Kidney stones were the most common symptom triggering PH1 suspicion; interviewees also most commonly mentioned kidney stones. Despite this, a number of patients with PH1 experienced long times to diagnosis following initial onset of disease manifestations. Possible findings on initial workup: failure to thrive, nephrocalcinosis, output, fever, hematuria, and/or vomiting. Physicians were from the United States (N=17), Europe (N=15), and Middle East / South Asia (N=17). Recognition of kidney impairment was critical to appropriately evaluate patients and obtain diagnosis of PH1 when kidney stones, including abdominal or back pain, were the main disease manifestation.

**Patient Characteristics**

- A total of 54 PH1 patient cases were reported by the physicians interviewed.
- Age of diagnosis ranged from 1 month to 48 years (median 9.5 years) post-diagnosis.
- By the time of interviews, patients were a median of 9.5 years old (range: 0.5–25 years) post-diagnosis.

**Pathophysiology**

Primary Hyperoxaluria Type 1 (PH1)

Kidney stones are common in PH1 patients. It is believed that elevated oxalate levels in the urine increase the risk of stone formation. Patients with PH1 may have a high dietary intake of oxalate, which is metabolized to glycine and urinary oxalate. The presence of hyperoxaluria can lead to the formation of kidney stones, which can cause pain, discomfort, and other symptoms.

**Diagnosis**

**Patient Journey from Presentation to Diagnosis**

- Kidney stones were the disease manifestation most commonly triggered by suspicion of PH1; however, in many cases, kidney stones were treated acutely without further evaluation, leading to significant diagnostic delay.
- Majority of patients presented with stones and remained under urology care for treating stones for several years with no metabolic evaluation (stone treatment cycle). In many cases, due to diagnostic delay, patients spent an average of 5 years in this cycle.

**Discussion & Summary**

- Kidney stones were the most common symptom triggering PH1 suspicion; interviewees also most commonly mentioned kidney stones (a single event in childhood or recurrent events in adults) when asked what, in retrospect, should have triggered suspicion in these cases.
- Despite this, a number of patients with PH1 experienced long times to diagnosis following initial onset of disease manifestations, which often included kidney stones.
- In many cases, patients initially presented with minimal or no renal impairment, but progressed to advanced kidney disease before diagnosis; this delay in diagnosis contributed to further decline of the disease.
- Key factors that contributed to diagnostic delay: patients remaining in the stone treatment cycle with no further evaluation/workup/completed for a while after initial presentation with stones and/or lack of awareness/suspicion of PH1.