially putting patients at risk. There is, however, only limited clarity on what defines high IRP, its possible risks, and how to monitor and manage it. A Delphi study was undertaken to help identify and understand which patients are most at risk from high IRP and its possible associated complications.

### Materials & Methods

A mixed-methods Delphi study was conducted with urologists identified as leading authors from a literature review of ureteroscopy and IRP. There were two online surveys prior to an in-person meeting. The first survey was qualitative in nature to understand surgeon opinion and practice. The second survey quantified the level of agreement within survey one and allowed a deeper exploration of key topics. All survey answers were anonymous. Consolidated findings were presented for discussion at the in-person meeting. Any areas of disagreement or agreement were explored, and consensus statements were developed. The developed consensus statements were then voted on to assess the level of consensus. The study was granted a waiver by the HML Institutional Review Board (IRB number 2193).

### Results

Eleven experts formed the panel. The panel had a median of 40 diagnoses of urolithiasis/nephrolithiasis and 30 stone removal procedures per month. During the Delphi study, experts derived 11 consensus statements that were moved forward to formal voting. Statements covered topics such as the definition of high IRP, complications linked to high IRP, and patient risk factors for these complications. Opinions initially varied on what constituted a high IRP, with concern noted predominantly at an IRP  $\geq 80 \text{ cm}^3 \text{ H}_2\text{O}$ .

After formal voting, a majority consensus was reached for 9 of 11 consensus statements. It is clear to panel experts that the higher the IRP, the higher the concern for patient safety. However, there was no consensus on a threshold for which intervention is required. Patients considered most at risk from high IRP included those with recurrent urinary tract infections, Charlson Comorbidity Index  $\geq 7$ , diabetes, female sex, and those with a tight ureter or narrow pelvic-ureteric junction.

### Conclusions

The panel agreed that any IRP above the normal physiological levels is to be considered high. High IRP during ureteroscopy is a concern, given its potential correlation with heightened patient complications. To minimize the risks, it is important to understand factors that put patients at risk of complications from high IRP. The panel were unanimous in their call for additional research to better understand and mitigate these risks and to inform refinements to current clinical practice.