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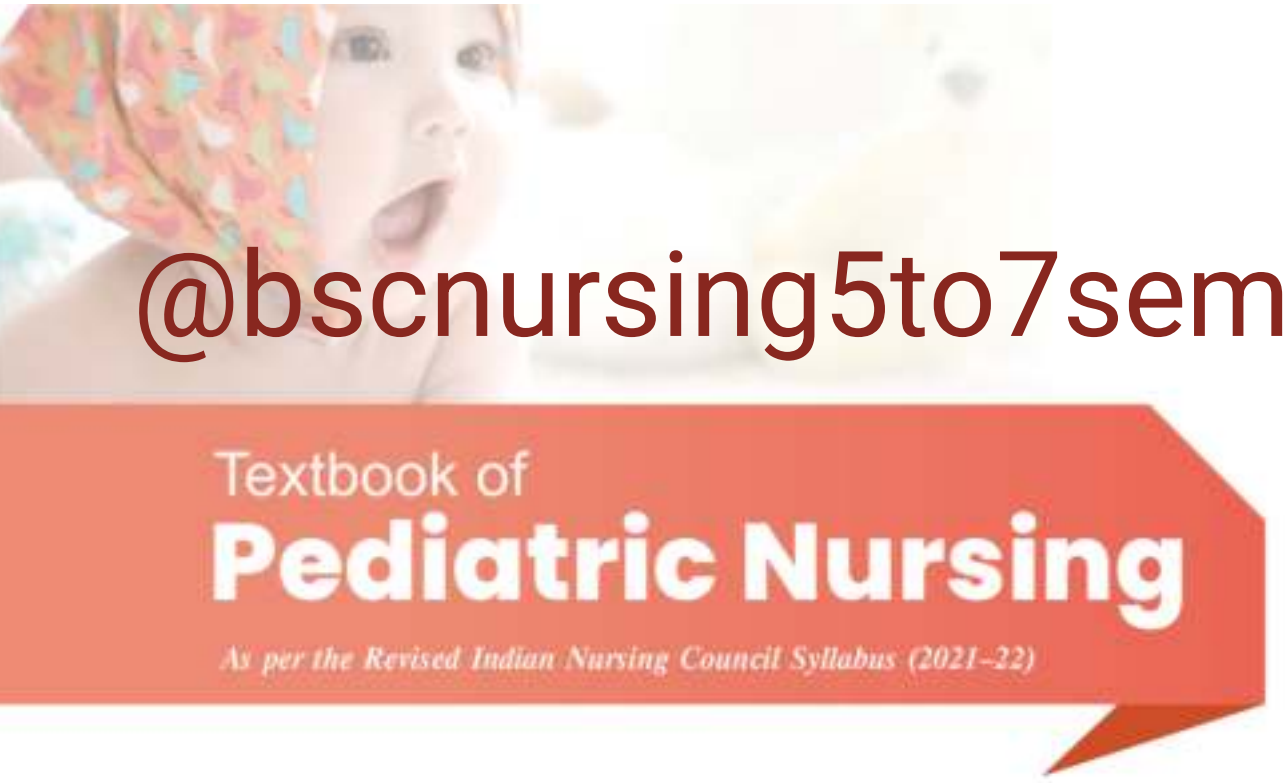

Textbook of Pediatric Nursing

As per the Revised Indian Nursing Council Syllabus (2021–22)

CHILD HEALTH NURSING-I

Placement: V Semester
Practicum: Lab/Skill Lab: 1 Credit (40 hours)

Theory: 3 Credit (60 Hours)
Clinical: 2 Credits (160 hours)

Course Content

T– Theory, L–Lab

Unit	Time (Hrs)	Learning Outcomes	Content	Teaching/ Learning Activities	Assessment Methods
I	10 (T) 10 (L)	Explain the modern concept of child-care	**Introduction: Modern Concepts of Child-care** • Historical development of child health • Philosophy and modern concept of child-care • Cultural and religious considerations in child-care	• Lecture discussion • Demonstration of common pediatric procedures	• Short answer • Objective type • Assessment of skills with checklist
		Describe National policy, programs and legislation in relation to child health and welfare	• National policy and legislations in relation to child health and welfare • National programs and agencies related to welfare services to the children • Internationally accepted rights of the child • Changing trends in hospital care, preventive, promotive and curative aspect of child health		
		Describe role of preventive pediatrics	• Preventive pediatrics: ▪ Concept ▪ Immunization ▪ Immunization programs and cold chain. ▪ Care of under-five and under-five clinics/well-baby clinics ▪ Preventive measures towards accidents		
		List major causes of death during infancy, early and late childhood Differentiate between an adult and child in terms of illness and response	• Child morbidity and mortality rates • Difference between an adult and child which affect response to illness ▪ Physiological ▪ Psychological ▪ Social ▪ Immunological		
		Describe the major functions and role of the pediatric nurse in caring for a hospitalized child.	• Hospital environment for sick child • Impact of hospitalization on the child and family • Communication techniques for children • Grief and bereavement		
		Describe the principles of child health nursing and perform child health nursing procedures	• The role of a child health nurse in caring for a hospitalized child • Principles of pre- and postoperative care of infants and children *Child Health Nursing procedures:* • Administration of medication: Oral, I/M, and I/V • Calculation of fluid requirement • Application of restraints • Assessment of pain in children ▪ FACES pain rating scale ▪ FLACC scale ▪ Numerical scale		

Contd...

Contents

Unit I

Introduction: Modern Concepts of Child Care

Learning Objectives

At the end of this unit, the students will be able to:

- Explain the modern concept of child care.
- Describe national policy, programs and legislation in relation to child health and welfare.
- Discuss preventive pediatrics.
- List major causes of death during infancy, early and late childhood.
- Differentiate between an adult and child in terms of illness and response.
- Describe the role of pediatric nurse in caring for a hospitalized child.
- Describe the principles of child health nursing.
- Perform child health nursing procedures.

Unit Outline

Chapter 1

Child Care Concepts

Chapter Outline

- Introduction
- Historical Perspectives on Child Care Practices
- Health Care Delivery System in India
- National Policies, Legislation and Agencies Related to Child Welfare
- National Health Programs Related to Children
- Internationally Accepted Rights of the Child
- Changing Trends in Child Health

INTRODUCTION

Children are the endowment and divine gift to human beings whose innocent smiles and hugs make this world more beautiful. There are considerable differences between adult and children in many aspects, like physiological and psychological. It is a collective responsibility of the society to protect and care to enable them to grow healthy. The focus of health care services, therefore, has now shifted from the care during illness to disease prevention, health promotion and wellness.

Worldwide history gives evidences indicating usage of children as a "commodity" for fulfilling the adult's various purposes, including increasing population and sharing the work. Due to lack of clear understanding regarding childhood illness and management, children who are ill or handicapped were considered burden and not useful to family, and hence were abandoned. It took a long time to change this deep-rooted concept and in 19th century, child healthcare gained a much better understanding regarding various child care, illness and wellness.

HISTORICAL PERSPECTIVES ON CHILD CARE PRACTICES

Prehistoric Times

Fossil studies highlight existence of child care practices in pre historic/stone age period. These included carrying small children at back, feeding and closely observing their growth. The mother had the responsibility to prepare their children to follow their customs and beliefs. The children will be then taught during their late childhood period regarding their customs, beliefs, skills, and history of their tradition (mostly tribal tradition). The children enjoyed a high level of freedom and all were prepared for continuation of their tradition, i.e., hunting, protection from animals and natural hazards.

Ancient Civilization

The peculiar feature of ancient civilization is evolution of various trades, like hieroglyphics (Scribe tradition of Egypt), peasants, artisan, king, farmer, etc. and carrying

the trade from generation to generation. Children during ancient period therefore enjoyed varying degree of status as like king's children, artisan's children, farmer's children, etc. The philosophy of child care aspects was same as to prepare the children to continue their tradition but the traditions were different and so were the child care practices. Families with large members were regarded as sign of prosperity and a result of God's blessing.

Ailments, illness, diseases, handicaps all existed during this time and treatments in practice were mostly herbal in most of the traditions, namely Indians, Chinese, Jews and others. Mosaic Law of Jews is famous for hygienic measures that has been reported as influenced mother and child care.

Charity services are another remarkable milestone during ancient times focusing on children who were orphaned (especially of soldiers) and widows in the form of adoption law, financial and medical support. At the same time fathers were given authority to punish, imprisonment, death, or even sale to slavery (Romans).

Medieval World (450–1350 AD)

Survival of human kind, especially children were affected very badly during this period due to war, epidemic and pandemic conditions. The Black Death of 1347 had taken one-fourth of the entire population. The history indicated that the first asylum to take care of children who were orphaned was founded in Italy in 787 AD. However, due to poor general level of public health and hygiene, the conditions of these asylums were very poor.

Renaissance and Early Modern World (1350–1800 AD)

The Chinese invention of printing and manufacture of paper made a drastic change in the human life world around. Knowledge was enhanced and two books; *The Book of Children by Thomas Phaer (England) and Children's Book by Felix Würtz* were published in 16th century. Another important person of this era is St. Vincent Paul who is known as patron saint of orphan who struggled to arouse public interest in the care of the children.

The early modern world showed emergence of middle class initially and Industrial Revolution in later period as a result of rapid growth in industry from home to large factories with machines. The Industrial Revolution led to accidents, sickness and the death toll raised dangerously owing to various factors. These were colonization, forcing children to work for long hours, low wage, poor sanitation and overcrowding in settlements.

Despite the unhealthy situation, certain ray of hopes also occurred during this period. Edward Jenner (England) developed small pox vaccine, William Harvey discovered circulation of blood. Microscope, thermometer and forceps were invented. The famous book *Emilie* written by Rousseau, has a section on the rights, hygiene and nutrition of children and infants.

Modern World

Knowledge of human body gained a momentum as a result of advancement in scientific approaches in gaining knowledge and philosophy of humanitarianisms. Knowledge of human body then branched into various diseases and treatment modalities. The significant contribution of modern world includes water purification, waste and sewage disposal, pasteurization of milk, immunization program, production of antibiotics. Maternal and Child Health (MCH) Program that include free food and medicines, Child Labour Act, introduction of more hospitals and child care centers.

Changes in Family Type and Culture

Migration and movement of families from one place to other created a break in the extended family system. As all members live together and inter dependant in extended system, the children were more secure. They are taken care of well and grow in their tradition-bound customs and practices. However due to migration owing to many reason but mostly for farming, the extended family system was broken into nuclear family set up. This led the family to pass through large amount of strangeness and mixing of culture, etc. The support that was there with extended family system was then shifted to public health agencies or governmental programs.

Evolution of Pediatrics in Medical and Nursing Practice

Hippocrates (460–377 BC) and Celsus (first century AD) have been recorded as pioneers who described about difference in treatment of children. However, the term pediatrics is originated from Greek and the meaning is child cure ("pais"= child). The care taking behavior of their children has been observed as strongly existing in human's culture since the ancient period. Indian traditional medicine has described about child care. Abraham Jacobi, a US-based Professor in pediatrics is known as Father of Pediatrics (1870). He set up a hospital for children and paved a path for a specialized training in pediatrics. This corresponds that the evolution of the modern system of child health is not very old as compared to other healthcare system. As of now, the healthcare practices of children are not only infant feeding or a few diseases management, but encompass a comprehensive approach from conception to maturity. The Henry Street Settlement House established by Lillian Wald in 1900 at New York city, is regarded as the start of public health nursing oriented toward providing services of home nurse visiting to teach mothers about health care.

The Indian traditional medicine Ayurveda and Siddha were in practice since Vedic times (5000 BC) and both have descriptions about maternal and child care components. Maternal and child care was practiced by women of special group (*Dai*) and hygiene was given priority during delivery and lactation. The rituals during pregnancy and childhood were true representation of the need of the child during developmental stages. For example, special and rich food with more of sweets, ghee and nuts and less spicy to meet the energy and other nutrients required for growth as well as birth process. Some of the good practices existed among various groups of India are listed here:

- Strict menstrual hygiene
- Mother going to her parental home for delivery
- Celebrations when pregnant lady achieves 32 weeks.
- Abstinence during pregnancy.
- 10 days of strict isolation of mother and new born from other members (prevention of infection)
- Cleanliness and hygiene, warmth, measures of lying in room

Trend of Preventive and Promotive Child Health Practices

Public health science originated from England in 1840 as the public health was affected by industrialization, colonization, lack of facility for safe water and waste disposal. In India, public health measures primarily were disease oriented and started since independence. MCH services have been given importance since 4th Five-year plan, until then it was of population control programs. Under the CSSM program, expansion of MCH services in large scale was done for implementation through Primary Health Centers (PHCs) and Sub-centers. These include the child survival components consisting of new born care, immunization, management of acute diarrhoea and respiratory infections, prevention of hypothermia, infections, promotion of exclusive breast feeding and referral of sick new born.

In 1997, the MCH programs then further expanded and integrated along with the Reproductive Child Health (RCH) package of National Family Welfare program. The focus of RCH-I program was prevention and management of unwanted pregnancy, antenatal, delivery and postnatal services, child survival services of newborn and infants, management of reproductive tract infections and STDs. The RCH aimed to utilize integrated delivery of the services with quality, especially in neonatal and perinatal health.

Besides above, ICDS program was launched in 1975 with an aim to cover 70% of community development blocks, and 260 urban slum pockets. The beneficiaries included children under six years of age, expectant and lactating mother and adolescent girls.

HEALTH CARE DELIVERY SYSTEM IN INDIA

The health system in India is a mix of public and private sector with the non-governmental organizations (NGOs) playing a small yet important role. The public health system in India is primarily under the purview of State Governments, with the Central Government providing broad policy guidelines, technical assistance, and additional resources. The health system in India is well structured (Fig. 1.1).

- **Sub-center (SC):** It is the most peripheral health service delivery point in the health care infrastructure. Each SC is staffed by a female worker, auxiliary nurse midwife (ANM) and a male worker. SCs cover a population of 3,000–5,000.
- **Primary Health Center (PHC):** The next level, caters to a population of 30,000 and overseeing 6–8 SCs. A PHC is staffed by one or two general physicians, a lady health visitor (LHV) and one or more ANMs.

Ministry of Health and Family Welfare (MoHFW) is transforming existing Sub-centers and Primary Health Centers across the country into Ayushman Bharat – Health and Wellness Centers (AB-HWCs). Health and Wellness Centers aim to provide Comprehensive Health Care Services closer to the community and reduce financial hardship. In 2017, the National Health Policy was launched, which endorsed the establishment of Health and Wellness Centers (HWCs).

- **Community Health Center (CHC):** For every 3–4 PHCs there is a provision for CHCs. About half of CHCs nationwide have been designated as first referral units (FRUs) and are staffed by a pediatrician, obstetrician, anesthetist, several general physicians, nurses and paramedics, and are able to provide emergency obstetric and newborn care. There are 2–4 FRUs in each district, and one or more multi-specialty hospitals at the district headquarters.
- **District hospitals:** These are the final referral centers for the primary and secondary levels of the public health system.
- **Hospitals, medical colleges and research institutes:** These are referral hospitals with specialized facilities.

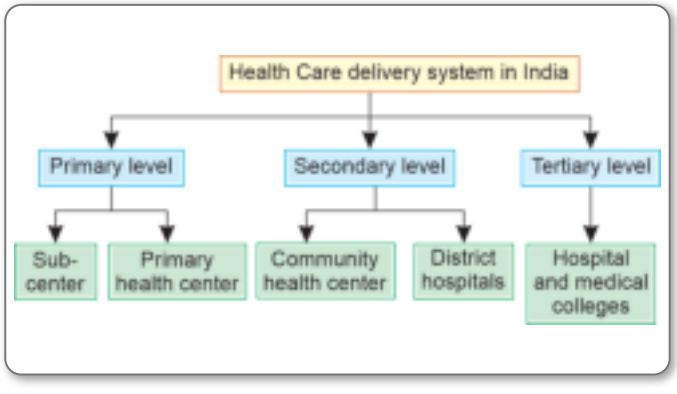

Figure 1.1: Health care delivery system in India

NATIONAL POLICIES, LEGISLATION AND AGENCIES RELATED TO CHILD WELFARE

National Policies

- **National Policy for Children, 1974** states that the State shall provide adequate services toward children, both before and after birth and during the growing stages for their full physical, mental and social development.
- **National Nutrition Policy, 1993** was adopted by the Government of India under the aegis of the Department of Women and Child Development. It advocated strategy for eradicating malnutrition and achieving optimum nutrition for all. The policy advocates monitoring of nutrition levels across the country and sensitising government on the need for good nutrition. It also includes the Food and Nutrition Board, which develops posters, audio jingles and video spots for disseminating correct facts about breastfeeding and complementary feeding.
- **National Population Policy (NPP), 2000:** It reaffirmed the Government's commitment toward voluntary and informed choice, target-free approach and achievement of replacement level of fertility by addressing the issues of contraception, maternal health and child survival. Some of the goals of NPP were:
  - Make school education up to age 14 free and compulsory, and reduce drop outs at primary and secondary school levels for both boys and girls.
  - Reduce IMR to below 30 per 1000 live births and reduce MMR to below 100 per 100,000 live births.
  - Achieve universal immunization of children against all vaccine preventable diseases.
  - Promote delayed marriage for girls, not earlier than age 18 and preferably after 20 years of age.
  - Achieve 80% institutional deliveries and 100% deliveries by trained persons.
  - Achieve 100% registration of births, deaths, marriage and pregnancy.
- **National Charter for Children, 2003:** It emphasizes Government's commitment to children's rights to survival, health and nutrition, standard of living, play and leisure, early childhood care, education, protection of the girl child, empowering adolescents, equality, life and liberty, name and nationality, freedom of expression, freedom of association and peaceful assembly, the right to a family and the right to be protected from economic exploitation and all types of abuse.
- **National Plan of Action for Children, 2005:** It includes strategies for improving the nutritional status of children, reducing IMR, increasing enrolment ratio, reducing drop-out rates, universalization of primary education and increasing coverage for immunization.
- **National Guidelines on Infants and Young Child Feeding, 2006:** These guidelines emphasize the importance of breast feeding. Breast feeding should be started immediately after birth and to be continued exclusively for six months. Appropriate and adequate complementary feeding must begin thereafter and breast-feeding can continue for up to two years.

Schemes of Ministry of Women and Child Development Related to Child Welfare

The Integrated Child Development Services Scheme (ICDS), 1975

It is one of the most comprehensive schemes on child development in the country run by Ministry of Women and Child Development since 1975 in pursuance of the National Policy for Children. It aims at providing services to pre-school children in an integrated manner to ensure proper growth and development of children in rural, tribal and slum areas. This centrally sponsored scheme also monitors nutrition of children.

The beneficiaries under the Scheme are:

- Children in the age group of 0–6 years
- Pregnant women and lactating mothers

Objectives of the Scheme are:

- To improve the nutritional and health status of children in the age-group 0–6 years
- To lay the foundation for proper psychological, physical and social development of the child
- To reduce the incidence of mortality, morbidity, malnutrition and school dropout
- To achieve effective co-ordination of policy and implementation amongst the various departments to promote child development
- To enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education.

Services under ICDS: The ICDS Scheme offers a package of six services, which are as follows:

- Supplementary Nutrition
- Pre-school non-formal education
- Nutrition and health education
- Immunization
- Health check-up and
- Referral services

The various initiatives under ICDS umbrella are:

Anganwadi Services

- **Scheme for Adolescent Girls (Kishori Shakti Yojna), 1991:** Services for adolescent girls were not covered by any health and social welfare program, whereas girls in this crucial groups need special attention. Under this scheme all adolescent girls in the age group of 11–18 years

receive the common services, like watch over menarche, immunization, general health check-ups once in every six-months, training for minor ailments, deworming, prophylactic measures against anemia, goiter, vitamin deficiency, etc., and referral to PHC, district hospital in case of acute need.

- **Rajiv Gandhi National Crèche Scheme for the Children of Working Mothers, 2006:** The creche services for children of working mothers were provided earlier under the Scheme for Crèches for the Children of Working and Ailing Mothers and the National Crèche Fund. The scheme and the corpus have been merged and new scheme, namely, Rajiv Gandhi Crèche Scheme for Children of working Mothers is under implementation since 1st January, 2006 to provide better and improved Crèche/Day Care facilities.
- **'Pradhan Mantri Matru Vandana Yojana' (PMMVY), 2017:** Under PMMVY, a cash incentive of ₹5000/– is provided directly to the Bank/Post Office Account of Pregnant Women and Lactating Mothers for first living child of the family subject to fulfilling specific conditions relating to Maternal and Child Health.
- **National Nutrition Mission renamed as Poshan Abhiyaan, 2018:** It has been aimed at reducing the level of stunting, under-nutrition, anemia and low birth weight babies. It will create synergy, ensure better monitoring, issue alerts for timely action. Under Poshan Abhiyaan, Intensified National Iron Plus initiative (I-NIPI) and Anemia Mukt Bharat were started.

Anemia Mukt Bharat (Fig. 1.2) initiative of MoHFW, focusses on six target beneficiary groups, through six interventions and six institutional mechanisms (6 × 6 × 6 strategy) to achieve the envisaged target under the POSHAN Abhiyan by 2022.

Integrated Child Protection Scheme (ICPS)

It is a centrally sponsored scheme aimed at building a protective environment for children in difficult circumstances, as well as other vulnerable children, through Government-Civil Society Partnership

Balika Samriddhi Yojana (BSY), 1997

The objective of this centrally-sponsored scheme is to provide postdelivery grant of ₹500/- to the mother of girl child belonging to BPL families and later scholarships to the girl child when she goes to school. The aim is to enhance the status of girl child by helping society to change negative attitude about girl child, and ensure her survival. It ultimately aims at ensuring that girl child is educated and not married before the age of 18 years.

Swadhar Scheme, 2001

It was launched for the benefit of women/girls in difficult circumstances like trafficking and sexual abuse.

Ujjawala Scheme, 2007

It is a comprehensive scheme for prevention of trafficking and rescue, rehabilitation and re-integration of women and child victims of trafficking and commercial sexual exploitation.

National Legislations

The existing laws relating to children are as follows:

- **The Protection of Children from Sexual Offences (POCSO) Act, 2012:** This act defines a child as any person below the age of 18 years and provides protection to all children under the age of 18 years from the offences of sexual assault, sexual harassment and pornography. The Act provides for stringent punishments, which range from simple to rigorous imprisonment of varying periods or fine, as decided by the Court. An offence is treated as "aggravated" when committed by a person in a position of trust or authority of child such as a member of security forces, police officer, public servant, etc.
- **The National Commission for Protection of Child Rights, 2007:** It was set up under the Commission for Protection of Child Rights Act, 2005, an Act of Parliament (December 2005). The Commission's Mandate is to ensure that all laws, policies, programs, and administrative mechanisms are in consonance with the Child Rights perspective as enshrined in the Constitution of India and also the UN Convention on the Rights of the Child. The Child is defined as a person in the 0 to 18 years age group.
- **Prohibition of Child Marriage Act, 2006:** To ensure that child marriage is eradicated from within the society, the Government of India enacted this Act, replacing the earlier legislation of Child Marriage Restraint Act, 1929. This legislation is armed with enabling provisions to prohibit child marriages, protect and provide relief to victims and enhance punishment for those who abet, promote or solemnize such marriages.
- **The Juvenile Justice (Care and Protection Act) Amendment Act, 2006:** It is an Act to consolidate and amend the law relating to juveniles in conflict with law and children in need of care and protection, by providing for proper care, protection and treatment by catering to their development needs, and by adopting a child-friendly approach in the adjudication and disposition of matters in the best interest of children and for their ultimate rehabilitation. Some of the features of the Juvenile Justice Act are:
  - It provides a uniform legal framework for juvenile justice in the country to ensure that no child under any circumstances is put in jail.
  - It envisages specialized approach toward prevention and treatment of juvenile delinquency in keeping with the developmental needs of children.
  - It establishes norms and standards for administration of juvenile justice in terms of investigation, care, treatment and rehabilitation.

Figure 1.2: Anemia Mukt Bharat

- It lays down appropriate linkage and co-ordination between the formal system of juvenile justice and voluntary organizations; and defines the roles and responsibilities of both.

The first central legislation on Juvenile Justice was passed in 1986, by the Union Parliament, providing a uniform law on juvenile justice for the entire country. The JJ Act, 1986 was repealed and the Juvenile Justice (Care and Protection of Children) Act, 2000 was passed taking into consideration all the International Standards prescribed as per the Convention on the Rights of the child. Later on again it was amended in 2006.

- **The Preconception and Prenatal Diagnostic Techniques (Pcpndt), (Prohibition of Sex Selection) Act, 1994:** Pre-Natal Diagnostic Techniques (Regulation and Prevention of Misuse) Act, 1994 (PNDT), was amended in 2003 by the Parliament of India to the Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act (PCPNDT Act) to improve the regulation of the technology used in sex selection. The law provides for the Prohibition of sex selection, before and after conception and regulation of prenatal diagnostic techniques (e.g., amniocentesis and ultrasonography) for detection of genetic abnormalities, by restricting their use to registered institutions. The Act mandates compulsory registration of all diagnostic laboratories, all genetic counselling centers, genetic laboratories, genetic clinics and ultrasound clinics.
- **Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Act, 1992:** It prohibits the advertisement of infant milk substitutes and feeding bottles to ensure that no impression is given that feeding of these products is equivalent to, or better than, breastfeeding.
- **Child Labor (Prohibition and Regulation) Act, 1986:** It has been enacted to prohibit the engagement of children (who has not completed their 14 years of age) in certain employments and to regulate the hours and conditions of work of children in certain hazardous employments.
  Child Labor (Prohibition and Regulation) Amendment Bill 2016 was passed by Rajya Sabha on July 20, 2016, as per the Child Labour Act "a child is defined as any person below the age of 14, prohibits employment of a child in any employment including as domestic help."
- **Immoral Traffic Prevention Act, 1986:** It prescribes stringent action against those inducting children (below 16 years) and minors (16–18 years) in the offence of procuring, inducing or taking a person for the sake of prostitution.
- **The Children Act, 1960:** It's an Act to provide care, protection, maintenance, welfare, training, education and rehabilitation of neglected or delinquent children and for the trial of delinquent children in the Union territories.
- **The Child Marriage Restraint Act, 1929:** An Act to restrain the solemnization of child marriage. In this Act, "child" means a person who, if a male, has not completed twenty-one years of age, and if a female, has not completed eighteen years of age. It says, whoever, being a male above eighteen years of age and below twenty-one, contracts a child marriage shall be punishable with simple imprisonment which may extend to fifteen days, or with fine which may extend to one thousand rupees, or with both.

Agencies Related to Welfare of Children

These are classified as international and national agencies:

International Agencies

- **World Health Organization (WHO):** WHO is the directing and coordinating authority for health within the United Nations system. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.
- **United Nations Children's Fund (UNICEF):** UNICEF has been working in India since 1949. It is the largest UN organization, committed to working with the Government of India to ensure that each child born in this country gets the best start in life, thrives and develops to his or her full potential. UNICEF uses its community-level knowledge to develop innovative interventions to ensure that women and children are able to access basic services such as clean water, health visitors and educational facilities, and that these services are of high quality. At the same time, UNICEF reaches out directly to families to help them to understand what they must do to ensure their children thrive. It recognizes that the health, hygiene, nutrition, education, protection and social development of children are all connected. UNICEF's work is centered on children from neonatal stages to adolescence. There is also a special focus on social inclusion in all these programs.
- **Food and Agriculture Organization (FAO) 1945:** It helps the people of the world to fight against hunger and malnutrition.
- **The United Nations Educational, Scientific and Cultural Organization (UNESCO)** It helps to develop text books and promotion and teaching of national languages to the children of migrant workers, training of staff for pre-school children and assists projects to set up production of children's books and libraries, especially for destitute children.
- USAID-US Agency for International Development
- CARE-Cooperative for Assistance and Relief Everywhere

National Agencies

- **Indian Red Cross Society, 1920:** The Indian Red Cross is a voluntary humanitarian organization having a network of over 1100 branches throughout the country, providing relief in times of disasters/emergencies and promotes health and care of the vulnerable people and communities.
- **Ford Foundation, 1936:** Its aim is to reduce poverty and injustice, strengthen democratic values, promote international cooperation, and advance human achievement.
- **Kasturba Gandhi Memorial Trust, 1945:** It was established as a result of the national endeavor, led by Mahatma Gandhi, to address the issues of women in Rural India. Its activities include Maternity and Child Welfare, home for women destitute, trainings at anganwadi centers, organizing medical camps, etc.

- **All India Blind Relief Society, 1946:** It functions for the relief of the blind.
- **Indian Council for Child Welfare (ICCW), 1952:** It is a national level voluntary organization which stands for the development of child welfare. The objective is to initiate, undertake or aid directly or through its State/ Union Territory Councils or affiliated bodies, schemes for continuance of child welfare in India. Activities of ICCW include:
  - Advocating Rights of children
  - Honoring Children for Bravery, Honoring Child Artists
  - National Integration Camps/Adventure Camps
  - Creches for children of working mothers
  - Training programs for child care workers
  - Sponsorship for School Education of under-privileged children
  - Projects for Street and Working children
  - Scrutiny of Adoption Cases, Rehabilitation of Abandoned Children
  - Institutional and day care services for differently-abled children
- **Central Social Welfare Board, 1953:** It was established by a Resolution of Govt. of India to carry out welfare activities for promoting voluntarism, providing technical and financial assistance to the voluntary organisations for the general welfare of family, women and children.
- **Mobile Crèches, 1969:** The founder, Meera Mahadevan, set up the first "mobile creche" in 1969 as a spontaneous response to the neglected children she saw on the site of the Gandhi Centenary Exhibition, in Delhi. From that rudimentary shelter, the journey began toward gaining entry into other construction sites and ensuring basic minimum care for the children of the vast migrant labor force belonging to the poorest strata of society. It provides childcare services to 6000 children in a year, at 21-day care centers at construction sites across Delhi, NOIDA (Uttar Pradesh) and Gurgaon (Haryana), from 9.00 a.m. to 5.00 p.m., six days a week. It works with corporate partners, including construction companies, and advocate for right policies and programs for children with the state/central governments.
- **Child Rights and You (CRY), 1979:** It is an NGO, working towards creating happier and healthier childhood. It works in areas such as education, malnutrition, immunization, protection from trafficking, child marriage and child abuse.
- **Smile Foundation, 1982:** It identifies out-of-school children from remote villages, tribal areas and urban slums, and provides them quality education. In addition to this, it also looks after their health, nutrition, and holistic development through participation in co-curricular activities.
- **Childline, 1996:** It is India's first 24-hour, free, emergency phone service **(1098)** for children in need of aid and assistance. It responds to the emergency needs of children and links them to services for their long-term care and rehabilitation. It is a platform bringing together the Ministry for Women and Child Development, Government of India, Department of Telecommunications, street and community youth, non-profit organizations, academic institutions, the corporate sector and concerned individuals. It works for the protection of the rights of all children in general. But special focus is on all children in need of care and protection, especially the more vulnerable sections, which include street children, child laborers, victims of flesh trade, differently abled children, substance abuse, etc.
- **SOS Children's Villages:** SOS Children's Villages take action for children as an independent non-governmental social organization. It works in the spirit of United Nations Convention on the rights of the child and promotes these rights around the world. This organization pioneers a family approach to the long-term care of orphaned and abandoned children. At present there are about 31 children's villages taking care of around 6000 children in the country. The concept is based on four principles which are as follows:
  1. **The mother:** Each child has a caring parent
  2. **Brothers and sisters:** Family ties grow naturally
  3. **The house:** Each family creates its own home
  4. **The village:** The SOS family is a part of the community

NATIONAL HEALTH PROGRAMS RELATED TO CHILDREN

The **National Health Policy of 1983** and the **National Health Policy of 2002** have served well in guiding the approach for the health sector in the Five-Year Plans. The National Health Policy, 2017 (**NHP, 2017**) seeks to reach everyone in a comprehensive integrated way to move toward wellness. It aims at achieving universal health coverage and delivering quality health care services to all at affordable cost. The specific child-related goals are:

- Reduce Under Five Mortality to 23 by 2025 and MMR from current levels to 100 by 2020.
- Reduce infant mortality rate to 28 by 2019.
- Reduce neonatal mortality to 16 and still birth rate to "single digit" by 2025.

The Ministry of Health, Government of India with help of central health council has taken several initiatives in launching programs aimed at controlling or eradicating diseases which cause considerable morbidity and mortality in India. New programs are being added and existing ones are modified in response to changing epidemiology of disease, host or parasites. The important National Health Programs are listed here:

Maternal and Child Health Program, 1951

The goal of this program was to promotive, preventive and planned health care activities for mothers and children.

The program started in 1951 with family planning services, and was called the **Family Planning Program**; it continued under this name until about 1977. Family planning methods were propagated among public. In 1971, Medical Termination of Pregnancy (MTP) was liberalized as a health measure to save women from unhealthy abortions resulting in morbidity and mortality.

After 1977, Maternal and Child Health (MCH) services became an important component of the program's services and the program was renamed as the **Family Welfare Program**. In the late eighties, the scope of MCH services expanded in the form of CSSM including activities like:

- Immunization
- Oral rehydration therapy, acute respiratory infections treatment and provision of 6 monthly doses of vitamin A to children
- Creation of first referral units (FRUs) for immediate and improved obstetric care of mothers.

After the international conference on population and development in 1994, the package of services became FP + CSSM + Prevention of RTI/STD and AIDS, and the program was called the Reproductive and Child Health (RCH) approach to family welfare. It believes in the philosophy that "people have the ability to reproduce and regulate their fertility, women are able to go through pregnancy and child birth safely, the outcome of pregnancies is successful in terms of maternal and infant survival and well-being and couples are able to have sexual relations free of fear of pregnancy and of contracting diseases." The program also covers the reproductive health needs of adolescents, reproductive rights, women's empowerment and female literacy.

School Health Program, 1977

The National School Health Program was launched in 1977 as Centrally sponsored scheme.

Objective of the Program

- To prepare younger generation to adopt measures to remain healthy so as to help them to make the best use of educational facilities to utilize in a productive and constructive manner, to enjoy recreation and to develop concern for others.
- To help the younger generations to become healthy and useful citizens who will be able to perform their role effectively for the welfare of themselves, their families, the community at large and the country as a whole.
- Promotion of positive health of School Children.
- Prevention of disease.
- Early diagnosis, treatment, follow up and referral.
- Awakening of health consciousness.
- Provision of healthful environment.

Strategies

- To conduct as many health check-up as possible among the School Children by increasing the number of school visit in every district.
- To train more medical officers and school teachers at every district on school health Program particularly on personal hygiene, household and school environment sanitation, detection of more children with health problems and give treatment and follow up.

Diarrheal Disease Control Program, 1978

The main objective of the program was to prevent death due to dehydration caused by diarrheal diseases among children under 5 years of age due to dehydration. Health education aimed at rapid recognition and appropriate management of diarrhoea has been a major component of the CSSM. Under the RCH program, ORS is supplied in the kits to all sub-centers in the country every year.

Immunization Program, 1978

1978: Immunization Program in India was introduced in **1978** as **Expanded Program of Immunization (EPI)** by the Ministry of Health and Family Welfare.

1985: EPI was modified as **Universal Immunization Program (UIP).** The objectives of the program were as follows:

- Rapidly increasing immunization coverage
- Improving the quality of services
- Establishing a reliable cold chain system to the health facility level
- Introducing a district wise system for monitoring of performance
- Achieving self-sufficiency in vaccine production

The infants are immunized against **six** vaccine preventable diseases, i.e., tuberculosis, diphtheria, pertussis, poliomyelitis, measles and tetanus.

2014: To accelerate the coverage of immunization, **Mission Indradhanush was envisaged** and implemented since 2015 to rapidly increase the full immunization coverage to 90%. The Mission Indradhanush, depicting seven colors of the rainbow, targets to immunize all children against seven vaccine preventable diseases, namely Diphtheria, Pertussis, Tetanus, Childhood Tuberculosis, Polio, Hepatitis B and Measles.

2017: Intensified Mission Indradhanush was launched.

Acute Respiratory Infection Control Program (ARI), 1990

The ARI Control Program was started in India in 1990. It sought to introduce scientific protocols for case management of pneumonia with co-trimoxazole. Initially 14 pilot districts were selected and later on new districts were included. A review of the health facility done in 1992 revealed that

although 87% of personnel were trained and the drug supply was regular, there were problems in correct case classification and treatment. Since 1992, the program was implemented as part of CSSM and later with RCH. Cotrimoxazole tablets are supplied as part of drug kit for use by different category of workers for managing cases of Pneumonia. Under RCH-II, activities are proposed to be implemented in an integrated way with other child health interventions.

Child Survival & Safe Motherhood Program (CSSM): (1992–1996)

It is aimed at addressing the major causes of maternal and childhood mortality.

Components of CSSM Program

- **Advise on breastfeeding:** Exclusive breastfeeding in the first 6 months of life to be propagated as an ideal method of feeding.
- **Care of newborn infant:** The main aim of child survival program is to reduce infant mortality. Since neonatal deaths constitute almost half of infant mortality, it is necessary to pay attention to such measures which reduce mortality like safe delivery services, exclusive breastfeeding and quick referral of sick neonates.
- **Resuscitation:** If the infant fails to cry immediately after birth, the initial steps of resuscitation must be started.
- **Low birth weight infants:** The TBA and other workers must be familiarized with the features of illnesses in LBW babies and the baby referred to a PHC.
- **Pregnant women:**
  - **Essential care for all:** It includes registration by 12–16 weeks, antenatal check-up at least three times, immunize with TT, give Iron and Folic acid 1 OD × 100 days, treat those with clinical anemia: 2 OD × 100 days, deworm with mebendazole during 2nd/3rd trimester, (where prevalence rates of hookworm infestation are high), safe and clean delivery services, prepare the woman for exclusive breastfeeding and timely weaning, postnatal care, including services for limiting and spacing births.
  - **Early detection of complications:** Like anemia, bleeding, weight gain of more than 3 kg in a month, and systolic BP of 140 mm Hg or more or diastolic BP of 90 mm Hg or more, fever 39°C and above after delivery or after abortion and prolonged or obstructed labor.
  - **Emergency care for those who need it:** It includes early identification of obstetric emergencies, provide initial management and refer to referral units using fastest available mode of transport.
  - **Women in the reproductive age group:** It involves counseling on small family norms, spacing of birth, information on MTP, IUD and family planning services.

Reproductive and Child Health Program (1997, 2005)

The program was launched on 15th October 1997, based on International Conference on Population and Development held at Cairo in 1994. The program aims to universalize the immunization, ante-natal care, skilled attendance during delivery as well as for common childhood ailments, improving neonatal care in at all levels, hospital, homes and community to substantially reduce the infant mortality. This program aimed at eradication of polio virus while selectively introducing Hepatitis B. The scheme is partly funded by the World Bank and European Commission and run by Department of Health and Family Welfare.

The second phase of Reproductive and Child Health (RCH) program, i.e., RCH–II commenced from 1st April, 2005. The main objective of the program is to bring about a change in mainly three critical health indicators, i.e., reducing total fertility rate, IMR and MMR with a view to realizing the outcomes envisioned in the MDGs, the National Population Policy 2000, and the Tenth Plan Document, the National Health Policy 2002 and Vision 2020 India. Major Elements of RCH Program are listed in Table 1.1.

Table 1.1: Major elements of RCH program

Reproductive health elements	Child survival elements
• Responsible and healthy sexual behavior • Interventions to promote safe motherhood • Essential obstetric care for all prevention of unwanted pregnancies • Increase access to contraceptives, emergency contraceptives • Safe abortion pregnancy and delivery services • First Referral Units (FRUs) for emergency obstetric care • Management of RTIs/STDs • Infertility & gynecological disorders • Referral facilities by government/private sector for pregnant woman at risk • Reproductive health services for adolescent health	• Essential newborn care • Prevention and management of vaccine preventable disease • Urban measles campaign • Elimination of neonatal tetanus • Cold chain system, polio Eradication: Pulse Polio Programs • Hepatitis B Vaccine, MMR Vaccine • Global alliance for vaccine and immunization • Diarrheal control program and ORS program • Prevention and control of vitamin A deficiency among children

Table 1.2: Strategies under RCH II

Essential obstetrical care	Emergency obstetrical care	Strengthening referral system
• Institutional delivery • Skilled attendant at delivery • Policy decision	• Operationalizing first referral units • Operationalizing PHCs and CHCs for round the clock delivery services	• Training of doctors and nurses in life saving anesthetic skills for emergency obstetric and neonatal care • Setting up of blood storage centers at FRUs according to GoI guidelines.

Essential Components of RCH Program

- Prevention and management of unwanted pregnancy.
- Maternal care that includes antenatal, delivery and postpartum services.
- Child survival services for newborn and infants.
- Management of Reproductive Tract Infection (RTIs) and Sexually Transmitted Infections (STIs).

The major strategies under RCH II are shown in Table 1.2.

Integrated Management of Neonatal and Childhood Illness (IMNCI), 1996

Integrated Management of Neonatal and Childhood Illness (IMNCI) was launched in 1996 by WHO and UNICEF. It is an integrated strategy for delivering a package of child health services, which takes into account many factors that must be addressed to ensure the well-being of the whole child. It is based on the rationale that decline in child mortality rates is not necessarily dependent on the use of sophisticated and expensive technologies but rather on a holistic approach that combines the use of strategies that are cheap and can be made universally available and accessible to all. The strategy also includes early identification of serious condition and urgent referrals to the nearest health facilities.

In India, neonatal deaths account for almost 50% all under 5 child deaths, therefore GoI extended IMCI to include neonatal health also calling it as IMNCI (Integrated management of neonatal and childhood illness). IMNCI is a component of the World Bank supported RCH II program. It is being implemented through a joint effort of UNICEF, National Rural Health Mission (NRHM), Government and other child survival partners. These guidelines recommend standardized case management procedures based on two age categories:

- Up to 2 months and
- 2 months to 5 years.

The strategy includes three main components:

1. Improvements in the case-management skills of health staff through the provision of locally-adapted guidelines on Integrated Management of Neonatal and Childhood Illness and activities to promote their use.
2. Improvements in the overall health system required for effective management of neonatal and childhood illness.
3. Improvements in family and community health care practices.

National Health Mission, 2013

National Rural Health Mission (NRHM) was launched in April 2005 and it morphed into National Health Mission (NHM) with launch of National Urban Health Mission (NUHM) during 2013. Thereafter, NRHM and NUHM became two sub-missions under the overarching NHM. The main programmatic **components** include Health system strengthening in rural and urban areas, Reproductive Maternal-Neonatal-Child and Adolescent Health (RMNCH+A) and Communicable and Non-Communicable Diseases. The NHM envisages achievement of universal access to equitable, affordable and quality healthcare services that are accountable and responsive to people's needs.

Initiatives under NHM

- **Janani Suraksha Yojana (JSY) 2005,** aims to reduce maternal mortality among pregnant women by encouraging them to deliver in government health facilities. Under the scheme, cash assistance is provided to eligible pregnant women for giving birth in a government health facility.
- **Janani Shishu Suraksha Karyakram (JSSK) 2011:** This scheme entitles all pregnant women delivering in public health institutions to free and no expense delivery, including caesarean section. The free entitlements include free drugs, diagnostics, diet, blood, free transport and exemption from all kinds of user charges. Similar entitlements are available for all sick infants (up to 1 year of age) accessing public health institutions.
- **Facility based newborn care:** A continuum of newborn care has been established with the launch of home based and facility based newborn care components. It ensures that every newborn receives essential care right from the time of birth and first 48 hours at the health facility and then at home during the first 42 days of life. Newborn Care Corners (NBCCs) are established at delivery points to provide essential newborn care at birth, while Special Newborn Care Units (SNCUs) at District Hospital/Medical College and Newborn Stabilization Units (NBSUs) at FRUs provide care for sick newborns.
- **F-IMNCI:** It is the integration of the facility based care package with the IMNCI package, to empower the health personnel with the skills to manage newborn and childhood illness at the community level as well as at the facility. Facility-based IMNCI focuses on providing appropriate skills for inpatient management of major causes of Neonatal

and Childhood mortality such as asphyxia, sepsis, low birth weight and pneumonia, diarrhoea, malaria, meningitis, severe malnutrition in children. This training is being imparted to Medical officers, Staff nurses and ANMs at CHC/FRUs and 24 × 7 PHCs where deliveries are taking place. The training is for 11 days.

- **Navjat Shishu Suraksha Karyakram (NSSK), 2012:** It aims to train health personnel in basic newborn care and resuscitation, has been launched to address care at birth issues i.e., Prevention of Hypothermia, Prevention of Infection, Early initiation of Breastfeeding and Basic Newborn Resuscitation. Newborn care and resuscitation is an important starting-point for any neonatal program and is required to ensure the best possible start in life. The objective of this new initiative is to have a trained health personal in Basic newborn care and resuscitation at every delivery point. The training is for 2 days and is expected to reduce neonatal mortality significantly in the country.

Rashtriya Bal Swasthya Karyakram (RBSK), 2013

Rashtriya Bal Swasthya Karyakram (RBSK) is an important initiative aiming at early identification and early intervention for children from birth to 18 years to cover 4 'D's viz. Defects at birth, Deficiencies, Diseases, Development delays including Disability (Fig. 1.3). The services aim to cover children of 0-6 years of age in rural areas and urban slums in addition to children enrolled in classes 1st to 12th in Government and Government aided Schools. It is expected that these services will reach to about 27 crores children in a phased manner.

Reproductive, Maternal, Newborn, Child and Adolescent Health, 2013

RMNCH+A launched in 2013 looks to address the major causes of mortality among women and children as well as the delays in accessing and utilizing health care and services. The RMNCH+A strategic approach has been developed to provide an understanding of 'continuum of care' to ensure equal focus on various life stages. Priority interventions for each thematic area have been included in this to ensure that the linkages between them are contextualized to the same and consecutive life stage. It also introduces new initiatives like the use of Score Card to track the performance, National Iron + Initiative to address the issue of anemia across all age groups and the Comprehensive Screening and Early interventions for defects at birth, diseases and deficiencies among children and adolescents. The RMNCH+A appropriately directs the States to focus their efforts on the most vulnerable population and disadvantaged groups in the country. It also emphasizes the need to reinforce efforts in those poor performing districts that have already been identified as the high focus districts.

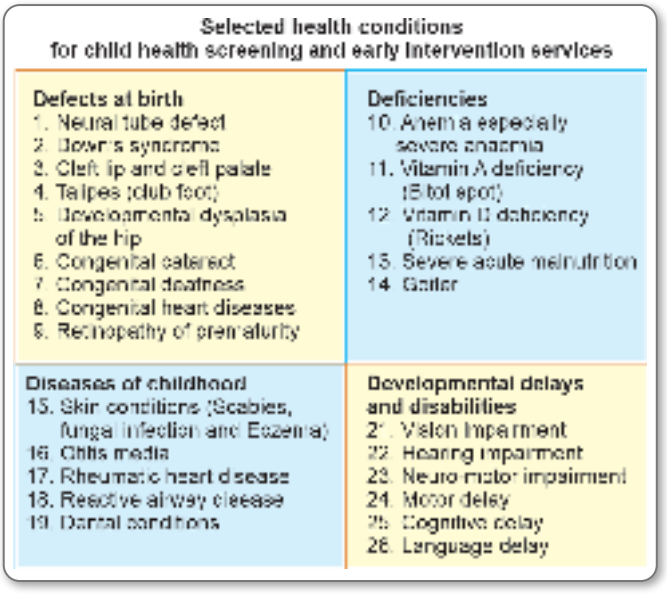

Figure 1.3: 4Ds of Rashtriya Bal Swasthya Karyakram

Objectives

The 12th Five-Year Plan (2012–17) defined the national health outcomes and the three goals that are relevant to RMNCH+A strategic approach as follows:

- Reduction of Infant Mortality Rate (IMR) to 25 per 1,000 live births by 2017
- Reduction in Maternal Mortality Ratio (MMR) to 100 per 100,000 live births by 2017
- Reduction in Total Fertility Rate (TFR) to 2.1 by 2017

In **2014** the Planning commission was abolished and in **2015** the **NITI Aayog**, (National Institution for Transforming India) was established with the aim to achieve SDG. NITI Aayog is undertaking the extensive exercise of measuring India and its States' progress toward the SDGs for 2030, culminating in the development of the first SDG India Index.

Rashtriya Kishor Swasthya Karyakram (RKSK), 2014

The MoHFW launched a health program for **adolescents**, in the age group of 10–19 years, which targets their nutrition, reproductive health and substance abuse, among other issues. The key principle of this program is adolescent participation and leadership, equity and inclusion, gender equity and strategic partnerships with other sectors and stakeholders. The program envisions enabling all adolescents in India to realize their full potential by making informed and responsible decisions related to their health and well-being and by accessing the services and support they need to do so.

Objectives

- Improve nutrition, reduce the prevalence of malnutrition and iron deficiency anemia among adolescent girls and boys through weekly iron and Folic Acid Supplementation (WIFS)
- Improve sexual and reproductive health (through menstrual hygiene scheme), reduce teenage pregnancies.
- Enhance mental health
- Prevent injuries and violence

- Prevent substance misuse
- Address NCDs. Promote behavior change in adolescents to prevent NCDs such as hypertension, stroke, cardio-vascular diseases and diabetes

WIFS: The Ministry of Health and Family Welfare has launched the Weekly Iron and Folic Acid Supplementation (WIFS) Program to meet the challenge of high prevalence and incidence of anemia amongst adolescent girls and boys through supervised weekly ingestion of IFA supplementation and biannual helminthic control.

India Newborn Action Plan (INAP), 2014

It was launched in September 2014, for accelerating the reduction of preventable newborn deaths and stillbirths in the country - with the goal of attaining 'Single Digit Neonatal Mortality Rate (NMR) by 2030' and 'Single Digit Still Birth Rate by 2030'.

Ayushman Bharat Yojna (National Health Protection Scheme), 2017

Ayushman Bharat, a flagship scheme of Government of India, was launched as recommended by the National Health Policy 2017, to achieve the vision of Universal Health Coverage (UHC). This initiative has been designed to meet Sustainable Development Goals (SDGs) and its underlining commitment, which is to "leave no one behind." Ayushman Bharat adopts a continuum of care approach, comprising of two inter-related components, which are:

- **Health and Wellness Centers (HWCs):** These are envisaged to deliver an expanded range of services to address the primary health care needs of the entire population in their area, expanding access, universality and equity close to the community.
- **Pradhan Mantri Jan Arogya Yojana (PM-JAY):** It is the largest health assurance scheme in the world which aims at providing a health cover of Rs. 5 lakhs per family per year for secondary and tertiary care hospitalization to over 10.74 crores poor and vulnerable families.

Surakshit Matritva Aashwasan (SUMAN) 2019

The aim is to assure, dignified and respectful delivery of quality healthcare services at no cost and zero tolerance for denial of services to any woman and newborn visiting a public health facility in order to end all preventable maternal and newborn deaths and morbidities and provide a positive birthing experience.

National programs related to control of nutritional deficiencies and disorders include:

- **Midday Meal Program, 1961:** also known as School Lunch Program, started earlier by MHRD, now Ministry of Education.

  Objective: Is to attract more children for admission to schools and retain them so that literacy improvement of children could be brought about. Midday Meal improves three areas:
  - School attendance
  - Reduced dropouts
  - A beneficial impact on children's nutrition

  Principles to be followed while formulating mid-day meals for school children:
  - Meal should be supplement and not a substitute to the home diet.
  - Meal should supply at least 1/3rd of the total energy requirement and half of the protein need.
  - Cost of the meal should be reasonably low.
  - Easy to cook, devoid of complicated cooking processes.
  - Use locally available food to reduce the cost of the meal.
  - Menu should be frequently changed to avoid monotony.

  Midday Meal Scheme (1995): Also known as National Program of Nutritional Support to Primary Education. It is a centrally sponsored program launched on 15th August 1995 and revised in 2004.

  Objectives: 1. Universalization of primary education by increasing enrolment, retention and attendance. 2. Impacting on nutrition of students in primary classes.

  Facilities are:
  - Free supply of food grain from nearest Food Corporation of India godown at the rate of 100gm/student/day.
  - Subsidy for transport of food grain.
  - Each meal provides minimum 300 calories and 8–12 g of protein.
- **Vitamin a Prophylaxis Program, 1970:** Vitamin A prophylaxis program aims at providing vitamin A – 2 lakh IU (110 mg retinol palmitate) to all preschool children, every 6 months. A vitamin A supplementation program has been in operation in India since 1970. It is a part of National Program for Control of Blindness. It utilizes technology developed by National Institute of Nutrition, Hyderabad. It has helped to decrease the preventable blindness in the community.
- **National Nutrition Anaemia Prophylaxis Program, 1970:** The program was launched in 1970 to prevent nutritional anemia in mothers and children. Under this program, the expected and nursing mothers as well as acceptors of family planning are given one tablet of iron and folic acid containing 60 mg elementary iron which was raised to 100 mg elementary iron, however folic acid content remained same (0.5 mg of folic acid) and children in the age group of 1–5 years are given one tablet of iron containing 20 mg elementary iron (60 mg of ferrous sulphate and 0.1 mg of folic acid) daily for a period of 100 days. This program is being taken up by MCH, Division of MOHFW. Now it is a part of RCH program.
- **Special Nutrition Program, 1970:** Launched in 1970, it aims to provide supplementary feeding of about

300 calories and 10 g of protein to pre-school children and about 500 calories and 25 g of protein to expectant and nursing mothers for six days a week. This program was operated under Minimum Needs Program. The program was taken up in rural areas inhibited predominantly by lower socioeconomic groups in tribal and urban slums.

- **Balwadi Nutrition Program, 1970:** Fund for the supplementary feeding of Balwadi Nutrition program is given by the Central Government which was launched in 1970-1971 through voluntary organizations. It provides 300 calories and 10 g of protein per child (3–5 years) per day for 270 days a year.
- **Applied Nutrition Program, 1973:** The Applied Nutrition Program (ANP) was introduced as a Pilot Scheme in Orissa in 1963 which later on extended to Tamil Nadu and Uttar Pradesh with the objectives of:
  - Promoting production of protective food such as vegetables and fruits
  - Ensure their consumption by pregnant and nursing mothers and children

During 1973, it was extended to all the state of the country. The nutritional education was the main focus and efforts were directed to teach rural communities through demonstration how to produce food for their consumption through their own efforts. The beneficiaries are children between 2 and 6 years and pregnant and lactating mothers. Nutrition worth of 25 paise per child per day and 50 paise per woman per day are provided for 52 days in a year. No definite nutrient content has been specified. The idea is to provide better seeds and encourage kitchen gardens, poultry farming, beehive keeping, etc., but this program did not produce any impact.

INTERNATIONALLY ACCEPTED RIGHTS OF THE CHILD

The United Nations Convention on the Rights of the Child is a human rights treaty which sets out the civil, political, economic, social, health and cultural rights of children. Nations that approve this convention are bound to it by an international law. Compliance is monitored by the UN Committee. India is a party to the UN declaration on the Rights of the Child, (1959) thus it adopted a National Policy on Children in 1974. The policy reiterated the constitutional provisions for adequate services to children, both before and after birth and through the period of growth to ensure their full physical, mental and social development.

Declaration of the rights of the child, adopted by UN General Assembly Resolution 1386 (XIV) of 10 December 1959 states that:

- The child shall enjoy all the rights set forth in this Declaration. Every child, without any exception whatsoever, shall be entitled to these rights, without distinction or discrimination on account of race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status, whether of himself or of his family.
- The child shall enjoy special protection, and shall be given opportunities and facilities, by law and by other means, to enable him to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner and in conditions of freedom and dignity.
- The child shall be entitled from his birth to a name and a nationality.
- The child shall enjoy the benefits of social security. He shall be entitled to grow and develop in health; to this end, special care and protection shall be provided both to him and to his mother, including adequate pre-natal and post-natal care. The child shall have the right to adequate nutrition, housing, recreation and medical services.
- The child who is physically, mentally or socially handicapped shall be given the special treatment, education and care required by his particular condition.
- The child, for the full and harmonious development of his personality, needs love and understanding. He shall, wherever possible, grow up in the care and under the responsibility of his parents, and in any case, in an atmosphere of affection and of moral and material security; a child of tender years shall not, except in exceptional circumstances, be separated from his mother. Society and the public authorities shall have the duty to extend particular care to children without a family and to those without adequate means of support.
- The child is entitled to receive education, which shall be free and compulsory, at least in the elementary stages. He shall be given an education which will promote his general culture and enable him, on a basis of equal opportunity, to develop his abilities, his individual judgement, and his sense of moral and social responsibility, and to become a useful member of society.
- The child shall in all circumstances be among the first to receive protection and relief.
- The child shall be protected against all forms of neglect, cruelty and exploitation. He shall not be the subject of traffic, in any form. The child shall not be admitted to employment before an appropriate minimum age of 18 years.
- The child shall be protected from practices which may foster racial, religious and any other form of discrimination. He shall be brought up in a spirit of understanding, tolerance, friendship among peoples, peace and universal brotherhood.

The constitution of India guarantees all children certain rights, which have been specially included for them. These include:

- Right to free and compulsory elementary education for all children in the 6–14 years age group (Article 21A).
- Right to be protected from any hazardous employment till the age of 14 years (Article 24).

- Right to be protected from being abused and forced by economic necessity to enter occupations unsuited to their age or strength (Article 39(e)).
- Right to equal opportunities and facilities to develop in a healthy manner and in conditions of freedom and dignity and guaranteed protection of childhood and youth against exploitation and against moral and material abandonment (Article 39 (f)).

Besides these, they also have rights as equal citizens of India, just as any other adult male or female:

- Right to equality (Article 14).
- Right against discrimination (Article 15).
- Right to personal liberty and due process of law (Article 21).
- Right to being protected from being trafficked and forced into bonded labor (Article 23).
- Right of weaker sections of the people to be protected from social injustice and all forms of exploitation (Article 46).

CHANGING TRENDS IN CHILD HEALTH

The following are the changing trends in pediatric nursing:

- **Atraumatic care:** It is the provision of therapeutic care in such a way as to minimize the physical and emotional distress to children and families. The goal of atraumatic care is to "first do no harm", and two principles that lead to achieving this goal are: (a) prevent or minimize bodily injury and pain and (b) promote a sense of control.
- **Primary nursing:** It is a method of nursing practice which emphasizes continuity of care by having one nurse care for a small group of inpatients within a nursing unit of a hospital. The "primary nurse" is responsible for coordinating all aspects of care for the same group of patients throughout their stay in a given area.
- **Kangaroo mother care:** It is a universally available and biologically sound method of care for all newborns, but in particular for premature babies, with three components: 1. Skin-to-skin Contact, 2 Exclusive breastfeeding and 3. Support to the mother infant dyad. Kangaroo care offers the most benefits for preterm and low birth weight infants, who experience more normalized temperature, heart rate, and respiratory rate, increased weight gain, fewer nosocomial infections and reduced incidence of respiratory tract disease.
- **Nursing process approach:** The nursing process is goal-oriented method of caring that provides a framework to nursing care. It involves five major steps (ADPIE):
  A - Assess (what data is collected?)
  D - Diagnose (what is the problem?)
  P - Plan (how to manage the problem)
  I - Implement (putting plan into action)
  E - Evaluate (did the plan work?)
- **Family-centered care:** It is based on the understanding that the family is the child's primary source of strength and support. Family-centered care improves patient and family outcomes, increases patient and family satisfaction, builds on child and family strengths, increases professional satisfaction, decreases health care costs, and leads to more effective use of health care resources.
- **Evidence-based practice**: It is defined as the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. This can help in improving patient safety, reducing health care costs and delivering best quality care. The practice of evidence-based nursing involves: 1. formulation of an answerable question; 2. systematic searching for the research evidence that could be used to answer the question; 3. Critical appraisal of the found literature; 4. Applying evidence in practice.
- **Child-oriented environment:** It refers to organizing the hospital stay in such a way that child feels comfortable and secure. The wards and ICUs must have colorful pictures. A playroom must be available where they can play with toys or learn drawing. The surroundings must be safe, the drugs must be kept in closed, locked cabinet and non-skid surfaces.
- **Cost containment:** It refers to providing high quality care with minimum resources which are available.
- **High-tech high-touch approach:** It means balancing between high-tech skills and high touch skills of life. Human element of high touch allows an emotional attachment to take place. Child needs to be touched, cuddled and hugged.

Summary

The concept of child care has progressed immensely from mother centric care to family centered care and promotion of vaccinations. There have been many recent changes in health care delivery systems including health and wellness centers; the laws, health programs, policies and schemes specific related to children. Focus on preventive aspects and evidence-based care is emphasized.

Assess Yourself

1. List the internationally accepted rights of child.
2. Discuss the changing trends in child health nursing.
3. Explain the latest initiatives of government to achieve goals related to child health.
4. Write full forms of:
   - JSY, JSSY, NSSK, F-IMNCI, UNICEF, CRY, ASHA, ICDS, SNCU, FRU
   - RKSK, CSSM, RMNCH A, RBSK, POCSO

Chapter 2

Preventive Pediatrics

Chapter Outline

- Introduction
- Immunization
- Vaccines
- Under Five-Clinics/Well Baby Clinics
- Child Morbidity and Mortality
- Infant Morbidity and Mortality
- Accidents in Young Children

INTRODUCTION

Preventive pediatrics is defined as the prevention of diseases and the promotion of physical, mental, and social well-being for children to reach optimal growth and development. It includes exclusive breastfeeding, timely immunization, understanding the causes of infant mortality and morbidity and taking steps to prevent them.

IMMUNIZATION

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease.

Immunity is a biological term that refers to a state of having sufficient biological defenses to avoid infection, disease, or another unwanted biological invasion. There are two components of immune system, namely, specific and non-specific. The non-specific components will act as a barrier or as eliminator destroying wide range of pathogens irrespective of their antigenic specificity, whereas, the specific components of the immune system will adapt themselves to generate pathogen-specific immunity whenever a new disease is encountered by our immune system.

Types of Immunity

Innate Immunity or Nonspecific Immunity

It is the natural resistance with which a person is born. It provides resistance through several physical, chemical, and cellular approaches. Microbes enter into the skin through the epithelial layers and physical barriers that line our skin and mucous membranes. Subsequent general defenses include secreted chemical signals (cytokines), antimicrobial substances, fever, and phagocytes activity associated with the inflammatory response. The phagocytes express cell surface receptors that can bind and respond to common molecular patterns expressed on the surface of invading microbes. Through these approaches, innate immunity can prevent the colonization, entry, and spread of microbes.

Acquired/Adaptive Immunity

Depending on how the immunity was introduced, acquired/adaptive immunity is sub-divided into two major types: naturally acquired and artificially acquired. **Naturally acquired immunity** occurs naturally (unintentionally) through the contact with a disease-causing agent, whereas **artificially acquired immunity** develops when the disease causing agent is deliberately introduced inside the body from outside such as by vaccination. Naturally and artificially

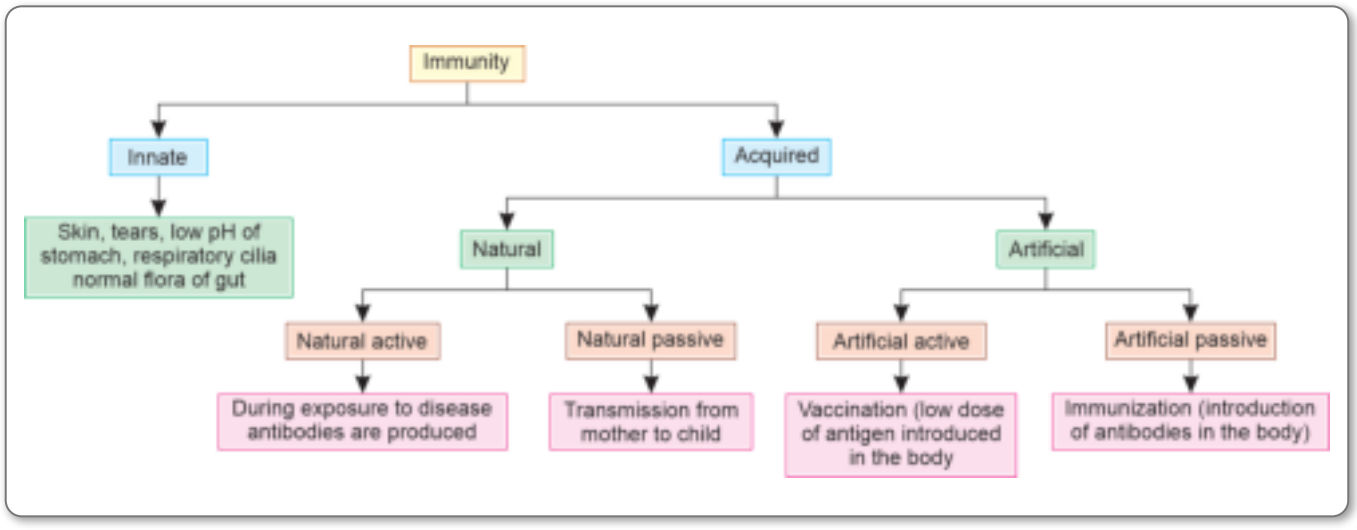

Figure 2.1: Types of immunity

acquired immunity can be further subdivided into active and passive immunity (Fig. 2.1).

Active Immunity

Active immunity results when exposure to a disease organism triggers the immune system to produce antibodies to that disease. Exposure to the disease organism can occur through infection with the actual disease (resulting in natural immunity), or introduction of a killed or weakened form of the disease organism through vaccination (vaccine-induced immunity). Either way, if an immune person comes in contact with that disease in the future, their immune system will recognize it and immediately produce the antibodies needed to fight it.

Active immunity is long-lasting, and sometimes life-long.

Passive Immunity

Passive immunity is provided when a person is given antibodies to a disease rather than producing them through his or her own immune system.

A newborn baby acquires passive immunity from its mother through the placenta. A person can also get passive immunity through antibody-containing blood products such as immune globulin, which may be given when immediate protection from a specific disease is needed. This is the major advantage to passive immunity; protection is immediate, whereas active immunity takes time (usually several weeks) to develop.

However, passive immunity lasts only for a few weeks or months. Only active immunity is long-lasting.

Immunization is one of the most well-known and effective methods of preventing childhood diseases. With the implementation of Universal Immunization Program (UIP), significant achievements have been made in preventing and controlling the Vaccine Preventable Diseases (VPDs). Immunization has to be sustained as a high priority to further reduce the incidence of all VPDs, control measles, eliminate tetanus and eradicate poliomyelitis.

India has one of the largest Universal Immunization Programs (UIP) in the world in terms of quantities of vaccines used, number of beneficiaries (27 million infants and 30.2 million pregnant women) covered, geographical spread (29 States and 7 Union Territories) and manpower involved. The national immunization schedule is summarized in Table 2.1.

VACCINES

Vaccines are produced from the same microorganisms or toxins that cause disease, but in either case are modified so as to be harmless to humans. Three main substances are used for the production of vaccines:

1. **LIVE** microorganisms, e.g., weakened measles and polio viruses or tuberculosis bacteria.
2. **KILLED** microorganisms, e.g., pertussis microorganisms used in DPT production.
3. **TOXOIDS**, e.g., inactivated toxins such as tetanus toxoid and diphtheria toxoid.

In addition, some vaccines are produced using genetic engineering technologies, i.e.,, recombinant DNA hepatitis B vaccine.

Cold Chain

The cold chain system is a means for storing and transporting vaccines in a potent state from the manufacturer to the person being immunized. This is a very important component of an immunization program, since all vaccines lose potency over time, especially if exposed to heat, and in addition, some also lose their potency when frozen. It is pointless to immunize

Table 2.1: National immunization schedule

Vaccine	When to give	Dose	Route	Site
For pregnant women*				
TT-1	Early in pregnancy	0.5 mL	IM	Upper arm
TT-2	4 weeks after TT1	0.5 mL	IM	Upper arm
TT-Booster	If received 2 TT doses in pregnancy within the last 3 years	0.5 mL	IM	Upper arm
For Infants				
BCG	At birth or as early as possible till one year of age	0.1 mL (0.05 mL until 1 month of age)	ID	Left upper arm
Hepatitis B—Birth dose	At birth or as early as possible within 24 hours	0.5 mL	IM	Anterolateral side of mid-thigh
OPV-0	At birth or as early as possible within the first 15 days	2 drops	Oral	Oral
OPV-1, 2, 3	At 6, 10, 14 weeks (can be given till 1 year of age)	2 drops	Oral	Oral
Pentavalent 1, 2, 3 (contains DPT, Hep B and Hib)	At 6, 10, 14 weeks (can be given till 1 year of age)	0.5 mL	IM	Anterolateral side of mid-thigh
Rotavirus	At 6, 10, 14 weeks (can be given till 1 year of age)	5 drops	Oral	Oral
IPV	Two fractional doses at 6 and 14 weeks of age	0.1 mL	I/D	Right upper arm
Measles/MR 1st dose	9 completed months–12 months (can be given till 5 years of age)	0.5 mL	S/C	Right upper arm
Japanese encephalitis (JE)-1	9 completed months–12 months	0.5 mL	S/C	Left upper arm
Vitamin A (1st dose)	9 completed months–12 months with measles	1 mL (1 Lakh IU)	Oral	Oral
For Children				
DPT Booster-1	16–24 months	0.5 mL	IM	Anterolateral side of mid-thigh
Measles/ MR 2nd Dose	16–24 months	0.5 mL	S/C	Right upper arm
OPV Booster	16–24 months	2 drops	Oral	Oral
JE 2	16–24 months	0.5 mL	S/C	Left upper arm
Vitamin A (2nd to 9th Dose)	16–24 months. Then everyone dose every 6 months up to 5 years of age	2 mL (2 lakh IU)	Oral	Oral
DPT Booster-2	5–6 years	0.5 mL	IM	Upper arm
TT	10 and 16 years	0.5 mL	IM	Upper arm
*Give TT to a woman in labor if she has not previously received TT				

with impotent vaccine. Once vaccine potency is lost, it cannot be regained. The damaged vaccines must be destroyed, leading to inadequate vaccine stocks and wastage of expensive vaccines. For a summary of vaccine sensitivities, see Table 2.2.

The cold chain system comprises three major elements:

1. **Personnel**, who use and maintain the equipment and provide the health service;
2. **Equipment** for safe storage and transportation of vaccines; the essential cold chain equipment needed to transport and store vaccines within a consistent safe temperature range include:
   - A refrigerator for storing vaccines
   - A digital, electronic or mercury/maximum thermometer and chart for recording daily temperature reading

Table 2.2: Summary of vaccine sensitivities

Vaccine	Exposure to heat/light	Exposure to cold	Temperature at PHC
Heat and light sensitive vaccines			
BCG	Relatively heat stable, but sensitive to light	Not damaged by freezing	+2°–8°C
OPV	Sensitive to heat	Not damaged by freezing	+2°–8°C
Measles	Sensitive to heat and light	Not damaged by freezing	+2°–8°C
Freeze sensitive vaccines			
DPT	Relatively heat stable	Freezes at –3°C (Should not be frozen)	+2°–8°C
Hepatitis B	Relatively heat stable	Freezes at –0.5°C (Should not be frozen)	+2°–8°C
DT	Relatively heat stable	Freezes at –3°C (Should not be frozen)	+2°–8°C
TT	Relatively heat stable	Freezes at –3°C (Should not be frozen)	+2°–8°C
At the PHC level, all vaccines are kept in the ILR for a period of one month at temperature of +2°–8°C			
Thermo-sensitivity of vaccines			
Vaccines sensitive to heat • BCG (after reconstitution) • OPV • Measles • DPT • BCG (before reconstitution) • DT, TT, Hep. B, JE Most ↓ Least		**Vaccines sensitive to freezing** • Hep-B • DPT • DT • TT Most ↓ Least	

- Cold boxes for transporting and storing vaccines
- Ice packs to keep vaccines cool
- Material to separate ice packs from the vaccines when using cold boxes (i.e., shredded paper, cardboard, bubble wrap or Styrofoam).

3. **Procedures** to manage the program and control distribution and use of the vaccines.

UNDER FIVE-CLINICS/WELL BABY CLINICS

The fact that 50% of the deaths in India occur among the under-five points to the need of special attention toward this age group. The concept of under-five clinics is rather a new one in India although well baby clinics have been successfully running for the number of years purely focused on preventive pediatrics.

An under-five clinic combines the concept of prevention, treatment, health supervision, nutritional surveillance, and education into a system of comprehensive system of health care within the resources available in the country, making use of non-professional auxiliaries, thus making the service not only more economical but also available to a larger proportion of children in the community.

Aims and Objectives

The aims and objectives of the under-five clinics are as follows:

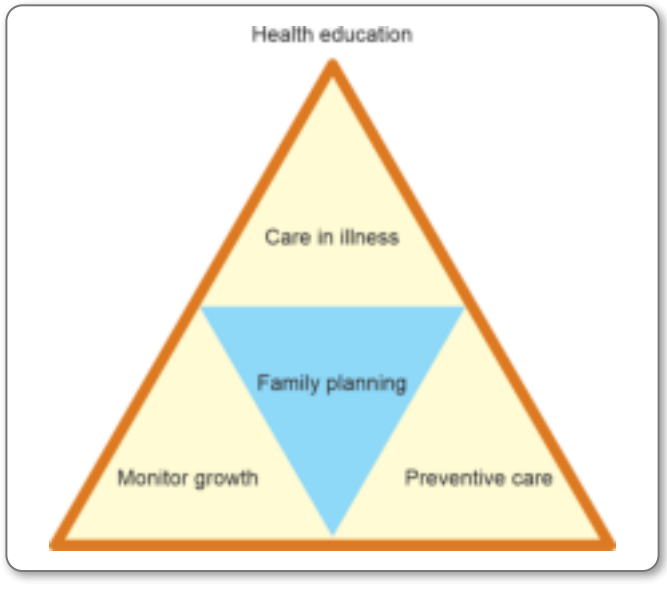

Figure 2.2: Symbol of under-five clinic

Care in Illness

The apex of the symbol (Fig. 2.2) represents "care and treatment of sick children". This is a mother's "felt need". Studies have shown that 70–90% of the care of sick children can be handled skillfully by trained nurses and more effective than interns and village quacks. It is also the basic philosophy of the Under-five clinics to give effective training and responsibility for handling the child health care service.

The illness care for children will comprise:

- Diagnosis and treatment of:
  - Acute illness
  - Chronic illness including physical, mental congenital and acquired abnormalities
  - Disorders of growth and development
- X-ray and laboratory services
- Referral services

Preventive Care

- **Immunization:** Immunization is the world's greatest public heath tool. In the context of HFA2000, one of the health goals was to immunize the all children against the "big six" infectious diseases of childhood—diphtheria, polio, tetanus, measles, tuberculosis, whooping cough. Together these diseases kill about 5 million children in a year and disable another 5 million worldwide.
- **Nutritional surveillance:** Almost all the nutritional disorders (i.e., PEM, anemia, rickets, etc.) occur in this age group. Nutritional surveillance is extremely important for sub clinical nutrition as it tends to be over looked. The Integrated Child Development Services (ICDS) in India has taken up supplementary feeding of children below 6 years in a big way.
- **Health check-ups:** The health check-ups cover physical examination and appropriate laboratory tests; and are provided every 3–6 months. The **child health card** provides a check list for these examinations; are in use in all ICDS projects. These can be very useful in identifying 'at risk' children so that they can be given special attention.
- **Oral rehydration:** On an average, child in the developing country, living in poor community suffer from an attack of diarrheal diseases between 2–6 times in a year and each time they are affected, lowers their immunity and present to the risk of death from dehydration. The home use of ORT has opened the way to the drastic reduction of child deaths and malnutrition.
- **Family planning:** In the center of the symbol is a triangular area. If this is painted red, we have our familiar family planning triangle of India. This puts the topic in its correct context, i.e., in the center of concern for the health and well-being of the child. It is possible to conduct family planning programs through these clinics, as the mother can receive counseling about family planning.
- **Health education:** Around the whole symbol is a border that touches all the other areas. This simply represents health education that mother automatically receives when she goes with her baby. She is taught about how to keep baby clean, and also about feeding and immunizations, etc.

Growth Monitoring

This is one of the biggest activities of the under-five clinics, i.e., to weigh the child periodically every month during the first year of life, after every 2 month during the second year and every 3 months thereafter up to the age of 5–6 years. This is plotted on growth chart against his/her age (gives what is known as the **growth curve**); which indirectly helps to detect early onset of growth failure (can be failure of breast feeding, intestinal parasites, etc.).

Functions of Under-Five Clinics

- Registration of all infants and toddlers and preparation of specific card.
- Medical check-up on scheduled visits, at least once by medical officer.
- Regular recording of health data; height, weight to verify normal growth and development.
- Distribution of nutritional supplements (Vitamin-A, folic acid, etc.).
- Immunization.
- Reporting of all registered children to the health assistant so that he may update his vital statistics records.
- Early detection of communicable/non-communicable or congenital diseases and defects.
- Referral to specialists.
- Training to mothers regarding child rearing, feeding and mother craft.
- Advice about family planning.
- Health education on various related topics.

The aim of preventive pediatrics is to prevent the occurrence of diseases and promote the optimum growth and development of children so that they become productive members of the society. It encompasses antenatal care, exclusive breastfeeding, immunization, early detection of warning signs and age-appropriate counselling of adolescents.

CHILD MORBIDITY AND MORTALITY

Morbidity rates and mortality rates are two health status indicators of the population. It is important to know the patterns of morbidity and mortality in children to formulate appropriate policies for intervention.

Morbidity (meaning "sick, unhealthy") is a diseased state, disability, or poor health due to any cause. The term may be used to refer to the existence of any form of disease, or to the degree that the health condition affects the patient. Morbidity rate is the number of disease prevalence of a particular disease at a given time in a stated number of population. Morbidity rates may include:

- Incidence and prevalence
- Notification rates
- Attendance rates and outpatient departments, health centers, etc.
- Admission, readmission and discharge rates
- Duration of stay in hospital
- Spells of sickness or absence from work or school

Table 2.3: Health indicators related to child health

Indicator	Definition
Neonatal mortality rate	Number of deaths among all live births during the first 28 days of life expressed per 1000 live births.
Early neonatal mortality rate	Number of neonatal deaths <7 days of life expressed per 1000 live births.
Late neonatal mortality rate	Number of neonatal deaths between 7 and 28 days of life expressed per 1000 live births
Perinatal mortality rate	Number of deaths of fetuses weighing at least 500 g (or if birth weight unavailable, after 22 completed weeks of gestation or crown heel length of 25 cm or more) plus the number of early neonatal deaths per 1000 total births.
Stillbirth	Death of a fetus weighing at least 500 g (or if birth weight unavailable, after 22 completed weeks of gestation or crown heel length of 25 cm or more) before the complete expulsion from its mother.
Infant mortality rate	Probability of dying between birth and 1 year of age expressed per 1000 live births.
Under 5 mortality rate	Probability of dying between birth and 5 years of age expressed per 1000 live births.

Some of the key heath indicators related to child health are listed in Table 2.3.

INFANT MORBIDITY AND MORTALITY

Infant mortality is affected rather quickly and directly by specific health programs and hence may change more rapidly than the general death rate. Infant mortality rate (IMR) is related to literacy. Kerala has the lowest IMR, the lowest birth rate and the highest literacy rate. The main causes of infant mortality are listed in Table 2.4.

Factors affecting infant morbidity and mortality are: 1. Biological factors; 2. Economic factors; 3. Cultural and social factors.

Biological Factors

- **Birth weight:** Babies of low birth weight (under 2.5 kg) and high birth weight (over 4 kg) are at special risk.

Table 2.4: Causes of infant morbidity and mortality

During neonatal period (0–4 weeks)	During postneonatal period (1–12 months)
Low birth weight	Diarrheal diseases
Acute respiratory infections	Acute respiratory infections
Tetanus	Measles
Sepsis	Pneumonia
Birth asphyxia	Malnutrition

- **Age of the mother:** Infant mortality rates are greater when the mother is either very young (<19) or relatively older (older 30 years).
- **Birth order:** The highest mortality is found among first born, and the lowest among those born second. The risk of infant mortality increases after the third birth. Infant mortality from nutritional deficiencies are 3-4 times higher for infants born with fifth or higher birth order compared to the first three.
- **Birth spacing:** Too less space: If the mother conceives before the first baby is displaced from the breast and prematurely weaned then that baby is more prone to develop protein energy malnutrition, diarrhoea and dehydration.
- **Multiple births:** Infants born in multiple births face a greater risk of death due to the greater frequency of low birth weight.
- **Family size:** Studies show that the infant mortality increases with family size.

Economic Factors

Infant mortality rates are highest in the slums and lowest in the richer residential localities.

Cultural and Social Factors

- **Breast feeding:** Breast feeding reduces the infant mortality. Early weaned and bottle-fed infants living under poor hygienic conditions are more prone to die than the breast-fed infants.
- **Religion and cast:** Infant mortality varies with different socio-cultural patterns of living, involving age-old habits, customs, traditions, affecting cleanliness, eating, clothing, childcare and almost every detail of daily living.
- **Maternal education:** Maternal education is inversely related to infant mortality; presumably reflecting personal health behavior, care and access to and use of health services. Women with schooling tend to marry later, delay child bearing and are more likely to practice family planning.
- **Quality of health care:** Inadequate prenatal care and infrequent attendance at delivery affects the infant mortality in India. Deliveries attended by untrained persons or relatives have high infant mortality rate. Shortage of trained personnel, like dais, midwives, and health visitors is another determinant.

Strategies to Decrease Infant Mortality Rate

- **Antenatal care:** Which includes supplementation of folic acid, iron and calcium during antenatal period.
- **Prevention of infection:** The universal immunization program aims at providing protection to all the expectant mothers and children against 6 vaccine preventable diseases and thereby ensures greater child survival

- **Infant nutrition:** The most effective measure for lowering infant mortality is to promote breast feeding which is a safeguard against gastrointestinal and respiratory infections and PEM, Promotion of exclusive breast feeding up to 6 months and weaning at proper time with adequate supplements. Safeguard against diarrhea and respiratory infections is needed through education about ORS and healthy behaviors.
- **Growth monitoring:** All infants should be weighed periodically and their growth charts maintained. Babies who do not thrive or show growth failure are given special health care to pull them on to the road-to-health.
- **Family planning:** Family limitation and spacing of births contribute substantially to lowering of infant mortality rate.
- **Sanitation:** Improving environmental sanitation
- Provision of essential newborn care.
- **Socioeconomic development:** It includes improving female literacy, improvement of nutritional standards, provision of safe water and basic sanitation, improvement of housing conditions, the growth of agriculture and industry, availability of commerce and communication
- **Strategies taken by the GoI to decrease IMR:** Launching of National Health Mission (NHM), implementation of a trained female community health worker, Accredited Social Health Activist (ASHA) in each village. Other interventions include provision of funds for referral and transport facilities for emergency delivery and hospitalization, under RCH-II - facilitating immunization, skilled attendance at delivery site whether community or institutions, promote institutional deliveries (Janani Suraksha Yojana), JSSK, operationalize emergency obstetric care' and strengthening referral systems.

In the year 2000, The Millennium Development Goals (MDGs) (Table 2.5) had been established following the Millennium Summit of the United Nations. All 191 United Nations member states at that time, and at least 22 international organizations, committed to help achieve the following Millennium Development Goals by 2015.

Table 2.5: Millennium development goals

MDGs (2000–2015)
• To eradicate extreme poverty and hunger • To achieve universal primary education • To promote gender equality and empower women • To reduce child mortality • To improve maternal health • To combat HIV/AIDS, malaria, and other diseases • To ensure environmental sustainability • To develop a global partnership for development

The MDG 4 was related to reducing child mortality. Building up on the success of MDGs, on 25 Sept 2015, 17 sustainable Development Goals (SDGs) (Fig. 2.3) have been framed by UN to be achieved by 2030. They are also known as the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. SDG 3.2 is related to child health.

The key to the progress of a country lies in reducing its maternal and child mortality and morbidity. Over the years, Government of India has taken many initiatives.

Figure 2.3: Sustainable development goals

Contd...

After the launch of National Rural Health Mission (NRHM) in 2005, significant improvements have taken place in building the health infrastructure in the country. NRHM, now called National Health Mission, is reflected in progress toward achieving targets for the reduction of Maternal Mortality Ratio (MMR), Infant Mortality Rate (IMR), Total fertility Rate (TFR) and other indicators.

The Janani Suraksha Yojana (JSY) scheme helped in increasing the number of institutional deliveries. Launch of Janani Shishu Suraksha Karyakram (JSSK) in 2011 further strengthened maternal health initiatives by entitling free services to every pregnant woman coming for delivery at government health facility. These programs have incentivised pregnant women to access healthcare in greater numbers.

Nevertheless, of constraints, India has achieved an impressive progress in reduction of IMR. Infant mortality rate is regarded as a very sensitive and sole indicator of health of children. The NMR has declined from 34 per 1000 live births in 2008 to 25 per 1000 live births in 2016 and IMR from 53 to 34 (Fig. 2.4). The latest goals related to child health are shown in Table 2.6.

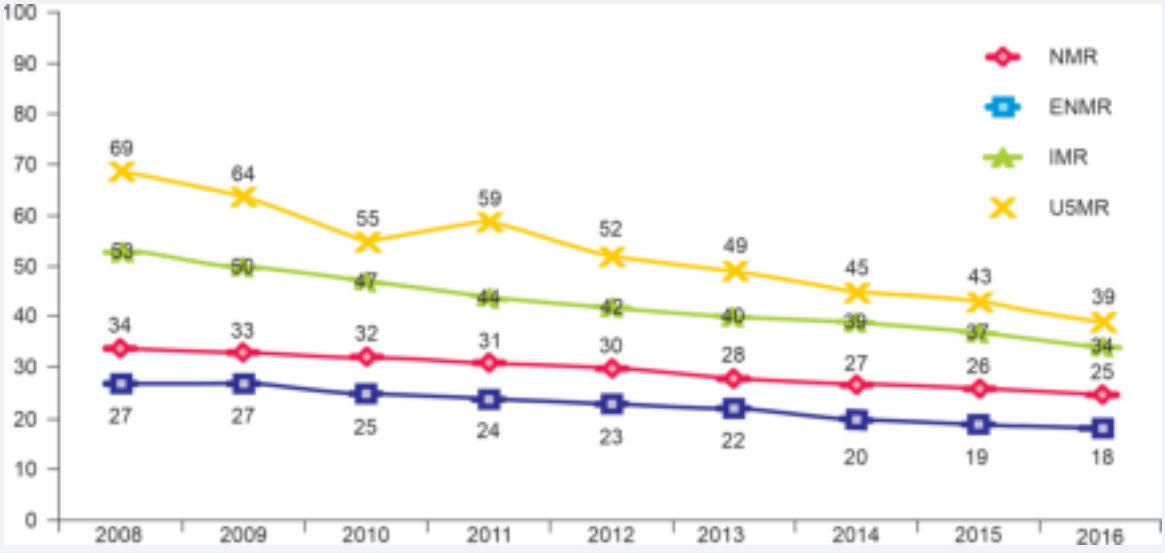

Figure 2.4: Trends of NMR and IMR

Table 2.6: Goals related to child health

	NHP- 2017 Target	SDG (2016-30) Goal 3.2	Achieved by 2017 (SRS)
NMR	16 by 2025 (still birth rate to "single digit" by 2025)	12/1000	23
IMR	28 by 2019		33
UFMR	23 by 2025	25/1000	37

Source- https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=819&lid=219

ACCIDENTS IN YOUNG CHILDREN

An accident is an unexpected event that happens by chance. It is true that sometimes an accident can take place despite all precautions taken by us, but this is not usually the case. An accident is often a harmful event that could be avoided by a little careful thought.

Accidental injuries to infants and young children are often serious, but are largely preventable with appropriate information and safe practices. Young children are particularly vulnerable to accidents due to their innate desire to explore their world and the inability to perceive the dangers of their actions. As children learn through experience, minor injuries are inevitable but providing a safe environment can reduce the risks, coupled with close supervision and setting the limits of safety. Parents should remember that they need to maintain a constant balance between overprotecting the child on one hand and giving him freedom in his process of learning the hazards of his environment on the other.

Type of Accidents

Road Accidents

Teach child to observe the safety rules while crossing the road. Instruct the child to wear a seat belt, as this will improve a child's chances of survival in a car accident. Make sure child's hands or head is not out of the window while driving. This may cause irreparable damage. Never let the child ride a two-wheeler without wearing a helmet.

Burns

The common cause of burns in children is spilling of hot water, hot oil or other liquids. Other common causes are crackers, stove fire and short circuit from electrical socket. Never place stoves or heaters within the reach of the children.

Poisoning

Safely store medicines and poisonous items, like insecticides, kerosene, acid for use in the bathroom, and drugs in a cabinet with lock, out of child's reach.

Accidents at Home

Never leave the babies or small child unattended in the balconies or near to open windows. Additionally, make sure all the windows should have bars to prevent episodes of falling and look out for the small child not to get his/her head stuck in between the windows bars.

Always have proper guards to prevent the child going up and down the stairs till the child is old enough to navigate on his/her own. Look out of the children playing 'hide-and-seek', kids should not be allowed to hide in the cupboards with inside locking system. Further, the bathrooms floor should be skid free and the door handles at the higher level to prevent child accidentally locking himself.

Drowning

Do not take children to beaches that have been declared unsafe.

Dog Bite

If there is a dog in house, ensure that it is regularly vaccinated against rabies and other diseases. Teach children not to tease dogs or hit them. Tell them to stay away from stray dogs.

Injuries from Sharp Objects/Doors/Unsafe Toys

Playing with certain toys, like bows and arrows can lead to major eye injuries. Certain toys like guns releases dangerous projectiles. Sharp objects, like knives, scissors and blades lying around the house can be dangerous for kids. Also parents should be careful while closing or opening room or car door, serious injuries can be inflicted on the fingers if caught between doors.

Toys or games with small detachable parts should not be given to infants and toddlers, as there is a risk of swallowing or aspirating. Toys with sharp edges are not safe and may cause injury.

Suffocation

Shopping bags made up of plastics can prove hazardous. An infant or a toddler playing with a plastic shopping bag may accidentally put it over his head and then the child will not be able to remove it. Sometimes balloon can be a choking hazard as the small children can choke on the scraps of balloons. Food items like peanuts, tamarind (*imli*) seeds, grapes, carrots, and other round items like buttons, coins beads can be aspirated and/or pushed into the nostrils or trachea by infants and toddlers. A toddler should be served food and allowed to eat in a calm and unhurried manner to avoid choking.

Swallowing Undesirable Objects

Certain things, like coins, safety pins, needles should not to be given to smaller children. These small items with round corners may smoothly pass out of the stomach but sharp objects may struck and cause problems.

Prevention of Accidents in Young Children

Specific Do's

- Appropriate barriers are used for stairs, landings, rooftops and fireplaces. Horizontal banister is more safer option for windows than the vertical banisters, as children will not be able to climb upon horizontal banister and there will be less risk of falling from height.
- Activities like playing with fireworks, using an escalators, kite-flying or swimming should be performed under supervision from adults.
- Dummy plugs are used to cover the unused sockets. Additionally, safety circuits should be installed in every house. Alternatively, a heavy furniture may be placed in front of the open circuit.
- Young children are very keen to play hide and seek. Always keep the cupboard locked. The kids may accidentally lock themselves inside the cupboard. This can cause choking.
- Medicines should be kept away from the reach of the children. Labels should be checked carefully before administering to the child. Certain drugs, like irons tablet or PCM tablets may look attractive but can result in fatal overdose. Discard all old and partially used medications.
- While playing on swings, slides or see-saws instruct children to hold on firmly.
- Small objects, like beans, buttons, beads and safety pins must be kept out of reach of children particularly below the age of two years.
- Teach the child about the traffic lights and zebra crossing. Instruct the child to look left and right before crossing roads. A child should wear bright colored clothes, as it is safer while walking at night.
- While driving a car young children should be allowed to sit in the backseat of the car. Teach them to wear seat belts while sitting in front or back.

Specific Dont's

- Never leave infant or young child unattended in a bathtub, water filled bucket, hot iron, teapot in the kitchen, etc.

- Do not allow children to play with plastic bags covering their heads and faces, as these can cause asphyxiation.
- While cooking or drinking hot liquids do not hold baby in the lap.
- Do not allow running or playing with sharp objects in their mouths. There may be accidental falls which can result in severe lacerated wounds in the mouth and throat.
- Do not allow children to perform new skills unless proper demonstration and training is given.

Anticipating potential dangers and taking simple measures will go a long way toward preventing suffering and making home a safe place for children.

Summary

Prevention is always better than cure. One of the most important functions of the nurse is to educate people about preventive aspects, like immunization. It is one of the most simple and cheap measures to get rid of major disease conditions popularized by government. Other factors include, literacy, good nutrition starting from antenatal period when the baby is in the womb of mother.

Assess Yourself

1. List the vaccines given at age 6, 10 and 14 weeks of age.
2. What are the components of cold chain?
3. Write a short note on 'Mission Indradhanush.'
4. Differentiate between active and passive immunity.
5. Explain the causes of child (infant and neonate) mortality in India.
6. List the measures to prevent accidents in infants.

Chapter 3

Hospitalized Child

Chapter Outline

- Differences Between Children and Adults
- Hospital Environment for a Sick Child
- Impact of Hospitalization on Child
- Nursing Care of a Hospitalized Child
- Effects of Hospitalization on Family
- Grief and Bereavement
- Role of a Child Health Nurse
- Ethics in Pediatric Nursing
- Principles of Pre- and Postoperative Care for Children

DIFFERENCES BETWEEN CHILDREN AND ADULTS

One of the important aspects of learning child health nursing is to understand the difference between adult and children. Therefore, it is pertinent to know the life cycle first. The ovum matures after fertilization as fetus, and later takes birth, passes through period of newborn for 28 days, grows as an infant, then toddler, preschooler, school going, adolescence and then adulthood. The life cycle indicate clearly that the children are not just a small adult but they undergo various stages to reach to the adulthood. The children's reaction to illness, perception to illness, body images are of different at different age group. Therefore, they need special attention during each stage to help them to complete the process of growth and development.

Anatomical and Physiological Difference

Airway

For first 6 months, an infant is an obligatory nose breather. A blocked nose in infancy can lead to respiratory failure. Also, in comparison with adult's trachea, infant's trachea is very short and soft. So, hyperextension airway manoeuvres may result in collapse. Tonsils and adenoids grow relatively fast in children, which compromise the movement of air by generating inflammatory response. The infants are more likely to be affected due to airway obstruction as they have proportionately large heads, short necks and large tongues.

Breathing

Children have much small upper and lower airways which makes them more prone to respiratory difficulties and failure. Infants rely mainly on the muscle of the diaphragm for breathing as they are abdominal breathers. Abdominal distension can lead to respiratory problems. The immature muscles associated with respiration, like diaphragm, intercostal muscles and sternocleidomastoid are more prone to fatigue. The respiratory center is relatively immature causing irregular respirations in neonates and young infants and greater risk of apnoea. Children have higher respiratory rates than adults. Higher RR leads to proportionately higher minute volumes. As a result, children may be more susceptible to agents absorbed through the pulmonary route than adults with the same exposure.

Larger Body Surface Area

Children have a proportionately larger body surface area than adults. As a result, children are at a greater risk of excessive

heat loss and fluids. Toxins can be easily absorbed through their skin.

Skin

The skin in children are thinner than adults, their epidermis is more thinner and under-keratinized, and thus, they are at higher risk for increased absorption of agents through the skin.

Immature Blood Brain Barrier

Children have immature blood-brain barriers and enhanced CNS receptivity. As a result, they may display more prevalence of neurological symptoms with the same level of exposure.

Immature Immune Systems

The immune system is weak in young infants and develops as the child grows. Therefore, children are more susceptible to communicable diseases and end up into fatal outcome.

Heart Rate

Children have higher HR as compared to adults. The HR of newborn is 110–160 beats/min.

Basic Metabolic Rate

Children have increased BMR, thus more susceptible to contaminants in food or water; greater risk for increased loss of water and when ill or stressed. Medication doses must be carefully calculated based on the child's weight and body size.

Undeveloped Hypothalamus

It means that their ability to regulate temperature is impaired.

Rapidly Dividing Cells

Children's cells divide more rapidly than adults to assist in their rapid rate of growth. Thus, children are more susceptible to the effects of radiation than adults.

Kidneys

Until 12–18 months of age kidneys do not concentrate urine effectively and do not exert optimal control over electrolyte secretion and absorption.

Psychosocial Difference

Although adults continue to develop psychosocially, their values, behavior, social circles are generally far more defined and stable, whereas children and adolescents are rapidly developing and using the world around them and picking up cues from their environment to aid in that development.

It is essential to be mindful of the way nurses interact and communicate with children, adolescents and their families as they play a crucial role in this development. These experiences may impact their recovery from illness or injury.

Unlike adults, children and adolescents are in a period of social development which involves learning the values, knowledge and skills that enable them to relate to one another. Their goal is to build a positive sense of identity and their role in relationships with society. These basic social skills like coming to hospital, are learnt from their caregivers, friends and participating in the world around them.

All of these relationships and experiences impacts the social behaviours. Hospitals and their staff are a part of a child's social environment and therefore, it is important for nurses to be aware of how they conduct themselves in their professional relationships with a child and his family. It impacts on learning and development of the social identity of a child and helps in shaping social skills.

Children, present more explicitly with their immediate social circle, like parents, grandparents, aunts and uncles etc. at appointments.

Emotional Difference

Children and adolescents are still developing their ability to recognize and manage their emotions or feelings, and this can be influenced by many social and environmental factors. For infants and young children, their emotional bond of attachment to their caregivers is crucial to their emotional development.

Nurses in a pediatric setting should be mindful of the disruption to this bond that may result in separation anxiety which is emotional distress seen in many infants when they are separated from people with whom they have formed an attachment.

They should also be aware that not all children will come from an environment where they will have consistency and stability in their everyday lives to allow them to form secure attachments, and this may be reflected in their coping and behavior.

Psychological Difference

Inability to communicate: Small children do not have the vocabulary to describe symptoms. The school age children describe symptoms with accuracy. They may intensify their concerns. However, exaggeration and minimization is also expected. Basic understanding of the children, close observation and reporting accurately are the ways to interpret symptoms.

Children are unable to monitor own care and manage fear. Children have fear of separation, darkness, unknown, intensive procedures and maturation of body parts that adults do not have.

HOSPITAL ENVIRONMENT FOR A SICK CHILD

Medical treatment affects children differently than adults, even if they suffer from the same illness or injury.

Growing children have different bodies than grownups. A routine procedure for an adult may have serious implications for a developing child. From newborns and babies to toddlers and preschoolers to school age and even adolescents, children are not small adults. They require specialized pediatric care from practicing professionals who not only identify a young patient's immediate health problem, but also recognize the long-term effects of procedures and treatments on a child. National Health Service policy in the UK recommends that the hospital-built environment should cater for the needs of younger and older children, adolescents and caregivers. A child-friendly environment should have:

- Specially trained and experienced professionals to provide high quality care.
- Facilities, equipment and medications tailored to fit the needs of children.
- Bright colors, themed décor and plenty of areas and opportunities to play.

It is said that hospitals are run by nurses and nurses are the backbone of a hospital. So, making the hospital environment safe in terms of hygiene and injury is the responsibility of a pediatric nurse. The following are the measures to make hospital environment friendly for children:

- Provide good illumination.
- Keep floors clear of fluid or objects that might contribute to falls.
- Use non-skid surfaces in washrooms.
- Familiar with the area-specific fire plan.
- Secure all windows, blind and curtain cords should be out of reach of children.
- Plants and showers harbor gram negative bacteria and molds that may affect the already immunocompromised children. So, these items may be kept away from the wards.
- Electrical equipment should be in good working order. It should be used only by personnel familiar with its use and kept away from children.
- Furniture should be checked for safety. Infants, young children, and those who are weak, paralyzed, agitated, confused, sedated or cognitively impaired should never be left unattended on treatment tables, weighing scales or in treatment areas.
- Prevent fall from the beds, and cribs by raising the side rails. Electronically controlled beds cause danger of entrapment.
- Asses the safety of toys. Toys should be appropriate to the child's age, condition, and treatment.
- Setting limits is essential, and children should know where they are permitted to go and what they are supposed to do.
- Ensure safe transportation for children within or outside the unit.
- Ongoing assessment, evaluation, and documentation of restraints.
- Communication with the child and family members plays a major role in the enhancement of therapeutic effects.

IMPACT OF HOSPITALIZATION ON CHILD

Illness and hospitalization are stressful experiences for children and their families.

The reaction of child to hospitalization depends on three factors:

1. **Child:** Child's developmental level and mechanisms used to cope with hospitalization and surgery are related to child's reaction to hospitalization.
2. **Parents:** Presence of the mother, preparation of the mother, support of the child by the mother, parental values, and socioeconomic status affect the child's reaction to hospitalization and surgery.
3. **Hospital:** The hospital environment is generally considered to be threatening to school-age children. The major factors that affect the child's reaction to hospitalization and surgery are specific events, length of hospitalization, nature and degree of illness, type of procedure, and method of preparation for the hospital experience.

Stressors of Hospitalization and Children's Reactions

Stressors of hospitalization in children include:

- Separation anxiety
- Loss of control
- Bodily injury and pain

Separation Anxiety

It is most evident from middle **infancy** throughout the **preschool** years, especially for children ages 16–30 months. Manifestations of separation anxiety are classified into three phases:

1. **Phase of protest:** During the phase, children react aggressively to parental separation. They scream and demand the attention of nobody else but their parents and are inconsolable. They avoid contact with anyone else and continuously search for their parents. They will cling to parent when they meet him/her. Toddlers verbally and physically attack strangers, and try to escape from the area to find their parents. These manifestations may last from hours to days and cease only when the child is physically exhausted.
2. **Phase of despair:** This phase is dominated by depression instead of crying. There is less activity and least interest in food or play. The child may appear sad, lonely, isolated and apathetic. There may be regression to the pre-learned behavior, like thumb sucking, bed wetting, or even use of a pacifier. The impact is evident in the child's physical condition also with refusal to eat, drink or move. Sometimes, these signs are misinterpreted for child's cooperation, and adjustment to the hospitalization.

3. **Phase of detachment:** In this phase, the child appears to have finally adjusted to the loss. The child may be more interested in the surroundings, starts playing with others and ready to form new relationships with others.

Loss of Control

Different age group children may perceive a great amount of control if compared to their own age group. Sometimes, new situations, like hospitalization will decrease the amount of control a child feels. This feeling threatens and can affect coping skills of the children. So, the nurses must have an insight into the type of environment that is conducive to a child's optimum growth. The major areas of loss of control in terms of physical restriction, altered routine, and dependency vary according to different age groups.

- **Infants:** Infants tries to control their environment by showing emotional expressions, such as crying or smiling. Nurses need to take care of infant's needs while doing their job so that trust is developed in children. According to Erikson, infants develop a 'trust' while overcoming a sense of 'mistrust'. They trust that their feeding, comfort, stimulation, and caring needs will be met. The trust acquired in infancy provides the foundation for all subsequent phases. Inconsistent care and making changes in the infant's daily routine may lead to mistrust and loss of control.
- **Toddlers:** According to Erikson, the developmental task of toddlerhood is to acquire a sense of autonomy while overcoming a sense of doubt and shame. Their behaviors range from motor skills, play, interpersonal relationships, activities of daily living and communication. When their pleasures are not met and they perceive hospital routine and caregivers as obstacles, they react with negativism and temper tantrums. Toddlers rely on the consistency and familiarity of daily rituals as a measure of stability and control in their life. Their rituals include eating, sleeping, bathing, toileting, and playing. When this daily routine is interrupted by hospitalization, their reaction is 'regression'. It is very threatening for them to abandon their most recently acquired achievements. Rigid schedules, altered caregiving activities, unfamiliar surroundings, separation from parents, and medical procedures decrease the toddler's control over their world. Due to this prolonged loss of autonomy, the child may have passive withdrawal from interpersonal relationships and regression is seen in all the areas of development.
- **Preschoolers:** When physical restraints are applied on preschoolers they experiences loss of control, their routines are altered and they have a feeling of enforced dependency. They believe hospitalization as a punishment for their offences. Preschooler age group has attained enough independence in self-care and they expect to maintain the same independence in the hospital environment also. Like the toddlers, a preschooler child also likes to have familiar routines and rituals. If the child is not allowed to maintain some control over the surroundings the child may regress to the earlier level of development.
- **School-age children:** School age children are more like movers and shakers, they are independent, likes to have control on their self-care and are highly social in nature. They like being involved in lot of activities but illness can change these patterns. In school age children, friendship is very important to them. The nurse can encourage the child to participate in self-care.
- **Adolescents:** Adolescents are not sure whether they want their family with them or not. They enjoy the freedom, like to be in touch with their friends. Usually, the peer group will support the ill friend. Control is very important to this age group, giving the adolescent some control will avoid endless power struggles. The control issues faced by the adolescents can cause a major conflict between the adolescents and parents.

Bodily Injury and Pain

When a child is admitted in hospital, his/her major concern is the pain and bodily injury. Children in different age groups respond differently to pain and when they experience pain, they become more hesitant to enter the hospital.

- **Infants:** Infants may express pain by assuming certain positions, such as squirming, writhing, jerking, and flailing. After the painful procedure, some infants may cry loudly, whereas others are easily calmed by a gentle hug or therapeutic touch. However, older infants show intense reaction like physical resistance and uncooperativeness.
- **Toddlers:** Infants experience some separation anxiety, but separation anxiety remains the major stressor for the toddler. The child reacts with intense emotional upset and physical resistance to any actual or perceived painful experience. He cries, clings to the parent, kicks, and generally creates a scene. It is a sign of healthy parent-child attachment. The toddler may resist bedtime and eating, temper tantrums, regression (esp. with toileting and eating). Nurses must teach parents to reinforce appropriate behavior while allowing the regressive behavior to occur. Hospitalization with its own set of routine can disrupt the world of the toddler**.** One cannot assess the degree of pain toddlers are experiencing from their reaction. The toddlers in later stages are able to locate their pain but are unable to describe the intensity of it.
- **Preschoolers:** The children in this age group fear injury, pain, and bodily mutilation. Sometimes the children verbally abuse the caregiver or make excuses to escape the painful procedure. They have a fear of intrusive surgical procedures and often imagine the worse treatments for the illness. Preschoolers have strong belief that the illness or hospitalization is due to some wrong doing or by touching something/someone. This can lead to feelings of guilt, shame and increased stress at a time when the child has to cope with several other stressors.–Nurses need to

understand that this is just an expected normal behavior from a preschooler.

- **School-age children:** They are able to describe their pain in words. Most of the time they demand explanation of procedures from the caregivers. It is important to be aware of nonverbal clues, such as a serious facial expression, silence, lack of activity, or social isolation, as signs of the need for help. Older children may be more concerned with missing school and the fear that their friends will forget them. School-aged children are more relaxed about having a physical examination, eyes or ear examination but are uncomfortable with of genital examination. School-age children have curiosity over the need of the procedure. They may ask questions about the illness. They have belief that illness has occurred due to eating junk food or not wearing coat in colder season.
- **Adolescents:** Body image is supreme during adolescence. Due to growth spurt and development of secondary sexual characteristics adolescents are concerned about their privacy. They have more self-control to the painful procedures. They tend to observe and enquire all the procedures done on them. Sometimes the adolescents show physical indications, such as limited movement, excessive quiet or irritability. Therefore, illness or injury that changes their perception of themselves can have a major impact. The adolescents who have diabetes may not want to eat different foods or take time out from an activity for injections. They do not want to call attention to themselves. They also give the impression that they are not afraid, even though they are terrified.

NURSING CARE OF A HOSPITALIZED CHILD

Nursing Diagnosis

- Self-care deficit R/T pain AEB physical expressions.
- Anxiety R/T change in environment AEB crying, restlessness.

Nursing Interventions According to Age

- **Infant:** Encourage parent to visit and room-in. Allow parents to participate in care, teach them procedures that they are capable of doing. Discuss arrangements for care of other family members at home. Try to simulate home routine. Assign the same nurse. Allow parents to be present during procedures and comfort afterwards. Keep frightening objects away from view. Provide swaddling, talk softly to soothe. Pay close attention to light and sound stimulation.
- **Toddler:** Encourage parent to room-in and if they have to leave, do it only when the child is awake. Never leave the child without support. Provide warmth and care. Explain to parent the stage child is in. Bring infant's security object, like favorite toy or blanket. Set limits, give choices on simple decisions. The parents should be taught that child may regress to earlier behavior in stressful situation. Follow the ritualistic behavior for child at bedtime. Teach parents about prevention of fall from crib, chair, equipment. Never leave the toddler unattended.
- **Preschooler:** Never dismiss the child's fear of hospitalization as irrational always acknowledge it and give time to adjust. Orient the child to the hospital, maintain interpersonal relationship this will help the child to build trust. Encourage presence of parent and involve them in the care of the child, if possible. Provide comfort and support to the child. Assess the likes and dislikes of the child among food items. Give small and frequent diet. Try to make the hospital environment comfortable for the child and should never be too rigid. Encourage intake of fluids in a play way method. Children do not like frequent change in their environment. So, be consistent and stick to the routine. Reinforce positive coping behavior. Do not unnecessary restraint the child, provide as much mobility as possible. Play therapy and diversional activities should be provided. Avoid intrusive procedures as much as possible. Assess child's perception by asking to draw a picture and tell about it.
- **School age:** Determine the existing level of knowledge and understanding. A school-age child can be given proper clarification about the procedure, surgery with scientific terminology and physiology of the body functions with the help of audio-visuals, pictures, body outlines, etc. Advise the child's ways of maintaining control over the stressful situation, like deep breathing relaxation technique. Try to gain child's cooperation. Always provide positive feedback on accomplishment of task, after an intrusive procedure, taking medicines, etc. Include the child in clinical decision-making like time the child prefers to take medicine, preferred site the child feels comfortable for the procedure. Encourage more active participation of the child in activities, like removing dressings. Take child's input in planning a day's activities for the child. Be firm yet gentle with the limits. Always provide privacy for performing the procedure on the child.
- **Adolescent:** Assess his/her knowledge. Encourage questioning regarding fears, or risks. Involve the adolescent in decision-making. Ask if child wants parent there. Impose fewer restrictions. Suggest ways of maintaining control. Accept regression to more childish ways of coping. Give positive reinforcement. Provide privacy for care.

Thus, care of hospitalized child includes:

- Prepare for hospitalization
- Prevent or minimize separation
- Minimize loss of control
- Prevent minimize bodily injury
- Allow for regression
- Provide pain management (= Atraumatic care)
- Provide for developmentally appropriate play activities
- Focus on developmental age rather than chronological age

EFFECTS OF HOSPITALIZATION ON FAMILY

Hospitalization causes a break in the unity of family. Emotional reactions of each member of the family must be considered to help him/her adjust with the stress. Parents feel separation, inadequacy of treatment, anxiety, anger, fear, disappointment, self-blame and guilt due to lack of confidence and competence for caring the child in illness and wellness. Specific causes of parental anxiety are related to:

- Strange environment
- Separation from child
- Unknown events
- Suffering of the child
- Spread of infection to other members, unbearable financial obligation, society's reaction.

Anxious parents can be recognized by trembling, coarse or low voice, restlessness, irritability, withdrawal, or erratic body movements. Hostile and aggressive behavior may be evident toward caring for the child. Some families hesitate to discuss, where as some families want long discussions.

A nurse must be aware of the psychological and emotional needs of parents/caregivers and counsel them appropriately as per their needs.

Nursing Responsibility for Management of Family and Caregivers

- Acknowledge the distress in caregivers
- Assist in diagnostic procedures
- Assess need for education-medication administration, any related procedures, like enema, nebulization, etc.
- Refer to support groups, if needed
- Teach how to monitor for signs of complications
- Encourage for follow-up

GRIEF AND BEREAVEMENT

Children must deal with the loss of significant others more often than most adults realize. Each loss results in the child going through the same process of grief resolution, though the length and intensity may vary. Each child is unique in his or her understanding of death and response to grief. This understanding is largely influenced by the child's developmental level and chronological age. There can be tremendous overlap, however, between the age groups since children move from one developmental level to another at very different rates.

Children's Understanding of Death and Special Needs

- **Infant and toddlers (0–3 years):** "All gone" may be understood as an absence. If the young infant cannot see something, it does not exist. Hide-and-seek games after six months help infants develop the concept that things and people exist even without being seen. Infants and small children can sense the emotional state of those around them and may exhibit increased crying, fussiness or gastro-intestinal problems. Provide a sense of security through nurturing and maintaining same routine.
- **Preschool (3–6 years):** Death may be thought of as temporary and/or reversible. The child may believe giving food can revive the dead person. They often do not understand their feelings, but are frightened by them and do not know what is happening to them. Questions about the death may be asked repeatedly, and their play may act out the death. Regression can occur with clinging, thumb sucking, loss of potty training, or baby talk. They need to return to normal activities such as play and school. Their openness about the death with people, including strangers, can be overwhelming to adults. Provide them with terms for some of their feelings. Answer questions honestly, especially about why important people in their life are sad. Death play and short-term regression are normal. Offer presence and maintain caring attitude.
- **School age (6–12 years):** Children understand that all body functions stop with death. They begin to internalize the universality and permanence of death. The greatest death anxiety is in this age group. They may be very curious about the details of death, but begin to hide feelings or engage in magical thinking where they believe they are powerful enough to cause someone's death by their thoughts. There may also be fear that death is a punishment for bad thoughts or actions. Offer constructive ways for them to release the great energy of grief, such as running, other sports activities, or hitting a tennis racket on a mattress. Encourage a support group or writing. Provide reassurance and honesty.
- **Adolescents (12 years and above):** Adolescents understand death as a natural process, but have difficulty dealing with it as they are occupied with many decisions in their own lives. They may react by acting out, withdrawing or overachieving. They focus on what effect the death has had on them and thus dwell on the unfairness of life. They become concerned about the "why" questions of life and death and may test their own mortality. Try to tolerate acting-out behaviors, if no harm is done. A short period of withdrawal is normal. Encourage the search for meaning in a healthy way. Teenage children are often more comfortable talking about death with their friends than with adults. Continue to set reasonable limits and let them know you care about them.

ROLE OF A CHILD HEALTH NURSE

The role of the child health nurse continuously evolves and expand to meet the increasingly complex health care demands of the pediatric population. Pediatric nurse is aware of basic childhood development. Treating certain illnesses, injuries or other conditions may depend on the developmental level of the individual child. Pediatric nurses have knowledge of childhood cognitive levels and milestones to know what types

of treatment and medical equipment are appropriate for each patient. The role of child health nurse includes:

- Maintaining therapeutic and trusting relationship with the client and their family.
- **Family advocacy and caring:** Nurses must work with the family to develop the best plan of care for a child. Parents are experts in their child's care and know more about their child. The family is also the child's main source of support providing stability in what can be an otherwise traumatic period in a child's life. The presence of the family during health-related procedures can significantly reduce both the child's and parent's anxiety
- Disease prevention and health promotion
- Health teaching to the caregivers about disease conditions, its prevention and management.
- Counseling and supporting the caregivers.
- **Restoration of health by caregiving activities:** Performing procedures for optimal patient care, assisting in diagnostic tests, initiating and changing therapies, performing invasive procedures, prescribing medications during and after hospitalization, and ordering post discharge home care.
- Coordination and collaboration with other professionals
- Ethical decision making
- **Research:** Nurses devise innovative methods to encourage children to comply with treatments. These interventions can be analyzed and published so that nursing practice can be based on science and not on tradition
- **Health care planning:** Nurses can involve at a political and legislative level as a child and family advocate.

ETHICS IN PEDIATRIC NURSING

Ethics includes the basic principles of autonomy, beneficence, nonmaleficence, justice, veracity, and fidelity. The pediatric nurse must understand these principles in order to analyze and respond to ethical dilemmas.

- **Autonomy** refers to the right to accept or refuse any medical treatment based on the individual's values, priorities, and preferences. Parents have the autonomy to make health care decisions for their child and sometimes adolescents are granted the autonomy to consent to their health care.
- **Beneficence** refers to the duty of health-care providers to perform things that are beneficial to children.
- **Nonmaleficence** means avoiding causing harm, intentionally or unintentionally.
- **Justice** refers to act fairly to all children and their families. The treatment decision should not be based on factors such as age, gender, religion, socio-economic status or ethnic group.
- **Veracity** is telling the truth about diagnosis, treatment or prognosis.
- **Fidelity** is keeping promises and maintaining confidentiality and privacy.

PRINCIPLES OF PRE- AND POSTOPERATIVE CARE FOR CHILDREN

Some common principles need to be followed when a child is scheduled for surgery. Some of these are as follows:

Preoperative Management

- Conduct interview with the parent and child to obtain history, perform thorough physical examination of the child, review previous medical records and perform preoperative assessment.
- **Psychological preparation:** Preparing the child and the parents before a surgery is very important duty of a clinical nurse. It will reduce the stress and help to gain cooperation. It begins with the pre-admission educational programs for parents and children. Age appropriate health education to the child and parents, clarify doubts and queries. Provide diversion therapy to childlike age appropriate toys and relaxed atmosphere. Parental separation should be avoided.
- Assess the need for blood transfusion.
- All the preoperative instruction related to fasting before surgery should be provided. The instruction should be clear, concise, in understandable language, avoid using medical jargons. Fasting guidelines should be with clearly written instructions about the period of preoperative fasting and the importance of compliance stressed upon to prevents aspiration during the surgery.
- Patient's file should be completed with all the investigations and reports.
- Ensure that preanesthetic check-up is done.
- **Premedication:** If the child is very anxious, administer anxiolytics, like midazolam, anticholinergics and antibiotics as prescribed. For painless cannulation use topical local anesthetic creams, like Emla or Ametop.

Postoperative Management

- Ensure airway is patent. Perform oral, ET or tracheostomy suctioning as required. Change position 2 hourly.
- Monitor ABG values and administer oxygen therapy.
- Maintain fluid and electrolyte balance, calculate the correct drop rate while administering IV fluids, always maintain intake output chart. Monitor serum electrolyte values and notify physician if any deviation is noticed.
- While performing any procedure follow standard precautions to avoid infections.
- Monitor and document vital signs.
- As per the requirement of the surgery, keep the child nil per oral until advised.
- Provide diversion therapy like toys to minimize pain while performing a painful procedure. Analgesics can be administered as prescribed by the physician.

- Monitor and report complications, like bleeding, nausea, vomiting, delayed micturition, unsteady gait, etc.
- Give postoperative health education to the caregivers and age appropriate explanations to the child related to the surgery, i.e., breathing exercises, ambulation, colostomy care, etc.
- Advise for follow up at regular intervals.

Summary

A hospitalized child undergoes major stress specific to his age for which age appropriate interventions can be planned. The interventions will be different for an adolescent as compared to an infant or toddler. A pediatric nurse has to perform specific functions while abiding all the ethical principles.

Assess Yourself

1. Discuss the major stressors for a child in various age groups, when he is hospitalized and how to manage these stressors.
2. Explain the role of a child health nurse.
3. Outline the ethical principles in pediatric nursing.
4. Explain the principles of pre- and postoperative care for children

Chapter 4

Child Health Nursing Procedures

Chapter Outline

- Introduction
- Administration of Medication: Oral
- Administration of Medication: IM
- Calculation of Fluid Requirement
- Calculation of Drop Rate
- Application of Restraints
- Pain Assessment in Children

INTRODUCTION

In this chapter we will learn about various common procedures which are performed in pediatric settings like administration of injections, calculation of fluid requirement, application of restraints and pain assessment in children.

ADMINISTRATION OF MEDICATION: ORAL

Oral medication is given to child who can swallow. Medications for oral use are supplied as suspensions, tablets, gel caps and capsules.

Procedure

- Perform hand hygiene and don gloves.
- Verify the identity of child.
- Explain the procedure to the child and family.
- Check the accuracy and completeness of the medication order.
- Ensure the six rights of medication safety: Right medication, right dose, right time, right route, right patient and right documentation.
- Prepare the medication for administration, using the proper administration device. If crushing a tablet, mix it in a small amount of water, other beverage or soft food such as pudding.
  - Always verify compatibility before mixing a medication with other liquids or food.
  - Do not crush sustained-release or enteric-coated tablets. Have the child swallow the tablet whole.
  - For an infant, avoid mixing medication in an essential food, such as formula or milk, because the infant may refuse the food in the future.
- Label all medications, medication containers and other solutions, including those that are on a sterile field.
- Demonstrate for the child or family how to measure and administer the medication if home use is anticipated.
- Administer the medication using an age-appropriate or developmentally appropriate method.
  - For an infant, administer liquid preparations using an oral syringe or nipple. Place the infant in a semi-reclining position. Place the syringe or dropper in the infant's mouth along the inside of the cheek or place a nipple in the center of the infant's mouth. Allow the infant to suck the medication.
  - For a toddler, offer medication in a medication cup or spoon.

  - For a school-age child, offer liquid medication in a syringe or medication cup or offer solid preparations. The older school-age child may be able to swallow pills.
  - For an adolescent, offer medication in a medication cup.
- Ensure that the child swallows all the medication. If the medication has been mixed with another liquid or food, ensure that the child finishes the entire amount of liquid or food.
- Offer an older child a chaser (tasty beverage) after he or she swallows the medication.

  Rationale: Providing a tasty beverage immediately after medication administration may promote future cooperation. Informing the older child that the medication may taste unpleasant may gain the child's cooperation in taking the medicine.
- Praise the child for cooperating.
- If the child vomits within 15–30 minutes of medication administration, confer with the practitioner to determine whether the dose should be repeated. Examine the vomit for signs of the medication. Repeat dosing should be considered on an individual basis because the margin of safety with medications varies.
- Discard supplies, remove gloves and perform hand hygiene.
- Document the procedure.

Monitoring and Care

- Monitor the child for adverse reactions to the medication based on the pharmacokinetics and pharmacodynamics. Reportable conditions include adverse drug reactions, allergic responses to medication.
- Assess, treat and reassess pain, if any.

ADMINISTRATION OF MEDICATION: IM

The purpose of IM injections is to administer medication safely into the muscle below the SC layer. Many medications must be injected intramuscularly because of pharmacokinetics, desired onset, intensity and duration of the effect and certain patient characteristics related to treatment compliance. An IM injection should be given only when less-painful options are not feasible. Sites for IM injection: The injection site affects how much fluid can be given and how quickly the medication will be absorbed. The most-appropriate sites for IM injections are the vastus lateralis (anterolateral thigh) for infants and toddlers and the deltoid muscle for children 3 or more years old. Selection of the injection site is based on the child's age, muscle mass, medication volume and medication viscosity.

Procedure

- Perform hand hygiene.
- Identify the child.
- Explain the procedure to the child and family.
- Check the accuracy and completeness of the medication order.
- Ensure the six rights of medication safety: Right medication, right dose, right time, right route, right patient and right documentation.
- Provide privacy.
- Select an appropriate injection site (Fig. 4.1) based on the child's age and muscle mass, the medication volume (Table 4.1) and the viscosity of the medication. Tissue or nerve damage, scar tissue, poor muscle mass or tone and lack of accessibility may be contraindications to using a particular site.
- Mix and draw up the exact amount of medication.
- Attach an appropriate-size needle to the syringe.
- Position the child and initiate developmentally appropriate distraction measures. Parents of infants may begin breastfeeding.
- Don gloves.
- Cleanse the area with an antiseptic solution and allow the skin to dry.

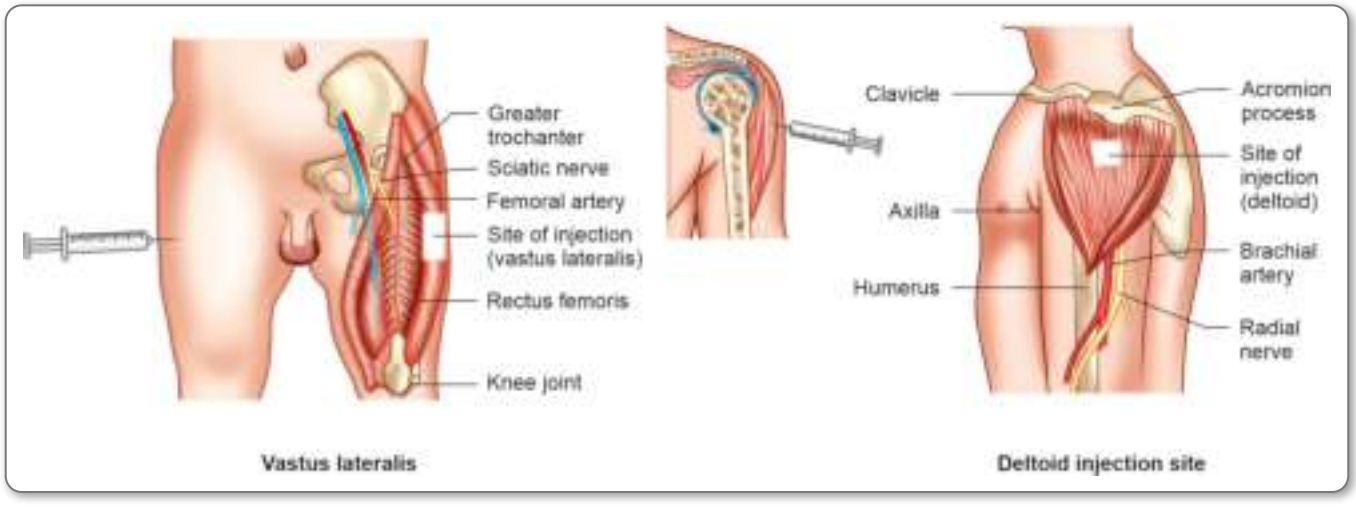

Figure 4.1: Sites of IM injection

Table 4.1: IM Administration: Location, needle length, gauge, amount of fluid

	Location of injection	Needle length (Inches)	Needle gauge (g)	Suggested maximum amount (mL)
Neonates (preterm and term and infants)	Anterolateral thigh	5/8[a]	22–25[b]	0.5–1[c]
Infant (1–12-month-old)	Anterolateral thigh	1[a]	22–25[b]	1[b,c]
Toddlers (1–2-year-old)	Deltoid Anterolateral thigh (preferred)	5/8–1[a] 1–1¼[a]	22–25[b] 22–25[b]	0.5–1[b,c] 1–2[b,c]
Children 3–18-year-old	Deltoid (preferred) Anterolateral thigh	5/8–1[a] 1–1¼[a]	22–25[b] 22–25[b]	0.5–1[b,c] 2[b,c]

[a]American academy of pediatrics (AAP). (2015). Red book 2015: Report of the committee on infectious diseases (30th ed.) Elk grove village, IL: AAP
[b]Brown, TL, (2015). Pediatrics nursing interventions and skills. In MJ Hockenberry, D. Wilson (Eds.), Wong's nursing care of infants and children (10th ed.). St. Louis: Mosby.
[c]Evaluate size of muscle mass before administration

- Administer the injection. Insert the needle at a 90° angle to the skin, using a steady, smooth motion. After the needle pierces the skin, use the thumb and forefinger of the non-dominant hand to hold the syringe barrel while still pulling on the skin. Move the dominant hand to the end of the plunger. Avoid moving the syringe. Pull back on the plunger. If no blood appears, inject the medication over several seconds.
- Remove the needle and syringe quickly and smoothly.
- Apply pressure at the injection site.
- Assess the injection site for complications.
- Praise the child for positive behaviour and allow the child to express his or her feelings after the procedure.
- Discard supplies, remove gloves and perform hand hygiene.
- Document the procedure.

CALCULATION OF FLUID REQUIREMENT

The Holliday-Segar formula, also known as the 4-2-1 rule (4 mL/kg/hr for the first 10 kg; 2 mL/kg/hr for the second 10 kg; 1 mL/kg/hr for every kilogram above 20 kg) is used to calculate maintenance fluid therapy for a child (Table 4.2). The formula determines maintenance fluid needs per hour. In addition to this maintenance volume, fluid administration is needed to correct fluid losses.

CALCULATION OF DROP RATE

The formula for drop rate calculation is:
Drop rate = (Total volume/Time in minutes) × Drop factor.
Drop factor refers to the number of drops equal to 1 mL. Usually the drop factor is written on IV drip sets. Example: If you want to administer 250 mL in 8 hours and the drop factor is 60, then;
Drop rate = {250/ (8 × 60)}/60 = 31.25 = 31 drops/min.

APPLICATION OF RESTRAINTS

A restraint is any manual method, physical or mechanical device, material or equipment that immobilizes a child or reduces his ability to move the arms, legs, body or head freely.

Table 4.2: Holliday-segar method (4–2–1 Rule)

Water		
Body Weight	mL/kg/day	mL/kg/hr
First 10 kg	100	4
Second 10 kg	50	2
Each additional kg	20	1
Example		
Determine the correct fluid rate for an 8-year-old child weighing 25 kg.		
First 10 kg	100 mL/kg/day x 10 kg = 1000 mL/day	4 mL/kg/hr X 10 kg = 40 mL/hr
Second 10 kg	50 mL/kg/day x 10 kg = 500 mL/day	2 mL/kg/hr x 10 kg = 20 mL/hr
Each additional 1 kg	20 mL/kg/day x 5 kg = 100 mL/day	1 mL/kg/hr x 5 kg = 5 mL/hr
	Answer: 1600 mL/day	Answer: 65 mL/hr

(Modified from Hughes, H.K., Kahl, L.K. [Eds.]. 2018. The Harriet Lane handbook [21st ed.]. Philadelphia: Elsevier.)

Any medication that is not a standard treatment or dose for that particular child's condition but is used to confine the child or restrict his or her freedom is considered a restraint. The child has the right to be free from any form of restraint that is not necessary for effective medical treatment. Restraints are not used as a means of discipline or retaliation by health care personnel. There are two categories of restraint use: restraint use for violent or self-destructive behavior and restraint use for non-violent behavior. Violent or self-destructive restraint involves restriction of the child's movement for the management of violent or self-destructive behavior that jeopardizes the immediate physical safety of the child, staff or others. Restraint for non-violent behavior is all restraint other than for violent or self-destructive behavior (i.e., restraint of a confused child who is in danger of pulling out his or her endotracheal tube).

Procedure

- Perform hand hygiene.
- Introduce yourself to the child and family.
- Verify the correct child.
- Explain the procedure to the child and family.
- Obtain a prescribing practitioner's order before using restraints.
- Select an appropriate restraint device. Apply using the appropriate technique. Assess the size and fit of the restraint. Ensure that the restraint can be removed rapidly in case of an emergency.
  - Use a belt restraint (Fig. 4.2) to prevent the child from falling from a bed or wheelchair. Apply the belt over the child's clothes, gown or pyjamas. Remove wrinkles or creases in the child's clothing. Avoid applying the belt too tightly.
  - Use a limb (ankle or wrist) restraint to immobilize one or all of the child's extremities to prevent the child from removing a therapeutic device (i.e., IV tube or urinary catheter). Wrap the limb restraint around the wrist or ankle with the soft part toward the skin.

Figure 4.2: Types of restraints

  - Use a thumbless mitten to restrain the child's hand(s) to prevent the child from dislodging invasive equipment, removing dressings.
  - Use an elbow restraint to prevent elbow flexion (i.e., when an IV is placed in the antecubital fossa). Insert the child's arm so that the elbow joint rests against the padded area with the tongue blades and the joint kept rigid.
- Attach restraint straps to the section of the bed frame that does not move when the head of the bed is raised or lowered. For a child in a chair or wheelchair, attach restraint straps to the chair frame, ensuring that the tie is not within the child's reach. Do not attach straps to side rails. If the restraint is secured to a side rail, the child may be injured when the rail is lowered.
- Secure the restraints with a quick-release tie. Do not tie the restraints with a knot.
- Insert fingers under the secured restraint to ensure that it is not too tight to prevent neurovascular injury.
- Assess the child's skin integrity at least daily and per the organization's practice. Ensure that the child's environment is clean and safe, modesty is maintained and his/her needs for food, fluids, personal hygiene and toileting are met.
- Terminate the use of restraint at the earliest possible time.
- Perform hand hygiene.
- Document the procedure.

PAIN ASSESSMENT IN CHILDREN

Pain is one of the most misunderstood, under diagnosed and under treated/untreated medical problems, particularly in children. Nurses are in a unique position to assess pain as they stay in contact with the child and their family in hospital most of the time. The regulations of Joint Commission on Accreditation of Healthcare Organization regard pain as "the fifth vital sign" as it requires caregivers to regularly assess and address pain. Assessment of pain in children is linked to their level of development. Children of the same age vary widely in their perception and tolerance of pain.

Definition and Concept of Pain

According to the International Association for the Study of Pain, "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage". Pain may be either acute or chronic. Acute pain is sudden and of short duration, it may be associated with a single event, such as surgery or an acute exacerbation of a condition such as a sickle cell crisis. The inflammatory response that follows the initial tissue injury causes a sustained pain response. Chronic pain is a persistent pattern of pain, lasting longer than 6 months; it is generally associated with a prolonged disease process such as juvenile rheumatoid arthritis.

Assessment of Pain in Children

Pain assessment is an important part of pain management. To adequately assess a child's response to treatment, it is necessary to have ongoing assessment of the child's pain. It should be carried out at regular intervals because the disease process and the factors that influence it may change over time and regular assessment permits the measurement of the efficacy of different treatment strategies in relieving pain. The pain assessment process involves the child, the parents or caregivers and the health-care providers.

History and Physical Examination of Pain

The initial assessment of the child reporting pain includes a detailed history related to pain, a physical examination and the measurement of severity of pain using an age-appropriate pain measurement tool.

History collection for pain assessment involves obtaining information about the location, duration, severity and characteristics of the pain (as described by the child/parent, i.e., sharp, burning, aching, stabbing, shooting, throbbing), as well as the impact of persisting pain on various aspects of the child's life such as sleep, emotional state, relationships, development and physical function.

A thorough physical examination is essential and each location of pain should be carefully evaluated. Various physiologic and behavioral indicators should be kept in mind while assessing a child for pain.

Physiologic Indicators

Acute pain stimulates the adrenergic nervous system and results in physiologic changes like tachycardia, tachypnea, hypertension, pupil dilation, pallor, increased perspiration and increased secretion of catecholamines and adrenocorticoid hormones. Chronic pain of long duration permits physiologic adaptation and therefore, normal heart rate, respiratory rate and blood pressure levels are often seen.

Behavioral Indicators

Children in acute pain behave in many of the same ways as children who show signs of fear and anxiety. These behaviors include the following:

- Short attention span (child is difficult to distract)
- Irritability (child is difficult to comfort)
- Facial expressions—grimacing, biting or pursing lips (Fig. 4.3)
- Posturing (guarding a painful joint by avoiding movement), remaining immobile, or protecting the painful area
- Drawing up knees, flexing limbs, massaging affected area
- Lethargy, remaining quiet or withdrawal
- Sleep disturbances

Figure 4.3: Facial expressions of pain in the infant

Preverbal children may show conflicting signs of pain (restlessness, agitation or withdrawal, hyper alert or vigilant, grimacing, crying or anger), making pain assessment and management more challenging. Children often suffer additional emotional distress and fear that the discomfort will worsen. Depression and aggressive behavior are frequently overlooked as indicators of pain. Behavioral responses and verbal descriptions of pain by children of different age is shown in Table 4.3.

Tools for Pain Assessment

Pain is a subjective experience and individual's self-reporting is the preferred method for assessing pain. However, for children who cannot communicate this information due to age or developmental status, observational and behavorial assessment tools are acceptable alternatives when valid self-report is not available. Physical and behavioral indicators are used to quantify pain in non-verbal children. For example, the Neonatal Infant Pain Scale (NIPS) and the FLACC Behavioral Pain Assessment.

The Neonatal/Infant Pain Scale (NIPS)

Listed in Table 4.4A, it is designed to measure procedural pain in preterm and full-term newborns up to 6 weeks after birth. The tool was adapted from the CHEOPS scale and uses the behaviors that nurses have described as being indicative of infant pain or distress. Six indicators, i.e. facial expression, cry quality, breathing patterns, arm and leg position and state of arousal are observed.

Each behavioral indicator is scored with 0 or 1 except "cry", which has three possible descriptors therefore, being scored with a 0, 1 or 2. Infants should be observed for one minute in order to fully assess each indicator. Total pain scores range from 0–7. Refer to Table 4.4B to understand the interpretation of NIPS.

Table 4.3: Behavioral responses and verbal descriptions of pain by children of different age

Age group	Behavioral response	Verbal description
Infants **<6 months** **6–12 months**	Generalized body movements, chin quivering, facial grimacing, poor feeding Reflex withdrawal to stimulus, facial grimacing, disturbed sleep, irritability, restlessness	Cries Cries
Toddlers **1–3 years**	Localized withdrawal, resistance of entire body, aggressive behavior, disturbed sleep	Cries and screams, cannot describe intensity or type of pain
Preschoolers **3–6 years** **(Preoperational)**	Active physical resistance, directed aggressive behavior, strikes out physically and verbally when hurt, low frustration level	Can identify location and intensity of pain, denies pain, may believe his or her pain is obvious to others
School age **7–9 years** **(Concrete operational)** **10–12 Years** **(Transitional)**	Passive resistance, clenches fists, holds body rigidly still, suffers emotional withdrawal, engages in plea bargaining May pretend comfort to project bravery, may regress with stress and anxiety	Can specify location and intensity of pain and describe its physical characteristics Able to describe intensity and location with more characteristics, able to describe psychologic pain.
Adolescents **13–18 years** **(formal operational)**	Want to behave in a socially acceptable manner (like adults), show a controlled behavioral response	More sophisticated descriptions as experience is gained; may think nurses are in tune with their thoughts, so they don't need to tell the nurse about their pain

Table 4.4A: Neonatal/Infant Pain Scale (NIPS)

(Recommended for children less than 1-year-old. A score greater than 3 indicates pain)

Variable	Findings	Points
1. Facial expression		
Relaxed muscles	Restful face, neutral expression	0
Grimace	Tight facial muscles; furrowed brow, chin, jaw, (negative facial expression-nose, mouth and brow)	1
2. Cry		
No cry	Quiet, not crying	0
Whimper	Mild moaning, intermittent	1
Vigorous cry	Loud scream; rising, shrill, continuous (Note: Silent cry may be scored if baby is intubated as evidenced by obvious mouth and facial movement)	2
3. Breathing pattern		
Relaxed	Usual pattern for this infant	0
Change in breathing	In-drawing, irregular, faster than usual; gagging; breath holding	1
4. Arms		
Relaxed/restrained	No muscular rigidity; occasional random movements of arms	0
Flexed/extended	Tense, straight arms, rigid and/or rapid extension, flexion	1
5. Legs		
Relaxed/restrained	No muscular rigidity; occasional random leg movement	0
Flexed/extended	Tense, straight legs; rigid and/or rapid extension, flexion	1
6. State of arousal		
Sleeping/awake	Quiet, peaceful sleeping or alert random leg movement	0
Fussy	Alert, restless, and thrashing	1

Table 4.4B: Interpretation of NIPS

Scores	Pain Level	Intervention
0-2	Mild to no pain	None
3-4	Mild to moderate pain	Non-pharmacological intervention with a reassessment in 30 minutes
>4	Severe pain	Non-pharmacological intervention and possibly a pharmacological intervention with reassessment in 30 minutes

Table 4.5: FLACC-R Scale

Categories	0	1	2
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested, sad, appears worried	Frequent to constant quivering chin, clenched jaw, distressed looking face, expression of fright/panic
Legs	Normal position or relaxed, usual tone and motion to limbs	Uneasy, restless, tense, occasional tremors	Kicking, or legs drawn up, marked increase in spasticity, constant tremors, jerking
Activity	Lying quietly, normal position, moves easily, regular, rhythmic respirations	Squirming, shifting back and forth, tense, tense/guarded movements, mildly agitated, shallow/splinting respirations, intermittent sighs	Arched, rigid or jerking, severe agitation, head banging, shivering, breath holding, gasping, severe splinting
Cry	No cry (awake or asleep)	Moans or whimpers; occasional complaint, occasional verbal outbursts, constant grunting	Crying steadily, screams or sobs, frequent complaints, repeated outbursts, constant grunting
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort, pushing caregiver away, resisting care or comfort measures

The FLACC Pain Scale (Revised)

The FLACC-R (Table 4.5) is designed to measure acute pain in infants and young children following surgery and it can be used until the child is able to self-report pain with another pain scale. FLACC is an acronym for the five categories that are assessed: Face, Legs, Activity, Cry, and Consolability. To use FLACC-R, the nurse observes the child during routine care for 1–5 minutes and then selects the score that most closely matches each behavior noted. The scores for the five categories are added together for the total score.

- Each of the five categories—(F) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolability is scored from 0–2, which results in a total score between zero and ten (Table 4.6).
- **Patients who are awake:** Observe for at least 1–2 minutes. Observe legs and body uncovered. Reposition patient or observe activity, assess body for tenseness and tone. Initiate consoling interventions, if needed.
- **Patients who are asleep:** Observe for at least 2 minutes or longer. Observe body and legs uncovered. If possible, reposition the patient. Touch the body and assess for tenseness and tone.
- The revised FLACC can be used for all non-verbal children. The additional descriptors (in bold) are descriptors validated in children with cognitive impairment. The nurse can review with parents the descriptors within each category. Ask them if there are additional behaviors that are better indicators of pain in their child. Add these behaviors to the tool in the appropriate category.

Table 4.6: Interpretation of FLACC-R

Scores	Pain level
0	Relaxed and comfortable
1–3	Mild discomfort
4–6	Moderate pain
7–10	Severe pain or discomfort or both

Self-Report Pain Scales

The Self-reporting scales depend on the child's self-report of pain intensity. To use pain scales, the child must be developmentally ready and understand the concept of a little or a lot of pain well enough to tell the nurse. Examples of self-report pain scales include the Faces Pain Scale, Numeric Pain Scale and Visual Analog Scale.

The Wong-Baker Faces Pain Scale: (Fig. 4.4) It is used self-report of pain to assess a patient's experience of pain. It can be used in children aged above 3 years, depending upon their cognitive ability. The Faces Pain Rating Scale has a series of six cartoon-like faces with expressions from smiling to tearful. **Face 0** is very happy because he doesn't hurt at all (i.e., has no pain). **Face 1** hurts just a little bit. **Face 2** hurts a

Figure 4.4: Faces pain scale

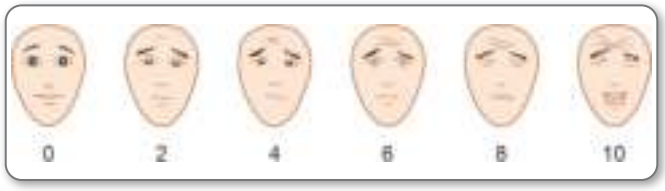

Figure 4.5: Faces pain scale revised

little more. **Face 3** hurts even more. **Face 4** hurts a whole lot. **Face 5** hurts as much as you can imagine.

Faces Pain Scale – Revised (FPS-R): The FACES pain scale has been revised so that the scale is from zero to ten rather than zero to five (Fig. 4.5) as in the Wong-Baker measure. The affective qualities including the smile and tears have been removed.

These faces show how much something can hurt. The faces show more and more pain as one moves from left to right. Score the chosen face 0, 2, 4, 6, 8, or 10 counting left to right, where '0' = 'no pain' and '10' = 'very much pain.'

The Numeric Pain Rating Scale (Fig. 4.6): School-age children and adolescents have better number concepts and language skills, so additional tools can be used to assess their pain. The nurse should ask the child to describe the pain and give its location. At about 8 years of age, children can give a separate rating for the intensity of pain and describe how unpleasant it is.

The Numeric Rating Scale (NRS) is an 11-point scale for patient self-reporting of pain. It is a vertical line that has descriptors of pain at each end (no pain, worst possible pain). Marks and numbers are placed at each cm on the line.

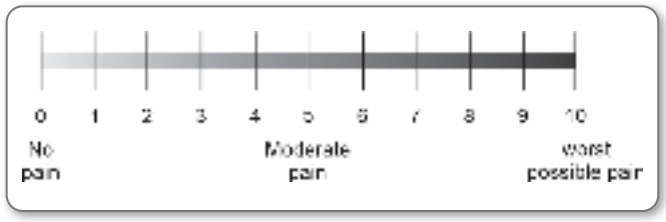

Figure 4.6: Numeric rating scale

The NRS is normally used for children over eight years old. A child is asked to rate their pain from no pain to the worst possible pain.

Interpretation of NRS: **0** = No Pain; **1–3** = Mild Pain (nagging, annoying, interfering little with Activities of Daily Living (ADLs); **4–6** = Moderate pain (interferes significantly with ADLs); **7–10** = Severe pain ((disabling; unable to perform ADLs).

Pain Management in Children

Pain management in children can be done in two ways: Nonpharmacological and Pharmacological

1. Non-pharmacological methods to reduce pain are:
   - Distraction by visual aids, like pictures, cartoons, mobile phones, and mirrors, playing with electronic devices, watching videos; auditory aids like music, singing, talking, or reading a book; providing toys with lots of color or toys that light up.
   - Reducing noise and lighting, use of soothing smells and clustering procedures to avoid over-handling
   - Non-nutritive sucking
   - Skin to skin contact
   - Rocking and holding the infant
   - Swaddling the infant
   - Breathing exercises like blowing bubbles
   - Age appropriate explanation to school age and adolescents
2. Pharmacological methods (Table 4.7) of pain management in children includes nonopioids and opioids.

Table 4.7: Pharmacological methods of pain management

Non-opioid analgesics	Opioid analgesics
• Nonsteroidal anti-inflammatory drugs- Action: anti-inflammatory, analgesic, antipyretic, and antiplatelet properties. NSAIDs are First line pharmacologic therapy for pain management. Examples: ▪ Acetic acids (ketorolac), ▪ Proprionic acids (ibuprofen, naproxen) ▪ Cyclooxygenase-2 selective (celecoxib) ▪ Ketorolac- IV or intranasal • Acetaminophen (paracetamol) – PO, rectally, IV; for mild to moderate pain and it is an antipyretic	• Used for acute moderate to severe pain which is refractory to other therapies. Examples: ▪ Codeine ▪ Tramadol ▪ hydrocodone ▪ Morphine ▪ Hydromorphone ▪ Fentanyl ▪ Methadone

Summary

Knowing about various procedures and the correct technique to perform them is essential for a nurse to work in the pediatric settings. Age-appropriate preparations have to be done, explanations have to be given to child and family to render their cooperation.

Assess Yourself

1. The most appropriate site for IM injections for infants and toddlers is..... (vastus lateralis).
2. The formula for drop rate calculation is ..... ({Total volume/Time in minutes} × Drop factor)
3. The Holliday-Segar formula, also known as the 4-2-1 rule (4 mL/kg/hr for the first 10 kg; 2 mL/kg/hr for the second 10 kg; 1 mL/kg/hr for every kilogram above 20 kg) is used to calculate ..... (maintenance fluid therapy for a child)
4. Discuss various tools for pain assessment in children.
5. Name some nonpharmacological methods of pain management in children.