



ME & MY CHILD

A guide for parents

Parenting young children is a difficult task. Guidance is often needed regarding their nutrition, growth and development, and care during common illnesses. In this book, I have tried to describe common problems which parents encounter with their children and their home management.

Dr. S Q Nizami

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Dedication

This book is dedicated to children of Pakistan and the world.

Preface

I have been taking care of children for more than 45 years. During this period, I have come across different types of parents with different levels of education and knowledge, with different backgrounds, and with different beliefs and superstitions. All these parental attributes have a direct effect on the life of the child and their parents, sometimes good and sometimes adverse effects. The main reason for this situation is lack of sound and proper knowledge about children's normal growth, their changing needs over time, and common issues and illnesses etc. In addition, different advice from relatives, friends, elder family members, irrespective of being right or wrong, has a direct impact on the life of children. Electronic media, both mainstream TV and social media such as YouTube, Facebook and others keep feeding wrong information to the public in the name of providing knowledge to common people. This is a dangerous practice and has resulted in unnecessary and avoidable loss to common people and the children, especially in respect to health issues. Many a times, people have suffered not only financial loss but also permanent disability and even death. That's why I decided to write a book about appropriate caring of children by their parents, especially about nutrition and home management of common childhood illnesses. Even if one child is saved from adverse events because of this book, I will think that I have succeeded in achieving my aim.

However, it doesn't exclude the need to consult the doctor. I also agree that some doctors may also not be competent enough and up to date and may give wrong advice. Hence, it is necessary that a second opinion is sought if the doctor's advice seems inappropriate. Also, media should take some responsibility to present only authenticated and scientifically proven views, instead of projecting quacks or presenting harmful material.

In this book, I have tried to present the information in a simple language as much as possible, avoiding difficult medical terminologies, explaining the different subjects in common language to be understood easily by parents. I have tried to provide answers to frequently asked questions by parents during routine well baby visits and sick children. I know that many common people may not be able to accept advice due to their longstanding beliefs in traditional views or superstitions like magic or religious thoughts. I have no intention of confronting them. Instead, I would like to present scientific information, which they may or may not accept. My aim is only to guide the parents and common people, and to provide correct and most up-to-date scientific knowledge. It is their prerogative to understand and use it when needed or continue with their own beliefs and practices.

I declare that I have written this book in my personal capacity. It is not a publication of the Aga Khan University and neither the Department of Pediatrics nor the Aga Khan University is responsible for its content and publications.



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Foreword

A career in Pediatrics spent being the guiding light for parents who are nervously navigating the journey of nurturing their precious child is one of the most rewarding of human experiences. Dr. Qamaruddin Nizami, one of Pakistan's most experienced and exemplary Pediatricians, has lived such a privileged life, bearing the responsibility of taking care of precious lives and giving parents the confidence and encouragement, they need to nurture their most prized possession.

In this fantastic book, geared towards parents and practitioners alike, Dr. Nizami covers the most common neonatal and childhood illnesses, and explains in the simplest of terms, what parents need to do to manage their child at home, and what signs they need to watch out for to bring them in to be seen by a medical professional. Dr. Nizami has succinctly covered both acute and preventative issues from neonatal life up to adolescence, giving each topic the importance, it deserves. The chapters on feeding issues in neonates comprehensively cover common questions most parents will have, including challenges with breastfeeding that mothers face. The chapters on malnutrition and obesity are particularly useful and give practical and contemporary advice on how to optimize a child's nutrition. Advice on immunizations addresses myths and challenges that will be

particularly useful to parents who live in this age of misinformation. He has masterfully laid out home management plans for common ailments like diarrhea and asthma, with attention to keeping children safe at home and having parents access the healthcare system effectively.

The most special quality of this book is that like his career, it is centered around the child and their family. In his empathetic style, Dr. Nizami has given parents and the world of Pediatrics a manual that is practical, up-to-date, and applicable to settings all over the world. Like his long and illustrious career which continues to inspire us, this book will guide us in taking care of our children for many years to come.

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Chapter 1:

Common Neonatal Problems

1. Neonatal Jaundice

Jaundice is one of the few major problems which is seen in the majority of newborns. Most of the time it is benign and causes no harm to the neonate, but its wrong management may become harmful for the neonate. Jaundice in newborns is different from the jaundice in later life. The causes of jaundice vary according to the age of neonate. During the first week of life, it is caused by hemolysis. That means breaking up of red blood cells, which releases hemoglobin. This hemoglobin gets converted into bilirubin. Since bilirubin is yellow in color, it causes yellowness of skin of newborn babies. This bilirubin, which is called to be “indirect”, is not excreted from the body and gets deposited in skin and other organs like brain. This “indirect bilirubin” is converted in liver to another form of bilirubin called “direct bilirubin”. This direct bilirubin is excreted into the intestine and later in urine. This is a normal process in the human body and goes on daily continuously. In newborns, the rate of this process is usually high and more indirect bilirubin is produced than could be handled by liver. This leads to an increase in the amount of indirect bilirubin in blood, resulting in jaundice. Up to a certain limit, it doesn't cause any harm to the baby. If its amount is increased beyond a safe limit, then it may cause permanent damage to the brain. The upper safe limit of bilirubin also varies according to age and weight of the

newborn. That's why timely treatment becomes important, to save the brain from permanent damage.

Key points:

1. Jaundice in newborn is different from jaundice later in life.
2. It can be dangerous and can cause brain damage if not managed in time and properly.
3. Repeated blood tests may be needed to monitor the progress of jaundice.
4. In a full term, normal weight baby, bilirubin level up to 12 mg/dl by day 5 is normal. Bilirubin level between 12-20 mg/dl needs attention, and more than 20 mg/dl needs urgent care and treatment. These limits are much less for premature and low birth weight babies.
5. Sunlight is not the alternative of phototherapy. It could be harmful and should be avoided.
6. If surgery is indicated, it should be done before it is too late

A) Causes of jaundice

As jaundice is a symptom and not a disease, it has many causes. These causes are described below to understand the nature of jaundice, its effect and management.

a. Hemolysis

As mentioned above, hemolysis of blood is a major cause of jaundice in newborns. But there may be other causes too. Those causes will be mentioned later. Causes of hemolysis or breakdown of red blood cells are also too many. But few of them are important and can be prevented in many cases. In most newborns and children, some degree of hemolysis occurs normally. In other cases, it occurs due to either difference in blood groups of mother and baby or deficiency of certain chemicals called enzymes in the baby.

Regarding blood groups, Rh incompatibility is the major cause of this hemolysis. The main blood groups are A, B, AB & O. Each one of them is divided into two further groups called Rh +ve and Rh -ve. Thus, there are eight major blood groups. Besides these groups, there are some other groups which are called minor blood groups. If the mother's and baby's group is same or compatible, it doesn't cause any increase in hemolysis in newborn and jaundice does not increase beyond a certain limit. If the blood groups of mother and baby are different, then there may be increased hemolysis and jaundice may increase beyond the safe limit. Thus, it is important to keep an eye on the jaundice of baby. One might have to test the blood of the baby daily or even more than once a day, to see the increasing trend of bilirubin and take appropriate measures to control it, if needed. Avoidance of blood testing in order not to prick, may result in sudden increase of bilirubin to a dangerous level. In that case even treatment may not be useful.

b. Enzyme deficiencies

Regarding enzymes, there are various enzymes in the red blood cells, whose deficiency may lead to increased hemolysis. One of them is a G-6-PD. Its deficiency is not uncommon. This deficiency may be present in some babies' red blood cells due to genetic reasons. It may not only cause increased hemolysis and jaundice in newborns but also in older children and adults. If its deficiency is detected in newborns, then certain medicines and food must be avoided throughout life. Though the list of such drugs is long, but names of few commonly used drugs is given below.

DRUGS TO USE WITH CAUTION IN G6PD DEFICIENCY

- **Acetaminophen (Paracetamol)**
- Aminophenazone, dipyrone, and metamizole (NSAIDs)
- Antazoline (antihistamine)
- Antipyrine (phenazone)
- **Ascorbic acid (vitamin C)**
- **Aspirin (acetylsalicylic acid)**
- Benzhexol
- Chloramphenicol
- **Chloroquine and hydroxychloroquine**
- Colchicine
- **Clotrimazole**
- Diphenhydramine
- **Isoniazid**
- Para-aminosalicylic acid
- Levodopa (L-Dopa) and levodopa-carbidopa
- Para-aminobenzoic acid (PABA)
- Phenylbutazone
- **Phenytoin**
- Probenecid (Benemid)
- Procainamide (Pronestyl)
- Pyrimethamine (Daraprim)
- Quinine
- Streptomycin
- **Sulfa-containing drugs** (sulfacetamide, sulfadiazine, sulfamethoxazole, sulfamethoxyipyridazine, sulfanilamide, sulfisoxazole)
- Tiaprofenic acid
- **Trimethoprim**
- Tripelethamine (Pyribenzamine)
- **Vitamin K**

DRUGS UNSAFE IN G6PD DEFICIENCY

- Chlorpropamide
- Dabrafenib
- Dapsone (diaminodiphenyl sulfone)
- **Fluoroquinolones** (ciprofloxacin, moxifloxacin, norfloxacin, ofloxacin) *
- **Methylene blue** (methylthionium chloride)
- Nalidixic acid
- **Nitrofurantoin**, nifuratel, and nitrofurazone (nitrofurural)
- **Phenazopyridine** (pyridium)
- Primaquine and tafenoquine
- Rasburicase and pegloticase
- **Sulfonylureas** (e.g., glipizide, glyburide [glibenclamide])

* Levofloxacin is not listed because some cases of hemolytic anemia with levofloxacin have been associated with a positive Coombs test.

For any queries, please contact Drug & Poison Information Center, AKUH-K. Tel # +92 21 34861504, 1506, 1479. Email: drug.information@aku.edu

Courtesy: Mr. Shamim Raza, Director AKUH pharmacy

Note: This is not the complete list of medicines to be avoided. A complete list should be obtained from a reliable source and doctor's advice should be obtained before using any medicine in G-6-PD deficient patient. Any medicine may cause hemolysis if not used properly.

Regarding food, fava beans commonly used in Africa are the main food which causes hemolysis in G-6-PD deficient children. Some beans locally available also have similar effects. One of them is called, "bankley ki phali".

c. Liver diseases

There are certain liver diseases which can also cause jaundice. These are different from liver diseases of older children and adults. These diseases may be divided into two groups.

In one group, the ducts in the liver called canaliculi, which collect the bile produced in liver and excrete it into intestine,

may not be formed properly or may be absent. This is called “biliary atresia”. In this case bile containing bilirubin is not excreted into intestine and amount of direct bilirubin increases in the blood. This increased amount of bilirubin causes jaundice. Such jaundice usually occurs during the second week of life and continues to increase. Due to absence of bilirubin in stool, the stool become white colored instead of normal yellow color. The size of liver keeps increasing and the baby usually dies due to liver failure. Its treatment is surgical. If surgery is not performed early and before permanent liver damage occurs, it may not be useful. Usually, such surgery is to be done within the first 8 weeks of life. Hence early diagnosis and treatment is necessary.

In the other group, the liver itself gets damaged due to infection by different viruses or bacteria or by faulty immune system. In this case also the direct bilirubin is increased. The liver keeps increasing in size along with spleen and abdomen gets distended. Treatment is usually difficult and may not be effective. Later the child may die due to liver failure.

B) Treatment of neonatal jaundice:

Treatment of neonatal jaundice depends on the cause. Hence determination of cause is most important. For which certain blood tests are to be done. The following tests are usually needed.

1. Hemoglobin
2. Blood group with Rh
3. Bilirubin, both direct and indirect
4. Reticulocyte count
5. G-6-PD level
6. Liver function tests, i.e., SGPT or ALT and alkaline phosphatase in addition to bilirubin
7. TSH for thyroid function
8. Other tests depending upon the results of the above tests.

Bilirubin may need to be repeated daily or even every 6-8 hours depending upon the rate of rise of bilirubin. If it is increasing fast, then tests are needed more often. So that proper treatment may be started before it is too late to prevent brain damage.

Other tests which may be needed include Ultrasound of liver, CT scan of abdomen and urine test for metabolic disorders etc.

a) Treatment of hemolytic jaundice:

Since hemolysis is the most important and common cause of neonatal jaundice, it is described here in some detail.

a1: Phototherapy:

In this form of treatment, the baby is kept under light, exposing the whole body except the eyes and nappy area to a certain type of light. Start of phototherapy depends upon gestational and postnatal age, weight, bilirubin level and

type of bilirubin. For this purpose, special tube lights are used continuously till the bilirubin level stops increasing or starts decreasing to a normal or safe level. **Sunlight** is not the replacement of phototherapy as it is often thought and advised, even sometimes by doctors or nurses. The light converts indirect bilirubin to direct bilirubin which is excreted into intestine and urine. Thus, it reduces the rate of increase of indirect bilirubin or even starts reducing it. Exposure to sunlight for a few minutes does not have any effect on indirect bilirubin unless it is used continuously for hours. Exposure to sunlight unnecessarily exposes the newborn to heat, dehydration, dust, and infection, without any benefit to the baby.



Phototherapy unit with incubator
Courtesy: Dr. Adnan Mirza, Neonatologist AKUH

a2. Exchange transfusion:

When the bilirubin increases to a certain critical level, beyond which brain damage might occur, the blood of the newborn is removed and replaced with blood donated by a healthy donor. This is called exchange transfusion. This reduces the bilirubin level immediately. In this procedure, 10-20 ml of blood is withdrawn from the newborn and thrown away and a similar amount of donor blood is transfused in. This process is continued till the calculated amount of blood is exchanged. However, the bilirubin may increase again because 100 % of newborn's blood is never exchanged. The remaining original blood of newborn may continue to hemolyze and produce bilirubin. Sometimes, exchange transfusion is needed more than once.

b) Treatment of obstructive jaundice or biliary atresia:

As mentioned above another major cause of neonatal jaundice is biliary atresia or absence of canaliculi/ducts of liver. This may again be of two types. In one type, the duct from liver to gall bladder and intestine is missing or obstructed. In the second type, ducts inside the liver are not made properly and are too narrow to drain the bile to the gall bladder and intestine. Treatment of first type is surgery. In this surgical procedure, the end of the duct from liver is connected to the intestine. This must be done before liver damage starts. In the second type no treatment is available except liver transplant. Avoidance of surgery at an appropriate time may lead to permanent liver damage and

inability to perform any kind of surgery later. Again, liver transplant may only be the treatment in such cases.

c) Treatment of infectious and metabolic disorders:

Since such disorders are uncommon, their treatment can't be described here. The only thing to say is that the treatment depends on the cause, such as thyroxine for thyroid, avoidance of milk for galactosemia etc. etc.

2. Vomiting in neonates:

Vomiting is a common problem in newborns and during the first few weeks of life. Most of the time this is benign and harmless. There may be many causes of vomiting. The common causes of vomiting include feeding mismanagement, ingestion of amniotic fluid, obstruction in stomach and intestine, infection especially urine infection (UTI), gastroenteritis etc. Hence it is important that the cause of vomiting is looked for and treated. But the most important matter is to prevent dehydration. The identification or diagnosis of these common causes and their management, especially home management, is given below.

Key points:

1. Some regurgitation of milk is common in neonates and doesn't cause any harm.
2. Vomiting may not be serious problem if baby is gaining weight.
2. Persistent vomiting may be due to several diseases. Its cause should be found and treated.

A. Early vomiting/ regurgitation.

Newborns usually vomit a couple of times on day one or two of their life. Mostly it occurs due to irritation of the stomach

because of ingestion of amniotic fluids, especially if it is contaminated with meconium. Meconium is a green colored stool which is passed by the newborn after birth. However, it may occasionally be passed in the uterus before birth or delivery. This type of vomiting is a self-limiting condition and doesn't require any medicine. The treatment is usually continuation of frequent feed. Sometimes doctors or nurses do stomach wash for it. The "stomach wash" means putting a tube in to the stomach through nose or mouth, sucking out the liquid present in the stomach and then putting in some glucose water. Later this glucose water is also sucked out and fresh glucose water is put in. This process is repeated several times. However, this is not needed in most cases and vomiting subsides on its own. The only thing is to watch that the newborn is not getting dehydrated. This can be estimated by urine output by the newborn. If s/he is passing urine in significant amount, then there is probably no dehydration.

B) Obstruction of esophagus, intestine, and stomach:

The esophagus is the pipe from the back of throat to stomach. The stomach is the main organ where the food /milk is collected and then slowly passed on into the intestine. Sometimes these organs are not formed properly and may have obstruction. Though stomach is present before intestine, I have written it after intestine. The reason is that obstruction in esophagus and intestine presents during the first few days whereas obstruction in stomach presents later, usually after two weeks. The main presenting symptom is always persistent vomiting. I will describe these three conditions separately though the main complaints in all these three conditions is vomiting.

a) Esophagus:

Obstruction in the esophagus results in persistent vomiting since birth. But this is not the only symptom. These newborns often have respiratory symptoms also, usually fast breathing. This occurs due to a connection between esophagus and trachea, the windpipe. Thus, saliva and milk enter lungs instead of stomach and cause infection in lungs.

The treatment is urgent surgery. In this operation the connection between the esophagus and trachea is cut and the two ends of esophagus are connected together. Thus, continuation of esophagus is restored. It takes about a week

to recover if the lungs are not affected too badly. These children may get repeated chest problems in future also.

b) Intestine:

As in esophagus, a part of the small intestine is not formed. This usually occurs in the initial part of the intestine called duodenum. The obstruction is usually complete. Sometimes the obstruction may be partial. Occasionally other parts of the intestine may also be involved sometimes. The symptoms are again continuous vomiting since birth. Lungs are usually not affected. A plain x-ray abdomen usually gives the diagnosis.

Treatment is again surgery. In this case both ends of the intestine are reconnected after cutting the obstructed part. It will take a few days to recover. Sometimes these children continue to have occasional vomiting.

c) Stomach:

In this case the end of the stomach called pylorus gets thick and does not relax to get the food or milk pass through it to the intestine. This process occurs slowly. Usually, the baby is normal during the first two weeks and then starts vomiting. Thus, it becomes difficult to diagnose it, because there are many other causes of vomiting at this age. In this case the weight of baby doesn't increase or sometimes, the weight is lost. This weight loss leads to its clue. Clinical examination of abdomen may also

indicate it. Usually, ultrasound is done which shows thick pylorus, the end of stomach.

Treatment is again surgical. Usually, some parts of the muscles around the pylorus are divided. This procedure eases obstruction and vomiting subsides.

C: Reflux:

This is another condition in which the baby vomits after feeding. In this case the upper end of stomach remains relaxed and open, instead of closing firmly after feeding. Thus, the food or milk from stomach comes back into the esophagus and vomited out. Since all milk or food is not vomited, the baby doesn't lose weight.

Treatment is usually medical. Most of the time only keeping the baby up for 15-30 minutes after feeding is enough. However, in severe cases, some medicines may be needed.

D) Infections:

Vomiting is one of the few main symptoms of infections. These infections may be gastroenteritis, urinary tract infection, general infection known as sepsis or even meningitis. In most case fever is also present. Hence consultation with a children's doctor is needed to diagnose these conditions. Several tests, such as blood, urine, ultrasound, and lumbar puncture (L.P.) may be needed. Choice of tests depends on symptoms (history) and signs (examination of baby).

3. Stools in newborn:

The consistency and color of stool in newborns is different than in older children. Stools passed during the first few days are usually black in color and mucoid in nature. The color changes gradually to yellow during the first week of life. Consistency is usually soft. A newborn may pass several stools in a day. It may be 8-10 times per day but not necessarily. Sometimes stools are passed after 2-3-4 days. If the stools are soft, then there is no problem. A problem occurs only if the stools are either hard or too watery. No treatment is needed in any of these conditions. These are the normal conditions. Medical advice is needed if the baby doesn't pass the stool after birth within the first twenty-four hours. It may be due to either congenital obstruction in the intestine or some other serious condition. Similarly, if the baby passes too many stools with unusual amount of water, then it may be because of infection. Fever may or may not be present. One must be careful about dehydration. Adequate amount of feeding milk, breast or otherwise is most important. Frequent breast feeding often prevents dehydration. In such cases a pediatrician should be consulted at the earliest.

Key points

1. Number of stools vary from once in few days to several stools per day.
2. Color of normal stool may vary from yellow to greenish.
3. If stools are too watery, then it could be due to some illness. A pediatrician should be consulted.

4. Thrush:

This is a common condition in infants. In this condition, the tongue of the infant gets white colored. Commonly people think that milk has been deposited on the tongue. They try to clean it with cloth etc. That's not true. It occurs due to fungal infection. It is more common in bottle fed babies because of inadequate boiling or sterilization of the bottles. Breast fed babies may also have it. Treatment is simple. Antifungal medicine like Nystatin in the form of drops is used. These drops should be administered three to four times daily, slowly so that they remain on the tongue for quite some time. The treatment should be continued for one to two weeks. Cleaning of bottles and personal hygiene remains the main preventive measure. Otherwise, it keeps recurring. However, if thrush persists for long period despite adequate treatment, an immune deficiency should be

suspected. The treating doctor should investigate to find out its cause.

5. Umbilical care.

Umbilical care is very important because improper care of umbilical cord may cause serious problems in neonates such as tetanus. Its care and associated problems are described below.

Key points

1. Umbilical cord falls itself within first week.
2. No oil, ointment or powder should be applied to cord.
3. It can be cleaned with simple alcohol swabs.
4. In case of bleeding and pus discharge, a pediatrician should be consulted as soon as possible.

A) Routine care.

Umbilical cord should be left without applying any substance on it. It usually dries and falls off itself within the first week. However, to prevent infection, it can be cleaned with an alcohol swab. Nothing else should be applied to it because it can cause local or generalized infection. The application of oil or ointment may cause delay in drying of the cord and delayed fall of the cord. In certain communities there is a custom of applying cow dung to umbilicus. This is a dangerous practice because it can cause tetanus which is a

severe life-threatening disease. It should never be used. Leaving the cord alone to get it dried and fall off is the best practice.

B) Discharge of pus from umbilicus.

Sometimes there is discharge of pus from umbilicus. This occurs due to bacterial infection and may need antibiotics for its treatment. Since immunity in newborns is low, umbilical infection may lead to a generalized infection known as septicemia. Hence, it is important to consult a pediatrician to get proper treatment if there is pus discharge from the umbilicus.

C) Bleeding from umbilicus.

Sometimes there is bleeding from the umbilicus. Mostly it occurs due to removal of scab formed after drying of the cord. Such bleeding is too small. If there is severe bleeding, it could be serious. Severe bleeding may be either due to temporary causes like bleeding due to vitamin K deficiency known as hemorrhagic disease of newborn or congenital bleeding disorders like hemophilia. In both condition proper diagnosis and urgent treatment may be needed. Hence, the baby should be taken to a hospital with good emergency services.

D) Umbilical hernia

In 1-2 % of newborns, the umbilicus remains protruded above the abdomen and swells on crying. This is called

umbilical hernia. No treatment is needed in this case. No pressure bandage or coin should be used. It subsides at its own by one year of life. If it doesn't settle in a year's time, then surgery may be needed. In case it swells on crying and doesn't go down on putting pressure by thumb then the baby should be taken to a good hospital. This may be due to obstruction in intestine. Its urgent reduction or surgery may be needed.



Umbilical Hernia

6. Breast-engorgement:

Some babies may develop engorgement of their breasts that becomes palpable. Sometime a few drops of milk may also be extracted from them. This is commonly known as "witches' milk". This occurs due to excessive hormones transferred from mother to baby during pregnancy and is normal. Nothing should be done in such cases as massage of breast nodules may result in infection. The condition subsides at its own a few days' time.

7. Bleeding from vagina:

Some female newborns may occasionally have some blood discharged from their vagina. This occurs due to withdrawal of maternal hormones from the baby after birth. The condition is analogous to menstrual bleeding in adult women. This does not require any treatment. The bleeding stops within a few days. If the bleeding is too much or from other sites of the body also, then blood tests may become necessary to exclude hemorrhagic disease.

8. Swelling on the head (cephalhematoma).

Sometime babies develop swelling on one or other side of the head. This occurs due to accumulation of blood under the skin and is called "cephalhematoma". The condition resolves itself and no active treatment is necessary. Removal of blood from the swelling may lead to serious infection and should not be done.

9. Teething issues:

Teething is a normal phenomenon for a child. There are two types of teeth, one temporary or milk teeth and the second permanent teeth.

The temporary teeth are twenty in number and start erupting at six months of age and complete by 30 months of age. Permanent teeth are thirty-two in number and start erupting at six years of life and their eruption continues till adulthood. Sometimes the eruption of teeth is delayed, which is completely normal. The temporary teeth start falling and permanent teeth take their place. First the frontal teeth known as incisors are replaced and then other teeth are replaced. This is a normal phenomenon and does not need any special treatment.

Key points:

1. Eruption of teeth starts at six months of age. Sometimes it may be delayed also. That should not worry the parents.
2. Baby may be irritable sometimes. No medicine except paracetamol should be given in this condition.
3. Diarrhea or fever at the time of eruption of teeth is not due to teething. This occurs due to infections. This should be taken care as mentioned in chapter on diarrhea.

As the primary teeth start erupting at six months of life, when the infant is active and tries to explore everything, and

puts different objects into the mouth, he may get several infections including fever and diarrhea. These illnesses have nothing to do with the process of eruption of teeth. Though parents attribute diarrhea to eruption of teeth, the diarrhea occurs because of infection. The baby may sometimes become irritable and tries to put everything into the mouth. This action doesn't need any special treatment or medicines. Occasionally, paracetamol may be given but no other medicines are needed.

10. Sleep pattern

Newborn babies often sleep 20 hours a day. Their sleep time is reduced gradually over the next few days and weeks. Some babies remain asleep during the day and remain awake during the night. This is completely normal. If they are feeding well and wake up for feeding and their other activities are normal, then you don't have to worry. Doctors should be consulted if they feed poorly, don't wake up even for milk and are not active. In such a case there might be an underlying serious illness, requiring urgent care and treatment.

Chapter 2: Infant Feeding

Infant feeding

Feeding newborns is extremely important. Breast milk is the best food for newborns. Human milk is made for human children. Animal milk is made for animal babies. Humans consume animal milk because it is produced in excessive amounts, several times more than needed for their babies. But animal milk is never suitable for the human child. However, the animal milk can be used for newborns and children if needed, after some modification. Breast milk has innumerable advantages and is never harmful for the baby, except in certain rare circumstances. It should be given as soon as possible after birth, maybe within the first hour of life. Colostrum, which is the first milk, is often discarded and thrown away by people. But it is extremely important and useful for the baby. The colostrum contains antibodies which prevent infection. A disease of intestine in premature babies known as “Enterocolitis” is less common in breast fed babies.

A) Breast feeding

As mentioned above, breast milk is the best food for newborn babies. Though, it has become common nowadays to use powdered milk baby formula due to variety of reasons, which are often not valid and depend on the perception of parents and their relatives. Breast milk remains the best option for feeding newborns unless there is a reason to use an alternative. Those reasons will be described later as the advantages of breast milk are too

many. The advantages and disadvantages of breast milk and contraindications are described below.

Key points:

1. Breast milk is the best for baby and should be given exclusively for first 4-6 months.
2. Advantages of breast milk are too many.
3. If top feeding becomes a necessity, then infant baby formula should be used.
4. Formula should not be changed frequently unless there is a medical indication.
5. Weaning should be started at 4-6 months of age.

a) Advantages of breast milk:

There are several advantages of breast milk: These include:

1. It is most suitable for the baby because of its composition.
2. It creates bonding between mother and baby.
3. It is easily available and doesn't need any preparation.
4. Infections and diarrhea are extremely uncommon in breast fed babies.
5. It is less expensive than formula feeding. However, it is not free as mother has to take more food for higher yield of breast milk.

Breast milk is almost never insufficient. The requirement of milk in a newborn baby is very low on the first day of life and increases over the next few days. So is the milk production by mother.

Secondly the milk is produced during feeding. The suction of breast by the baby causes milk production, as long as baby keeps sucking the breast. If the baby doesn't suck, milk is not produced. That's why sucking is very important. When baby's mouth is properly attached to the mother's breast, it results in a reflex. Due to this reflex, milk production starts. If there is no reflex, then milk production is minimal.

It is often thought and said that the mother's milk is insufficient. This is said due to crying of baby. There are several reasons for crying of baby which are given in section on excessive crying. There is an instinct in the baby that s/he wants to have something in the mouth, usually breast of mother. There are several methods by which one can assess the insufficiency of mother's milk. But two practical methods are very useful. First is the amount of urine. If baby is passing urine adequately, often judged by the number of diapers changed per day, then there is no insufficiency of milk. The second is weight gain. If the baby is gaining weight adequately, milk is sufficient. Usually, a baby gains 20 gm daily or 600 gm per month during the first five months and then 500 gm per month till one year of age. If weight gain is

sufficient then there is no shortage of milk. Causes of baby's crying are other than hunger in such cases and should be looked for.

b) Contraindication for breast feeding.

There are very few conditions in which breast feeding may be harmful for babies. Mostly breast feeding is stopped because of mother taking medicines. There are very few medicines which harm the baby through breast milk. Though medicines are secreted in the milk, their amount is so little that it doesn't affect the baby. The medicines which could harm the baby through breast milk are anticancer, antithyroid and antiepileptic medicines etc. Antibiotics, antiallergic, pain killers, cough and cold medicines etc. don't cause any harm.

Besides these, there may be some diseases in babies or mothers, in which breast milk may be harmful. Such diseases include metabolic diseases in babies like galactosemia, or mental illnesses in mother etc.

B) Top feeding or formula feeding:

No doubt that there may be some cases in which breast milk may be insufficient or there are other conditions in which breast milk may not be used, as given above. In such cases, top feeding or formula feeding becomes necessary. There are few questions which arise in such cases such as:

1. Which milk should be used?
2. Which formula should be used?
3. How the milk should be prepared?
4. How often the baby should be fed?
5. What type of bottle and nipple should be used?
6. When solid foods or weaning should be started?

I will try to provide answers to these common questions.

a) Non-human milks:

As mentioned earlier, breast milk is the best. If animal milk is to be selected, then cow milk is the most often used animal milk. Sometimes people use goat milk also, considering it light and better digestible. But that's not entirely true. Goat milk lacks several nutrients. Thus, babies may become victims of deficiencies of those ingredients.

If cow milk is selected as it is easily available and cheap, it needs certain modifications. Commonly it is diluted with water, considering that it will become more digestible. But again, it is not entirely true. Dilution only reduces its energy or calorie content. This makes the baby weak, causing slow

weight gain and other deficiencies. Though cow milk has high calcium content, it has high amount of phosphorus also. Phosphorus combines with calcium and prevents its absorption and leads to calcium deficiency and rickets, a bone disease.

Secondly pure cow milk is often not available in Pakistan. Milkman often mixes water in it. If parents add more water to it, it will become too diluted. However, water can be added if the milk is pure. In that case some sugar or glucose should be added to compensate for the calorie loss due to dilution. It should be boiled and cooled to kill the germs in it. Raw milk should never be given to the baby as it contains germs and often tuberculosis germs.

b) Powdered milk or formula milk.

The use of powdered milk is a better option if human breast milk is not available. However only those formulas should be selected which have been modified to change its composition. So that its composition becomes as close to human milk as possible. But it can never become the same as human milk. Commonly available powdered milk for ordinary use should not be used for feeding babies. Only infant feeding formulas should be used. There is very little difference amongst these infant formulas marketed by different companies. Hence frequent changing of formula is not appropriate, thinking that one formula is more suitable than the other. All formulas are made of cow's milk. If a baby

can't tolerate one brand, then the other brands of milk formula will also not be tolerated. This is described below in sub-section c.

The infant formula should be diluted in clean water. It doesn't mean bottled water. The water should be properly boiled and cooled. It should be boiled for at least 10 minutes. Then, it should be stored in clean utensils. If bottled water is used, it should not be boiled. Boiling of bottled water may cause contamination, due to improper storage after boiling.

The formula should be diluted as per instruction given on the pack or tin. It should not be diluted by estimation or own judgment. Usually, one scoop of milk powder should be diluted in one ounce or 30 ml of water. The scoop is always present in the tin. In some brands, the scoop size is big, and one scoop of milk powder is to be diluted in 60 ml or two ounces of water. Hence it is important to read the instructions for dilution written on the tin or pack.

The bottles used for feeding should also be clean. The feeding bottle should be boiled along with the nipple for at least five minutes. But if these are boiled for ten minutes, it is better. Care should be taken that the bottles are fully immersed in water, and are not floating on the top of boiling water. The bottles should be cleaned with brush and plain water before boiling to remove any remaining milk in it. Further care should be taken so that the bottle is not touched with unclean hands after boiling. Also, the nipple should not be touched at all as far as possible.

The size of hole of the nipple is also important and it is often overlooked. Sometimes, it is so small that the baby has to put in a lot of effort to get milk out of that nipple. This causes ingestion of lot of air along with the milk, leading to vomiting and colic. On the contrary, if the hole is too big then the milk flows more speedily than could be swallowed by the baby. This also leads to overflowing of milk from mouth or sometimes aspiration. The correct size is the one in which milk flows drop by drop from it, without sucking on it.

c) Difference in baby milk formulas

As mentioned above, there is no significant difference amongst different formulas. All formulas are made of cow's milk and are equally bad. If an infant is allergic to cow milk protein OR if the baby has lactose intolerance, then no cow milk formula will be tolerated in such cases. An alternate formula such as cow milk protein free or lactose free formula should be used. Soy protein formulas are the ones which can be used in both cases. However, in lactose intolerance, cow milk-based lactose free formula can be used.

In certain congenital metabolic diseases, special formulas are needed. In such cases early diagnosis and use of appropriate special formula is necessary to save the life or prevent deadly effects of the disease.

d) Feeding schedule:

Baby should be fed on demand and not by clock. As mentioned earlier, baby's crying is not always due to hunger. It is wrong to adhere to the clock to feed the baby every two or three hours. An adequately fed baby usually doesn't ask for feeding before three hours. There is no need to wake up the baby for feeding if three hours have passed. Let her sleep for another few minutes till she wakes up herself. However, if she doesn't demand feed even after four hours then she should be awakened and given feeding.

C) Burping

Burping is often considered necessary, which is not. As the baby ingests air during feeding, that fills up a part of stomach, it has to come out in form of burping. For this purpose, the baby is held upright in front of mother's chest for few minutes. If burping doesn't occur during the next few minutes, it means that the baby has not ingested too much air. So, the parents should not worry if the baby doesn't have burping. Non-burping and passing on of the air ingested with milk often results in colic and crying of the baby.

D) Colic or excessive crying:

Excessive crying commonly known as infantile colic is common in neonates during the first few months. It occurs in a healthy, thriving infant. Usually, it occurs for three days a week and lasts for three hours. It begins in the 2nd or 3rd week of life and lasts for more than 3 weeks and resolves itself by 3 or 4 months of age.

Though many causes have been described for the colic, none is confirmed. Hence the management is also difficult. Excessive crying usually occurs in the evening. No remedy seems to work. Different medicines are prescribed by the doctors, but none works satisfactorily. Traditional methods which are not harmful like sugar solution, gripe water, flannel water etc. may be tried. But harmful substances and medicines such as “GHUTTI” or antispasmodic medicines (like Spaslar etc.) should never be used. Probiotics also have not been found effective and should be avoided.

Infantile colic is more common in top fed babies than in breast fed babies but not proved scientifically. If cow milk protein allergy is suspected, then cow milk formula should be avoided. Clothes should also be checked if those are wet or soiled or too tight. Unnecessary medicines should be avoided as the colic is benign though extremely tiring for parents. The medicines may cause harm, but colic may not. Mother and family need psychological support to overcome this tiring challenge.

In case of acute onset of excessive crying, one should try to find out the cause if possible. Because an acute crying episode in a non-colicky infant may occur due to various diseases which may prove fatal if not treated. These diseases include meningitis, Intussusception (intestinal obstruction), infection in joints, or even fracture of bones. Such conditions need urgent attention and proper management to save the life of the child. Detailed description and management of such conditions is described later.

Key points:

1. Infantile colic is common in about 30 % of babies.
2. It subsides usually in three months' time.
3. No medicine or treatment is effective. Hence unnecessary medicines should be avoided. Some medicines like Ghutti might be harmful.
4. Maternal and familial psychological support is necessary.

E) Weaning:

The actual meaning of weaning is transition from mother's milk to alternate feeding. But it is commonly used for introduction of solid food to an infant. There are again several questions about it. Such as

1. At what age weaning should be started?
2. What should be used as the first weaning food?
3. How much weaning food should be given at one time?
4. How often it should be given?
5. How long breast feeding should be continued?
6. How long formula feeding should be continued?
7. What should be the composition of weaning food?
8. And many other questions.

I will try to provide answers to these questions below:

1. Age for weaning foods:

As exclusive breast feeding is advised till 4-6 months, weaning can be started at four months of age. But if the child is growing well on breast feeding then it is better to delay weaning till six months of age.

2. Weaning foods:

The weaning foods should be home based, using staple dietary ingredients. These may vary according to culture, dietary habits of the family etc. Though, readymade commercial weaning foods are available but home-made foods are preferable. The important principles of weaning foods and the disadvantages of commercial weaning foods are given below:

3. Principles of weaning foods

As mentioned above, there are few principles for weaning foods. If these principles are followed, the infants get the best nutrition. These principles include:

1. Common household items should be used in the preparation of infant food. These could be rice, flour, corn, sugar, pulses (daal) meat (whichever is used in family), fruit etc.
2. Solid feeding may be introduced at four months of age but no later than six months. However, breast feeding should be continued as long as possible but at least till six months of age.
3. Initially, it should be semisolid. It should slip from the spoon easily. Then consistency should be increased and thickened with time, when infant is able to chew the food.

There can be several examples such as dilute custard or kheer. Later it should be made thicker and thicker with the

increasing age of the infant. Other items like Suji ka halwa (Semolina porridge), Dalia (Wheat or Oats porridge), Kitchri (Rice & daal mixed and cooked together) etc. may be added to their diet.

4. Initially, it should be given once a day, 1-2 teaspoons daily. Then the amount should be increased gradually, till the baby is able to take half a cup at one time.

5. Later, the food should be introduced at other times such as lunch and dinnertime. The amount should be increased gradually. The aim should be to give three meals and three milk feeds at one year of age.

6. Solid foods should be given before milk. The baby will take less milk in this case and that is completely normal.

7. Remember that milk is never a complete food except for the first few months as it is thought and propagated. It doesn't contain all the necessary ingredients in adequate amounts. The babies who remain on milk alone develop anemia at one year of age or later. Also, they don't like to take other foods if the foods are not introduced at 4-6 months of age. Sometimes they develop rickets also due to vitamin D deficiency.

The notion that the milk is the main source of calcium is also not true. As mentioned above, the calcium of milk is not absorbed fully due to high phosphate content and low vitamin D. Calcium present in other weaning diets and

vitamin D supplementation is more important for bone health.

4. Disadvantages of commercial weaning foods

Readymade infant feeding solids are available to guide the parents, but I don't recommend them because:

1. These readymade foods don't provide full nutrition, though claimed like that. An infant can't get full caloric requirement from these foods given once or twice a day. They always need additional food to fulfill their energy requirements. Thus, they may suffer from malnutrition if only commercial foods are given to babies.

2. These foods are not culturally adapted.

3. Infant is not going to use these foods for life. If he doesn't develop a taste for common household food, feeding problems may arise later.

4. These are expensive. The rich and well-to-do people may afford it. By seeing them poor people, who can't afford also try to buy such foods. They think that these foods have some special features. But they are totally wrong. These foods don't have any special ingredients to enhance or improve the growth of children. Thus, poor people develop financial problems without any additional benefits.

Key points:

1. Weaning food must be started by 6 months of age
2. It should preferably be home made using staple food items.
3. Initially it should be semiliquid. Its consistency should be gradually increased to semisoft and then soft food with increasing age.
4. Initially, it should be introduced once a day. Later it should be given more frequently till three meals by one year of life.
5. It should be given before milk feed.

Chapter 3:

Common Childhood Illnesses

Common Childhood Illnesses

In this chapter I would like to mention common illnesses and their home management. There are three most common illnesses which children often get, fever, vomiting & diarrhea, and cough & cold. Asthma is another disease which is not uncommon. Besides these, there are several other diseases which are not common. Their description is not given separately in this book because those are mentioned briefly under the subject of fever.

A) Fever.

This is the most common illness for which patients seek doctor's advice. The causes of fever are too many. It is the cause of fever which is more important than the fever itself. Fever may be low grade, but its cause may be serious. The fever may be high up to 104⁰ F, but its cause may not be serious. Most of the fevers are caused by common viruses, which take 2-5 days to subside. Patients with viral fevers don't need any antibiotics. Use of antibiotics in viral fevers may cause development of resistance to antibiotics in the bacteria. Remember that **antibiotics are not antipyretics** (fever relieving medicine). Antibiotics are the substances which kill the bacteria.

a) Causes of fever:

As mentioned above causes of fever are too many. But the common causes are being given below:

1. Infections.

Infections are the most common cause of fever. Infections are caused by germs which may be of different types. Such as

i) Virus: These are the smallest particles which can't be seen under microscope or grown in laboratory routinely. Antibiotics don't kill viruses. Antiviral medicines are few and mostly not effective. Antiviral medicines usually have more

side effects. Some viruses get transferred from one person to another person like influenza. But some viruses need another organism for transfer from one person to another such as Dengue, which is transferred through mosquitos.

ii) **Bacteria:** These are small single cell organisms which can be seen under an ordinary microscope and can be grown easily in the laboratory. These are different types. These can be killed by antibiotics. But improper use of antibiotics causes resistance in them. Thus, antibiotics become ineffective. The best example is that of typhoid fever. Antibiotics which were effective fifty to sixty years ago, became ineffective thirty years ago due to improper and irrational use of antibiotics. New expensive antibiotics were discovered then. Now these typhoid bacteria have become resistant to those antibiotics also. Nowadays only one or two extremely expensive antibiotics are available to treat these extremely resistant typhoid cases. But it doesn't mean that the antibiotics should not be used. Antibiotics are necessary in bacterial infections. If antibiotics are not used in bacterial infections, several complications may occur including death.

If the antibiotic is prescribed by a competent doctor for a properly diagnosed or suspected bacterial infection, it must be given in proper dose for proper duration.

iii) **Fungus:** These organisms can also be seen under microscope and grown in laboratory with some difficulty. A common example is the fungus seen on old food and rotten fruits which look like wool. But there are other different

types of fungi also. Common antibiotics don't kill them. Only a few antifungal medicines are available which are not only expensive but have more side effects. The most used antifungal medicines can only be given by intravenous injections. Most of fungal infections occur in patients with weak immune system, either due to disease or use of drugs.

iv) Protozoa: These are also single cell organisms which can be seen under microscope but can't be grown in laboratory. Some of them infect only human beings but some need other animals or insects to continue their life. The best example is malaria. Antibiotics don't kill them. Special medicines are needed to kill them, to which they become resistant if the medicines are not used properly.

Note: proper use of antibiotics means proper dose according to age and weight of the patient and proper duration of treatment.

2. Chronic diseases:

This means the diseases which either usually take a long time to get cured or persist lifelong despite continuous use of medicines. The common example is joint disease i.e., Rheumatoid arthritis or autoimmune disease like SLE. In such cases fever persists for weeks and months.

3. Cancer:

Cancer affects different parts of the body and is of many different types. Sometimes it presents only with persistent fever, especially blood cancers.

b) Diagnosis of cause of fever:

This is the most important factor in the management of fever. For suspecting and diagnosing the cause of fever, the following steps are important.

i) History: History is the most important step for the diagnosis of the cause of fever. Many times, it is difficult to get proper history which leads not only to difficulty in diagnosis but also wrong diagnosis or performance of unnecessary tests. In history, duration of fever, severity of fever, pattern of fever and associated complaints such as cough, pain, injury, swelling in any parts of body etc. are very important.

ii) Examination of patient. This is no less important than history. Examination of ears, nose, throat, chest, and abdomen etc. may sometimes reveal the diagnosis immediately, such as tonsillitis, ear infections or pneumonia.

iii) Investigations: Investigations are also very important but should be done cautiously and judiciously. Unnecessary investigations not only cause financial loss to the patient but may not give any clue to a proper diagnosis. Simple CBC is usually not helpful. Blood and other cultures are often needed to diagnose the infection and to know which antibiotic is the best for the patient, instead of using antibiotics blindly. Sometimes liver and kidney function tests

are also needed to watch for the toxicity and side effects of antibiotics and other medicines.

c) Management of fever:

People get worried when their child gets a fever and want it to subside immediately. That is not possible. Simple viral fever may take three to five days to subside. Unnecessary and wrong use of medicines is more harmful than the fever itself. Medicines have side effects and may be given in overdose by parents. Common medicines used for controlling fever are paracetamol, ibuprofen and mefenamic acid. These medicines are available by different trade names and in different concentrations. Medicines are given according to the age and weight of the children. Giving more medicines or several medicines at one time will not relieve the fever. Similarly, antibiotics will also not relieve the fever. Though there may be several trade names for one medicine, few are commonly known. One should always see the name of real medicines (generic name) on the bottle of medicine. Names of commonly available medicines for relieving fever along with their commonly used trade names are given below. But there are hundreds of other products with different trade names, which contain these medicines.

1. Paracetamol=

Calpol, Panadol, Disprol, etc.(125mg/5ml),

Calpol 6 plus (250mg/5ml),

Panadol drops (80mg/ml),

2. Ibuprofen=

Brufen (100mg/5ml) and Brufen DS (200mg/5ml)

3. Mefenamic acid=

Dolor (50 mg/5 ml) and Dolor DS (100 mg/ 5 ml)

The **dose** of these medicines is as follows:

Paracetamol= 10 mg/kg bodyweight 3-4 times per day

Ibuprofen = 15 mg/Kg bodyweight two times daily

Mefenamic acid= 10 mg/kg body weight 3-4 times daily

These medicines may have several side effects especially if given in overdose. This is not uncommon as the same medicine is given twice or thrice using different names, thinking that these are different medicines. Fever will be relieved only when the cause is removed or treated. Common **side effects** of these medicines are given below:

Paracetamol: It may cause liver damage if given in overdose. Hence it is important not to give too much. Treatment of liver damage caused by paracetamol overdose is difficult and the overdose may cause death also. But its use within the dose (mentioned above) is quite safe and it is the safest medicine

for controlling fever and pain. Overdosing occurs when it is given both by mouth and per rectally. NAPA suppository is also paracetamol available in 125 and 250 mg. If oral paracetamol is given and after that NAPA suppository is also given, then overdosing and toxicity may occur. NAPA is not any special medicine which will relieve fever permanently. Fever will be relieved permanently only when the cause of fever is treated or removed.

Ibuprofen: It may cause damage to stomach causing burning pain in abdomen. If platelets are low or patient has ulcer, he may have bleeding and vomiting of blood also. The only advantage is that it causes relief of fever temporarily for longer period.

Mefenamic acid: It has the same effect and side effects as ibuprofen.

It should be remembered that none of these medicines treat the fever or cause of fever. These medicines relieve the fever only for a few hours, so that parents become happy. Hence these are not the real treatment of fever. Fever will subside at its own time or after use of an appropriate antibiotic if it is bacterial. Or by using other medicines such as antimalarials in malaria etc.

Key points:

1. Don't get panicky if the child gets fever. It takes time for fever to subside usually 3-5 days. Most fevers are caused by viruses, which take their own time.
2. Fever will not subside unless the cause of fever is treated.
3. Don't use antibiotics immediately unless a bacterial infection is suspected or diagnosed by a doctor. Antibiotics are not fever relieving medicines.
4. Don't overuse fever relieving medicines like paracetamol. Medicines may harm the child, the fever may not if underlying disease is not serious.
5. No food should be restricted or avoided in fever. Child with fever needs more food and calories. Child with fever should be offered food of his choice which should be tasty.

6.

پرامیز سے پرامیز کریں

I often say that fever is a blessing from Allah. Because it leads the patient to seek the appropriate care and secondly the bacteria and viruses get killed when body temperature is high. If the temperature is brought down, then the bacteria and viruses survive longer.

People are afraid of fever because it might cause fits or seizures. These are usually benign and do not cause any harm. Unnecessary use and overdose of medicine may cause harm as mentioned above but do not prevent seizure. Its details are given in chapter 3. Brain damage usually occurs if the temperature is 105°F or higher. Up to 104°F, brain damage doesn't occur.

d) Instructions for parents for management of fever:

So, what one should do if the child has fever.

1. Look if there are any other symptoms such as cough, sore throat, drowsiness, vomiting, pain in part of body or swelling etc. In such cases immediately consult the doctor. Paracetamol may be given as mentioned above.

2. If there is no other symptom or sign, then just give paracetamol as mentioned above if temperature is more than 100°F. Sponging with plain water (not cold water) may be done if the temperature is 104°F to bring it to 102°F.

3. Don't give any antibiotics unless prescribed by the doctor.

4. See the doctor if the fever doesn't get better in 2-3 days or child develops any other symptoms mentioned above.

5. Don't give any medicine if a newborn gets fever. Always consult a child specialist as the newborn may have severe disease. Newborns often need antibiotics till the cause of fever is found.

B) Cough

Cough is the second most common reason for visiting doctors. Causes of cough are many. But coughs commonly occur due to common viral illnesses such as flu or viral sore throat. It takes its own time and often doesn't require too many medicines or antibiotics. Remember again that antibiotics are not the treatment of cough, nor cough suppressant medicines and syrups. It is important to know the cause of cough and treat the cause. The common causes of cough are:

1. Common cold or flu

2. Throat infections, i.e., pharyngitis and tonsillitis and postnasal drip in sinus infections.

3. Viral or Bacterial lung infections i.e., bronchiolitis and pneumonia

4. Tuberculosis

5. Asthma

Antibiotics are needed only in cases of tonsillitis, pharyngitis (bacterial sore throat) and bacterial pneumonia to treat the infection. In other conditions cough gets better itself. Sometimes only antiallergic medicines are needed. In asthma specific medicines are needed according to the stage of asthma. Hence, proper examination of the patient is

necessary. Sometimes repeated examination is also needed as the disease might be evolving and appropriate signs may be missing initially. One should consult the doctor in the following conditions:

a. Cough with high grade fever.

b. Rapid respiration. It means if the respiratory rate is above 40/min in any child.

c. Difficulty in breathing known as respiratory distress. In this condition, there will be an indrawing of the ribs commonly known as “Moving Ribs” ”پسلیاں چلنا”. Moving rib” is not a disease or diagnosis. It is a sign of lung infection i.e., pneumonia or obstruction in the windpipe i.e., trachea and bronchi or maybe Asthma.

d. Blue discoloration of lips and nails. This is known as cyanosis. It occurs when oxygen level in the body drops below a safe level. Such children need emergency treatment and oxygen. Sometimes they need ventilation also.

e. Drowsiness: This is a serious condition. It may occur due to various diseases but in the case of cough and fever it may occur due to some serious problem or overdose of medicines.

f. Persistent vomiting: Sometimes cough leads to vomiting. If vomiting is occasional, then it may not be worrisome. But if it is severe, it may cause dehydration and the child might need intravenous drip to treat the dehydration.

g. Feeding difficulties: in this case, again dehydration may occur. Also, the child needs nutrition for which tube feeding or intravenous feeding may become necessary.

Key points:

1. Causes of cough may vary from simple flu to asthma and pneumonia.
2. Antibiotics are not cough relieving medicines and should not be used unless bacterial infection is suspected or diagnosed by a doctor.
3. Cough suppressing medicines should be avoided in children.
4. Cause of cough should be looked for and treated appropriately.
5. Concept of hot and cold food is not correct. All foods like banana, rice etc. can be given to child having cough. Cough is not caused by cold food or weather, though it occurs more commonly in cold weather.

C) Vomiting:

Vomiting usually occurs as a part of acute gastroenteritis. It often follows diarrhea in the next few hours. Sometimes diarrhea doesn't occur and vomiting stops after a few episodes. This occurs due to some infection or irritation of the stomach known as gastritis. Anti-vomiting medicines usually are not useful. The main issue of concern remains dehydration which may occur due to excessive vomiting. Use of liquids, especially ORS and/or other drinks might help in prevention of dehydration. Hence, giving fluids is more important than anti-vomiting medicines. If the child doesn't take enough fluid, then again intravenous drip will be needed. Then visiting a hospital will become necessary. Visit to doctor in the clinic may not be helpful if vomiting is severe and child is already dehydrated. In such a condition the child should be taken to a nearby good hospital with appropriate emergency care.

a) Causes of vomiting

Apart from acute gastroenteritis, other causes may be as follows:

1. Meningitis / Encephalitis: The infection of the brain and its covering is called meningitis and encephalitis. In this case, the child may have fever and drowsiness or unconsciousness and sometimes seizures or fits along with vomiting. In such a

case hospitalization and appropriate treatment becomes necessary to save the life of the child or brain damage.

2. Urine infection: In newborn, neonates and young children urine infection is silent. It often doesn't cause any symptoms except vomiting and fever. Thus, in case of persistent vomiting, urine infection must be excluded by testing urine. Collection of urine may be difficult in young babies. For routine checkups, urine collection bags may be used. But for confirmation of urine infection, more invasive methods of collection might be needed such as urinary catheterization or use of syringe.

3. Hepatitis: Vomiting is the major symptom in case of hepatitis. In young children, there may not be any visible jaundice or yellowness of body or urine. Vomiting may be the only symptom. Hence a blood test may be necessary to diagnose hepatitis.

b) Diagnosis of cause of vomiting:

As mentioned earlier, apart from good history, certain tests may be needed, both for diagnosis and management. These tests include:

1) Urine examination

2) Blood tests for

i) SGPT for hepatitis

ii) Electrolyte (i.e., salts like sodium potassium etc.) to decide type and amount of intravenous fluids.

c) Management of vomiting:

As mentioned earlier the main treatment for vomiting is ORS i.e., salt and water, to prevent dehydration. If vomiting is severe and nothing is tolerated, then intravenous drip will be needed. Medicines may be given but may not be effective.

Key points:

1. Causes of vomiting vary from simple gastroenteritis to severe diseases like urinary infections, meningitis, and hepatitis.
2. Anti-vomiting medicines are usually not very effective unless the cause of vomiting is diagnosed and treated. Rather some medicines may cause drowsiness in children, thus reducing water intake and causing dehydration.
3. Dehydration should be prevented by giving ORS frequently. If vomiting is severe and nothing is tolerated, IV drip may be needed. The child should be taken to a hospital rather than to a doctor in clinic.

D) Diarrhea

Diarrhea is the third most common cause of visiting a doctor. The Commonest cause is acute gastroenteritis. It is often caused by consuming stale or contaminated food. Germs in food or water which is not clean cause infection in stomach and intestine. This leads to inflammation of the gut, which prevents absorption of water and salts. These water and salts are lost in the form of watery stools. Mostly these germs are viruses. But bacteria may also cause gastroenteritis. Common virus is Rota virus, which causes diarrhea in infancy and can be prevented by giving oral Rota virus vaccine before 6 months of life. Other germs which cause diarrhea are bacteria. Names of bacteria which cause diarrhea commonly are E. coli, Shigella and Campylobacter. Diarrhea caused by viruses is usually watery in nature whereas diarrhea caused by bacteria may be watery or dysenteric. That means it may contain blood and mucus. The color of stool might change to green also. But green stool doesn't always mean infection. Viral diarrhea settles at its own without any specific treatment. But bacterial diarrhea often needs antibiotics though antibiotics are not always necessary.

a) **Complications of diarrhea:** The main complication of diarrhea is dehydration, which may kill the patient. Hence, prevention and correction of dehydration is the most important part of the management of diarrhea. Other complications include kidney failure and sometimes

septicemia, especially in bacterial diarrhea. Septicemia means the spread of germs or bacteria through blood. Thus, other parts and organs of the body may also get infected or affected.

Loss of salts in stool may also cause complications. Loss of potassium may cause intestinal malfunction and abdominal distension. Loss of Sodium with water may cause low blood pressure and shock. Loss of bicarbonate (Soda) may cause acidity and fast breathing. Besides these there may be several other complications.

b) Management of diarrhea:

As mentioned above the most important part of the management of diarrhea is correction of dehydration including correction of salts or electrolytes in blood. That's why ORS (oral rehydration salt) is important which contains these electrolytes in a specific ratio. Giving only water may correct dehydration but not salts or electrolytes and acidity.

Dehydration may be of different grades. It may be mild or severe. If it is severe or vomiting is continued, then intravenous fluids may be needed. Rehydration is the most important part of the management of diarrhea. Antibiotics are needed if bacterial infection is suspected. Use of zinc may reduce severity and duration of diarrhea by 20%. But some children don't tolerate it. Otherwise, no other treatment is needed.

Key points:

1. Most of the cases of diarrhea are due to viruses. But one third cases may be due to bacterial infections.
2. Main treatment of diarrhea is to prevent and treat dehydration.
3. ORS (low osmolar) is the best solution to prevent and treat dehydration.
4. Antibiotics are not the treatment of diarrhea unless a bacterial infection is suspected.
5. IV drip may be needed if child gets severely dehydrated or is losing more water than taking orally.
6. Rota virus vaccine given in first six months may prevent severe diarrhea in later infancy.
7. Hand hygiene and taking clean food are the main preventive strategy for diarrhea.

E) Constipation

Constipation is also a major problem in children. It may be of two types. 1. Acute i.e., within 1-2 days or 2. Chronic lasting for days and weeks.

1. Acute constipation:

Acute constipation needs urgent attention. Because it could be due to obstruction in the intestine and might need urgent surgery. This type of constipation is often accompanied by vomiting and abdominal distension along with pain in abdomen. In such conditions, one must visit a hospital with good emergency services.

2. Chronic constipation.

This is also of two types. (a) Due to congenital disease in the large intestine known as Hirschsprung's disease. (b) Functional due to faulty dietary habits and improper toilet training.

a) Hirschsprung's disease.

In this disease there is some congenital defect in the last part of the large intestine, which doesn't allow stool to be passed on. Thus, the stool keeps collecting in it, getting harder day by day. The intestine gets dilated and sometimes some watery stool might pass around the solid impacted stools. Abdomen also gets distended, and the child gets

malnourished. Its diagnosis and treatment are important for a child's normal growth.

The **diagnosis** is made by doing an x ray of abdomen after giving a special enema. But the diagnosis is confirmed by biopsy of the intestine.

The **treatment** is surgical, in which the defective part of intestine is removed, and a hole known as "colostomy" is made in the abdominal wall. That colostomy is closed later in life and normal continuity of intestine is restored.

b) Functional constipation

This often occurs due to food which lacks fiber. Children raised on milk alone without weaning diets often get chronic constipation. Another reason is lack of toilet training and holding the stool by child, who doesn't want to go to toilet when needed. He either keeps playing or is in school etc. This leads to holding stools in intestine, which get harder and harder with time. Its treatment is dietary modification and long-term laxative medications. Short term medication does not resolve the problem. Because constipation recurs as soon as the medicines are stopped. The medicines should be stopped slowly and gradually so that the intestinal movement activity becomes normal, which was lost due to holding of hard stools. However, hypothyroidism should be excluded and treated as it may be a cause of constipation in few cases.

F) Abdominal pain

This is another common complaint among children. These pains can be of two types. 1. Acute pain which occurs within a few hours or a day. 2. Chronic pain which is present for weeks and months. Both have different causes and management.

Key points:

1. Abdominal pain may be dangerous sometimes. In case of new abdominal pain of less than 24-hour duration, one must consult a pediatrician or visit a hospital with good emergency services.
2. Recurrent abdominal pain may not be serious but one consultation with pediatrician is necessary to rule out chronic diseases.

1) Acute abdominal pain

In case of acute abdominal pain, urgent consultation with a doctor is necessary. This is because acute abdominal pain may be due to some serious illnesses such as appendicitis, intestinal intussusception, volvulus, torsion of testis and ovaries or other serious metabolic diseases. In such a case proper examination of the child is necessary, and certain tests such as x-rays, ultrasound, blood tests etc. may be needed. Such children might need urgent treatment also, which could be surgery. In such cases the children should be

taken to a good hospital with good emergency services. Waiting overnight to see the family doctor or family pediatrician the next day may result in unnecessary harm to the child and may even prove to be life threatening sometimes.

2. Chronic abdominal pain

Chronic abdominal pain may also be either nonspecific without any definitive cause or due to certain diseases which might need specific treatment.

a) Nonspecific abdominal pain

Chronic abdominal pains are often not serious, though occasionally these may also be serious. Hence, consultation with a doctor is necessary. But most often such pains are functional and not serious enough to cause any significant harm to the child. Occasionally these may be due to some psychiatric problems in the child or family, or sometimes by undue pressure from the parents on the child to have better grades in school etc. Such pains are usually diffuse and not localized to any site of the abdomen. These are nonspecific without any specific time and duration and severity. Also, such pains don't need any specific treatment.

b) Specific or organic chronic abdominal pains.

Such pains have some definitive cause. The causes of organic chronic abdominal pain vary including liver, kidney, and stomach diseases. The children have additional signs and

symptoms such as jaundice in liver disease, urinary complaints in kidney diseases, vomiting and burning sensation in stomach diseases etc. Similarly, the site of pain may also be different such as upper right side of abdomen in liver diseases, upper central area in stomach diseases and side of the abdomen in kidney disease. Hence, a consultation with a pediatrician is necessary if such signs and symptoms are present in children with chronic abdominal pain. In such cases proper diagnosis and appropriate treatment depending on the cause is necessary. The investigations may include blood tests, urine & stool examination and sometimes ultrasound and CT/MRI scans. As mentioned above, the treatment depends upon the cause and can't be discussed here.

G) Leg pains

Leg pains are also common in toddlers. These pains are often labeled as “growing pain”. Most often these pains are benign. But sometimes they may have some underlying serious cause also. It should also be ascertained that the pain is in muscles and not in bones or joints. Pain in bones and joints may be due to infection in bones or joints or due to other joint diseases, which may need urgent and specific treatment. Some chronic muscular diseases may also present with leg pains. Hence at least one consultation with pediatrician is necessary to rule out serious causes of leg pains. These pains may be treated by simple pain killers such paracetamol (Calpol/Panadol) etc. Vitamin supplementation may sometimes help children. This is because children become deficient in vitamins due to improper food intake. Excessive cooking often destroys the vitamins present in food. Also, food deficient in vitamin D causes vitamin D deficiency, leading to leg pains. However, too much vitamin D should be avoided as it may cause an increase in calcium in blood. Abnormally increased blood level of calcium may cause calcium deposition in kidneys. It is very difficult to treat high blood levels of calcium. It has become a common practice nowadays to give excessive vitamin D alone. They forget that the child needs other vitamins also such as vitamin A, B and C also. Vitamin A deficiency is also not uncommon and leads to night blindness and eye diseases. Hence, the children should be given any brand of multivitamin daily. Their amount should be according to the

brand. Usually, 5 ml once a day is enough. Too many vitamins are also not helpful. Because vitamins given in a dose more than daily requirement are excreted in urine except vitamin D.

H) Seizures or fits

Seizures are another common childhood illness. Seizures are not a disease but a symptom of many other diseases like fever. These may be benign i.e., harmless, or sometimes serious enough to cause death or permanent disability in the child. The common causes of seizures include:

Febrile seizure

Meningitis and Encephalitis

Intracranial bleeding

Intracranial tumors

Head injury

Epilepsy

These causes are described below in some detail.

a) Febrile seizure:

These types of seizures are common and occur in children aged six months to six years of life. Sometimes these seizures may occur up to eight years of life. These are usually benign and do not cause any harm but are quite frightening to parents. Sometimes even doctors also get frightened. The characteristics of these seizures are the following:

1. These seizures occur in children from six months to six years of life.
2. These seizures are generalized involving whole body. These are never localized.
3. The seizures can occur at any temperature, even low-grade temperature such as 99^o-100^o F.
4. The seizures usually last for a few minutes and stop on their own.
5. The child may remain drowsy for another 10-15 minutes and then becomes normal without leaving any abnormality.
6. The seizures occur only once in a single febrile illness. Rarely these may recur in the same febrile illness.
7. These seizures may occur only once in a lifetime or may recur in every febrile episode.
8. These seizures are not part of epilepsy, and their EEG is usually normal.
9. These seizures are more common in children whose parents or other family members have a history of such seizures in their childhood.

Management of febrile seizure:

Initial management at home is more important than that in a hospital or doctor's clinic to prevent harm to the child. Improper management at home may cause harm to the child. The first and most important part is to remain calm and avoid panic. There should be no attempt to try to stop the seizures or restrain the child. Nothing should be inserted into the mouth to prevent injury to tongue. Insertion of objects into mouth causes more injury to tongue and teeth rather its prevention. Leaving alone and clearing the surroundings to prevent the fall of the child and getting injured by surrounding is the most important part of home management. Seizures usually stop within 15 minutes at their own. If these seizures continue beyond 15 minutes, then their control by giving medicines becomes necessary and important. Because if seizures are prolonged then brain injury might occur. For this purpose, intravenous diazepam or diazepam suppositories are needed. Once it is diagnosed as febrile seizures then one should keep diazepam suppository or per rectal solution at home for future use. Nowadays intranasal midazolam is also available, which may also be kept at home. This may be given as intranasal spray if seizures are not controlled within a few minutes. This is easier to use than diazepam suppository or rectal diazepam.

The problem with diazepam is that the child becomes drowsy, and it becomes difficult to exclude other causes of seizures.

Key points

1. Seizures with fever may or may not be dangerous.
2. Several tests may be needed to find out the cause of seizures such as blood test, spinal tap (L.P.), CT scan or MRI scan.
3. Spinal tap (L.P.) doesn't cause any harm to patient. It helps in diagnosis and proper treatment. If conditions like meningitis is not diagnosed in time and treated early, it may cause permanent brain damage or even death.
4. In case of recurrent seizures with fever known as febrile seizures, be calm and patient. Panic actions may harm the child.
5. During seizures, no attempt should be made to stop the seizure or put anything in the mouth. It may cause injury to tongue or teeth.
6. In case of first seizure, visit a hospital with good emergency services.

Hence one should rush to a nearby hospital or doctor if seizures don't stop within 15 minutes even after use of intranasal midazolam, or the child doesn't behave normally after half an hour of the seizure, or the seizures are localized.

Because in these situations, the seizures may be due to other serious illnesses which might need immediate attention and treatment. Otherwise, one can wait to see the doctor for a few hours.

b) Meningitis and encephalitis:

Meningitis and encephalitis mean infection of coverings of brain or brain itself. These may be caused by bacteria or viruses. If not treated properly, the majority of children die or become permanently brain damaged. Very few children survive without any damage. Urgent and proper diagnosis and treatment may result in full recovery but not in all children. The clinical signs are seizures, drowsiness, neck stiffness and paralysis. For its proper diagnosis, certain investigations are needed. The investigations may include blood tests such as blood culture and CSF examination. CSF examination is most crucial and diagnostic. CSF is the fluid around the brain and spinal cord within the spinal column. It is obtained by putting a needle at the back in its lower part. This is called lumbar puncture (L.P.) or spinal tap. If done properly with proper aseptic technique, no harm occurs to the child. Rather proper diagnosis leads to proper and specific treatment and thus prevention of brain damage. Parents are often afraid of the procedure and think that it causes harm or damage to the brain, which they might have seen in any of their relatives or acquaintances. But that may be due to disease itself rather than the procedure. Many times, parents come to hospital quite late, and damage has already occurred. The parents then attribute the damage to the procedure (LP) rather than the disease. In addition, it is also important to identify the germs and their sensitivity to

antibiotics. So that appropriate and effective antibiotics or antiviral medicines may be given. As mentioned above, despite being given appropriate and correct treatment the child may die or may get brain damage and other complications.

c) Intracranial bleeding

Bleeding inside brain called intracranial bleed may occur due to various reasons. The three common causes are head injury or fall from a height, abnormalities in the blood vessels in the brain known as aneurysm and hemangiomas, and bleeding disorders such as hemophilia or platelet deficiency.

Intracranial bleeding may cause drowsiness and seizures. Clinical examination may give clue to diagnosis but investigations especially CT scan and MRI is needed for diagnosis. Sometimes it needs surgery to remove blood from the brain and sometimes it is left alone to be absorbed itself. That depends on the cause and size of the bleed. Complications may include brain damage, mental retardation, paralysis, or seizure disorder called epilepsy.

d) Intracranial tumors

Sometimes tumors are formed in the brain which may cause seizures. Besides seizures, tumors may cause headaches and vomiting. If the headache and vomiting persist for more than few days or weeks and other causes are ruled out, a brain tumor should be suspected. Though clinical examination may indicate a tumor, CT scan or MRI of the brain is needed for its confirmation.

Its management is usually surgical removal of the tumor. In the case of a malignant tumor i.e., cancerous tumor, radiotherapy and chemotherapy may also be needed.

e) Head injury:

Head injuries due to fall from height or accidents may also cause seizures. Usually, seizures after head injury occur due to injury to brain or bleeding inside the brain. Proper diagnosis and management are needed to control the seizures. For which investigations such as CT scan or MRI is needed. Surgery may also be needed.

f). Epilepsy

Epilepsy is the commonest cause of recurrent seizures. There are different types of epilepsies. The seizures may be generalized in which whole body gets abnormal movement or may be partial in which only a part of body or limb shows abnormal movements. These epilepsies may be primary in which no cause is found on investigation. Or these may be secondary which occur due to some previous illnesses such as head injury or meningitis, intracranial bleeding, or surgical procedure on the brain.

The investigations to diagnose the type of epilepsy and its cause include EEG and CT scan/ MRI as mentioned above. EEG may however be normal when seizures are not present. EEG is recording of brain activity which is done using a machine. In this procedure some wires are attached to the scalp / head, which are connected to the machine. The recording is done for half an hour and then read by an expert.

Treatment / Management includes many different medicines. Initially one or two medicines are given according to the type of epilepsy. If the seizures are not controlled, then another medicine is added, or the medicines are changed. These medicines are to be used for 3-5 years continuously till there are no seizures for two years. Then the medicines are withdrawn slowly and gradually. After withdrawal of medicines, half of the patients don't get the

seizures again, but other halves may have recurrence of seizures. In those patients, lifetime medicines may be needed.

Certain precautions are needed to be taken by patients of epilepsies. These precautions include avoidance of hazardous profession, driving etc. So that they may not get injury if they get seizure during working or driving etc.

9. Asthma

Asthma is a common illness which occurs in 1 in 10 to 1 in 5 children. That means 10-20 % of children have asthma. Most often it is denied by the parents that their child or relatives have asthma. They try to take refuge in the term allergy. If they are told that their child has asthma, they get offended and think of it as a stigma. Thus, they often get inadequate or improper treatment and have a difficult life with a lot of suffering. Proper diagnosis and management may lead to a normal and happy life.

It should also be noted that there is no diagnostic test which can confirm the diagnosis of asthma, though pulmonary function tests are often claimed to be diagnostic by some physicians, but these are not diagnostic and are difficult to perform in children. These tests are useful only in following the progress of asthma and its control. Most useful test is PEF, which can be done in the clinic.

A) What is asthma?

This is a question often asked by parents. To understand it, one should know respiration briefly. From the throat, a pipe known as trachea goes down in the chest which divides into two branches. Each branch goes into one lung. These branches divide further and further into smallest and thinnest branches called bronchi and bronchioles. There is a

balloon like structure at the end of the smallest branch, which expands and collapses during respiration. The exchange of oxygen and carbon dioxide between air and blood occurs in these balloon-like structures called alveoli. In asthma, the passage in these bronchi and bronchioles gets narrowed due to swelling in their inner lining or contraction of muscles in the walls of bronchi. This causes obstruction to airflow and difficulty in respiration. The obstruction causes abnormal sounds called wheezing and reduction in exchange of oxygen in alveoli. Thus, oxygen level in the body falls. The proper treatment reverses this obstruction, and the patient gets better. This narrowing of bronchi occurs as an abnormal reaction to certain substances to which the asthmatic patient is allergic and encounters those substances. There can be hundreds of such substances to which one may be allergic, but few substances are common in asthmatic patients. These include both environmental substances and food, such as insects, plants' products known as pollen, insects in dust known as house dust mite, birds, cats and dogs' fur, eggs and sea food like fish and prawns etc.

It may also be precipitated by viral infections such flu virus.

B) Causes of asthma.

The real cause of asthma is not known. It may be familial or genetic in nature. Or it may be non-familial also, in which no family member has asthma. It should also be noted that every case of shortness of breathing or difficulty in breathing is not asthma. There may be other causes of shortness of

breathing including heart diseases and metabolic diseases etc.

Mostly asthma occurs due to allergies. Though the term allergy is used by everyone, they don't know what it really means. Allergy means an abnormal reaction to normal substances. For example, eggs do not cause any harm to a normal person. But it may cause harm to certain people in the form of rash or cough etc. Then the person will be called to be allergic to egg. Thus, one can be allergic to anything including food, plants, plants products, environmental contaminants, insects, birds, animal fur and hairs, germs especially fungus etc. Allergic reactions may be in the form of rash, pruritis or itching, running nose and sneezing, cough, vomiting, diarrhea, swelling of body or edema etc. Sometimes swelling occurs in the throat and larynx, the upper part of windpipe or trachea. It may be life threatening if it is not treated urgently. In this case obstruction to respiration may kill the patient.

C) Management of asthma:

Since asthma is a lifelong disease. It is not cured but managed so that the asthmatic patient has a normal healthy life. For which he may need medicines which may be needed intermittently or continuously. One should not be afraid of medicines because the medicines keep him healthy and

active, without school or work absences and loss of income in adults. The management includes:

1. Avoidance of allergens: If someone knows the allergens which are responsible for his allergy or asthma, he should try to avoid it. It is easier for food but difficult for environmental allergens. But one can try to do so. The common things to avoid are dust, aerosols like perfumes, pet animals, especially birds. Hence one should not do dusting at home but should do vacuum cleaning. The people are advised to remove the carpets and curtains but that rarely solves the problem. Because it is the mite in the dust which is the cause. Hence, dust on the surfaces and bedsheets etc. remain the main source of dust mite. Dusting should be avoided. Surfaces may be cleaned by wet cleaning, and carpets by vacuum cleaning. Stuffed toys should be avoided which contain a lot of dust and dust mite. Similarly, bed sheets should not be shaken in the room to clean it but folded and kept aside if there is something on it.

2. Medicines:

There are two types of medicines. a) those which are used to control acute attack of asthma. These medicines reverse the narrowing of bronchi and reduce swelling in the lining of bronchi. (b) ones which are used to prevent further attacks of asthma. The preventive medicines prevent allergic reactions and thus prevent narrowing of bronchi and their inner swelling.

The medicines used to control asthma may be given orally by mouth, by injections, or by inhalation. Each method has its own advantages and disadvantages. Oral medicines take time to act and are needed in higher doses. They may have more side effects. Injections are fast acting and often needed in acute asthmatic attacks or severe allergic reaction threatening death. Inhalation of medicines is best as it delivers medicines directly to bronchi and much smaller dose is needed. Thus, side effects are also minimized. Inhalation medicines are given by two methods. 1) by inhalers 2) by nebulizers. Both have their advantages and disadvantages but are equally effective. The choice between the two methods often depends on the comfort of the patient and physician. Because if these methods are not used properly then they may not be effective. People try to avoid inhalers as they think that the child will become used to or addicted to them. They should know that it is not the addiction but the need of the patient. As asthma is a lifelong disease, the management is also lifelong. One only gets addicted to substances which are not needed by him for living a healthy life, such as alcohol, opium, cigarettes, tobacco, or sedatives. None of these are needed for a healthy life but are harmful and dangerous, causing liver failure or brain issues. Avoidance of antiasthma medicines in a mistaken belief that patient will become addicted to it, leads to difficulties in life as mentioned above.

Antiasthma medicines to control acute attack of asthma are mainly of two types. One which reverses the narrowing of

bronchi. These are salbutamol, terbutaline and theophylline known by various trade names such as Ventolin, Britanyl and aminophylline or Acefylline etc. Second are those which reduce swelling in the lining of bronchi. These include steroids. Commonly people get afraid of the name of steroid. They don't know that steroids are essential for normal living. It is the excessive dose or improper use of steroids which is harmful and causes side effects. On the other hands steroids are lifesaving in many situations such as shock and acute asthma. Steroids are also useful in preventing asthmatic attacks. Short courses of oral steroids often do not cause any major side effects, rather they save the life of the patients.

Inhalation of medicines is most important in-home management of asthma. These may be used by inhalers or by nebulization. Proper technique is important for both methods. These are described below in some details.

2a) Nebulization:

Home nebulization has become common over the last two decades. Nowadays almost every house has a nebulizing machine irrespective of its need. Because doctors often prescribe unnecessary nebulization in case of upper respiratory infections commonly known as flu. Otherwise, it is needed only in cases of asthma. Proper use of machines is also important to get the desirable results. These home nebulizers have an electric pump which generates air flow. This air is passed through a small container in which water is added with medicines. The forced air flow changes water

into very minute particles which look like cold steam. When this is inhaled it goes into trachea and lungs and carries medicine with it. Proper combination of medicines is also important. Otherwise, a proper dose of medicine will not reach the lungs and will not have the desired effect. Usually, medicine is mixed with normal saline solution which is solution of common salt in specific proportion. Usually, a minimum of 2 ml or maximum 4-5 ml solution is used. The whole amount of the solution must be finished. The common mistake is inadequate amount of the medicine added to saline solution. It should be used in ml measuring with a syringe and not in drops as many people do. The dose of medicine depends on the age and weight of the patient. The advantage is that the patient doesn't have to make any effort and can be used in patients of any age. But the disadvantage is that it needs electricity. It can't be used in school or offices etc.

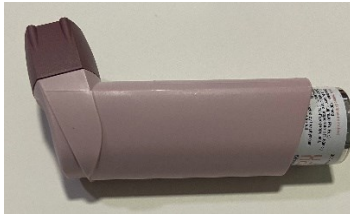
2b) Inhalers:

Inhalers are commonly called “pumps” by common people. But these are not pumps. In this method dry powdered medicine is filled in a pressurized container. When pressed a specific amount of medicine comes out of it in the form of spray, which has to be inhaled. The container should be pressed when one is inhaling. Otherwise, all the medicine will go out into the air and there will be no effect of its use. It is difficult to teach this method to children and many a times to adults also. Hence, a device called spacer is needed

to use inhalers. This device is used in between the mouth or nose of the patient and the inhaler. When the inhaler is pressed the medicine is filled in the device and is delivered to lungs by gently inhaling and exhaling into the device or by face mask in young infants. Thus, it can be used in small infants also. Its advantage is that no electricity is needed and can be carried easily in the bag and can be used anywhere, anytime, such as school, offices etc.

Key points:

1. 10-20 % of children have asthma. The diagnosis of asthma is not a stigma.
2. Asthma is not contagious and doesn't spread from one patient to another person.
3. There is no diagnostic test for asthma. It is the history and examination which leads to diagnosis of asthma.
4. Asthma is a lifelong disease but a patient with asthma may be free of symptoms for months and years.
5. With treatment, an asthmatic patient may lead a normal, useful, and productive life. Avoidance of treatment causes school and work losses.
6. Asthmatic treatment like inhalers are not addictive. These are main and best treatment strategies. These are better than oral medicines with immediate effect and lesser side effects.



Inhaler



Spacer



Spacer with inhaler



Nebulizer machine

10. Skin problems:

Some skin problems are common in children. These may be commonly due to allergies or infections. But there may be other causes also. Some of the common problems and their management are described here.

A) Neonatal skin problems:

Newborns may have some skin problems which often don't need treatment, but some may need early treatment. Most often they have different types of rashes which are benign and disappear on their own without any specific treatment.

1. Erythema toxicum: In this case the newborn may have red colored minute rash. Commonly people and sometimes even doctors label them allergies. These are not allergies. This type of rash does not require any treatment. Many a times common people and sometimes doctors also diagnose it as measles. But it is not measles. Measles in newborns is extremely rare and may even be fatal.



Erythema toxicum

Other common neonatal skin problems are following:

2. Pustules: In this case small pus-filled lesions are formed in the skin of neonates. This occurs due to bacterial infection. Antibiotics are needed for its treatment. Otherwise, a generalized infection known as septicemia may occur.

3. Eczema: Some newborns may have eczema, especially on the face and skin folds. In many children, it gets cured by one year of life. Its treatment may need some mild steroid creams only. High potency steroid creams should not be used. Because it may cause steroid toxicity known as Cushing's disease.

4. Scalp infection: Some neonates may get yellowish colored scaly rash on the scalp i.e., head. This is called "Seborrheic

dermatitis". Treatment is simple. Washing of head and hair with any anti-dandruff shampoo once or twice a week may be enough. In severe cases steroid creams such as 1% Hydrocortisone cream may be needed.

B) Childhood skin problems:

In later childhood, some skin problems may occur which occasionally may be severe and life threatening. Mostly these are benign but may be chronic and troublesome. Some of the common skin problems are described below:

1. Urticaria:

This is an allergic condition in which there may be some swelling on the lips and other parts of the body. Mostly there are raised red blebs on the skin. These blebs change their site and size. There is a lot of itching also. Usually, these blebs persist for a few days to a few weeks. Treatment is antiallergic medicine, which sometimes may not be effective. Occasionally steroids may be needed. But in most of the children, these get better in a week time. However, in a few children these might become chronic and may come again and again later in life.

2. Contact Dermatitis:

In this condition different types of rashes may appear on the skin after contact with different allergens. These allergens may include soaps, detergents, clothes, insects, grass, and plants etc. Avoidance of these allergens if known is the best treatment. Otherwise, oral antiallergic medicines may be needed.

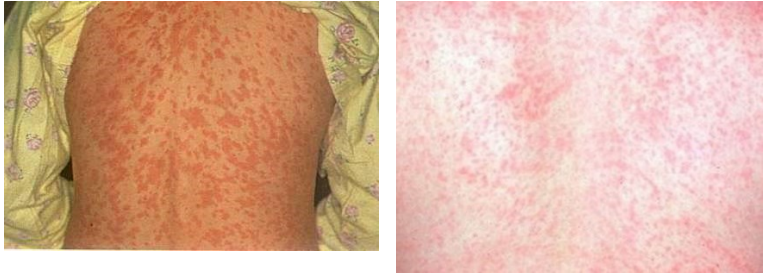
3. Roseola infantum:

It is necessary to describe this condition here because it is often diagnosed as measles by common people or inexperienced doctors. This is a viral infection in which the child may have three days high fever and the rash looking like measles appears on fourth day. The child's fever subsides with the appearance of rash, and he becomes afebrile. This is the major clue in its diagnosis. Treatment is symptomatic i.e., only paracetamol etc. No antibiotics are needed in this condition.

4. Measles:

This is a common childhood illness which can be prevented by immunization. This is caused by viruses and occurs only once in life. If it is diagnosed more than once, then that will not be measles. There may be other conditions as mentioned above which are misdiagnosed as measles. In measles, the child has high grade fever with inflammation in eyes, mouth, and other areas along with the rash. The clue is that the fever rises with the appearance of rash. There may be several complications such as pneumonia, eye infection, ear infection etc. Since it is a viral disease, no specific treatment is available. Antibiotics may be needed to treat pneumonia and other associated infections. Vitamin A deficiency may occur in measles. Hence high dose of vitamin A supplementation may help in rapid recovery from measles. Immunization at 9 months of age and then repeated

immunization at 15-18 months of life may give lifelong immunity.



Measles

5. Chicken pox:

This is again a viral disease and may occur in children and even adults. In children it is usually benign but causes loss of school. Hence, its prevention and treatment are necessary. Its complications are few and rare in children but may be severe in adults especially pregnant women.

In this disease, rash appears on the body of the children which are often too itchy. The rash is vesicle type with fluid filled. When rash subsides, it becomes crust like. The rash may be in different stages in different parts of the body. Somewhere it may be small popular evolving into vesicles. In other parts it may be vesicular or crust like. Fever may or may not be present. Nowadays treatment is available. If antiviral

medicines are given within the first five days, then the disease gets better sooner, and complications usually don't occur. Immunization may prevent the disease. Hence children should be immunized if possible.



Chicken pox

6. Scabies:

This is a very troublesome disease. It makes the life of children and adults miserable. The patient gets a papular rash which is more common in folds especially genitalia, fingers etc. Itching is severe and common. The disease spreads from one person to another in the family. Hence, the whole family needs treatment at the same time.

The disease is caused by a small, tiny insect called “mite” which travels below the skin leaving a line. This is called “Burrow”. As mentioned above, rash in between the finger and genitalia is common and diagnostic. Secondary bacterial infection occurs which need antibiotics, both locally in the form of ointment and orally as syrup or tablets.

The treatment is simple and easy but difficult at the same time. The anti-scabietic solution or cream must be applied on the whole body without sparing any area except the face. All the family members must be treated at the same time. The clothes and bed sheets need special treatment. These clothes either should be washed with hot water or exposed to sunlight for a few days. Otherwise, it becomes difficult to eradicate the disease from the family.

7. Lice infestation:

Lice infestation of hairs is also a common problem. This causes itching, which leads to bacterial infection of scalp. Later cervical lymph nodes may also get infected and enlarged. For which antibiotics might be needed. Though old women often remove the lice from head of children by using a thin comb, but these are never eradicated completely.

Anti-lice shampoos are available in the market which can be used. However, all the family members must be treated at

the same time. Otherwise, lice infestation will recur. It is also necessary that the anti-lice shampoo is applied to head for at least five minutes, to kill the lice completely.

8. Tinea versicolor

White patches or discoloration on the face and other parts of skin are not uncommon. Common people think it is due to calcium deficiency. Calcium deficiency has nothing to do with it. These patches are also different from skin disease known as vitiligo, in which the patches occur due to disease in pigmentation of the skin. These common patches occur due to a fungus which is more common in humid atmosphere. These patches often don't require any treatment. However, antifungal creams may be used. But they often reappear. Remember that calcium deficiency occurs due to vitamin D deficiency and may present as bone disease known as "Ricket" or seizures specially in newborns.

9. Nappy rash:

This is also a common problem in infants and children and quite troublesome. Mostly it is a type of contact dermatitis. Secondary fungal or bacterial infection may occur on the top of it. Primarily it occurs due to contact of skin with acidic stools or urine. Hence, it becomes more common after an episode of diarrhea. It can be simply prevented by avoiding

contact of skin with stool and urine by changing nappy more frequently and applying a barrier cream, such as petroleum jelly or Sudo cream or Rashnil. But once the rash appears then these barrier creams don't seem to be too effective. To use these creams properly for better effect, the cream should be applied at the time of changing diaper. These creams should be applied after removal of soiled diaper and cleaning the perineal area of skin with water and drying it. So that when the baby passes stool or urine next time, it doesn't come in contact with the skin. This exercise can prevent the nappy rash or even improve it.

Non-healing of the nappy rash by the above procedures usually occurs due to secondary fungal and bacterial infections. In case of fungal infections, simple antifungal cream such as nystatin may be used. Bacterial infections are less common. Many a times doctors give steroid creams also which enhance the recovery. But steroid creams are not needed except occasionally. Also, steroid creams should not be applied for a longer period, as it may cause local side effects and systemic steroid toxicity.

Occasionally, there may be Herpes virus infection also which might need antiviral creams.

Chapter 4: Immunization

Immunization:

Immunization is extremely important not only for children but for adults also. In Pakistan neither the people know that adults also need immunization nor doctors advise any immunization to adults. This is because there is no concept of routine checkup or well-adult clinic like well- baby or well-child clinic. Only vaccine which is known in common people is tetanus vaccine which is commonly advised by doctors on getting injuries or accident.

Immunization can prevent many communicable diseases. These include the following:

TB

Polio

Diphtheria

Tetanus

Whooping cough or pertussis

Measles

Rubella

Mumps

Meningitis

Chicken pox

Hepatitis A & B

Typhoid fever

HPV (against cancer caused by HPV in females)

A) Importance of immunization:

Immunization or vaccination is important because the vaccines prevent diseases, which might be life threatening or may cause lifelong disabilities such as polio. Every country has its own immunization schedule for children and adults according to their burden of diseases and health care system. WHO has given immunization schedule for developing countries under EPI program. EPI program is active in Pakistan also under the government department of health. In addition, Pakistan Pediatric Association which is working for improvement of children health, is active in promoting routine and special immunizations in collaboration with government of Pakistan and WHO and UNICEF. I want to give a word of caution here. As mentioned above, Pakistan has its own schedule of immunization, which is adopted from WHO schedule of childhood immunization and implemented through EPI program. This immunization schedule should be followed in letter and spirit by our doctors. Immunization schedules in the USA or UK are different due to their own

requirement and are revised each year depending upon changing conditions. Our doctors should not follow their schedule, nor our patients and parents try to use that schedule. This may result not only unnecessary confusion but also risk of getting diseases due to improper immunization. The EPI schedule of immunization endorsed by PPA is given below. Our parents should follow this schedule. The notion that the government vaccines are not standard or effective is not true. Private doctors do provide immunization, but I discourage it. Because mostly these become expensive for the patient and the proper storage of vaccine in the clinic is not ensured. However, additional voluntary vaccines may be given by private doctors or hospitals under care of their consultants.

In addition, PPA in collaboration with the government celebrates national immunization days. Such immunization days are extremely important, and the parents should get their children vaccinated by the team visiting their homes. The parents should never refuse the team to vaccinate their children. The vaccines given by them are the standard one and not fake as it is often considered by the common people. Such immunization campaigns are very useful in reducing the cases and in controlling the epidemic. In the past such campaigns have been run for polio, typhoid, and measles. Such campaigns will continue in future also and the people should cooperate with the visiting immunization team. This is in their own interest as these vaccines are not available

with the private doctors or hospitals except in designated hospitals by government.

EPI provides immunization against twelve diseases only and till 15 months of age. Other vaccines are optional but highly recommended. These include mumps, Hepatitis A, boosters for diphtheria, tetanus and pertussis and Human papilloma virus (HPV). These vaccines can be given by private practitioners if one can afford them, being quite expensive.

B) Immunization schedule

Following is the EPI / PPA/ Government Immunization schedule for Pakistan.

Visit #	Age	Vaccine
1st	At birth	BCG, Oral Polio, & Hepatitis B
2nd	6 weeks	Oral polio-I, Pentavalent-I, Pneumococcal-I, Rota virus-I
3rd	10 weeks	Oral polio-II, Pentavalent-II, Pneumococcal-II, Rota virus-II
4th	14 weeks	Oral polio-III, Inj. Polio-I Pentavalent-III, Pneumococcal-III,
5th	9 months	MR-I, Inj. Polio-II, Typhoid
6th	15 months	MR-II

MR= Measles & Rubella

Pentavalent= Diphtheria, Pertussis, Tetanus, HiB, Hepatitis B,

Chapter 5: Growth and Development

A) Growth

The growth of children is extremely important and depends on health and nutrition. If the child has no chronic disease and is getting proper feeding and nutrition the growth should be optimal. However, familial, and genetic factors might affect the growth. The growth is measured by height and weight. The growth charts show the ranges at different ages. Any height and weight between the maximum and minimum height and weight is normal as far as monthly change in height and weight remains within the lines. That's why two children of the same age should not be compared. Both may have different height and weight, and both may be within normal range. A table of height and weight is given here for ready reference. In this table I have not written percentile but minimum and maximum for easy understanding for common people.

Table 1. Approximate Weight in Kg according to age

Age	Boys			Girls		
	Minimum	Average	maximum	Minimum	Average	Maximum
Birth	2.3	3.5	4.4	2.4	3.4	4.2
3 months	4.9	6.3	7.9	4.5	5.8	7.2
6 months	6.5	8.1	10.1	5.95	7.4	9.1
9 months	7.7	9.4	11.7	7.0	8.6	10.6
1 year	8.5	10.4	12.9	7.9	9.6	11.8
2 years	10.4	12.6	15.6	10.0	12.05	15.0
3 years	11.8	14.4	18.0	11.4	13.9	18.0
4 years	13.3	16.3	21.0	12.7	15.7	21.3
5 years	14.8	18.5	24.5	12.7	15.8	2.3
6 years	16.5	20.8	28.3	14.3	18.0	14.9
7 years	18.3	23.0	32.5	17.7	22.8	33.3
8 years	20.1	225.7	37.4	19.5	25.7	38.5
9 years	22.0	28.7	43.1	21.5	29.1	44.5
10 years	24.2	32.0	49.4	24.0	33.0	51.4
11 years	26.6	36.1	56.2	26.8	37.3	58.7

12 years	29.5	40.6	63.3	30.0	41.8	65.9
13 years	33.0	45.8	70.2	33.4	45.9	72.3
14 years	37.1	51.2	76.9	36.7	49.4	77.6
15 years	41.5	56.5	83.2	39.5	52.1	81.6
16 years	45.8	61.1	88.9	41.8	53.9	84.3
17 years	49.3	64.7	93.7	43.3	55.2	86.1
18 years	51.7	67.3	97.2	44.2	56.2	87.4
19 years	53.2	69.2	99.2	44.7	57.3	88.4
20 years	54	70.6	100.8	45.0	58.2	89.0

Note: Adapted and modified from CDC growth charts. For exact values, please consult the original CDC charts available online.

Minimum=3rd centile, Average = 50th centile Maximum=97th centile

Table 2. Approximate Height in Cm according to age

Age	Boys			Girls		
	Minimum	Average	maximum	Minimum	Average	Maximum
Birth	44.9	50	54.9	45.0	49.2	54.5
3 months	57.7	62.0	67.2	55.8	60.4	65.1
6 months	63.3	67.8	73.3	61.1	66.1	70.9
9 months	67.4	72.3	73.3	65.2	70.59	75.7
1 year	68.6	73.6	79.4	68.7	74.39	79.8
2 years	79.9	86.4	99.3	78.4	84.9	91.5
3 years	88.4	95.2	102.9	86.9	94.2	101.8
4 years	94.5	101.9	110.5	93.0	101.0	109.5
5 years	100.3	109.2	117.8	99.3	107.9	117.3
6 years	106.1	115.6	125.1	105.7	115.0	125.2
7 years	111.9	122.0	132.3	111.8	121.7	132.7
8 years	117.5	128.1q	139.2	117.2	127.8	139.4
9 years	122.4	133.7	15,6	121.8	133.1	145.3
10 years	126.6	138.8	151.5	125.96	138.2	151.2
11 years	130.8	143.7	157.2	130.7	144.2	158.1

12 years	135.6	149.3	163.7	137.4	151.5	165.1
13 years	141.7	156.4	171.3	144.2	157.3	170.2
14 years	148.5	164.1	178.1	148.1	160.4	172.8
15 years	154.6	170.1	184.1	149.7	161.8	174.1
16 years	158.8	173.6	187.0	150.4	162.5	174.8
17 years	161.2	175.3	188.6	150.7	162.9	175.0
18 years	162.5	176.1	189.4	150.9	163.1	175.2
19 years	163.0	176.6	189.9	151.0	163.2	175.3
20 years	163.3	176.8	190.1	151.1	163.3	175.5

Note: Adapted and modified from CDC growth charts. For exact values, please consult the original CDC charts available online.

Minimum=3rd centile, Average = 50th centile Maximum=97th centile

B) Development:

Like changes in height and weight, a child grows mentally and physically over time. As you know, when the baby is born, s/he neither sits nor holds neck. S/he also doesn't understand anything. But within months s/he starts acquiring different skills. These skills though divided into four categories but for common understanding by common people, I have divided them into two categories only. One is motor skills and the second is social skills. Motor skills include neck holding, sitting, standing, walking, holding of objects etc. All other skills may be included in the social skills. Motor skills usually represent development of brain and muscles. If motor skills are not developed in time, it means, either there are diseases of muscles, or the brain is affected due to a variety of causes. These causes may be due to problems (a) before birth such as infections, (b) during birth such as lack of oxygen or (c) after birth such as meningitis and trauma etc. Familial disease and congenital genetic disorders may also be responsible for such motor disability. Details of such disorders are beyond the scope of this book. A chart is given below in which some important developmental milestones are given. These are approximate time intervals and may vary for different children. Hence, two children should not be compared. For example, a child may start walking at 9 months of age and other may walk at 15 months of age independently. Both are normal. If parents

feel a delay in development, they must seek medical advice urgently before it is too late. Hypothyroidism is one major cause of developmental delay which occurs in one in one thousand children and is treatable. If diagnosed early and treated early, the child may be completely normal. If it is missed and not treated early, permanent brain damage may occur. That's why a blood test is done at birth in good hospitals to diagnose hypothyroidism. This includes a test called TSH. If it is high, early treatment with thyroxine is needed. Then thyroxin is needed for lifetime.

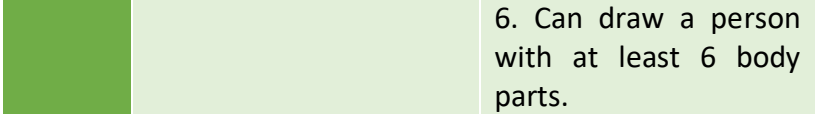
Table 3: Developmental milestones

Age	Motor skills	Social & other skills
2 months	<ol style="list-style-type: none"> 1. Holds head up temporarily. 2. Moves both arms and both legs. 3. Opens hands briefly. 	<ol style="list-style-type: none"> 1. Starts smiling. 2. Makes different sounds. 3. Watches moving persons.
4 months	<ol style="list-style-type: none"> 1. Holds head steady without support. 2. puts hands into mouth. 3. Pushes up onto elbows/forearms when on tummy. 	<ol style="list-style-type: none"> 1. Begins to babble. 2. Turns head towards the sound. 3. Follows moving things with eyes from side to side. 4. Looks at his hands with interest.
6 months	<ol style="list-style-type: none"> 1. Rolls over from front to back. 2. Leans on hands to support himself when sitting. 3. Begins to transfer things from one hand to another hand. 	<ol style="list-style-type: none"> 1. Recognizes familiar faces. 2. Puts various things into the mouth. 3. Reaches to grab toys and other objects. 4. Closes lips if doesn't want to eat.
9 months	<ol style="list-style-type: none"> 1. Starts sitting without help. 	<ol style="list-style-type: none"> 1. Looks when you call his/her name.

	<ol style="list-style-type: none"> 2. Transfers objects from one hand to other hand easily. 3. Sits without support 4. Pulls to stand himself. 5. Stands holding on furniture 6. Starts crawling 	<ol style="list-style-type: none"> 2. Smiles or laughs when you play peek-a-boo. 3. Makes different sounds like “mamamama” and “babababa” 4. Lifts arms up to be picked up. 5. Looks for objects when dropped out of sight.
12 months	<ol style="list-style-type: none"> 1. Walks, holding on to the furniture in both hands. 3. Drinks from a cup if held by mother. 4. Picks up small things between thumb and finger. 	<ol style="list-style-type: none"> 1. Plays games like pat-a-cake. 2. Waves “bye-bye”. 3. Calls a parent “mama” or “baba”. 4. Understands commands like “no”.
15 months	<ol style="list-style-type: none"> 1. Starts walking without holding hands. 2. Can feed himself using fingers. 	<ol style="list-style-type: none"> 1. Makes a tower of two blocks. 2. Tries to say words other than mama and baba. 3. Claps with both hands when excited. 5. Hugs stuffed toys. 6. Follows directions if given.

18 months	<ol style="list-style-type: none"> 1. Walks without support easily. 2. Scribbles on paper. 3. Drinks from a cup with occasional spilling. 4 Feeds self with own fingers. 5 Tries to use a spoon and fork for feeding. 6 Climbs on and off the furniture without help. 	<ol style="list-style-type: none"> 1. Keeps looking when moves away from you. 2. Looks at the pages in a book. 3.Helps you in getting dressed. 4. Tries to say three or more words. 5. Plays with own toys like dolls and carts.
24 months	<ol style="list-style-type: none"> 1. Can kicks a ball 2. Runs without frequent falls. 3. Can Walk up a few steps on stairs without help. 4. Eats with a spoon easily. 5 Can draw straight lines and circles. 	<ol style="list-style-type: none"> 1. Points to objects in a book asked. 2. Says sentences with two words. 3. Points to at least two body parts when asked. 4. Plays with more than one toy at the same time.
30 months	<ol style="list-style-type: none"> 1. Tries to turn the doorknobs or unscrew lids of container. 2. Can take some clothes off by himself. 3. Jumps off the ground with both feet. 4. Can turns book pages, one at a time. 	<ol style="list-style-type: none"> 1. Can use words like "I", "me" or "we". 3. Shows simple problem-solving skills. 4. Starts recognizing colors. 5. Plays next to other children.

		6. Follows simple routines commands.
36 months	<ol style="list-style-type: none"> 1. Puts items together, like large beads. 2. Puts on some clothes by himself, 3. Uses a fork. 	<ol style="list-style-type: none"> 1.Says first name, when asked. 2.Talks with you in conversation. 3. Asks questions with, “who,” “what,” “where,” or “why” like “Where is Mama or baba?”
4 years	<ol style="list-style-type: none"> 1. Catches a large ball. 2. Serves himself food or pours water, with adult supervision. 3. Can unbutton few buttons. 4. Holds pen or pencil between fingers and thumb. 	<ol style="list-style-type: none"> 1. Says sentences with four or more words. 2. Answers simple questions. 3. can name different colors of items. 4. Draws a person with three or more body parts.
5 years	<ol style="list-style-type: none"> 1. Buttons some buttons. 2 Hops on one foot 	<ol style="list-style-type: none"> 1. Counts to 10. 2. Writes some letters. 3. Follows rules while playing games. 4. Sings, dances. 5. Can use the toilet on own.



6. Can draw a person with at least 6 body parts.

Adapted and modified from Denver Development Screen Test (DDST) and CDC milestones moments booklet.

Chapter 6: Nutrition Disorders

Nutrition disorders

Proper adequate feeding with a balanced diet is most important for normal growth and development. Some principles of infant feeding and weaning have been given in the previous chapters. However, there are still several questions about food and balanced diet which remain unanswered. There are a lot of misunderstandings and food faddism among the people because of traditional lifestyle and effect of advice by hakims and other health care providers. Some important aspects of nutrition are described below.

A) Energy requirement.

Every living person needs energy to survive. This energy is obtained from food. That's why an adequate amount of food is important. But food provides not only energy, but other components required by the body also. Energy is measured in terms of calories. Each food provides certain nutrients and number of calories. Energy requirements vary according to the age and working conditions of an individual. Usually, 1000 to 3000 calories are needed for a person from one year of life to adulthood. A rough guide is that one year old child needs 1000 calories per day and 100 additional calories for each year. For example, a five-year-old child needs $1000+400=1400$ calories per day. This is only a rough guide for common use, but calculation of actual requirement needs special methods.

B) Food components.

Food consists of three major components i.e., carbohydrates, fats, and protein. In addition to these, there are three other important elements which are also necessary i.e., salts (mineral), vitamins and water. These are called micronutrients.

a) Carbohydrates. These are the substances which do not contain nitrogen and are a major part of food. Usually, 50% of food is carbohydrates. This includes sugars, and starch from grains i.e., wheat flour, rice, pulses etc. Sugars are pure carbohydrates and readily absorbed in the intestine without any digestion. Other complex carbohydrates like rice and pulses contain other elements also. These carbohydrates need digestion in stomach and intestine before being absorbed into the blood.

b) Proteins. These are the food components which contain nitrogen. The major protein containing foods are meat and fish. However, pulses and grains also contain a significant amount of protein. For a balanced diet, 15 % of food should contain protein. The proteins also need to be digested in the intestine before absorption.

c) Fat. These may be both animal fat and oils obtained from plants. Butter is also fat obtained from milk. These should be at least 35% of the total food requirement. These fats are of two types. 1. Saturated fats like animal fat and butter and 2. Unsaturated fats like vegetable oils. The energy content of fats is usually double than the energy content of

carbohydrates and protein. Unsaturated fats are better than saturated fats. Because saturated fats cause an increase in cholesterol and deposit in the arteries.

d) Salts or Minerals. These include Sodium, Potassium, Calcium, Magnesium etc. Too much and too little salt intake is harmful. Since these salts are already present in the common food items, no extra addition is needed. However too much addition of common salt to food should be avoided as it is harmful for health, especially for patients of high blood pressure and kidney diseases.

e) Vitamins. There are several vitamins which are needed for proper metabolism in the body. These vitamins are labeled as Vitamin A, B, C, D & E etc. Vitamin B group has several subgroups such as B₁, B₂, B₆, B₁₂ etc. Their deficiency leads to different diseases. Since vitamins are also present in the food items, no extra supplementation is needed. But cooking often destroys most vitamins. In such a case, a minimal daily requirement of multivitamins may be needed. Details of their actions and diseases caused by their deficiency or excess are beyond the scope of this book.

f) Water. This is the most important component of diet. Usually, 1-3 liters of water is needed for a healthy life from one year of life depending upon age. In case of excessive loss like diarrhea, vomiting and increased urine, dehydration may occur, which sometimes may become life threatening. This has already been described.

C) Malnutrition

Malnutrition includes both undernutrition and overnutrition. Undernutrition means less food intake, especially less intake of calories. It causes growth failure, less weight, and short height. Overnutrition means increased food intake which is more than necessary. It causes increased weight gain (but not height) called obesity. A few important points about malnutrition are described below.

a) Undernutrition.

Due to inadequate intake of food, the child doesn't gain appropriate weight. A chart of average weight and height is given here for parents to see if their child is growing well. Though there may be some diseases which might affect weight and height gain such as liver and kidney diseases but mostly it occurs because of less food intake. Its main reason is wrong beliefs and food faddism. Parents think various foods might harm the children and they don't give these foods to their children. Such as they avoid banana and rice food in case of cough, roti in case of fever and especially in typhoid etc. Though children need more food during illnesses, their food intake is reduced by parents. This causes weight loss and weakness in children. The long-standing concept of cold and hot food is also a reason for avoiding common and important foods for their children. When I am asked, what food is restricted to their children, I say that they can give everything except wood, cloth, stones & dust, and metal objects unless there is any specific reason to avoid a certain food item. Such reasons include avoidance of milk in

lactose intolerance, eggs and fish in allergic children, or wheat in celiac disease. Otherwise, all foods may be given to children in health and diseases according to their custom and practice. Undernourished Children with lesser weight get infections more often than normal children.

Though weight is the major criteria affected by decreased food intake, height is also affected. Children with less weight look thin and weak and is often said that they have "سوکھے" -

کی بیماری This is not a disease but inadequate weight gain due to inadequate food intake. The treatment is giving extra food to these children.

Similarly, height is also affected by inadequate food intake. In addition, poor intake of minerals, especially zinc, may also be responsible for shorter height. Occasionally certain diseases such as hypothyroidism, growth hormone deficiency, or chronic diseases may also be responsible for short height. Hence at least one consultation with a pediatrician is necessary to exclude such causes.

b) Obesity.

Though undernutrition is more common in the developing and poor countries, but prevalence of obesity is also increasing. This is due to Increased food intake, especially

fast food whose consumption is increasing. People think that higher weight is a sign of healthiness, which is not. Body weight higher than expected is called obesity and it is a disease. It may lead to diabetes, high blood pressure etc. in later life. Most often the parents get upset or angry if they are told that their child is obese. They think that their child is healthier than other children. They must be counseled that their child is not healthy and needs to control the diet. They must avoid or limit intake of high caloric fatty and fast foods. They should be guided to have a healthy lifestyle.

Chapter 7:

Accidents and Their Prevention

Accidents

Children often have accidents at home which sometimes are fatal or cause significant injuries and lifelong disabilities. Their prevention is extremely necessary.

These accidents can be prevented by simple precautions taken by parents. Some of the common accidents and their preventive strategies are given below.

A) Fall from bed or heights:

This is an important issue in taking care of children. Children should not be left unattended. There should be railing around the bed of the infants. So that the infant doesn't fall from the bed on rolling over.

Similarly, there should be a railing alongside the staircase. There should not be space enough for the child to get through the railing. The verandahs in flats or other houses should not have grills with space enough through which the child may pass or climb over. These are the common pitfalls in construction of houses risking the life of children.

Similarly, children should not be thrown in the air while playing with them. Because one may miss the child while catching him and the child may fall on the floor causing fracture of skull and intracranial bleeding.

B) Ingestion of poisons and drugs:

This is another common cause of accidents in homes. There are two major mistakes which parents often make. One is the unsafe storage of the medicines and the second is storage of poisonous substances in common drinks bottles.

Medicines should be stored in a place which is not within the reach of children. Child-safe containers of medicines are not available in Pakistan, which are legally compulsory in the West. The medicines should never be kept on the bedside or drawers of the cabinets which are often opened by the children. Many medicines which are used by elderly such as sleeping pills, antidiabetic medicines, and antidepressant medicines are kept on bedside or in a basket. These can easily be reached by the children. In addition, children should never be given sweets in the form of sugar-coated tablets. Because children swallow the medicines thinking of them as sweets.

Secondly it is a common practice in Pakistan to keep dangerous substances in common drinks bottles, such as kerosene, insect killing oils, acids etc. in Pepsi or Coca Cola bottles or even simple drinking water bottles. Children often drink these substances taking them as common cold drinks. Ingestions of these poisonous and toxic substances may make children too sick or may even prove to be fatal.

C) Foreign Bodies ingestion and inhalation:

Ingestion and inhalation of foreign bodies by infants and children is not uncommon. This occurs during play with toys having small parts. Children often put these toys in their mouth and ingest or inhale them. Inhaling foreign bodies is more dangerous than ingesting it. In addition, certain food items which need to be chewed by teeth are given by parents to their children such as peanuts, almond etc. During feeding, if the child gets cough, these objects are inhaled and enter the trachea (windpipe). Sometimes these foreign bodies are stuck in the trachea and bronchi and sometimes these items pass into the lungs. If they get stuck in the trachea, urgent removal becomes necessary. Otherwise, the child may die or have permanent brain damage due to oxygen deficiency.

If the foreign body reaches the lungs, it may cause the collapse of lung. Later this may lead to pneumonia and abscess. Persistent cough may occur. Early removal of the foreign body can prevent these complications. The procedure is called bronchoscopy. In this procedure a tube is passed into trachea. At the end of that tube is a prong which picks up the foreign body and removes it.

Sometimes a foreign body is ingested. Common objects include coins and small toy parts. Once these foreign bodies pass through the esophagus and reach stomach these are passed out. Even sharp bodies are excreted without any harm. If these are impacted somewhere in the intestines,

then surgical removal is needed. However, button batteries are the most dangerous. Because these can get open and burn the stomach and intestine. Their urgent removal is extremely necessary. This is done by endoscopy.

D) Drowning:

This is another common accident which occurs in homes. Small children can get into buckets or bathing tubs full of water. But they can't come out of it. A few minutes submersion of head in the water may cause severe oxygen deficiency to the brain. Thus, the child may get permanent brain damage for whole life even if he survives the episode. Hence, buckets and water tubs should not be left full of water and the child should never be left unattended near these objects.

E) Burns by hot fluids and fire

There are several ways in which the child may get severe burns, which could be life-threatening or fatal. Some such scenarios are given here to apprise the parents to prevent burns to their children.

a) There should not be any tablecloth on the top of a table on which hot food and fluids are kept. Because the child pulls the cloth and the container having hot stuff falls on the child, burning him.

b) One should never drink tea or hot drinks with the child sitting on the lap. Child often hits the cup or container, and the hot substance falls on the child and parents causing severe burns.

c) One should not keep any container filled with hot water or food covered with a lid on the floor. The child often comes and sits on the lid and falls into the container, burning the child, sometimes fatally. I still remember the case of a child living in my neighborhood who had sat on a large hot cooking pot filled with boiling water and fell into it. Despite being admitted to a good hospital, he could not be saved. The water was boiled for drinking purposes.

d) Cooking should never be done while taking the child in lap. Because the child never remains quiet in the lap and often tries to reach the oven or hot food. The foods, especially oil

if it is being used for frying, may fall on the child or mother.
Severe life-threatening burns may occur.

F) Road traffic accidents:

Though accidents on the road might occur despite taking full precautions but there are certain wrong actions which make children and adults prone to accidents. Some of these actions are given here.

a. Motorcycle riding. It is extremely unsafe for children to carry them on a motorcycle, which itself is prone to accidents. The children are often made to sit on the petrol tank. Not only one but two to three children are made to sit on it. In addition, small infants are carried in the lap of mothers, sitting behind the driver. The mothers also sit on one side and unbalanced. I have seen a maximum of seven people including children riding on a single motorcycle. Roads in Pakistan especially in Karachi are broken and bumpy. There is always a possibility for children to be thrown in the air or falling on the road if the motorcycle hits a ditch, which is quite common at night due to the absence of streetlights.

Not only this, but women often wear a dress with hanging dupatta or Sari or sometimes with hanging shirt. These clothes are often stuck in rear wheels, causing motorcycles to fall. Each hospital's emergency department receives many such cases of accidents daily, causing permanent injuries or prolonged hospitalization or death.

b) Driving the car with the child in the lap. One can often see the cars on the roads with drivers having an infant or child in their lap and driving the car with one hand, even at high speed. The child may turn the steering or pull up brake etc., causing accidents. Secondly it is often seen that the glass window of the car is open, and the child is looking out with his head outside the window. This is an extremely dangerous situation. Any vehicle passing by this car might hit the face of the child. Or even bushes or any other object on the road might hit his face, injuring him badly. Sometimes, it can be fatal also. The major problem is apathy on the part of parents. If one advises them against these mishaps, they reply with the sentence that I/we can manage or “it’s none of your business”.

ANNEXURE:

Weaning foods and foods for children with diarrhea

1) Khitchri

Ingredients:

Rice:	100 gm
Daal:	50 gm
Oil:	1 ½ tablespoon (20 ml)
Salt:	to taste (Minimal)
Water:	one cup

Method: After cleaning the rice and daal, soak in water for half an hour. Add one cup of water and cook on medium heat till semisoft.

Note: Other food ingredients like minced meat, potato, peas and other vegetables may also be added.

Cost: Rs. 50-100

Calories: 600

2. Dalia (Porridge)

Ingredients:

Dalia:	100 gm
Oil:	1½tablespoon (20 ml)
Salt:	to taste (minimal)
Water:	One cup

Method: Clean the dalia and roast in oil till light brown. Add one cup of water and cook on medium heat till it becomes semisoft.

Cost: Rs. 30-50

Calories: 450

3) Suji ka Halwa

Ingredients

Suji (Semolina):	100 gm
Sugar:	30 gm (two tablespoonfuls)
Oil:	1 ½ tablespoon (20 ml)
Water:	One cup

Method; Roast Suji in oil till light brown. Add one cup of water and sugar to it. Cook on medium heat till semisoft. Food color may be added.

Cost: Rs. 30-50 Calories: 600

