

BLADDER

[Serine Deamination Is a New Acid Tolerance Mechanism Observed in Uropathogenic Escherichia coli](#)

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Escherichia coli associates with humans early in life and can occupy several body niches either as a commensal in the gut and vagina, or as a pathogen in the urinary tract. As such, E. coli has an arsenal of acid response mechanisms that allow it to withstand the different levels of acid stress encountered within and outside the host. Here, we report the discovery of an additional acid response mechanism that involves the deamination of l-serine to pyruvate by the conserved l-serine deaminases SdaA and SdaB. l-serine is the first amino acid to be imported in E. coli during growth in laboratory media. However, there remains a lack in knowledge as to how l-serine is utilized. Using a uropathogenic strain of E. coli, UT189, we show that in acidified media, l-serine is brought into the cell via the SdaC transporter. We further demonstrate that deletion of the l-serine deaminases SdaA and SdaB renders E. coli susceptible to acid stress, similar to other acid stress deletion mutants. The pyruvate produced by l-serine deamination activates the pyruvate sensor BtsS, which in concert with the noncognate response regulator YpdB upregulates the putative transporter YhjX. Based on these observations, we propose that l-serine deamination constitutes another acid response mechanism in E. coli.

[Total fluid intake, caffeine, and other bladder irritant avoidance among adults having urinary urgency with and without urgency incontinence: The Symptoms of Lower Urinary Tract Dysfunction Research Network \(LURN\)](#)

Cameron AP, Helmuth ME, Smith AR, Lai HH, Amundsen CL, Kirkali Z, Gillespie BW, Yang CC, Clemens JQ; LURN Study Group

Caffeine has long been vilified as a cause for urinary urgency incontinence (UUI)

along with other potential bladder irritants such as carbonation, alcohol, and acidic juices. The objective of this study was to assess the fluid intake behavior of people with urgency, UUI, and those with lower urinary tract symptoms (LUTS) without UUI or urgency to assess if they avoided certain potential bladder irritants or had different fluid intake. We hypothesized that patients with UUI would avoid caffeine as a self-management method more so than these other two groups. Treatment-seeking men and women with LUTS in the Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) Observational Cohort study completed a baseline 3-day voiding and intake diary. "Complete" diaries had 3 days of data and no missing intake or voided volumes. Beverages with any caffeine, alcohol, carbonation, or acidic juice were identified and the total volume was recorded as well as the type of beverage containing caffeine to calculate the daily caffeine dose. The conclusion showed individuals with urgency consume a lower volume of fluid than those without urgency. UUI participants more often abstain from caffeine, but among those that consume caffeine, the dose is similar to those without UUI. One explanation for these results is that only a subset of individuals with urgency or UUI are caffeine sensitive.

[Treatment patterns in women with urinary urgency and/or urgency urinary incontinence in the symptoms of Lower Urinary Tract Dysfunction Research Network](#)[Observational Cohort Study](#)

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Limited epidemiological data exist describing how patients engage with various treatments for overactive bladder (OAB). To improve care for patients with OAB, it is essential to gain a better understanding of how patients interface with OAB treatments longitudinally, that is, how often patients change treatments and the pattern of this treatment change in terms of

escalation and de-escalation. The objective was to describe treatment patterns for women with bothersome urinary urgency (UU) and/or urgency urinary incontinence (UUI) presenting to specialty care over 1 year. Among 349 women, 281 reported UUI and 68 reported UU at baseline. At the end of 1 year of treatment by a urologist or urogynecologist, the highest level of treatment received by participants was 5% expectant management, 36% behavioral treatments (BT), 26% physical therapy (PT), 26% OAB medications, 1% percutaneous tibial nerve stimulation, 3% intradetrusor onabotulinum toxin A injection, and 3% sacral neuromodulation. Participants using BT or PT at baseline were more likely to be de-escalated to no treatment than participants on OAB medications at baseline, who tended to stay on medications. Predictors of the highest level of treatment included starting level of treatment, hypertension, UUI severity, stress urinary incontinence, and anticholinergic burden score. The conclusion showed treatment patterns for UU and UUI are diverse. Even for patients with significant bother from OAB presenting to specialty clinics, further treatment often only involves conservative or medical therapies. This study highlights the need for improved treatment algorithms to escalate patients with persistent symptoms, or to adjust care in those who have been unsuccessfully treated.

- Jennifer Allmaras MPH, Muen Wang, 1/3/2023

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