Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Editorial

What the editors are reading: Population and health services

A systematic review and meta-analysis of children with coronavirus disease 2019 (COVID-19) [1]

Cui X, et al., J Med Virol 2020

Summary: The authors conducted a systematic review and meta-analysis of articles reporting on pediatric cases of coronavirus disease 2019 (COVID-19) due to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection. This article focused on the clinical presentation of COVID-19, including demographic characteristics, disease severity, reported symptoms, laboratory findings and imaging results.

To identify eligible studies, the authors followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and queried multiple databases. The initial search generated 1056 unique articles, and 48 articles from December 2019 to April 2020 with 5829 patients included in the final analysis. Most studies were from China, with 6 countries represented. Most (79%) of the patients were from 2 studies — 1 from the United States and 1 from China.

Nearly 1 in 5 pediatric cases were diagnosed in children <1 year old, with a relatively even age distribution among children >1 year old. Just over half of children with COVID-19 (55%) were male, and 72% had a known COVID-19 contact. Infants were more frequently symptomatic vs. older children (94% vs. 80%), and more were more frequently severely/critically ill vs. older children (21% vs. 12%). The most common presenting symptoms in both infants and older children were fever and cough. Nearly 70% of children had normal white blood cell counts, while 10% had leukocytosis, and 19% had lymphopenia. Of children >1 year old, 37% had an elevated creatine kinase-MB while 88% of infants had an elevated CK-MB. Nearly half of patients (42%) had normal chest imaging. Encouragingly, no deaths were reported.

Take Home Message: COVID-19 affects children, but disease is typically milder than in adults. Infants appear to be disproportionately affected by both disease prevalence and severity. Though deaths from COVID-19 have been reported in children since publication of the article online by Cui et al. [2], it is rare for children to die from COVID-19, though an additional emerging concern is for multisystem inflammatory syndrome in children (MIS-C) [3]. Children (particularly infants) do appear to have cardiac damage from COVID-19 such that cardiac clearance prior to sports participation is now recommended by the American Academy of Pediatrics [4]. Long-term monitoring recommendations for all children with a known history of COVID-19 are still forthcoming. All pediatric clinicians, including pediatric urologists, should be aware of possible presentation and sequelae of COVID-19 among their patients.

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Kidney Function Surveillance in the National Spina Bifida Patient Registry: A Retrospective Cohort Study [1]

Chu DI et al., J Urol 2020

Summary: Disparate clinical practices have the potential to lead to disparate patient care, often underpinning healthcare disparities. Investigating care patterns and practice variation is thus central to the Health Services Research (HSR) armamentarium. In this article, Chu et al. investigate whether kidney function surveillance among children with Spina Bifida varies among institutions participating in the National Spina Bifida Patient Registry (NSBPR).

The authors included patients from the NSBPR with >2 years follow up between 2013 and 2018. Key variables included the unique, unidentified clinic where care was delivered, type of spinal dysraphism (myelomeningocele versus any other spinal dysraphism), sociodemographic variables (age, gender, race/ethnicity & insurance) and clinical characteristics (CIC, prior augment, functional lesion level and mobility status). The primary outcome was defined as having a serum creatinine and a renal/bladder ultrasound (RBUS) checked at least once within a 2-year follow up period. Three focused analyses, including a more stringent definition of renal surveillance (creatinine plus RBUS within 1 year) and two less stringent definitions (RBUS only within 2 years and creatinine only within 2 years), were also performed.

Over 5000 patients were treated at 23 separate locations with an overall renal surveillance rate of 62%. There was substantial variability in surveillance rates among the clinics, which ranged from 6 to 100%. This variation persisted when adjusting for demographic and clinical factors, as well as when renal surveillance criteria were even less stringent. An incidental insight was that most patients who had appropriate surveillance had additional surveillance during the two-year period. Other clinical factors independently associated with appropriate renal surveillance were younger age, lesion level, non-ambulatory status and prior augment. Close to half of patients in late childhood did not receive renal surveillance.

Take-Home Message: Between 2013 and 2018, the rate of renal surveillance among children with Spina Bifida was suboptimal. This was driven by substantial variability in renal surveillance among clinics participating in the NSBPR. Those clinics that met surveillance criteria were also more likely to have performed additional surveillance, revealing an even broader chasm in follow up care. It is important to note that participation in the NSBPR requires a degree of organization and resources related to the care of patients with spina bifda. Therefore, one could hypothesize that variability in care received outside of NSBPR institutions may be worse. Ultimately, the creation, testing and adoption of clinical protocols will serve to diminish unwarranted variation in the care of patients born with spina bifida and improve long-term renal outcomes.

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Childhood Urinary Tract Infections and Pregnancy-Related Complications in Adult Women [1]

Honkila M, et al. Pediatrics 2020

Summary: In this population-based cohort study, Honkila et al. compare pregnancy outcomes of women with a history of urinary tract infection (UTI) in childhood to those without. Women with vesicoureteral reflux (VUR), and with mild abnormalities on renal ultrasound (including ureteral dilation) were included. Women with severe urinary tract abnormalities (defined as ureteropelvic junction or ureterovesical junction obstruction, renal agenesis, renal dysplasia [not further defined], unilateral small kidney) were excluded from the study.

In total, 260 mothers with a history of prior UTI were compared with a control group of 500 women who had given birth, but never had a UTI. Renal ultrasound was abnormal (e.g., mild renal pelvis dilation, renal duplication) in 18% of women with prior UTI. Of the women with prior UTI who underwent a voiding cystourethrogram, 14% (23/161) had VUR grade $\geq$ III, 16 of whom underwent antireflux surgery.

The primary outcome was the proportion of women with hypertension, preeclampsia, proteinuria, or pyelonephritis during the first pregnancy. There was no difference in this composite outcome (or any of the individual components) when comparing women with prior UTI vs. controls: 40% of women with UTI, and 41% of women without a UTI history had one of the primary study outcomes. No woman with a prior UTI had pyelonephritis in pregnancy. On subgroup analysis, there were no differences in pregnancy outcomes comparing women with prior history of VUR vs. controls. Pre-eclampsia was more frequent among women whose first UTI was classified as pyelonephritis compared with controls (12% vs. 6%, $p = 0.047$), representing the only statistically significant study finding.

Take-Home Message: Pregnancy outcomes appear to be similar when comparing women with a prior history of UTI to other women with similar characteristics. Though study data are somewhat limited in clinical granularity, history of UTI alone does not appear to represent a significant risk factor for adverse renal outcomes during pregnancy. Similar studies focused on patients with VUR and/or renal scarring specifically would be particularly useful to pediatric urologists who are counseling parents of girls and adolescents about potential long-term sequelae of their urologic diagnoses.

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Discrepant Rates of Hypospadias Surgical Complications: A Comparison of U.S. News & World Report and Pediatric Health Information System Data and Published Literature [1]

Pohl HG, et al. J Urol 2020

Summary: Using data from 29 free-standing pediatric hospitals (PHIS), Pohl et al. compared revision rates following distal and proximal hypospadias repairs using several different strategies for identifying revision surgeries. The authors conducted a time and cluster-adjusted analysis that compared current procedural terminology (CPT) codes used by USNWR to define a revision versus CPT codes used by USNWR + a CPT code for "urethrocutaneous fistula repair" versus USNWR CPT codes + a broad list of procedure codes that would reflect management of a hypospadias complication. Overall, 19,931 patients underwent distal and 5840 underwent proximal hypospadias repair. Compared to USNWR CPT codes alone, revision rates were significantly more common when more inclusive criteria were used following distal hypospadias (3.3% versus 4.3% and 6.4%, respectively). For proximal hypospadias, there was no difference if only "repair of urethrocutaneous fistula" was added, but a significant difference appeared when a broader list of CPT codes was used (USNWR 12.3% versus 22.1%). Although raw data indicated more repeat procedures with additional years of follow-up, this was not significant for any group.

These results identify an issue of basic *validity*: the USNWR process of measuring hypospadias complications does not fully measure the concept it intends to measure. In fact, it *reliably* underestimates hypospadias revisions. This underestimation appears to be driven by not using key CPT procedural codes associated with hypospadias complications managed in the operating room.

The authors are quick to acknowledge that even the most comprehensive CPT code criteria for identifying revision rates produces results inconsistent with single institution reports, which have ranged as high as 50% [2]. This in part reflects the trappings of secondary data analysis: you simply cannot identify key details and control your sample in the same way as primary data collection, which inherently leads to varying rates of misclassification [3]. It may also reflect whether or not one is reporting complications or revisions, as well as varying thresholds for what is considered a complication or revision. The gravity associated with this study is that the USNWR is setting unattainable standards for revision rates after hypospadias repairs.

Take Home Message: Revision rates after proximal and distal hypospadias are substantial. Any secondary analysis of procedural codes may underestimate the revision rates associated with each hypospadias procedure; however the magnitude of this underestimation is significantly larger when using USNWR CPT code criteria as compared to a more inclusive list of procedural codes.

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