

FEBRUARY 2021 Medical Newsletter



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Specialty Spotlight: Pediatrics

Job Description

- Examine young patients from birth to twenty years of age
- Record all patient data (including vaccination information, treatment plans and prognosis, medications and more)
- Interpret and discuss test results
- Explain medical treatments and procedures to patients and family members
- Educate patients, parents and members of community about activity, diet, hygiene, and disease prevention methods

Years of Study (In Order)

- 4 years of undergraduate school
- 4 years of medical school
- 3 years of residency

Licensing

- M.D. candidates will take the U.S. Medical Licensing Exam (USMLE)
- D.O. candidates will take the Comprehensive Osteopathic Medical Licensing Exam (COMLEX-USA)

Certification

- Can become board certified through American Board of Pediatrics

Salary Range

- \$178,798 - \$245,297

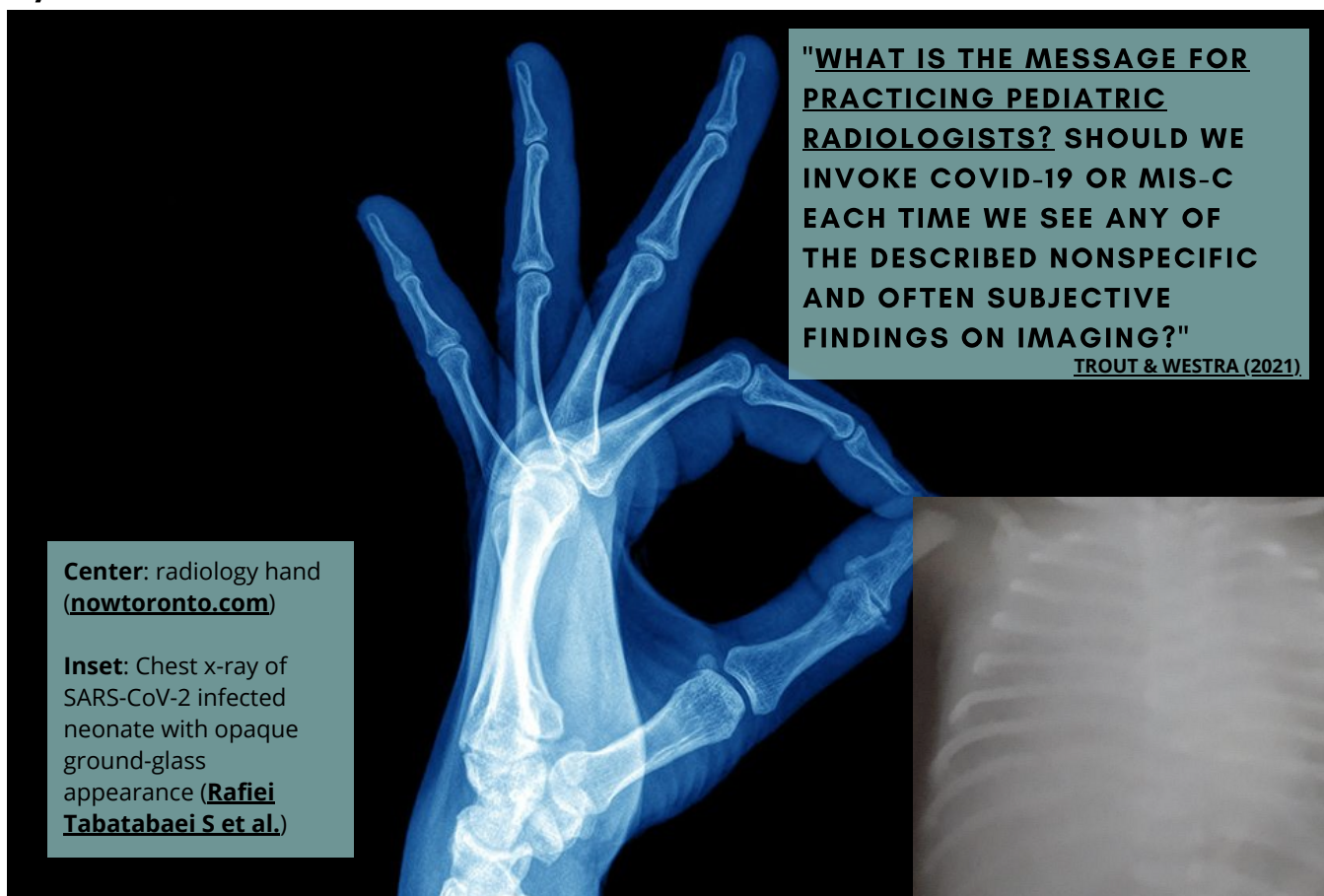
Subspecialties

- Adolescent medicine
- Child abuse pediatrics
- Developmental-behavioral pediatrics
- Hospice and palliative medicine
- Neonatal-perinatal medicine
- Cardiology
- Critical care
- Emergency medicine
- Gastroenterology
- And more



COVID-19 in Children and Neonates

Ryen Belle Harran



"WHAT IS THE MESSAGE FOR PRACTICING PEDIATRIC RADIOLOGISTS? SHOULD WE INVOKE COVID-19 OR MIS-C EACH TIME WE SEE ANY OF THE DESCRIBED NONSPECIFIC AND OFTEN SUBJECTIVE FINDINGS ON IMAGING?"
 TROUT & WESTRA (2021)

Center: radiology hand (nowtoronto.com)
Inset: Chest x-ray of SARS-CoV-2 infected neonate with opaque ground-glass appearance ([Rafiei Tabatabaei S et al.](#))

How does SARS-CoV-2 affect humans?

- Infects the **lung tissues**; induces **muscle pain**, headache, and **fever**
- Causes **respiratory issues**, including cough, **shortness of breath**, and **pneumonia**
- More severely affects **at-risk adults** than children

Although it affects children less severely than adults, it **still infects children**. It has the potential to cause severe adverse consequences if left undiagnosed or untreated.

Pediatric COVID-19 infections caused a variety of effects, including "**multisystem inflammatory syndrome in children**" (MIS-C). Assumably, the **variability** of response levels in children is due to the **different levels of ACE-2 receptor** expression** in the mucosa of young children.

In Iran, a **case series study of neonates** found, that **infants under one year** showed more severe COVID-19 symptoms, in comparison to children between **1 and 15 years old**.

Infection in neonates is **highly nonspecific**, as (1) temperature instabilities, (2) respiratory, (3) GI, and (4) cardiovascular issues are less severe in most cases, and **may indicate a plethora of non-COVID-related causes**.

A **February 2021 editorial** supported these findings, summarizing a number of clinical and laboratory research results. Pediatric cases showed **characteristic** signs of (1) **peribronchial thickening**, (2) pleural effusions (leading to **opaque pulmonary x-rays**), (3) gallbladder, and (4) bowel **wall thickening**. However, the variability of these signs is **not specific enough**, to allow physicians to make **accurate MIS-C diagnoses**.

**ACE-2 is necessary for SARS-CoV2 spike binding.

A Game-Changing Drug for Obesity

Srusti Chandra



"No other drug has come close to producing this level of weight loss -- this really is a gamechanger. For the first time, people can achieve through drugs what was only possible through weight-loss surgery," Professor Batterham (UCL Medicine)

A study, published in the New England Journal for Medicine, involved roughly 2000 people in 16 countries to analyze the effects of a drug, Semaglutide, on obesity.

About the Trial:

- Conducted for 68 weeks
- 94.3% of participants completed the study
- 2.4mg dose of Semaglutide was taken weekly via a subcutaneous injection
- 33% of the participants lost more than 20% of their body weight
- The average participant lost roughly 34 pounds
- The placebo group observed an average weight loss of about 6 pounds

About Semaglutide:

- Clinically approved for patients with type 2 diabetes and is prescribed at lower doses of 1mg
- Possesses a compound similar to human glucagon-like peptide-1 (GLP-1) hormone, which reduces hunger and calorie intake

The Drug and Obesity:

- Obesity is accompanied by other risks such as heart disease, type 2 diabetes, liver disease, increased susceptibility to COVID-19, and more
- Semaglutide can aid in the reduction of life-limiting diseases associated with obesity and improve quality of life



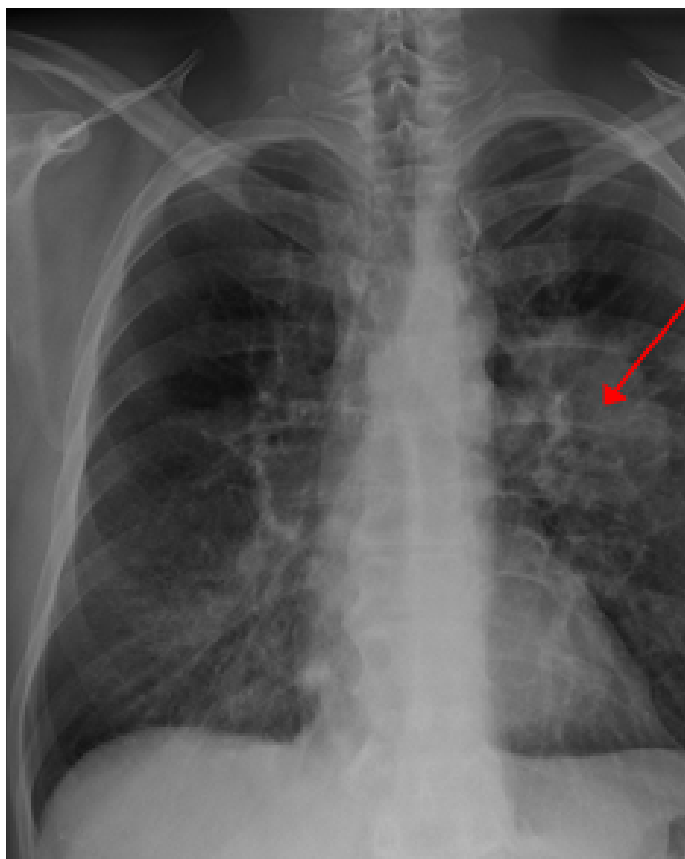
How can patients with spinal cord injuries self-regulate their blood pressure? This new invention tells us how!

A New Invention to Regulate BP in Patients with Spinal Cord Injuries

Alisha Khodabocus

- Researchers from the University of Calgary developed equipment that can regulate BP by sending electrical stimulation to the spinal cord
- It is implanted into the spinal cord at the hemodynamic hotspots (points where BP is controlled).
- An algorithm helps to monitor the BP level and, when it drops too low, it applies electrical stimulation which constricts blood vessels and raises BP.
- Has already shown effective in animal studies and researchers are working with the company ONWARD to commercialize the product!

If we are generally healthy, our blood pressure tends to self-regulate when we sit up from lying down. But what if you have a spinal cord injury that makes sitting up difficult, or even impossible? Not being able to self-regulate blood pressure by sitting up can lead to issues like dizziness, loss of cognitive function, and brain fog. If this continues long-term, more serious events like strokes can occur. Thankfully, a new piece of technology can help to remedy this!



Lung cancer makes up more than 25% of cancer-related deaths.

Identifying the Cause of Lung Cancer

Sejal Kaushik

Lung cancer threatens the lives of over 540,000 Americans. With no cure in sight, it is essential to diagnose lung cancer when it is at its earliest stage. Pinpointing the causes of lung cancer is one way to do this. Steering clear of smoking and other harmful identified carcinogens is common knowledge to prevent lung cancer. Genetics also plays a large role in the formation of this cancer. A [study](#) conducted by Epidemiology of Young Lung Cancer (EoYLC) from 2014 through 2017 revealed that almost 84% of young lung cancer patients had genetic mutations. On Tuesday, the Addario Lung Cancer Medical Institute (ALCMI) and Go2 Foundation for Lung Cancer [announced](#) that they

would be conducting another study within the initial EoYLC study, this time focusing on the role of childhood exposures and environmental factors in the formation of lung cancer. This information will be collected through anonymous surveys. The goal of this study, ALCMI CEO Tony Addario stated, is to get closer to "understanding who is at greater risk and how we can further individualize more effective care that will result in better outcomes for young lung cancer patients". With this, scientists can get a step closer to defeating lung cancer.

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