



S Q U A R E

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the **S Q U A R E**
Healthcare **bulletin**

- *Autism Spectrum Disorder*
- *Hand, Foot and Mouth Disease*
- *Common Childhood Problem in Winter*
- *Medical Breakthroughs 2017*



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the SQUARE

healthcare bulletin

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Editorial



We wish all our readers a Happy New Year 2018!

Welcome to this edition of "the SQUARE" healthcare bulletin!

In this edition, we have a special feature on "Autism Spectrum Disorder" a complex developmental disorder that affects how a person behaves, interacts with others, communicates, and learns. This disorder begins in early childhood and eventually causes problems functioning in society — socially, in school and at work. We focused on "Hand, Foot and Mouth Disease" a mild, contagious viral infection common in young children, characterized by sores in the mouth and a rash on the hands and feet. We also bring you the details on "Common Childhood Health Problems in Winter" in this edition. Here we highlighted some basic information on some of the more common winter illnesses and some tips on how to keep our children healthy. Besides, we have some "Medical Breakthrough News" to make this issue more interesting one!

We are confident that you will find this issue informative and interesting as well!

Wishing all of you, a safe, healthy and peaceful life, and a New Year filled with love, joy and prosperity.

Thank you!



Omar Akramur Rab

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Autism spectrum disorder (ASD) is a developmental disability that can cause significant social, communication and behavioral challenges. There is often nothing about how people with ASD look that sets them apart from other people, but people with ASD may communicate, interact, behave and learn in ways that are different from most other people. The learning, thinking and problem-solving abilities of people with ASD can range from gifted to severely challenged. Some people with ASD need a lot of help in their daily lives; others need less.

The ASD represent a wide continuum of associated cognitive and neurobehavioral deficits, including deficits in socialization and communication, with restricted and repetitive patterns of behavior. ASD are organic neuro developmental disorders caused by genetic or neurobiological factors rather than by psychological or environmental ones. Recently, many studies on the genetics of ASD have been conducted. In the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), published in May 2013, the diagnostic criteria for ASD have subsequently been revised.

The Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV; 1994) and the DSM-IV-TR (text revision; 2000) included five possible diagnoses under the pervasive developmental disorder (PDD): autistic disorder, Asperger disorder, childhood disintegrative disorder, Rett syndrome and PDD-not otherwise specified (NOS). A revision of the ASD was proposed in the DSM-5, released in May 2013. The autism spectrum describes a range of conditions classified as neuro developmental disorders in the fifth edition of the DSM. The new diagnosis encompasses the previous diagnostic criteria for autistic disorder, Asperger syndrome, childhood disintegrative disorder and PDD-NOS.

Epidemiology

The prevalence of autism has increased dramatically and it has been currently recognized as one of the most common developmental disorders. For many years after autism was first described in the 1940s, its prevalence was considered to be two to four cases per 10,000 children. Based on the most recent United

States diagnostic survey reported by parents, the prevalence of ASD was as high as 11 per 1,000. A number of factors have contributed to this increase. The diagnostic criteria for ASD have been broadened; the concept of autism is now defined as an autistic



disorder plus the broader ASDs, including Asperger syndrome and PDD-NOS. There is also a codiagnosis with known medical disorders such as fragile X syndrome, Tourette syndrome and Down syndrome. Additionally, the growing public awareness among parents and teachers in developing countries has led to earlier diagnoses. Other factors include the increased availability of services and the ability to diagnose children at younger ages.

Diagnostic criteria

The diagnostic criteria of autism in the DSM-IV consisted of three domains: social interaction impairment, communication deficits and stereotypic behavior. These were condensed into two domains in the DSM-5: deficits in social communication and restricted patterns of behavior (Table 1). Additionally, the autism categories in the DSM-IV included autistic disorder, Asperger disorder, Rett syndrome, childhood disintegrative disorder and

PDD-NOS. However, these were converted to only one category in the DSM-5: ASD, with various severity levels added (Table 2).

Table 1. DSM-5 diagnostic criteria for autism spectrum disorders

DSM-IV
Social impairment
Speech/communication deficits and language delay
Repetitive behaviors and restricted interests
DSM-5
Deficits in social communication
Restricted, repetitive patterns of behavior, interests

example, the ICD-10 is the most commonly-used diagnostic manual in the UK and European Union.

Rather than categorizing these diagnoses, the DSM-5 has adopted a dimensional approach to diagnosing disorders that fall underneath the autism spectrum

Table 2. Categories of autism spectrum disorders

DSM-IV
Pervasive developmental disorders (PDD)
Autistic disorder
Asperger disorder
Rett syndrome
Childhood disintegrative disorder
PDD-not otherwise specified
DSM-5
Autism spectrum disorder
Level 3: Requiring support
Level 2: Requiring substantial support
Level 1: Requiring minimal support

DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, fourth edition; DSM-5, Diagnostic and Statistical Manual of Mental Disorders, fifth edition.

Classification

In the United States, a revision to autism spectrum disorder was presented in the Diagnostic and Statistical Manual of Mental Disorders version 5, released May 2013. Compared with the DSM-IV diagnosis of autistic disorder, the DSM-5 diagnosis of ASD no longer includes communication as a separate criterion and has merged social interaction and communication into one category. Slightly different diagnostic definitions are used in other countries. For

example, the ICD-10 is the most commonly-used diagnostic manual in the UK and European Union. Rather than categorizing these diagnoses, the DSM-5 has adopted a dimensional approach to diagnosing disorders that fall underneath the autism spectrum umbrella. Some have proposed that individuals on the autism spectrum may be better represented as a single diagnostic category. Within this category, the DSM-5 has proposed a framework of differentiating each individual by dimensions of severity, as well as associated features.

Another change to the DSM includes collapsing social and communication deficits into one domain. Thus, an individual with an ASD diagnosis will be described in terms of severity of social communication

symptoms, severity of fixated or restricted behaviors or interests and associated features. The restricting of onset age has also been loosened from 3 years of age to "early developmental period", with a note that symptoms may manifest later when social demands exceed capabilities.

Autism forms the core of the autism spectrum disorders. Asperger syndrome is closest to autism in signs and likely causes; PDD-NOS is diagnosed when the criteria are not met for a more specific disorder. Some sources also include Rett syndrome and childhood disintegrative disorder, which share several signs with autism but may have unrelated causes; other sources differentiate them from ASD, but group all of the above conditions into the pervasive developmental disorders.

Autism Asperger syndrome and PDD-NOS are sometimes called the autistic disorders instead of ASD, whereas autism itself is often called autistic disorder, childhood autism or infantile autism. ASD is a subset of the broader autism phenotype, which describes individuals who may not have ASD but do have autistic-like traits, such as avoiding eye contact.

Signs and Symptoms

Parents or doctors may first identify ASD behaviors in infants and toddlers. School staff may recognize these behaviors in older children. Not all people with ASD will show all of these behaviors, but most will show several. There are two main types of behaviors: "restricted / repetitive behaviors" and "social communication / interaction behaviors."

Restrictive / repetitive behaviors may include:

- ❑ Repeating certain behaviors or having unusual behaviors
- ❑ Having overly focused interests, such as with moving objects or parts of objects
- ❑ Having a lasting, intense interest in certain topics, such as numbers, details or facts.

Social communication / interaction behaviors may include:

- ❑ Getting upset by a slight change in a routine or being placed in a new or overly stimulating setting
- ❑ Making little or inconsistent eye contact

- ❑ Having a tendency to look at and listen to other people less often
- ❑ Rarely sharing enjoyment of objects or activities by pointing or showing things to others
- ❑ Responding in an unusual way when others show anger, distress or affection
- ❑ Failing to or being slow to respond to someone calling their name or other verbal attempts to gain attention
- ❑ Having difficulties with the back and forth of conversations
- ❑ Often talking at length about a favorite subject without noticing that others are not interested or without giving others a chance to respond
- ❑ Repeating words or phrases that they hear, a behavior called echolalia
- ❑ Using words that seem odd, out of place or have a special meaning known only to those familiar with that person's way of communicating
- ❑ Having facial expressions, movements and gestures that do not match what is being said
- ❑ Having an unusual tone of voice that may sound sing-song or flat and robot-like
- ❑ Having trouble understanding another person's point of view or being unable to predict or understand other people's actions.

People with ASD may have other difficulties such as being very sensitive to light, noise, clothing or temperature. They may also experience sleep problems, digestion problems and irritability.

ASD is unique in that it is common for people with ASD to have many strengths and abilities in addition to challenges.

Strengths and abilities may include:

- ❑ Having above-average intelligence – 46% of ASD children have above average intelligence
- ❑ Being able to learn things in detail and remember information for long periods of time
- ❑ Being strong visual and auditory learners
- ❑ Excelling in math, science, music or art.

Causes

While specific causes of autism spectrum disorders have yet to be found, many risk factors have been identified in the research literature that may contribute to their development. These risk factors include genetics, prenatal and perinatal factors neuro anatomical abnormalities and environmental factors. It is possible to identify general risk factors but much more difficult to pinpoint specific factors. In the current state of knowledge, prediction can only be of a global nature and therefore requires the use of general markers.

Genetic risk factors:

The results of family and twin studies suggest that genetic factors play a role in the etiology of autism and other pervasive developmental disorders. Studies have consistently found that the prevalence of autism in siblings of autistic children is approximately 15 to 30 times greater than the rate in the general population. In addition, research suggests that there is a much higher concordance rate among monozygotic twins compared to dizygotic twins. It appears that there is no single gene that can account for autism. Instead, there seem to be multiple genes involved, each of which is a risk factor for components of the autism spectrum disorders.

Prenatal and perinatal risk factors:

Several prenatal and perinatal complications have been reported as possible risk factors for autism. These risk factors include maternal gestational diabetes, maternal and paternal age over 30, bleeding after first trimester, use of prescription medication during pregnancy and meconium in the amniotic fluid. While research is not conclusive on the relation of these factors to autism, each of these factors has been identified more frequently in autistic children compared to their non-autistic siblings and other normally developing youth.

- ❑ Low vitamin D levels in early development has been hypothesized as a risk factor for autism.

Vaccine controversy

Perhaps the most controversial claim regarding autism etiology was the "vaccine controversy". This conjecture, arising from a case of scientific misconduct, suggested that autism results from brain damage caused either by the measles, mumps,

rubella vaccine itself or by thimerosal, a vaccine preservative. No convincing scientific evidence supports these claims and further evidence continues to refute them, including the observation that the rate of autism continues to climb despite elimination of thimerosal from routine childhood vaccines. A 2014 meta-analysis examined ten major studies on autism and vaccines involving 1.25 million children worldwide; it concluded that neither the MMR vaccine, which has never contained thimerosal, nor the vaccine components thimerosal or mercury, lead to the development of ASDs.

Pathophysiology

In general, neuro anatomical studies support the concept that autism may involve a combination of brain enlargement in some areas and reduction in others. These studies suggest that autism may be caused by abnormal neuronal growth and pruning during the early stages of prenatal and postnatal brain development, leaving some areas of the brain with too many neurons and other areas with too few neurons. Some research has reported an overall brain enlargement in autism, while others suggest abnormalities in several areas of the brain, including the frontal lobe, the mirror neuron system, the limbic system, the temporal lobe and the corpus callosum. In neuro anatomical studies, when performing theory of mind and facial emotion response tasks, the median person on the autism spectrum exhibits less activation in the primary and secondary somatosensory cortices of the brain than the median member of a properly sampled control population. This finding coincides with reports demonstrating abnormal patterns of cortical thickness and grey matter volume in those regions of autistic persons' brains.

Diagnostic evaluation and screening

ASD can be reliably diagnosed in children as young as 2 years old and early intervention is beneficial. The average age of diagnosis, however, is reported to be 3–6 years. The American Academy of Pediatrics Council of Children with Disabilities recently published a set of guidelines on the identification and management of children with ASD. According to the screening algorithm of ASD, the patient at a preventive care visit or at an extra visit for an autism-related concern should identify the risk factors, such as a sibling with ASD, parental concern

for ASD, other caregiver concern or pediatrician concern and each risk factor has a score of 1. If a patient has a score of 2 or higher, there should be parental education, comprehensive ASD evaluation, early intervention/early childhood education services, audio logic evaluation and a scheduled follow-up visit. If a patient has a score of 1, the intervention choice will depend on the child's age. If the patient is at least 18 months old, he/she has to take the ASD-specific screening test. After the test, if the result is positive following the two-score process and if the patient has no risk factor, ASD specific screening will be recommended only if the visit is the 18 or 24-month preventive care visit.

1. Instruments for ASD screening

The Checklist for Autism in Toddlers, developed in Great Britain, is the most popular tool for screening 18- to 24-month old children. The Modified Checklist for Autism in Toddlers relies only on the parent's report. The Screening Tool for Autism in Two-year-olds consists of interactive items administered by a clinician to a 24- to 35-month-old child.

2. Instruments for ASD diagnosis

The Childhood Autism Rating Scale is a clinician-rated diagnostic instrument for use with children older than 2 years. The Autism Diagnostic Interview, Revised, a structured interview for parents and the Autism Diagnostic Observation Schedule are considered as gold standards for the diagnosis of autism.

Neurologic evaluation

1. Neurologic examination

Most investigators report that a small proportion of children with autism have remarkable macrocephaly. The abnormalities in the neurologic examination may include hypotonia, which was observed in children with autism. Hand or finger stereo typical movement, body rocking and unusual posturing are reported in 37%–95% of autistic individuals and these symptoms often manifest during the preschool years.

2. Evaluation of hearing

Many children diagnosed with autism are first described by their parents as acting "as if they are deaf." Audio logic evaluation or brainstem auditory-evoked potential testing should be performed in all children with autism so that if

indicated, appropriate referrals can be made for aural habilitation.

3. Electroencephalography

There is no sufficient evidence for or against the use of routine electroencephalogram (EEG) screening in ASD patients. A recent review found that epileptiform EEG abnormalities were present in 10.3%–72.4% of the patients and subclinical abnormalities in 6.1%–31% of the patients.

4. Neuroimaging studies

Routine neuro imaging to evaluate a child with autism and macrocephaly is not warranted unless evidence of lateralizing signs is found in the neurologic examination.

5. Coexistent medical conditions

Children with ASD have several coexistent medical conditions such as gastrointestinal problems, sleep disturbance, epilepsy, and congenital blindness.

Co-morbidity

Autism spectrum disorders tend to be highly comorbid with other disorders. Co-morbidity may increase with age and may worsen the course of youth with ASDs and make intervention/treatment more difficult. Distinguishing between ASDs and other diagnoses can be challenging, because the traits of ASDs often overlap with symptoms of other disorders and the characteristics of ASDs make traditional diagnostic procedures difficult.

The most common medical condition occurring in individuals with autism spectrum disorders is seizure disorder or epilepsy, which occurs in 11-39% of individuals with ASD. Tuberous sclerosis, a medical condition in which non-malignant tumors grow in the brain and on other vital organs, occurs in 1-4% of individuals with ASDs.

Intellectual disabilities are some of the most common comorbid disorders with ASDs. Recent estimates suggest that 40-69% of individuals with ASD have some degree of an intellectual disability, with females more likely to be in the severe range of an intellectual disability. A number of genetic syndromes causing intellectual disability may also be comorbid with ASD, including fragile X syndrome, Down syndrome, Prader-Willi and Angelman syndromes and Williams syndrome.

Learning disabilities are also highly comorbid in individuals with an ASD. Approximately 25-75% of individuals with an ASD also have some degree of a learning disability.

Various anxiety disorders tend to co-occur with autism spectrum disorders, with overall co-morbidity rates of 7-84%. The relationship between ASD and schizophrenia remains a controversial subject under continued investigation and recent meta-analyses have examined genetic, environmental, infectious and immune risk factors that may be shared between the two conditions.

Deficits in ASD are often linked to behavior problems, such as difficulties following directions, being cooperative and doing things on other people's terms. Symptoms similar to those of attention deficit hyperactivity disorder can be part of an ASD diagnosis.

Sensory processing disorder is also comorbid with ASD, with co-morbidity rates of 42–88%.

Treatment

1. Pharmacologic therapy

The goal of pharmacotherapy for children with autism is to alleviate the symptoms and specific behaviors. The target symptoms include sleep problems, anxiety, repetitive motor behaviors, obsessive-compulsive symptoms, impulsivity, depression, mood swings, agitation, hyperactivity, aggression and self-injurious behavior. Although there are no medications currently that directly impact cognitive impairment, controlling these symptoms should allow the child to maximize the benefits of educational and behavioral therapy that is directed more towards the core symptoms.

a. Neuroleptic agents

Risperidone and aripiprazole have been approved by the U.S. Federal Drug Administration for the treatment of irritability such as aggression, self-injurious behavior, temper tantrums and mood swings, in school-age children and adolescents with autistic disorders.

b. Serotonin reuptake inhibitors

The symptoms causing major impairment in autism, such as anxiety and repetitive and ritualized behaviors, can disrupt learning. Due to the effectiveness of serotonin reuptake inhibitors in alleviating the anxiety and obsessive-compulsive

symptoms and due to the finding that serotonin system abnormalities exist in individuals with autism, there has been a considerable surge in treating disruptive behaviors in autism with these agents.

c. Stimulants and drugs for treating hyperactivity

Hyperactivity is an important target symptom that can be potentially alleviated with psycho stimulant medication.

d. Antiepileptic drugs

In open-label studies, levetiracetam and divalproex sodium appeared to be well tolerated and successful in alleviating repetitive behavior, impulsivity, and mood stability.

2. Educational and behavioral interventions

The prioritization of interventions should focus on six specific areas: functional spontaneous communication, social instruction delivered throughout the day in various settings, play skills, cognitive development, proactive approaches to problem behaviors and functional academics.

Methods based on applied behavior analysis (ABA) for teaching skills and facilitating more appropriate and adaptive behaviors have been tested extensively for their effectiveness in children and adults with autism and other developmental disabilities. In the most rigorously designed studies of intensive early intervention programs based on ABA, efficacy was demonstrated at the group level, but the response was variable.

Conclusions

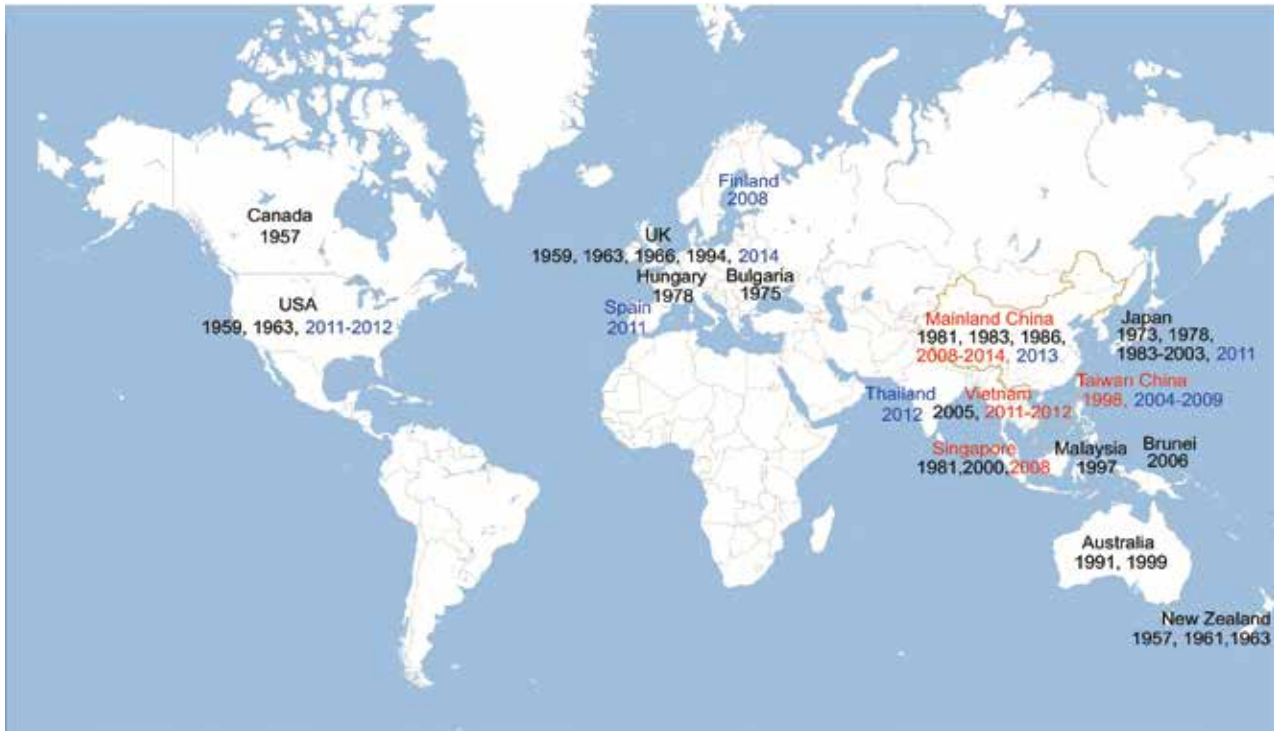
For patients with developmental delays, especially patients with language delays, a differential diagnosis for ASD must be conducted when they visit a pediatric clinic. In ASD patients, appropriate behavioral therapy and rehabilitation treatment significantly affect the prognoses and hence, it is important to make an early diagnosis and to treat the disorder at an early stage.

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Hand, foot and mouth disease (HFMD) is a common infection caused by a group of viruses. It typically begins with a fever and feeling generally unwell. This is followed a day or two later by flat discolored spots or bumps that may blister on the hands, feet and mouth and occasionally buttocks and groin. Signs and symptoms normally appear 3–6 days after exposure to the virus. The rash generally goes away on its own in about a week. Fingernail and toenail loss may occur a few weeks later, but will regrow with time.

In 2008 and 2009, large outbreaks of HFMD emerged in mainland China. These outbreaks made HFMD a great public health concern in China, leading to its classification as a category C communicable disease in the Chinese National communicable disease surveillance system in 2008. From 2008 to 2014, more than 1 million HFMD cases have been reported in China each year, according to data obtained from the Chinese National Notifiable Disease Reporting System.



Worldwide epidemics of HFMD (country and year). Red indicates outbreaks of HFMD involved more than 10 000 cases and blue indicates coxsackievirus A6 (CV-A6) infection, which is one of the most common pathogens of HFMD in recent years.

HFMD was first identified in New Zealand and Canada in 1957. The disease was designated as 'Hand, Foot and Mouth Disease' after a similar outbreak occurred in USA in 1959. HFMD reappeared in New Zealand, the UK and in the USA in the 1960s. Outbreaks of HFMD also occurred in Bulgaria in 1975 and in Hungary in 1978 and 44 and 47 deaths were recorded respectively. HFMD emerged in the 1970s in Japan from which point on numerous outbreaks occurred in the Asia-Pacific region. After the 1990s, large outbreaks that involved more than 10,000 cases all occurred in this region. The reasons underlying these outbreaks are still not fully understood.

Etiology

HFMD is caused by Enterovirus (EV) which belong to the Enterovirus genus of the family Picornaviridae. The EV genus contains many well-known viruses, including polioviruses (PV), Coxsackieviruses (CV-A and -B) and ECHO viruses (E). The EV genome is a single positive-stranded RNA molecule which encodes a 5'-untranslated region (5'-UTR), a polyprotein and a 3' UTR. The polyprotein consists of three regions: P1, P2 and P3 which are in turn cleaved into four viral capsid proteins (VP1–VP4) and seven non-structural proteins involved in protein processing and genome replication (2A–2C, 3A–3D)

by EV's proteases 2A and 3C. The viral capsid is an icosahedron, composed of VP1–VP4. VP1, VP2 and VP3 form a deep canyon that serves as the receptor-binding site at the surface of the capsid. Proteins 2A and 3C are not only essential for EV replication, but also play important roles in virus–host interactions. The protein 3D is an RNA-dependent RNA polymerase (RdRp) which lacks proofreading activity leading to frequent mutations during EV replication. Based on the phylogenetics of VP1, the major antigenic protein of EVs, the Enterovirus genus is proposed to be divided into seven species, including EV-A to D and rhinovirus A–C by the International Committee on Taxonomy of Viruses.



Improvement of virus detection methodology and disease surveillance has led to a better understanding of the etiology of HFMD. At least 23 EV serotypes which belong to two different EV species have been reported to cause HFMD over the past 50 years. Among them, EV71 and CV-A16 are the most prevalent. CV-A16 isolated in 1958, was the first identified HFMD pathogen, followed by EV71, which was isolated in the USA in 1969. Since then, EV71 outbreaks have occurred periodically throughout the world including in Japan, Bulgaria, Hungary, Australia, Malaysia, UK and Vietnam. CV-A16 outbreaks also occurred in Australia, England, Singapore and the mainland China. CV-A16 infection and EV71 infection emerged alternately and these vectors have become the most relevant pathogens of HFMD worldwide to

date. In mainland China, HFMD was first reported in Shanghai in 1981. Outbreaks of CV-A16 infection were identified in Tianjin in 1983 and 1986. EV71 was first isolated in Wuhan in 1995. The outbreaks of EV71 infection occurred in Linyi, Shandong Province in 2007 and Fuyang, Anhui Province in 2008, initiating the EV71 pandemic in mainland China that has persisted ever since.

The fact that EV71 has been associated with a wide spectrum of acute central nervous system (CNS) syndromes, including aseptic meningitis, poliomyelitis-like paralysis and acute neurogenic pulmonary edema, makes it the predominant serotype in severe (80%) or fatal (93%) laboratory-confirmed cases. CV-A16 and most other EV serotypes more intend to cause mild HFMD cases.

Recombination is the major force that drives EV variation. CV-A16 and EV71 often circulate together and their coinfection increases the chance of intertypic recombination. A recombinant may be responsible for the large HFMD outbreaks in mainland China. Recombination also contributes to the variation of other EV serotypes.

In recent years, the switch of HFMD etiology has been suggested by the increased epidemics of serotypes other than EV71 and CV-A16, including CV-A6, CV-A10 and CV-A12. Disease caused by a new strain of CV-A6 has been found worldwide, causing severe HFMD in children and atypical HFMD in adults. In some areas in China, CV-A6 has replaced CV-A16 as a predominant causative agent. The increasing trend of CV-A6 spread warrants enhanced precise etiology surveillance of HFMD.

Together, diverse EV serotypes can cause HFMD and EV71 and CV-A16 are the most common pathogens. EV71 is the major agent causing severe cases. The switch of HFMD etiology requires a precise EV typing in the surveillance for a better HFMD control.

Transmission

The viruses that cause HFMD can be found in an infected person's:

- Nose and throat secretions

- ❑ Blister fluid
- ❑ Feces

An infected person may spread the viruses that cause HFMD to another person through:

- ❑ Close personal contact
- ❑ Through coughing or sneezing
- ❑ Contact with feces
- ❑ Contact with contaminated objects and surfaces

For example, a person might get infected by kissing someone who has HFMD or by touching a doorknob that has viruses on it then touching eyes, mouth or nose.

It is possible to get infected with the viruses that cause HFMD if someone swallows recreational water such as water in swimming pools. However, this is not very common. This is more likely to happen if the water becomes contaminated with feces from a person who has HFMD and is not properly treated with chlorine.

Generally, a person with HFMD is most contagious during the first week of illness. People can sometimes be contagious for days or weeks after symptoms go away. Some people especially adults, may not develop any symptoms but they can still spread the virus to others. This is why people should always try to maintain good hygiene so they can minimize their chance of spreading or getting infections.

HFMD is not transmitted to or from pets or other animals.

Signs & Symptoms

The symptoms of HFMD usually develop between three and five days after being exposed to the infection.

The first symptoms may include:

- ❑ A high temperature, usually around 38°-39°C (100.4°-102.2°F)
- ❑ A general sense of feeling unwell
- ❑ Loss of appetite
- ❑ Coughing
- ❑ Abdominal pain
- ❑ A sore throat and mouth

Mouth ulcers:

After one or two days, red spots appear on the tongue and inside the mouth.



These quickly develop into larger yellow-grey mouth ulcers with red edges.

The ulcers can be painful and make eating, drinking and swallowing difficult. They should pass within a week.

Some people especially young children, may get dehydrated if they are not able to swallow enough liquids because of painful mouth sores.

Spotty rash and blisters:

Soon after the mouth ulcers appear, notice a rash made up of small raised red spots on the skin.



These typically develop on the fingers, the backs or palms of the hand, the soles of the feet and occasionally on the buttocks and groin.

The spots may then turn into small blisters with a grey centre. The spots and blisters can sometimes be itchy or uncomfortable and typically last up to 10 days.

Not everyone will get all of these symptoms. Some people especially adults, may show no symptoms at all but they can still pass the virus to others.

Diagnosis

To distinguish HFMD from other types of viral infections by evaluating:



- ❑ The age of the affected person
- ❑ The pattern of signs and symptoms
- ❑ The appearance of the rash or sores

Throat swab or stool specimen also helpful to determine which virus caused the illness.

Treatment

Medications are usually not needed as it is a viral disease that typically resolves on its own. Currently, there is no specific curative treatment for HFMD. Disease management typically focuses on achieving symptomatic relief. Pain from the sores may be eased with the use of analgesic medications. Infection in older children, adolescents and adults is typically mild and lasts approximately 1 week, but may occasionally run a longer course. Fever reducers and lukewarm baths can help decrease body temperature. Antibiotics won't help as HFMD is caused by a virus.

Medical advices needed if:

- ❑ Child is unable or unwilling to drink any fluids
Child has signs of dehydration such as unresponsiveness, passing small amounts of urine or no urine at all or cold hands and feet
- ❑ Child develops fits (seizures), confusion, weakness or a loss of consciousness
- ❑ Child is under three months old and has a temperature of 38°C (101°F) or above, or is between three and six months old and has a temperature of 39°C (102°F) or above
- ❑ The skin becomes very painful, red, swollen and hot, or there's a discharge of pus
- ❑ The symptoms are getting worse or haven't improved after 7 to 10 days

Symptomatic treatment:

- ❑ Plenty of fluids can be taken to avoid dehydration – water or milk are ideal; it may help to give a baby smaller but more frequent bottle or breast milk feeds
- ❑ Soft foods such as mashed potatoes yoghurt and soups should be taken if there is any swallowing difficulty
- ❑ Over-the-counter painkillers, such as paracetamol or ibuprofen, can be used. To ease a sore throat and fever – aspirin shouldn't be given to children under the age of 16; paracetamol is best if patient is pregnant
- ❑ Gargling with warm salty water will help to relieve discomfort from mouth ulcers – it's important not to swallow the mixture, so this isn't recommended for young children

Alternatively, use mouth gels, rinses or sprays for mouth ulcers but aren't routinely recommended and some aren't suitable for young children. Children keep away from nursery or school until they're feeling better. Adults with the condition should stay away from work until they're feeling better.

A minority of individuals with HFMD may require hospital admission due to complications such as inflammation of the brain, inflammation of the meninges or acute flaccid paralysis. Non-neurologic complications such as inflammation of the heart, fluid in the lungs or bleeding into the lungs may also occur.

Infection in pregnancy is usually nothing to worry about, but there's a small chance it could make baby ill if infected shortly before giving birth.

Complication

The most common complication of HFMD is dehydration. The illness can cause sores in the mouth and throat, making swallowing painful and difficult.

Watch closely to make sure child frequently sips fluid during the course of the illness. If dehydration is severe, intravenous (IV) fluids may be necessary.

HFMD is usually a minor illness causing only a few days of fever and relatively mild signs and symptoms. A rare and sometimes serious form of the coxsackievirus can involve the brain and cause other complications:

- ❑ **Viral meningitis:** This is a rare infection and inflammation of the membranes (meninges) and cerebrospinal fluid surrounding the brain and spinal cord.



- ❑ **Encephalitis:** This severe and potentially life-threatening disease involves brain inflammation caused by a virus. Encephalitis is rare.

Prevention

Child is most contagious in the first 7 days. But the virus can stay in the body for days or weeks after symptoms go away and it could spread through her spit or poop. The best way to prevent that is to wash hands thoroughly.

It's not always possible to avoid getting HFMD but following the advice below can help stop the infection spreading.

- ❑ **To wash hands carefully:** Be sure to wash hands frequently and thoroughly, especially after using the toilet or changing a diaper and before preparing food and eating. When soap and water aren't available, use hand wipes or gels treated with germ-killing alcohol.
- ❑ **To Disinfect common areas:** Get in the habit of cleaning high-traffic areas and surfaces first with soap and water then with a diluted solution of chlorine bleach and water. Child care centers should follow a strict schedule of cleaning and disinfecting all common areas including shared items such as toys, as the virus can live on these objects for days. Clean baby's pacifiers often.
- To teach good hygiene:** Show children how to practice good hygiene and how to keep themselves clean. Explain to them why it's best not to put their fingers, hands or any other objects in their mouths.
- ❑ **To isolate contagious people:** Because HFMD is highly contagious, people with the illness should limit their exposure to others while they have active signs and symptoms. Keep children with HFMD out of child care or school until fever is gone and mouth sores have healed. If adult have the illness, stay home from work.

References:

- ❑ National Science Review, 2: 268–284, 2015
- ❑ <https://en.wikipedia.org>
- ❑ NHS (National Health Science), UK
- ❑ Centers for Disease Control & Prevention, USA
- ❑ World Health Organization, Western Pacific Region, Regional Emerging Diseases Intervention

Winter weather offer families the chance to enjoy all kinds of fun cold weather activities with lots of common childhood health problems. We should not let winter to keep our child in the house but do make sure our kids are prepared to safely enjoy cold weather activities. The human body's mechanisms of heat retention are significantly less efficient than our ability to dissipate heat. Epidemiological research suggests that even in otherwise innocuous environmental conditions, hypothermia can occur. During the day, the temperature may be moderate and the sun shining, but as the sun sets and the temperature begins to fall, when coupled with conditions of exhaustion, dehydration and wet clothing associated with physical activity, the risk of cold-related pathology can increase.

Understanding the mechanisms of heat retention and production is essential to the prevention and management of cold-related illnesses and injuries:

- ❑ **Vasoconstriction** - Decreases blood flow to the periphery to prevent loss of body heat.
- ❑ **Shivering** - While involuntary shivering generates heat through increased muscle activity, it may also hinder ability to perform behavioral tasks to aid in heat retention.
- ❑ **Activity increase** - Increases heat production through a general increase in metabolic activity. Intense activity can generate incredible amounts of heat.
- ❑ **Behavioral responses** - Adjusting the number and type of clothing layers will result in heat regulation by controlling the amount of heat lost by the body.

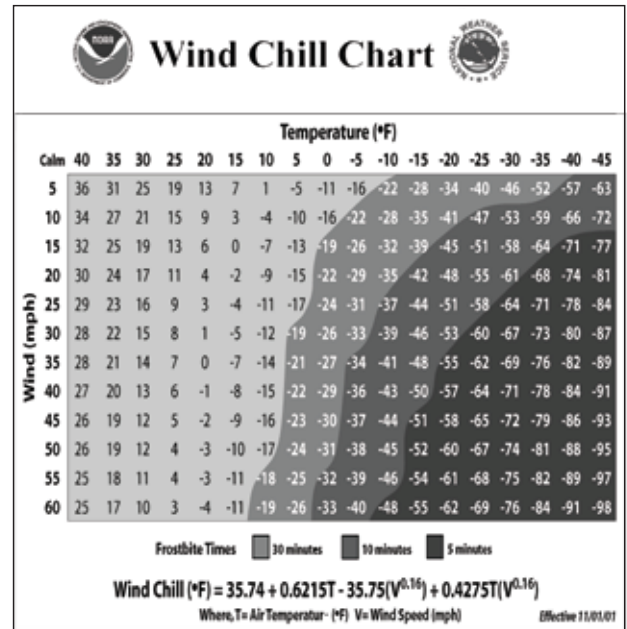
There are several factors influencing one's susceptibility or risk of cold related injury or illness. It is essential to appreciate each of these factors, along with the associated signs and symptoms of hypothermia and frostbite. For example, exposure to 30 degrees - 50 degrees temperature under wet and windy conditions can be equivalent to sub-zero temperatures with no wind or moisture

Risk Factors

- ❑ **Low air temperature** - When cold exposure exceeds or overwhelms the body's ability to

compensate for heat loss due to the external environment.

- ❑ **Wind chill** -Wind-chill index chart that identifies the risks, associated with the interaction of the wind speed and air temperatures.



- ❑ **Moisture** - Wet skin freezes at a higher temperature than dry skin.
- ❑ **Exposed skin** - Heat loss occurs primarily through convection and radiation to the external environment, but may also include evaporation if the skin is moist. This is a concern for those exercising and sweating in cold environments.
- ❑ **Insulation** - The amount of insulation from cold and moisture significantly affects thermoregulation.
- ❑ **Dehydration** - Negatively influences metabolism and thermoregulation.
- ❑ **Secondary Smoking** - Acts as a vasoconstrictor; increasing the risk of frostbite.

A) Hypothermia

It is defined as a decrease in the core body temperature to at least 95°F. It occurs when the heat loss is greater than the metabolic and heat production. Hypothermia can be categorized in three stages: mild, moderate and severe, based on core body temperature.

Treatment

The basic principles of rewarming victims of hypothermia are to conserve the heat they have, and replace the heat that they have already lost. The best method to determine the extent of core temperature loss is measurement of rectal temperature. Unfortunately, obtaining a rectal temperature reading on a moderately or severely hypothermic patient can be difficult.

- ❑ Severe hypothermia should be treated as a medical emergency. Wrap the children in an insulated blanket and seek emergency medical care immediately.
- ❑ The following describes the management regimes for hypothermia relative to severity.

Stages of Hypothermia

Stage	Core Temperature In Degrees	Signs and Symptoms
Mild Hypothermia	99 - 97 F	Normal, shivering may begin
	97 - 95 F	Cold sensation, goose bumps, unable to perform complex tasks with hands, shiver can be mild to severe, hands numb.
Moderate Hypothermia	95 - 93 F	Intense shivering, muscle in-coordination becomes apparent, movements slow and labored, stumbling pace, mild confusion, may appear alert.
	93 - 90 F	Violent shivering persist, difficulty speaking, sluggish thinking, amnesia starts to appear, gross muscle movements sluggish, unable to use hands, stumbles frequently, signs of depression, withdrawn.
Severe Hypothermia	90 - 86 F	Shivering stops, exposed skin blue or puffy, muscle coordination very poor, inability to walk, confusion, incoherent/irrational behavior, but may be able to maintain posture and appearance of awareness.
	86 - 82 F	Muscle rigidity, semiconscious, stupor, loss of awareness of others, pulse and respiration rate decrease, possible heart fibrillation.
	82 - 78 F	Unconscious, heart beat and respiration erratic, pulse may not be palpable.
	78 - 75 F	Pulmonary edema, cardiac and respiratory failure, death. Death may occur before this temperature is reached.

Overview:

- ❑ Child should be removed from cold environment.
- ❑ Remove wet clothing and replace with dry clothing and/or blankets. Refer all moderate cases to the emergency room once safe to transport.
- ❑ Mild hypothermia - Seek dry shelter; replace wet clothing, insulate whole body and head, avoid sweating, use external warmth (bath, fire) only if core above 95°F, give warm sweet drinks and food.
- ❑ Moderate hypothermia - Avoid exercise and external warmth, gently rest, give warm sweet

drinks and calories, internal warming via warm moist air, monitor pulse and breathing.

- ❑ Severe hypothermia - Medical emergency, give nothing by mouth, wrap in an insulated blanket, avoid rapid rewarming, transfer to hospital immediately.

B) Frostbite

It is a thermal injury to the skin, which can result from prolonged exposure to moderate cold or brief exposure to extreme cold. The body areas most prone to frostbite are the hands, feet, nose, ears and cheeks. Frostbite can be classified into three basic categories: Frostnip, Superficial Frostbite and Deep Frostbite

Stages of Frostbite

Stage	Signs and Symptoms
Frostnip	Only the outer layer of skin is frozen. Skin appears white and waxy or possibly gray or mottled. It may have sensation or may be numb. May be painful.
Superficial Frostbite	Skin appears white, mottled or gray. It feels hard or rubbery on the surface, but deeper tissue is still soft. Skin is insensitive to touch.

Treatment

It is very important to note that refreezing newly thawed frostbitten tissue can cause extensive tissue damage. If it is not absolutely certain that the tissue will stay warm after rewarming, do not rewarm it. Once the tissue is frozen, the major harm has been done. Keeping it frozen for a longer period of time will not cause significant additional damage.

Overview:

- ❑ Gently rewarm the area by blowing warm air onto the area, placing the area against a warm body part or placing the affected area into warm (101° - 108°F) water for several minutes
- ❑ If a person is also suffering from hypothermia, the first concern is core rewarming

The following describes the management of frostbite relative to severity.

- ❑ Frostnip - Rewarm the area gently by blowing warm air onto the area or placing it against a warm

body part or place in warm (101° - 108°F) water bath for several minutes. Never rub the area. This can damage the affected tissue by increasing the friction on the ice crystals in the cell, causing tearing of the tissue.

- ❑ Superficial frostbite - If a small area is involved, it can be treated the same as indicated for frostnip; if it is a larger area, follow the management for deep frostbite.
- ❑ Deep frostbite - Rewarm by removing restrictive clothing and immersing the affected body part in a water bath of 105°-110°F for 25-40 minutes. Refer deeply frostbitten child's to the emergency room.

- ❑ Do not rewarm the tissue unless absolutely certain that it will stay warm after rewarming.

Prevention

- ❑ Dress in layers
- ❑ Cover the head to prevent excessive heat loss from the head and neck
- ❑ Stay dry by wearing a wicking fabric next to the body and a breathable, water repellent outer layer
- ❑ Stay adequately hydrated
- ❑ Eat regular meals

C) Common Cold

Cold germs can live on toys, door handles and other surfaces for up to two days. There are more than 200 cold-causing viruses. Reduction to child's exposure to germs by wiping down grocery carts, restaurant tabletops and high chairs before using them.

Chances to develop: 99 percent of young kids typically get three to ten colds every year.



Symptoms

Runny nose, nasal congestion, sneezing, cough, sore throat, headache and mild fever.

Contagiousness

It is contagious for about five days.

Treatment

Mainstay treatment is plenty of fluids and rest. Use a cool-mist humidifier. Ibuprofen or acetaminophen helps to reduce the fever and achiness and saline nose drops if there is congestion. Cold medication should be avoided if child is under 6.

D) RSV (Respiratory Syncytial Virus)

Respiratory syncytial virus infection usually called RSV, is a lot like a bad cold. It causes the same symptoms. And like a cold, it is very common and very contagious. Most children have had it at least once by age 2.

Chances to develop: 90 percent of children are infected by age 2.

Symptoms

- Cough
- Stuffy or runny nose
- Mild sore throat
- Earache
- Fever

Babies with RSV may also

- Have no energy
- Act fussy or cranky
- Be less hungry than usual
- Some children have more serious symptoms, like
- wheezing

Diagnosis

Child's symptoms and by knowing whether there is an outbreak of the infection is enough to diagnose the disease.

There are tests for RSV, but they aren't usually needed. Laboratory tests can be done to exclude other problems. The most common test uses a sample of the drainage from nose.

Treatment

- Child's head should be propped up to make it easier to breathe and sleep. Suction of nose if baby can't breathe well enough to eat or sleep.
- Relieve fever with acetaminophen or ibuprofen, if needed. Aspirin is contraindicated if patient is less than 20 years, because it can cause Reye syndrome, a serious but rare problem.

When a person with RSV is otherwise healthy, symptoms usually get better in a week or two.

RSV can be serious when the symptoms are very bad or when it leads to other problems, like pneumonia. Certain people are more likely to have problems with RSV:

- Babies younger than 6 months, especially those born prematurely
- People with immune system problems
- People with heart or lung problems
- Adults older than 65

Prevention

It's very hard to keep from catching RSV, just like it's hard to keep from catching a cold. But chances can be lowered by practicing good health habits. Measures to keep baby safe-

- Wash hands often
- Recommended vaccines
- Medicines to prevent RSV

E) Viral gastroenteritis

Viral gastroenteritis is present when a virus causes an infection of the stomach and intestine. The infection can lead to diarrhea and vomiting. It is sometimes called the "stomach flu."

Causes

Gastroenteritis can affect one person or a group of people who all ate the same food or drank the same water. The germs may get into system in many ways:

- Directly from food or water
- By way of objects such as plates and eating utensils
- Passed from person to person by way of close contact

Many types of viruses can cause gastroenteritis. The most common viruses are:

- Norovirus (Norwalk-like virus) is common among school-age children. It may also cause outbreaks in hospitals and on cruise ships
- Rotavirus is the leading cause in children. It can also infect adults who are exposed to children with the virus and people living in nursing homes
- Astrovirus
- Enteric adenovirus

Symptoms

Symptoms most often appear within 4 to 48 hours after contact with the virus. Common symptoms include:

- Abdominal pain
- Diarrhea
- Nausea and vomiting

Other symptoms may include

- Chills, clammy skin or sweating
- Fever
- Joint stiffness or muscle pain
- Poor feeding
- Weight loss

Diagnosis

Signs of dehydration, including:

- Dry or sticky mouth
- Lethargy or coma
- Low blood pressure
- Low or no urine output, concentrated urine that looks dark yellow
- Sunken soft spots on the top of an infant's head
- No tears
- Sunken eyes

Tests of stool samples may be used to identify the virus that is causing the sickness. Most of the time, this test is not needed. A stool culture may be done to find out if the problem is being caused by bacteria.

Treatment

The goal of treatment is to make sure the body has enough water and fluids. Fluids and electrolytes that are lost through diarrhea or vomiting must be replaced by drinking extra fluids.

- Older children and adults can drink sports beverages, but these should not be used for younger children. Instead, use the electrolyte and fluid replacement solutions or freezer pops available in food and drug stores.
- Should be avoided fruit juice, sodas or cola, Jell-O or broth. These liquids do not replace lost minerals and can make diarrhea worse.
- Drink small amounts of fluid (2 to 4 oz. or 60 to 120 mL) every 30 to 60 minutes. Do not try to force down large amounts of fluid at one time, which can cause vomiting. Use a teaspoon (5 milliliters) or syringe for an infant or small child.
- Babies can continue to drink breast milk or formula along with extra fluids.

Try eating small amounts of food frequently. Foods to try include:

- Cereals, bread, potatoes, lean meats
- Plain yogurt, bananas, fresh apples
- Vegetables

F) Roseola

Roseola is a common virus that infects children under age 2. Most of the time, it's nothing to worry about, and kids get better on their own. It's also sometimes called "sixth disease."

Symptoms

A child may not have any symptoms for 5-15 days after getting the virus that causes roseola. When symptoms do appear, the first thing will be a sudden, high fever (over 103 F) that lasts or can come and go for 3-7 days.

Other than the fever, child might seem healthy. Childs may be restless or irritable. Once the fever goes away, child might also develop a raised, spotty, reddish rash, mainly on neck and trunk. It doesn't itch and may last just a few hours or a few days.

Causes

It's an infection brought on by human herpesvirus 6 or occasionally, human herpesvirus 7. It remains in the child's body but usually remains latent or turned off. It's most common in infants and children between 6 and 24 months old.

Diagnosis and Treatment

Usually roseola can be diagnosed by symptoms like-high fever followed by rash & no lab tests are needed.

Since it's caused by a virus, antibiotics won't help cure it. So, symptomatic treatment will be enough to make child more comfortable. For high fever, the most recommended medicine is acetaminophen or ibuprofen. Roseola is contagious, so it's better to keep child away from others, at least until the fever goes away. Once it's been gone for at least 24 hours, baby can play with other kids, even if still baby has a rash.

G) Ear Infection

Ear infections in children are typically caused by a bacteria or a virus. Symptoms include pain, fever or trouble sleeping. Parents may notice children rubbing their ear. Ears may drain a yellowish fluid as well. Treatments for child ear infections may only involve home remedies and pain relievers, but some cases of ear infections require antibiotics or ear tubes if the infection is severe enough.

Chances to develop: 75 percent of kids have one by age 3.

Contagiousness:

No, but the cold that led to the ear infection probably is.

Treatment:

Ibuprofen or acetaminophen will reduce the pain and fever. Place a paper towel in the bottom of a small

plastic cup, pour in a little hot water, squeeze off the excess liquid into a sink, and put the cup over child's ear. The warm moisture will ease pain.

H) Flu (Influenza)

Chances to develop: Up to 40 percent of all kids come down with the flu each year.

Symptoms:

High fever, body aches, chills, sore throat, cough, runny nose.

Contagiousness:

Child could pass it on for about two weeks.

Treatment:

The best medicine is prevention. Flu shot is recommended for every children from 6 months of age. If the virus is diagnosed within 48 hours and if the child is at least a year old, oseltamivir can be given to reduce the symptoms and duration of the illness.

Flu shots won't completely protect child since different strains of the virus hit every winter, but they're still well worth getting: Kids under 2, are at high risk for complications-including dehydration and breathing problems, that may require hospitalization.

Common measures to protect child from winter**To keep child well hydrated**

If child is not drinking enough water owing to low temperature, make sure that baby is drinking enough water as it is vital to keep their skin hydrated. Contrary to the common myth that consuming certain fruits can cause cold, let kids eat plenty of fresh fruits and fruit juices (fresh without sugars) they don't cause any cold as long as they are consumed at room temperature.

To ensure Lukewarm Water Bath

Some kids are prone to catch cold during shower while taking their regular baths. And, sometimes tend to stay longer in the shower. Extreme hot water is not good for their skin. The best bet is to ensure brief shower in lukewarm water. Don't use regular bath soaps as they contain detergents that can dry out the skin further, instead use milder skin-friendly soaps, which are commercially available. Moisturize their

skin with a moisturizing lotion after the bath.

To massage with Olive Oil or Coconut Oil

Tender skin of child is prone to damage by the chilling winter winds. A regular body massage with olive oil or coconut oil that contains plenty of vitamin E and fatty acids is quite good for their skin.

Winter Clothes for Child

Jackets, pullovers or sweaters are good in the morning, but as the temperature soars by mid-afternoon and when the sun shines brightly, kids tend to take off the pullover. At the dusk as the temperature sinks, kids feel cold but don't realize to wear their winter gears back. In such a scenario, the chances of catching cold are high. The best bet would be to ensure that kids are dressed up in layers so that even after they remove one or two layers of clothes they are still protected.

To keep a Check on Dietary Habits

In winter child needs a balanced diet that comes with required amount of proteins, carbohydrates, fats, fibres and essential nutrients. To ensure this, include a lot of fresh fruits and vegetables in diet. It is important that kids stay healthy and enjoy all the varied food options that come exclusively during the winters. Having cakes, pastries and barbecues are fine, but make sure that these are not the only ingredients of their diet.

Allow Child to Play

Don't allow the kids to keep confine themselves to bed under blanket; let them put on their winter gear and go out for regular exercises and afternoon game sessions. Good diet, proper protection and enhanced fitness levels ensure good immunity against the common winter cold and flu infections.

To ensure General Hygiene

Keep child clean and don't allow them to play in dust. Ensure that they are washing their hands regularly. Hand washing after visiting toilet, after changing diapers, before preparing and before eating food, after coming home from an outing is the simplest and most effective way to get rid of cold and flu germs. In addition, get sanitizers for kids and teach them how to use them when outside particularly before eating food.

How to tackle Flu in winter

These are the general measures that can take at home when child gets infected with flu: take the advice of doctor for using acetaminophen or paracetamol at home for relieving pain and fever of child. For relieving congestion, use saline nasal drops along with steam and humidifier. Ensure that child is drinking plenty of fluids. Do not let child to eat solid food for a day or two if they are not willing to ensure lot of fluids/ soups with fresh fruits and vegetables in their diet. Use probiotics if child has diarrhoea due to stomach flu.

To get child vaccinated

Just ensure that child's vaccinations are up to date. As for as flu is concerned, once child reaches 6 months or older get flu shots done.

References:

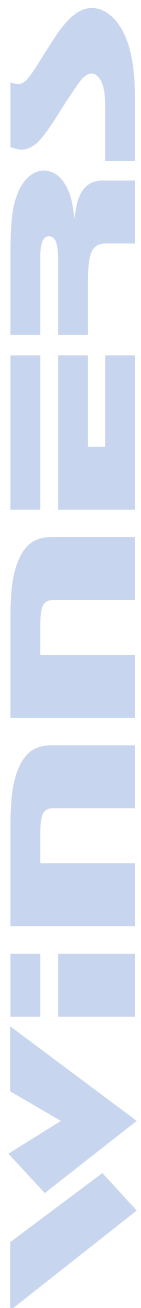
- ❑ World Health Organization (WHO)
- ❑ Center for Disease Control & Prevention (CDC)

Test Yourself - 44

Correct Answers :

1. D 2. A 3. C 4. C 5. B 6. B

CONGRATULATIONS!



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Test Yourself - 45

1. The followings are true for “Hand, Foot and Mouth Disease” except:

- It was first identified in New Zealand and Canada in 1957.
- Signs and symptoms normally appear 7 – 8 days after exposure to virus.
- It typically begins with a fever and feeling generally unwell.
- The viruses can be found in an infected person’s nose and throat secretions, blister fluid, feces.

2. All the followings are correct for “Autism Spectrum Disorder (ASD)” except:

- About 20 – 39% of individuals with ASD have some degree of an intellectual disability.
- Parents or doctors may first identify ASD behaviors in infants and toddlers.
- There are two main types of behaviors.
- Most recent studies in US showed that the prevalence of ASD was as high as 11 per 1000.

3. All the below are true for “Common Childhood Health Problems in Winter” except:

- There are more than 200 cold causing viruses.
- Respiratory Syncytial Virus (RSV) is very common and contagious.
- About 90 % of the children are infected with RSV by two years of age.
- About 99% of the young children typically get two to three colds every year.

4. All the followings are correct for “Hand, Foot and Mouth Disease” except:

- A person with this condition is most contagious during the first few days of illness.
- It is not transmitted to or from pets or other animals.
- The most common complication of this disease is dehydration.
- The virus can stay in the body for days or weeks after the symptoms go away.

5. The followings are right for “Autism Spectrum Disorder (ASD)” except:

- The diagnostic criteria of autism in the DSM – IV consisted of three domains.
- People with ASD may be very sensitive to light, noise or temperature.
- It can be reliably diagnosed in children as young as two years old.
- About 46% of ASD children have average intelligence.

6. All the followings are correct for “Common Childhood Health Problems in Winter” except:

- Norovirus is common among school age children causing gastroenteritis.
- Symptoms of viral gastroenteritis most often appears within 4 – 48 hours after contact with virus.
- Flu shots will completely protect the child from Influenza.
- Roseola is a common virus that infects children under age two.

Soon our officials will be visiting you with a token of our appreciation

1. Regenerating Body Parts

Regenerative medicine—a branch of science working to find ways to regrow or replace damaged tissue and organs—took a huge leap forward in 2017, when Ohio State University researchers announced the development of a new technology called tissue Nano transfection. TNT technology, which is embedded in a tiny chip, can reprogram skin cells to repair organs and blood vessels. With certain kinds of DNA, "we can convert one kind of cell into other types," says an Ohio State professor and coleader of the project. The noninvasive procedure involves placing a postage stamp-size chip on the skin and sending a small electric current through it. The process delivers DNA vectors into the body in less than a second. So far, the research has focused only on animals, growing blood vessels in an injured mouse leg in a week and generating nerve cells that helped mice recover from strokes. Clinical trials in humans are scheduled to begin in 2018.

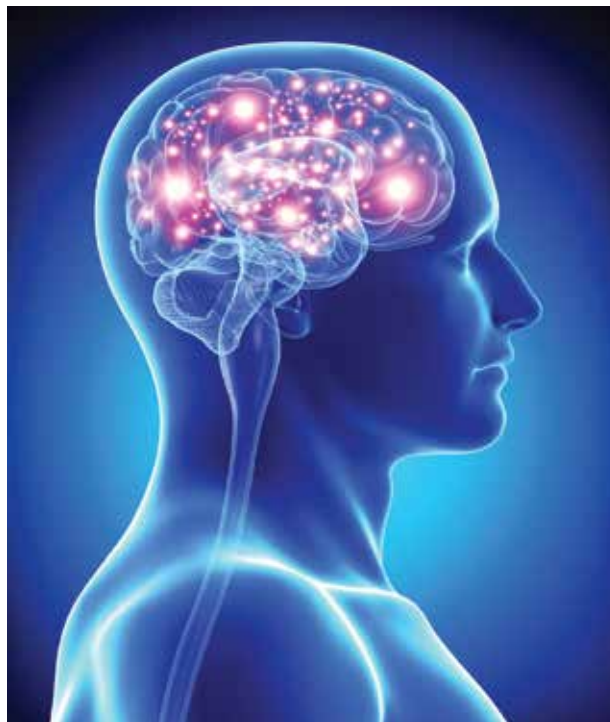
2. A Smartphone Heart Monitor

Keeping a watch on the heart has gotten more convenient and sophisticated. People can get medical-grade electrocardiograms (EKG) using a small device that attaches to the back of a smartphone, then receive monthly analyses of their results and have the reports sent directly to their doctors. And soon, pending FDA clearance, consumers will be able to get EKGs simply by placing a finger on the band of an Apple Watch. Vic Gundotra, CEO of AliveCor, which produces the monitors, says the company is also collaborating with Mayo Clinic to develop an artificial intelligence system that can predict from an EKG if a patient has too much or too little potassium in the blood and is at risk of sudden death.

3. Liquid Biopsies

Scientists announced major steps forward this year in the development of "liquid biopsies," methods for analyzing blood samples to find evidence of cancer. Currently being used to detect changes in people with metastatic cancer, liquid biopsies could eventually help diagnose new cancers early, when they're most treatable. "Finding tumor DNA in the blood is like looking for a needle in a haystack," says Pedram Razavi, an oncologist at Memorial Sloan Kettering Cancer Center in New York City who led a

recent study. The latest tests in development are so comprehensive that doctors don't even need to know what genetic mutation they're looking for.



4. Deep Brain Stimulation for Strokes

Researchers at Cleveland Clinic conducted the first-ever deep brain stimulation therapy in a stroke patient this year, and the patient regained more of her motor function than expected. (1 in 3 americans may have had a mini stroke—here are the symptoms to look out for). The therapy, originally scheduled to last 4 months, is ongoing because the patient continues to make progress, says a neurosurgeon and chair of the clinic's Neurological Institute, which is conducting the experiment. "We're encouraged that there are "strong implications" the therapy will be useful in helping people recover physical function after a stroke leaves them paralyzed or faced with other debilities. Nearly half of the 5.5 million Americans who have had strokes are unable to perform daily activities without assistance.

References:

Rochelle Sharpe, Reader's Digest



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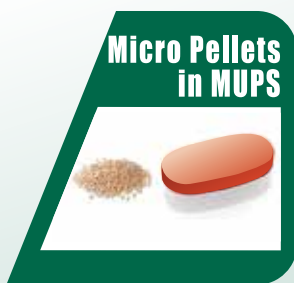





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