Testing and Treating Mycobacterium tuberculosis Infection

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After infection with Mycobacterium tuberculosis, a minority of individuals will progress to tuberculosis disease (TB). The risk is higher among persons with well-established risk factors and within the first year after infection. Testing and treating individuals at high risk of progression maximizes the benefits of TB preventive therapy; avoiding testing of low-risk persons will limit potential harms. Several treatment options are available; rifamycin-based regimens offer the best efficacy-safety balance. In this review, we present an overview of the diagnosis and treatment of TB infection, and summarize common clinical scenarios.

Care of the Seriously Ill Patient with SARS-CoV-2

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In late 2019, SARS-CoV-2 caused the greatest global health crisis in a century, impacting all aspects of society. As the COVID-19 pandemic evolved throughout 2020 and 2021, multiple variants emerged, contributing to multiple surges in cases of COVID-19 worldwide. In 2021, highly effective vaccines became available, although the pandemic continues into 2022. There has been tremendous expansion of basic, translational, and clinical knowledge about SARS-CoV-2 and COVID-19 since the pandemic's onset. Treatment options have been rapidly explored, attempting to repurpose preexisting medications in tandem with development and evaluation of novel agents. Care of the seriously ill patient is examined.

The Role of Long-Term Noninvasive Ventilation in Chronic Stable Hypercapnic Chronic Obstructive Pulmonary Disease

Madalina Macrea and John M. Coleman III

Despite the heterogeneity of data on the role of noninvasive ventilation (NIV) in severe stable chronic obstructive pulmonary disease with chronic hypercapnia, the current evidence supports the use of NIV in select populations and phenotypes. The Center for Medicare and Medicaid Services reimbursement criteria are complex, and the practice of navigating the most efficient method to initiate NIV therapy continues to be challenging. These patients optimally require referral to a medical center that has physicians with specific training in pulmonary and sleep medicine, who can navigate the specific needs for the use of NIV.
As many as 15% to 20% of patients with asthma have incompletely or poorly controlled asthma despite treatment with inhaled corticosteroids and long-acting beta-agonist bronchodilators. They are vulnerable to burdensome symptoms, limitations to their exercise capacity, and asthma attacks that can be frightening and potentially life-threatening. This article outlines a systematic approach to their evaluation, attempting to identify remediable factors that are making their asthma more severe than most other persons with asthma. This approach includes an emphasis on ensuring the correct diagnosis, minimizing exposures to stimuli that worsen airway inflammation, alleviating modifiable comorbidities such as chronic rhinosinusitis and gastroesophageal reflux, and supporting regular medication adherence and effective technique for administering inhaled medications. A basic diagnostic laboratory work-up is recommended, to be modified and amplified according to individual patient needs.

Providers caring for patients with severe, therapy-resistant asthma have novel treatment options. Administration of additional inhaled corticosteroids at the time of rescue bronchodilator use, a strategy referred to as anti-inflammatory rescue or AIR, has proved to be effective in reducing the frequency of exacerbations and improving asthma-related quality of life. Monoclonal antibodies targeting Type-2 airway inflammation are highly effective and can reduce the frequency of need for oral corticosteroids. The care of the patient with severe asthma must also include a strategy to help avoid severe, life-threatening asthma attacks, with intense patient education and a recommended survival toolkit.

People with Cystic Fibrosis (CF) are living longer and healthier lives due in part to new therapies, called Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) modulators. However, disparities in outcomes still exist, with females demonstrating a shorter life expectancy than males; this is opposed to the typical female versus male life expectancy in the general United States population. In addition, minority populations such as those of Hispanic ethnicity and African Americans are less frequently eligible for these new CFTR modulators. The mechanisms driving this difference and the relative contribution of CFTR to the etiology are not yet elucidated.

Chronic obstructive pulmonary disease (COPD) is the third leading cause of mortality in the United States, behind cardiovascular and malignant
disorders. As the understanding of the pathogenesis has evolved, it led to targeting mechanical aspects of the disease to improve patient symptoms and quality of life. Modern management of COPD offers a variety of mechanical and surgical treatments for patients with advanced disease who do not achieve benefit from medical therapy alone. These treatments include therapies aimed at lung volume reduction, through surgical or bronchoscopic techniques. While these techniques are established and have proven benefit, others are still under development. Herein we discuss these techniques, aimed at improving clinician recognition of patients that may benefit from these interventions.

Disparities in Disease Burden and Treatment of Patients Asthma and Chronic Obstructive Pulmonary Disease 1027
Adam W. Gaffney

Lung health reflects the inequities of our society. Asthma and chronic obstructive pulmonary disease are 2 lung conditions commonly treated in general clinical practice; each imposes a disproportionate burden on disadvantaged patients. Numerous factors mediate disparities in lung health, including air pollution, allergen exposures, tobacco, and respiratory infections. Members of racial/ethnic minorities and those of low socioeconomic status also have inferior access to high-quality medical care, compounding disparities in disease burden. Physicians can work against disparities in their practice, but wide-ranging policy reforms to achieve better air quality, housing, workplace safety, and healthcare for all are needed to achieve equity in lung health.

Lung Cancer Screening 1041
Humberto K. Choi and Peter J. Mazzone

Lung cancer screening with low-dose computed tomography (LDCT) reduces lung cancer deaths by early detection. The United States Preventive Services Task Force recommends lung cancer screening with LDCT in adults of age 50 years to 80 years who have at least a 20 pack-year smoking history and are currently smoking or have quit within the past 15 years. The implementation of a lung-cancer-screening program is complex. High-quality screening requires the involvement of a multidisciplinary team. The aim of a screening program is to find balance between mortality reduction and avoiding potential harms related to false-positive findings, overdiagnosis, invasive procedures, and radiation exposure. Components and processes of a high-quality lung-cancer-screening program include the identification of eligible individuals, shared decision-making, performing and reporting LDCT results, management of screen-detected lung nodules and non-nodule findings, smoking cessation, ensuring adherence, data collection, and quality improvement.

Hypersensitivity Pneumonitis: An Updated Diagnostic Guide for Internists 1055
Megan A. Koster

This summary highlights updated definitions, terminology, and classification systems proposed in the diagnosis of hypersensitivity pneumonitis. Clinical presentation, epidemiology, and pathophysiology are reviewed
from the most recent data. Radiographic and histopathologic diagnostic criteria are presented in a manner relevant to the practice of general medicine internists, including new guideline recommendations. The role of adjunctive tests, such as serum IgG testing, bronchoalveolar lavage lymphocyte analysis, and pulmonary function testing is discussed in the context of supporting diagnostic confidence for hypersensitivity pneumonitis diagnosis. Finally, new diagnostic algorithms are synthesized and applied to the general internal medicine setting.

**Initiating Pharmacologic Treatment in Tobacco-Dependent Adults**

Alejandra Ellison-Barnes and Panagis Galiatsatos

There is a strong evidence base for the use of existing pharmacotherapies to support tobacco cessation, alone or in combination, ideally with concurrent behavioral interventions. Future pharmacotherapies under development may assist in the most refractory cases. Incorporating current and future therapies into a longitudinal chronic care model for tobacco dependence will help a diverse range of patients achieve independence from nicotine addiction.

**Electronic Cigarette Use, Misuse, and Harm**

Hasmeena Kathuria

Electronic cigarettes (e-cigarettes) are battery-powered devices that use heat to aerosolize a liquid containing a variety of substances (usually nicotine and/or cannabinoids, flavorings, and glycerol or propylene glycol base) that is then inhaled. E-cigarettes are rapidly evolving over time, so the true health effects of e-cigarettes are difficult to study and remain largely unknown. We review the effects of e-cigarettes on nicotine addiction and on pulmonary disease including the effects of dual use and switching from combustible cigarettes to e-cigarettes. Studies show that e-cigarette use can increase the risk to nicotine dependence and combustible tobacco use. Studies show an association between e-cigarette use and pulmonary disease. Some studies suggest reduced harm from e-cigarette use compared with smoking, but this requires further study. Most adults who use e-cigarettes also smoke cigarettes; epidemiologic studies suggest that the combination of e-cigarettes and cigarettes is more harmful than using either product alone.

**Marijuana and the Lung: Evolving Understandings**

Manish Joshi, Anita Joshi, and Thaddeus Bartter

Human beings have used marijuana products for centuries. Relatively recent data showing extensive cannabinoid receptors, particularly in the brain, help to explain the impacts of cannabinoids on symptoms/diseases, such as pain and seizures, with major nervous system components. Marijuana can cause bronchitis, but a moderate body of literature suggests that distal airway/parenchymal lung disease does not occur; marijuana does not cause chronic obstructive pulmonary disease and probably does not cause lung cancer, distinctly different from tobacco. Potentials for cognitive impairment and for damage to the developing brain are contextually important as its beneficial uses are explored.
Even well-intentioned policies have great potential to cause harm. This statement is vividly illustrated by the influential, yet controversial, Surviving Sepsis Campaign guidelines and subsequent CMS benchmarks. Despite low-quality evidence, tendentious industry ties, and rebuke from the Infectious Disease Society of America (IDSA), these benchmarks continue to eschew therapy driven by clinician expertise and individual patient needs in favor of mandating an arbitrary, one-size-fits-all approach that suspends clinical judgment and promotes indiscriminate use of treatments that have the potential to cause great harm.