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.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Contents

Foreword: COVID-19 Pandemic, Children, Pediatricians, and the Future xv
Bonita F. Stanton

Preface: How Do We Take Care of Children During this COVID-19 Pandemic? xix
Elizabeth Secord and Eric J. McGrath

Mental Health Effects of the COVID-19 Pandemic on Children and Adolescents: A Review of the Current Research 945
Jill Meade

Research confirms that children and adolescents are experiencing significant anxiety and depression during the coronavirus disease 2019 pandemic. Adolescents may be at greater risk, particularly females. Social isolation, loneliness, lack of physical exercise, and family stress may contribute to these problems. Children who feel unsafe with regards to coronavirus disease 2019 may be more likely to experience somatic symptoms, depression, and anxiety. Parental stress and mental health problems may put children at an increased risk for maltreatment. Medical and behavioral health professionals should routinely screen for depression and anxiety. Increased access to mental health services will be critical.

COVID-19 in Children: Clinical Manifestations and Pharmacologic Interventions Including Vaccine Trials 961
Ramon Galindo, Heather Chow, and Chokechai Rongkavilit

Children usually present with milder symptoms of COVID-19 as compared with adults. Supportive care alone is appropriate for most children with COVID-19. Antiviral therapy may be required for those with severe or critical diseases. Currently there has been a rapid development of vaccines globally to prevent COVID-19 and several vaccines are being evaluated in children and adolescents. Currently, only the Pfizer–BioNTech messenger RNA vaccine is approved for emergency authorization use in the pediatric population ages 12 years and older.

COVID-19 and Substance Use in Adolescents 977
Leslie H. Lundahl and Ciara Cannoy

Studies have yielded mixed findings regarding changes in adolescent substance use during the COVID-19 pandemic; some report increased alcohol and cannabis use, others show less binge drinking and vaping behaviors, and others no change. In 2019, only 8.3% of the 1.1 million adolescents with a substance use disorder received specialized treatment. Treatment rates for 2020 have not yet been published. Stay-at-home orders and social distancing guidelines put into place in March 2020 caused the partial closure of many outpatient substance use clinics. The implications of this
treatment suspension and special considerations for working with adolescents during stay-at-home orders are discussed.

Child Maltreatment During the COVID-19 Pandemic: A Systematic Rapid Review
Ashley Rapp, Gloria Fall, Abigail C. Radomsky, and Sara Santarossa

The present study is systematic rapid review on the nature of the relationship between the COVID-19 pandemic and child maltreatment. Database searches on December 28, 2020, identified 234 unique citations; 12 were ultimately included in our analysis. Included articles measured child maltreatment inclusive of physical, psychological, and sexual abuse, and child neglect during the COVID-19 pandemic. Compared with the pre-pandemic period, 5 articles found an increase in child maltreatment, 6 articles found a decrease, and 1 study found no difference. There existed variation in geography of study location, age of child maltreatment victims, and types of child maltreatment assessed.

Pediatric Rheumatologic Effects of COVID-19
Nivine El-Hor and Matthew Adams

A multisystem inflammatory syndrome (MISC) can result from COVID-19 infection in previously healthy children and adolescents. It is potentially life threatening and is treated initially with intravenous immunoglobulin and aspirin but may require anti-inflammatory monoclonal antibody treatment in severe cases. SARS-CoV-2 infection can cause macrophage activation syndrome, chilblains, and flares of existing rheumatologic diseases. The pandemic has led to later presentation of some rheumatologic conditions as parents and patients have avoided health care settings. PubMed and Google scholar have been utilized to review the literature on the rheumatologic conditions resulting from COVID-19 and the current treatment options.

Impact of COVID-19 on Pediatric Immunocompromised Patients
James A. Connelly, Hey Chong, Adam J. Esbenshade, David Frame, Christopher Failing, Elizabeth Secord, and Kelly Walkovich

Although living with the threat of severe infection is a constant worry for many pediatric immunocompromised patients, the pandemic begotten by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) created new fears and challenges for families and health care providers. As people around the world through government directive or independent choice moved into protective isolation, immunosuppressed children who routinely require medical management were challenged with necessary public ventures to health care facilities. Medical centers adapted by developing new approaches to care for immunocompromised children such as expanding telemedicine services and conversion to at-home immune therapies to reduce infectious exposure. Testing of asymptomatic patients for SARS-CoV-2 before medical therapies became routine in most modern health care units, and development of highly sensitive assays was critical to avoid patient and staff exposure as well as initiation of new immunosuppressive treatment in positive patients. As the prevalence of coronavirus disease (COVID-
amplified and infected immunocompromised patients became more common, questions quickly arose including how aggressively to treat the infection with most agents still in clinical trials. In addition, how should chronic immunosuppressant drugs that may interfere with the ability to clear the virus be adjusted? Finally, what if the infection leads to excessive immune responses or flares of the underlying disorder? In this review, we explore the impact of the COVID-19 pandemic on immunocompromised children during the first year, summarizing what is known and yet to be discovered, approaches to testing and treatment of SARS-CoV-2, considerations in management of underlying immune suppressive medications, outcomes published to date, and strategies for vaccinating this unique population.

Changes in Clinical Care of the Newborn During COVID-19 Pandemic: From the Womb to First Newborn Visit

Pezad N. Doctor, Deepak Kamat, and Beena G. Sood

COVID-19 has afflicted the health of children and women across all age groups. Since the outbreak of the pandemic in December 2019, various epidemiologic, immunologic, clinical, and pharmaceutical studies have been conducted to understand its infectious characteristics, pathogenesis, and clinical profile. COVID-19 affects pregnant women more seriously than nonpregnant women, endangering the health of the newborn. Changes have been implemented to guidelines for antenatal care of pregnant women, delivery, and newborn care. We highlight the current trends of clinical care in pregnant women and newborns during the COVID-19 pandemic.

The Effect of COVID-19 on Education

Jacob Hoofman and Elizabeth Secord

COVID-19 has changed education for learners of all ages. Preliminary data project educational losses at many levels and verify the increased anxiety and depression associated with the changes, but there are not yet data on long-term outcomes. Guidance from oversight organizations regarding the safety and efficacy of new delivery modalities for education have been quickly forged. It is no surprise that the socioeconomic gaps and gaps for special learners have widened. The medical profession and other professions that teach by incrementally graduated internships are also severely affected and have had to make drastic changes.

Neurological Effects of COVID-19 in Children

Tuhina Govil-Dalela and Lalitha Sivaswamy

The COVID-19 pandemic has spread rapidly across the world in 2020, affecting both adults and, to a lesser extent, children. In this article, the authors describe the neurologic manifestations of COVID-19 in children, including the epidemiology, pathogenesis, clinical features, laboratory and imaging findings, and treatment options. The management of patients with concomitant neuroimmunologic disorders and drug interactions between medications used to treat COVID-19 and other neurologic disorders (especially immune-modifying drugs) is also discussed.
Care of Pediatric Patients with Diabetes During the Coronavirus Disease 2019 (COVID-19) Pandemic

Colleen Buggs-Saxton

This article summarizes clinical observations and management strategies in pediatric type 1 diabetes (T1D) during the coronavirus disease 2019 (COVID-19) pandemic. Despite initial fears that children with diabetes would, similar to adults with diabetes, be at risk for severe COVID-19, most pediatric patients with a history of T1D who developed COVID-19 had mild disease or were asymptomatic similar to their peers without diabetes. The article also summarizes the use of telemedicine to provide ongoing care for pediatric patients with T1D during the COVID-19 pandemic. Finally, the article highlights important lessons learned about management of pediatric diabetes during the COVID-19 pandemic.

Avoidance of COVID-19 for Children and Adolescents and Isolation Precautions

Shipra Gupta, Layne Smith, and Adriana Diakiw

Limiting exposure to severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus has been the major principle guiding public health measures. Masking, social distancing, as well as frequent hand hygiene have been the chief nonpharmaceutical interventions as preventive strategies for all age groups. Advancement in vaccine development and vaccination of large populations offer a glimmer of hope for containing and ending this pandemic. However, until immunization is widespread in the community, masking, social distancing, and frequent handwashing, as well as early detection and isolation of infected persons, should be continued to curb the spread of illness.

The Impact of Coronavirus Disease 2019 on Pediatric Asthma in the United States

Aishwarya Navalpakam, Elizabeth Secord, and Milind Pansare

The coronavirus disease 2019 (COVID-19) pandemic has caused severe economic and health impacts in the United States, and the impact is disproportionately more in socially disadvantaged areas. The available data, albeit limited in children, suggest that the initial concerns of the potential impact of COVID-19 illness in children with asthma are unproven thus far. The reduction in asthma morbidities is due to improved adherence, COVID-19 control measures, school closures, and decreased exposure to allergens and viral infections in children. During the pandemic, asthma guidelines were updated to guide physicians in asthma care. Due to the unpredictable nature of COVID-19, it is important to be vigilant, adhere to treatment guidelines, and implement preventive measures to eradicate the virus and improve outcomes in children with asthma.

Health Disparities and Their Effects on Children and Their Caregivers During the Coronavirus Disease 2019 Pandemic

Lynn C. Smitherman, William Christopher Golden, and Jennifer R. Walton

The coronavirus disease 2019 (COVID-19) pandemic has uncovered long-standing health disparities in marginalized communities, including racial and ethnic minorities and children with underlying medical and social problems. African Americans, Hispanics, and Native Americans have
higher rates of COVID-19 infections and deaths than their population percentages in the United States. Unique populations of children, including children with developmental disabilities, children in the foster care system, children with chronic medical problems, and children who are homeless are particularly vulnerable to COVID-19 infection. This article explores how the COVID-19 pandemic superimposed on health disparities directly and indirectly affects children, adolescents, and their caregivers.