

# A Review on Infectious Diseases in the World Pediatric Population

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## Abstract

diseases and their mode of transmission. this enables attention employees to supply a secure perioperative expertise for the patient furthermore as interact in acceptable infection management practices. There are variety of noteworthy medical specialty metabolism infections, like the novel coronavirus, called Severe Acute metabolism Syndrome Coronavirus a pair of (SARS-CoV-2), and wasting disease. alternative common microorganism and infectious agent infections price mention embody human immunological disorder virus (HIV), human papillomavirus, molluscum, infectious agent or microorganism inflammation, and strep skin infections. A review of the literature reveals the malady pathology furthermore as infection management recommendations that are presently in situ for the aforesaid infectious diseases.

**Key words:** Coronavirus; pulmonic Tuberculosis; Human immunological disorder Virus; Human Papillomavirus; Skin disorder Contagiosum; Inflammation; Transmission-Based Precautions.

## INTRUDUCTION

As per the Centers for malady management and bar (CDC), normal precautions embody basic hand hygiene. Hand hygiene precautions promote the utilization of alcohol-based hand sanitizers over soap and water in most clinical things. Exclusions embody hands that are visibly bedraggled with blood, bodily fluids, alternative rubble or once handling a patient infected with the novel Coronavirus malady 2019 (COVID-19), eubacteria difficile or norovirus [1]. Hand laundry is imperative before and when patient contact, following contact with metabolism secretions, and when contact with instrumentation and environmental surfaces that are doubtless contaminated. Personal protecting instrumentation (PPE) as well as gloves, gowns, face masks, goggles, face shields, and respirators ought to be donned once acceptable. metabolism hygiene and cough rule embody covering one's mouth and nose once coughing or instinctive reflex, disposal of used tissues as efficiently as doable, and maintaining 3 feet of special separation from others [1]. Isolation precautions embody normal precautions with the addition of mere patient placement. Patients United Nations agency are in danger for transmission to others as

well as those with uncontained secretions, wound drain or excretions, or suspected infectious agent or gi infections ought to be placed in an exceedingly single-patient area once acceptable. Patient care instrumentation and devices which will be contaminated with blood or bodily fluids ought to be contained, transported and handled to diminish the chance of infection transmission [1]. Environmental surfaces ought to be often and totally cleansed in step with the amount of patient contact and degree of soilure. Transportation and movement of patients ought to be restricted to solely medically necessary functions. solely disposable or dedicated patient care instrumentation ought to be used. Needles and sharps shouldn't be recapped, bent, broken, or hand manipulated. If recapping is critical, a one-handed scoop technique ought to be used with safety options once accessible. Used sharps ought to be placed in an exceedingly puncture-resistant instrumentation [1].

## Respiratory Infections

Droplet precautions are used for patients with noted or suspected infection with pathogens that ar transmitted by metabolism droplets throughout coughing, talking or

instinctive reflex [1]. supply management needs inserting a mask on the patient and housing them in an exceedingly single area as typically as doable. PPE ought to be used by personnel fitly, particularly a mask upon entry into the patient's area. mobile precautions are used for patients noted or infected with pathogens transmitted by the mobile route as well as infectious disease, severe acute metabolism syndrome (SARS), craniate grippe (H5N1), and COVID-19. Patients ought to be placed in Associate in Nursing acceptable mobile infection isolation area (AIIR), or negative pressure area. These are single-occupancy patient care locations designed to isolate mobile pathogens with a specialized application of the hospital's HVAC (heating, ventilation, and air conditioning) system. The flow provided into the space is balanced with exhaust to form a negative differential pressure with relevance adjacent areas, so no mobile particulates will escape into public areas. Exhaust from these rooms isn't recirculated into the HVAC system, however transferred to upper side ventilation stacks, wherever part air provides dilution of infectious particles [1]. attention personnel ought to be restricted from coming into the space, and a fit-tested National Institute for activity Safety (NIOSH) approved N95 or higher-level respirator ought to be accessible beside gloves, robe and face/eye protection for people who are in-tuned with the patient. vulnerable or disorder patients ought to be immunized following unprotected contact, if doable [1]. Surgical masks ought to be worn if tolerated and bigger than six feet of special separation ought to be maintained.

In addition to the aforesaid precautions, there are common measures for reducing metabolism infective agent transmission within the health care setting. additionally, handy and metabolism hygiene, cough rule and normal precautions, sick guests and personnel ought to be restricted. Cohort nursing, or the isolation of patients with identical infection to 1 unit or ward, is helpful furthermore. fast diagnostic testing ought to be used for prompt designation of metabolism infections [2]. Elective admissions of patients ought to be restricted throughout community or facility outbreaks, and police work for magnified infectious agent infections within the community ought to be instituted. Contact precautions alone are adequate for metabolism syncytial virus and adenovirus. animal virus necessitates contact and driblet precautions, with the addition of attention employee vaccination for the seasonal grippe infection. The novel coronavirus mandates contact precautions, mobile precautions and eye protection for personnel safety [2].

The transmission of infectious agent metabolism infections happens in an exceedingly multitude of attention settings, resulting in magnified patient morbidity and attention prices. Transmission most ordinarily happens via aerosol, metabolism droplets, or following physical object self-contamination. Protection of infectious agent transmission needs early recognition and isolation of symptomatic patients and timely establishment of infection management precautions. If patients with metabolism infections should bear aerosol-generating procedures, like intromission or extubating, bronchoscopy, mucus induction, mouth-to-mouth resuscitation, or autopsy, attention employees ought to wear acceptable PPE Associate in Nursing an N95 filtering respirator in an exceedingly negative pressure area, if possible.

### **NOVEL CORONAVIRUS UN WELLNESS 2019**

In Dec 2019, a completely unique syndrome inflicting severe respiratory illness was known in patients in metropolis, China [3]. Bronchoalveolar irrigation fluid from variety of those patients known a completely unique coronavirus, called SARS-CoV-2, resulting in the syndrome called COVID-19. A beta-coronavirus, SARS-CoV-2 is an element of constant family that causes the initial severe acute metabolic process syndrome (SARS) virus likewise as Middle East metabolic process syndrome-related coronavirus (MERS). the globe Health Organization (WHO) declared COVID-19 a world pandemic on March fourteen, 2020. though the bulk of COVID-19 patients have delicate symptoms, a set will develop respiratory illness, and metabolic process distress, requiring noninvasive or invasive ventilation, and potential extracorporeal membrane natural process (ECMO) [4]. Characteristic photography findings embrace peripheral, bilateral ground glass opacities in COVID-19 patients, with progression to "reverse halo" radiologic patterns related to inspissated secretions and fibro myxoid exudates [5]. metabolic process failure is often precipitated by viscous secretions resulting in compromised alveolar gas exchange. there's a large aim clinical presentation for COVID-19 patients, from symptomless to acute metabolic process distress syndrome and shock, seemingly because of underlying factors as well as infective agent load, route of vaccination, and individual immune standing [6]. information counsel that SARS-CoV-2 utilizes tissue angiotonin changing enzyme-2 (ACE-2) as its receptor, doubtless resulting in clinical presentation of lower tract infection likewise as redness. Acute internal organ

injury ensuing from COVID-19 might also result to ACE-2 expression in vascular epithelial tissue and internal organ myocytes [7]. Lauer et al. [8] calculable the mean period for COVID-19 to be 5 days, with ninety fifth of cases having incubation periods starting from 2 to 14 days. The World Health Organization has suggested a quarantine amount of fourteen days supported similar findings. it's conjointly extremely seemingly that the latency phase of COVID-19 could also be but the period, therefore people could also be contagious before exhibiting symptoms. the foremost mode of unwellness transmission is shut or direct contact with infected secretions or aerosol droplets, [9] though there's conjointly growing concern over fecal-oral transmission of COVID-19, [10] because of the ACE-2 receptor super molecule found inside the internal organ lumen. In general, fast diagnostic tests to diagnose infection, contact tracing, and effective community police work are vital benchmarks to curb the unfold of this virus.

Vertical transmission of SARSCoV-2 is unlikely, because it has not been detected in channel blood, waters, placental tissue, epithelial duct swabs, or breast milk and maternal pathology rates are 1 Chronicles in an exceedingly study by Wang et al. [11]. though elevated Ig (IgM), protein levels, and white corpuscle counts could also be suspicious of in utero infection, current information suggests early baby infection is possibly because of postnatal contact with caregivers. Patients at higher risk for severe ill health from COVID-19 embrace folks aged sixty five or older, those in an exceedingly rest home or future care facility, patients with poorly controlled underlying medical conditions as well as chronic respiratory organ unwellness, internal organ unwellness, upset patients, severely corpulent patients (BMI > 40), patients with polygenic disease and people with chronic uropathy undergoing qualitative analysis.

As per office pointers, a reverse-transcription enzyme chain reaction (RT-PCR) look at is that the gold customary look at for confirmation of COVID-2019. Limitations embrace delayed time for results, likewise as variable interpretation of results. Specimens for unwellness testing is collected from bodily cavity or cavity swabs from the higher tract, sputum, endotracheal aspirate, and bronchoalveolar irrigation from the lower tract. Serum, excretion and stool samples can even be used for testing. Laboratory findings in COVID-19 positive patients embrace blood disease, elevated aminotransaminase levels, elevated suck dehydrogenase and elevated

inflammatory markers (C-reactive super molecule, ferritin, corpuscle geological phenomenon rate). Non-survivors have higher d-dimer, higher sensitivity internal organ troponin I, liquid body substance protein, and IL-6 values as compared to survivors [12]. The importance of frequent and correct hand hygiene in transmission interference of COVID-19 can't be overdone, either via soap and water or a hand sanitizer that contains a minimum of hour alcohol. Like alternative coronaviruses, SARS-CoV-2 contains a lipide envelope that twenty seconds of handwashing with soap and water can penetrate, inactivating the virus. Fomites from SARS-CoV-2 are found to be additional stable on plastic and stainless-steel than on copper and cardboard, and viable virus has been detected up to seventy-two hours once application to those surfaces, though infective agent titer was greatly reduced [13]. though the medicine population was antecedently thought to possess been mostly spared by this international pandemic, information has emerged concerning a Kawasaki disease or toxic shock syndrome syndrome like presentation during this cohort. This syndrome is observed either as medicine inflammatory multisystem syndrome, or multisystem inflammatory syndrome in kids. ordinarily presenting symptoms embrace persistent fever, pathology, non-purulent rubor, polymorphic rash, swollen extremities, and tissue layer changes. it's been postulated this syndrome represents a post-infectious inflammatory syndrome which can be protein or immune complicated mediate [14].

Appropriate PPE, metabolic process hygiene, associate degreed an N-95 respirator are imperative for attention employees taking care of suspected or evidenced cases of COVID-19. Perioperative preparation of patients with COVID-19 ought to embrace cancellation of elective surgical procedures till the patient is not any longer infectious. If aborning, surgical intervention ought to be performed in selected negative pressure operative rooms. Patients ought to be transported to the OR with associate degree N95 mask or on improvement support, if indicated. There ought to be clear communication regarding COVID precautions between OR employees and spare instrumentation ought to be removed. Standardized intromission and extubating protocols ought to be in situ for COVID positive patients.

## **PULMONARY TB**

Tuberculosis (TB) is primarily a respiratory organ infection cause by 2 species, either mycobacterium or *M. bovis* [15]. though most cases of TB were antecedently

thanks to infection reactivation within the old, the overwhelming majority of current cases occur amongst racial and ethnic minorities, inhabitants of geographic areas wherever TB is endemic, blood vessel drug abusers, patients with HIV infection, homeless persons and people residing in overpopulated living conditions. Infections area unit the results of inhalation of driblet nuclei from infected people throughout coughing, inborn reflex or talking. The infectiousness of a personal depends upon the anatomic website of infection, the presence of inborn reflex or coughing, cavitation of the lungs, presence of impervious bacilli (AFB) within the bodily fluid, period of symptoms and antibiotic medical aid [16]. TB microorganism replicate inside macrophages, whereby the host mounts a T cell-mediated response, inflicting neoplasm formation. microorganism cells will stay dormant inside this neoplasm, leading to latent infection. during this situation, the patient might stay well, however show a positive response to a liquid diagnostic test [17]. Factors that increase chance of active malady progression embody time from exposure, younger age of patient, and system competence [18].

Of note, the bulk of patients infected with TB don't become symptomatic. The period risk of associate degree immunocompetent patient developing active infection with TB is common fraction [19]. Common symptoms of respiratory organ TB embody persistent cough, weight loss, anorexia, chest pain, and night sweats. respiratory organ malady is that the commonest presentation, with productive cough and symptom. node enlargement will result in cartilaginous tube compression with localized asthmatic, whereas hematogenous unfold will result in military TB. Constitutional symptoms area unit secondary to pro-inflammatory cytokines and embody failure to thrive in youngsters. Following T-cell activation, hypersensitivity phenomena together with erythema, phylctenular rubor, and Poncet's malady might occur. Extrapulmonary manifestations embody king's evil, abdominal TB and infectious disease [20]. First-line treatment includes antibacterial, isoniazid, ethadmbutol and pyrazinamide. Steroids area unit utilized in cases of TB infectious disease, carditis, and node enlargement inflicting airway obstruction. The tuberculin test is used for diagnosis; utilizing shot of zero.1 cubic centimeter of refined macromolecule by-product that contains 5 liquid units. A positive skin reaction is browsing in 48-72 hours associate degree outlined as a sclerosis of bigger than 10 millimeters [21]. For HIV positive patients, a reaction

of 5 metric linear unit or bigger is positive, though this population is a lot of possible to possess a false negative result. Serial testing of patients, notably those who have received the Bacilli Calmette Guerin (BCG) vaccination, might demonstrate a positive check, representing a "boosted" response to previous exposure instead of active infection. Chest radiography provides a helpful adjunct for diagnosing of TB; associate degree top or subapical infiltrate is connotative active infection. Bilateral higher lobe infiltration with the presence of cavitation is additionally a standard finding. Nodular, tumor lesions gift with well-defined margins as critical exudative TB lesions. HIV patients typically have unsupportive picture taking findings thanks to infection with *Pneumocystis carinii* respiratory disease. The healthcare facility unfold of TB mostly happens secondary to delayed diagnosing and positive pressure ventilation in isolation rooms. Procedures involving mechanical ventilation or aerosolization of infectious particles together with dressing changes, symptom irrigation associate degree performance of an autopsy additionally change unfold.

In order to stop the unfold of infection, there are a unit variety of infection management tips that ought to be in situ. accessibility and access to timely diagnostic testing, likewise as applicable reportage of results is integral. supply management, applicable patient isolation, engineering controls, personal respirators, and negative pressure patient environments with six environmental air changes per hour are shown to be effective in containing the unfold of infection. High potency particulate air (HEPA) filters hooked up to the anaesthesia circuit, beside applicable remotion and sterilization of surfaces and instrumentation area unit essential. additionally, to annual liquid testing, compliance with chemoprophylaxis and BCG vaccination have additionally tried effective in curtailing infective agent unfold. Surgical masks area unit inappropriate to hasten unfold of TB as a result of their unable to filter particles from one to 5  $\mu\text{m}$ . The CDC recommends periodic liquid screening of all health care staff. There is a unit multiple situation within which anesthesiologists got to directly look after patients with TB, together with node biopsies and bronchoscopies needed for definitive diagnosing, and potential TB connected surgical complications, together with abnormalcy and blockage. additionally, patients for elective and emergency surgery might have TB incidentally or get on a therapeutic regime. Patients could also be acutely sick (with TB or superimposed

infection), or inveterately sick, malnourished and anemic. Patients with long standing TB typically have chronic respiratory organ malady together with bronchiectasis and pathology. There is a unit multiple drug interaction that the anaesthetist should bear in mind of. Rifampicin may be a potent inducer of the haemoprotein p450 system, notably isoenzyme 3A4, which may lead to inflated metabolism of variety of anesthetic medicine, resulting in subtherapeutic effects, or inflated production of nephrotoxic metabolites. Patients might have a bigger risk of awareness with total blood vessel anaesthesia. The result of vecuorium could also be prolonged by antacid, associate degree catalyst substance, and shortened by Dilantin. Resistance to the consequences of rocuronium are shown with carbamazepine. Non depolarizing muscle relaxants ought to be titrated to result with frequent observance utilizing a nerve stimulator. Sublimaze and alfentail area unit each metabolized by CYP450 3A4; each exhibit a shortened period of action in patients on TB medical aid. regional anaesthesia could also be desirable in patients with chronic respiratory organ malady to avoid drug interactions and metabolic process embarrassment.

## HUMAN PAPILLOMAVIRUS

The human papillomavirus (HPV) affects keratinocytes and membrane animal tissue, usually manifesting as connective tissue warts in kids, however, will cause metastatic tumor lesions of the skin, reproductive organ and oral mucous membrane with persistent infection. HPV contains 2 oncogenes, E6 and E7, which may cause tumor growth and carcinogenesis by inactivating tumor suppressor genes. HPV affects up to 10 to one-fifth of school-aged kids. connective tissue warts square measure transmitted via direct skin contact with Associate in Nursing infected individual or via autoinoculation. Lesions square measure benign, however will take up to at least one to 2 years to resolve because the virus integrates into host polymer resulting in persistent infection. The molluscum virus (MCV) may be a double-stranded polymer animal virus that usually causes nonmalignant neoplasm growth of the body covering and connective tissue levels of skin. it's transmitted thanks to shut skin-to-skin contact and infection with fomites like shared towels in environments together with pools, day cares, spas, and bathtubs. The virus is additionally usually transmitted via autoinoculation by scratching or touching a lesion. it's common in class aged kids and resolves impromptu in healthy patients.

immunological disorder kids or those with eczema/atopic eczema/dermatitis} (AD) will gift with widespread lesions difficult by comorbid dermatitis, inflammation or pruritis. it's hypothesized that the suppression of helper T cells in AD results in a predilection for MCV. Infection is long lasting as a result of the virus reduces host immunity, Associate in Nursing prevents erythroderma and an inflammatory response. MCV lesions square measure classically represented as "pearly papules with central umbilication.". Lesions square measure varied, usually one to a few millimeters in size, flesh colored, and cluster within the axillae and extremities, usually thrifty the palms and soles. though lesions can impromptu resolve, new ones can still arise till immunity is developed. Treatment for MCV includes damaging office-based medical care together with cryotherapy, ethanoic acid, hydroxy acetic acid, and cantharidin. periodic dye lasers will facilitate to eliminate the lesion's tube offer, whereas cidofovir may be a fortunate antiviral each locally and systemically in upset patients. The treatment modality chosen, medical care is time overwhelming or lead to pain, dyspigmentation, scarring and irritation. The period of the virus is from one week to 6 months. Hematoxylin and resorcinol phthalein staining of a lesion reveals keratinocytes containing leucocyte protoplasm inclusion bodies additionally called Henderson-Paterson bodies. medical diagnosis for MCV includes fungal infection, histoplasmosis, flat warts, verruca acuminata, condylomata lata, pathology neoplasm, annexal tumors, Langerhans cell blood disorder, basal cell malignant neoplastic disease and amelanotic skin cancer.

These ought to be definitively dominated get into immunological disorder patients. To avoid transmission to others, lesions that square measure seemingly to return in touch with others ought to be coated with article of clothing or a water-proof bandage. Communal bathing ought to be avoided and towels mustn't be shared. commonplace contact precautions square measure acceptable for aid suppliers once managing MCV patients, most specifically hand laundry. Common warts, or blemish vulgaris, gift as flesh-colored, dome formed, exophytic papules on dorsal hands and fingers or areas that suffer perennial trauma like the elbow or knee. Common warts square measure most typically caused by HPV-1, HPV-2, HPV-4, HPV-27, and HPV-57. Prevalence is as high as 33.3%, with a peak at 9 to 10 years ancient. Risk factors embody White race, native trauma and atopic illness which will interrupt skin barrier integrity. In kids

with multiple diffuse lesions presenting as flat warts, an identification of noninheritable epidermodysplasia verruciformis ought to be excluded. medicine anogenital warts square measure caused by HPV-7 and HPV-57, and square measure noninheritable through a range of suggests that together with perinatal transmission within the passageway, self-inoculation from another connective tissue supply, a gamogenetic transmission from a caregiver, and fewer usually, regulatory offence. connective tissue wart treatment includes damaging strategies together with cryotherapy, salicylic acid, and optical maser medical care. continual metabolic {process metastasis} papillomatosis (RRP) may be a benign process that affects children's airways and might usually result in multiple operative interventions, primarily caused by HPV serotypes six and eleven. It most typically presents within the speech organ, resulting in harshness, higher airway obstruction, chronic cough, dyspnea, stridor, and continual metabolism infections. Incidence of RRP is one to four in a hundred,000 patients.

Patients gift between the ages of 2 and 4, with harshness and speech defect usually because the chief criticism. Transmission happens mostly through perinatal transmission, maternal infection, and a protracted second stage of labor. RRP patients have a relapsing-remitting illness course and need varied surgical interventions to manage metabolism papillomas which will result in airway obstruction. Otolaryngologists usually manage RRP with micro laryngeal surgeries with a greenhouse gas optical maser or microbrewer. in depth illness burden is managed with surgery. Anesthetic management for these cases needs mobile precautions.

## VIRAL/BACTERIAL RUBOR

Conjunctiva refers to the skinny, clear membrane that overlies the anterior a part of the albuginea and eyelids, composed of the neural structure and palpebral portion. rubor refers to inflammation or infection of the mucous membrane and is characterised by vessel dilatation resulting in dropsy and congestion, usually related to ocular discharge. the foremost common explanation for infectious rubor is viral; a lot of rife in summer months. microorganism rubor is that the second most rife cause and is answerable for most cases in kids throughout the winter. Allergic rubor affects 15-40% of the population and is commonest throughout the spring. rubor is usually divided into infectious and no transmissible cases; infectious cases square measure either microorganism or microorganism. no transmissible cases are allergic,

toxic, cicatricial resulting in pathology, or inflammatory secondary to immune mediate or growth processes. general treatment for rubor is secure if it's secondary to general diseases like venereal disease, chlamydia, graft-vs-host illness and Retier syndrome.

## CONCLUSION

It is vital for physicians to acknowledge the pathophysiology and mode of transmission for common medical specialty infectious diseases and order to produce safe care to patients and interact in acceptable infection management practices. This review highlights the etiology of common infectious diseases and the way they will be fittingly managed within the perioperative setting.

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