

**INTEGRATED
MANAGEMENT OF
NEONATAL AND
CHILDHOOD
ILLNESS**

Introduction

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INTRODUCTION

Over the last 3 decades the annual number of deaths among children less than 5 years old has decreased by almost a third. However, this reduction has not been evenly distributed throughout the world. Every year more than 10 million children die in developing countries before they reach their fifth birthday (Fig.1).

The most common causes of infant and child mortality in developing countries including India are perinatal conditions, acute respiratory infections, diarrhoea, malaria, measles and malnutrition. These are also the commonest causes of morbidity in young children. In India, the common illnesses in children younger than 5 years of age according to the National Family Health Survey III (NFHS-III) data include fever (15% prevalence in the previous 2-week period), acute respiratory infections (6%), diarrhoea (9%) and malnutrition (46%) - and often a combination of these conditions.

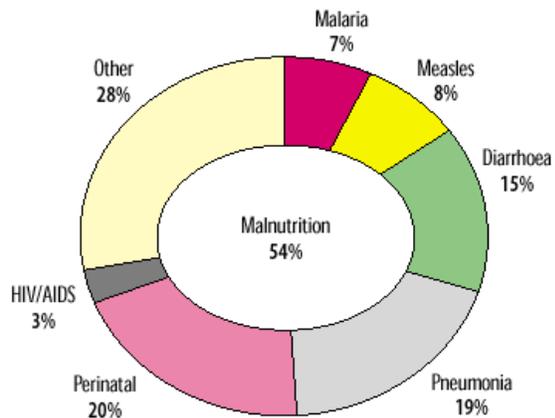


Fig. 1: Distribution of 10.5 million deaths among children less than 5 years old in all developing countries, 1999

(WHO. World Health Report 1999: Making a difference, Geneva, WHO, 1999)

Infant Mortality Rate (IMR) in India continues to be high at 57/1000 live births and Under Five Mortality Rate (U5MR) at 74/1000 live births. (NFHS-III) Neonatal mortality contributes to over 64% of infant deaths and most of these deaths occur during first week of life. Mortality rate in the second month of life is also higher than at later ages. Any health program that aims at reducing IMR needs to address mortality in the first two months of life, particularly in the first week of life.

Projections based on the 1996 analysis *The Global Burden of Disease* indicate that common childhood illnesses will continue to be major contributors to child deaths through the year 2020 unless significantly greater efforts are made to control them. This assumption makes a strong case for introducing new strategies to significantly reduce child mortality and improve child health and development.

Rationale for an Evidence-based Syndromic Approach to Case Management

Many well-known prevention and treatment strategies like UIP, Oral Rehydration and appropriate antibiotic therapy for pneumonia have already proven effective for saving young lives. Even modest improvements in breastfeeding practices have reduced childhood deaths. While each of these interventions has shown great success,

accumulating evidence suggests that a more integrated approach to managing sick children is needed to achieve better outcomes. Child health programmes need to move beyond single diseases to addressing the overall health and well being of the child. Because many children present with overlapping signs and symptoms of diseases, a single diagnosis can be difficult, and may not be feasible or appropriate. This is especially true for first-level health facilities where examinations involve few instruments, little or no laboratory tests, and no X-ray.

During the mid-1990s, the World Health Organization (WHO), in collaboration with UNICEF and many other agencies, institutions and individuals, responded to this challenge by developing a strategy known as the Integrated Management of Childhood Illness (IMCI). Although the major reason for developing the IMCI strategy stemmed from the needs of curative care, the strategy also addresses aspects of nutrition, immunization, and other important elements of disease prevention and health promotion. The objectives of the strategy are to reduce death and the frequency and severity of illness and disability, and to contribute to improved growth and development. This strategy has been adapted for India as Integrated Management of Neonatal and Childhood Illness (IMNCI).

The IMNCI clinical guidelines target children less than 5 years old — the age group that bears the highest burden of deaths from common childhood diseases. The guidelines take an evidence-based, syndromic approach to case management that supports the rational, effective and affordable use of drugs and diagnostic tools. Evidence-based medicine stresses the importance of evaluation of evidence from clinical research and cautions against the use of intuition, unsystematic clinical experience, and untested pathophysiologic reasoning for medical decision-making. In situations where laboratory support and clinical resources are limited, the syndromic approach is a more realistic and cost-effective way to manage patients. Careful and systematic assessment of common symptoms and well-selected clinical signs provides sufficient information to guide rational and effective actions.

An evidence-based syndromic approach can be used to determine the:

- Health problem(s) the child may have;
- Severity of the child's condition;
- Actions that can be taken to care for the child (e.g. refer the child immediately, manage with available resources, or manage at home).

In addition, IMNCI promotes:

- Adjustment of interventions to the capacity and functions of the health system; and
- Active involvement of family members and the community in the health care process.

Parents, if correctly informed and counselled, can play an important role in improving the health status of their children by following the advice given by a health care provider, by applying appropriate feeding practices and by bringing sick children to a health facility as soon as symptoms arise.

Components of the Integrated Approach

The IMNCI strategy includes both preventive and curative interventions that aim to improve practices in health facilities, the health system and at home. At the core of the strategy is integrated case management of the most common childhood problems with a focus on the most common causes of death.

The strategy includes three main components:

- 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;
- Improvements in the overall health system required for effective management of childhood illness;
- Improvements in family and community health care practices.

The Principles of Integrated Care

The IMNCI guidelines are based on the following principles:

- All sick young infants age up to 2 months must be examined for signs of **“possible serious bacterial infection”** and all children 2 months to 5 years must be examined for **“general danger signs”** which indicate the need for immediate referral or admission to a hospital.
- All sick children must be **routinely assessed for major symptoms** (for young infants up to 2 months: diarrhoea; and for children age 2 months up to 5 years: cough or difficult breathing, diarrhoea, fever and ear problem). They must also be routinely assessed for **nutritional and immunization status, feeding problems, and other potential problems**.
- Only a **limited number of carefully selected clinical signs** are used, based on evidence of their sensitivity and specificity to detect disease. These signs were selected considering the conditions and realities of first-level health facilities.
- A combination of individual signs leads to a child’s **classification(s) rather than a diagnosis**. Classification(s) indicate the severity of condition(s). They call for specific actions based on whether the young infant or the child (a) should be urgently referred to another level of care, (b) requires specific treatments (such as antibiotics or antimalarial treatment), or (c) may be safely managed at home. The **classifications are colour coded**: “pink” suggests hospital referral or admission, “yellow” indicates initiation of treatment, and “green” calls for home treatment.
- The IMNCI guidelines address **most, but not all, of the major reasons a sick child is brought to a clinic**. A child returning with chronic problems or less common illnesses may require special care. The guidelines do not describe the care at birth and the management of trauma or other acute emergencies due to accidents or injuries.
- IMNCI management procedures use a **limited number of essential drugs** and **encourage active participation of caretakers in the treatment** of children.

- An essential component of the IMNCI guidelines is the *counselling of caretakers* about home care, including counselling about feeding, fluids and when to return to a health facility.

THE CASE MANAGEMENT PROCESS

The case management process is presented on a series of charts, which show the sequence of steps and provide information for performing them. The charts describe the following steps:

- Assess the young infant or child
- Classify the illness
- Identify treatment
- Treat the infant or child
- Counsel the mother
- Give follow-up care

These steps are probably similar to the way you care for sick children now, though you may have learned different words to describe them. The step called "Assess the Young Infant or Child" means taking a history and doing a physical examination. "Classify the Illness" means making a decision on the severity of the illness. You will select a category, or "Classification," for each of the child's major symptoms, which corresponds to the severity of the disease. Classifications are not specific disease diagnoses. Instead, they are categories that are used to determine treatment.

The charts recommend appropriate treatment for each classification. When using this process, selecting a classification on the chart is sufficient to allow you to "Identify Treatment" for a young infant or child. For example, a young infant with the classification POSSIBLE SERIOUS BACTERIAL INFECTION could have pneumonia, septicaemia or meningitis. The treatments listed for POSSIBLE SERIOUS BACTERIAL INFECTION will be appropriate because they have been chosen to cover the most important diseases included in this classification.

"Treat" means giving treatment in clinic, prescribing drugs or other treatments to be given at home, and also teaching the mother how to carry out the treatments. "Counsel the mother" includes assessing how the child is fed and telling her about the foods and fluids to give the child and when to bring the child back to the clinic.

Management of the young infant age up to 2 months is presented on two charts titled:
 * *ASSESS AND CLASSIFY THE SICK YOUNG INFANT AGE UP TO 2 MONTHS* and
 * *TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER.*

The case management process for sick children age 2 months up to 5 years is somewhat different from young infants and is presented on three charts titled:

- * *ASSESS AND CLASSIFY THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS*
- * *TREAT THE CHILD*
- * *COUNSEL THE MOTHER*

The charts are designed to help you to manage young infants and children correctly and efficiently. This course trains you to use the charts and gives you clinical practice managing sick young infants and children. After the course, the charts will help you recall and apply what you have learned when you manage sick young infants and children at your clinic.

PURPOSE OF THIS TRAINING COURSE

This training course is designed to teach the case management process to doctors who see sick children and infants. It is a case management process for a first-level facility such as a clinic, a health centre or an outpatient department of a hospital. The course uses the word "clinic" throughout to mean any such setting.

You will learn to manage sick children according to the case management charts, including:

- Assessing signs and symptoms of illness, and nutritional and immunization status,
- Classifying the illness,
- Identifying treatments for the child's classifications and deciding if a child needs to be referred,
- Giving important pre-referral treatments (such as a first dose of an antibiotic, vitamin A, quinine injection, and treatment to prevent low blood sugar) and referring the young infant or child,
- Providing treatments in the clinic, such as first dose of antibiotic, oral rehydration therapy, vitamin A, and immunization, warming the young infant by skin to skin contact,
- Teaching the mother to give specific treatment at home, such as an oral antibiotic or antimalarial, and
- Counselling the mother about feeding and when to return.
- Providing treatment to sick young infants and children who have a severe classification but referral is not possible.
- When a young infant or child comes for scheduled follow-up, reassessing the problem and providing appropriate care.

COURSE METHODS AND MATERIALS

In addition to the case management chart booklets, you will be using a series of training modules, which explains each step of IMNCI guidelines. These modules are titled:

- *Assess and Classify the Sick Young Infant Age up to 2 Months*
- *Identify Treatment for the Sick Young Infant*
- *Treat the Young Infant and Counsel the Mother*
- *Assess and Classify the Sick Child Age 2 Months up to 5 Years*
- *Identify Treatment for the Sick Child*
- *Treat the Child*
- *Counsel the Mother*
- *Follow-Up*

The modules also include exercises that will help you learn the steps. Most exercises provide clinical information describing a sick young infant or child and ask questions. Some exercises use photographs or video. You will complete a module by reading it and working through the exercises.

For approximately half of each day, you will go to nearby clinics to observe and practice managing sick young infants and children. In these clinical sessions you will assess, classify and treat sick young infants and children, including teaching their mothers how to care for them at home. The clinical sessions give you opportunities to try the skills that you learn about in the modules. You may ask questions and receive guidance if difficulties arise. By the end of the course, you will have experience in managing young infants and children according to the case management process and can feel comfortable continuing at your own clinic.

A facilitator will guide you through the activities and exercises in the modules, lead group discussions and review your individual work on the modules. A facilitator will also supervise your practice during clinical sessions. You are encouraged to discuss any questions or problems with a facilitator.

HOW TO SELECT THE APPROPRIATE CASE MANAGEMENT CHARTS

Depending on the procedure for registering patients at your clinic, the child's name, age and other information such as address may have been recorded already. If not, you may begin by asking the child's name and age.

Decide which age group the child is in:

- Age up to 2 months
- Age 2 months up to 5 years

If the child not yet 2 months of age, the child is considered a young infant. Use the chart *ASSESS AND CLASSIFY THE SICK YOUNG INFANT*. “Up to 2 months” means that the child has not yet completed 2 months of age. For example, this age group includes a child who is 1 month and 29 days old but not a child who is 2 months old. If the child is age 2 months up to 5 years, select the chart *ASSESS AND CLASSIFY THE SICK CHILD AGE 2 MONTHS UP TO 5 YEARS*. “Up to 5 years” means that the child has not yet had his fifth birthday. For example, this age group includes a child who is 4 years and 11 months but not a child who is 5 years old.

In the next module, *Assess and Classify the Sick Young Infant*, you will learn how to assess and classify a young infant.

GLOSSARY

- Active feeding:** Encouraging a child to eat, for example, by sitting with him and helping to get the spoon to his mouth.
- Active neurological disease of the central nervous system:** Epilepsy and other current diseases of the brain or spinal cord. This does not include permanent, old neurological problems from cerebral palsy, polio, or injuries.
- AIDS:** Acquired Immune Deficiency Syndrome, caused by infection with the Human Immunodeficiency Virus (HIV). AIDS is the final and most severe phase of HIV infection. The immune system works poorly, and the patient may have various symptoms and diseases (such as diarrhoea, fever, wasting, pneumonia).
- Amoebiasis:** Amoebic dysentery; dysentery caused by the amoeba *E. histolytica*.
- Allergies:** Problems such as sneezing, a rash, or difficult breathing that affect certain people when specific things are breathed in, eaten, injected, or touched.
- Antidiarrhoeal drugs:** Drugs that are claimed to stop or decrease diarrhoea, such as antimotility drugs. These drugs are not useful for children with diarrhoea. Some are dangerous.
- Antifolate drugs:** Drugs that act against folate. Both cotrimoxazole (trimethoprim-sulfamethoxazole) and the antimalarial sulfadoxine-pyramethamine (Fansidar) are antifolate drugs.
- Antimotility drugs:** Drugs that slow the movement of contents through the bowel by reducing its muscular activity
- Axillary temperature:** Temperature measured in the armpit.
- Cerebral malaria:** Falciparum malaria affecting the brain.
- Checking questions:** Questions intended to find out what someone understands and what needs further explanation. After teaching a mother about feeding, a doctor/doctor might ask the checking question, "What foods will you feed your child?"
- Chest indrawing:** When the lower chest wall (lower ribs) goes in when a child breathes in. In a child age 2 months up to 5 years, if chest indrawing is clearly visible and present all the time during an examination, it is sign of SEVERE PNEUMONIA OR VERY SEVERE DISEASE.

Severe chest indrawing: Chest indrawing that is very deep and easy to see. In a young infant, mild chest indrawing is normal, but severe chest indrawing is a sign of serious illness.

Classify: As used in this course, to select a category of illness and severity (called a classification) based on a child's signs and symptoms.

Clinic: As used in this course, any first-level outpatient health facility such as dispensary, rural health post, health centre, or the outpatient department of a hospital.

Communication skills: As used in this course, skills used in teaching and counselling with mothers, including: ASK AND LISTEN, PRAISE, ADVISE, AND CHECK UNDERSTANDING.

Complementary foods: Foods given in addition to breastmilk, starting when a child is 6 months of age. By age 6 months, all children should be receiving a nutritious, thick complementary food, such as cereal mixed with oil and bits of meat, vegetables, or fish. Complementary foods are sometimes called "weaning foods."

Corneal rupture: Bursting of the cornea, that is, the clear outer layer of the eye.

Counsel: As used in this module, to teach or advise a mother as part of a discussion which includes: asking questions, listening to the mother's answers, praising and/or giving relevant advice, helping to solve problems, and checking understanding.

Digital watch: A watch that shows the time in digits (numerals) instead of with moving hands.

Disease: As used in this course, a specific illness or group of illnesses, classified on the basis of signs and symptoms, for example, "VERY SEVERE FEBRILE DISEASE." This classification includes several illnesses such as meningitis, cerebral malaria, and septicaemia.

DPT: Immunization to prevent diphtheria, pertussis (whooping cough), and tetanus. For full protection a child needs 3 injections: at 6 weeks, 10 weeks, and 14 weeks.

Energy-rich: Full of ingredients that give energy (or calories), such as starches or oil.

Diarrhoeal episodes: Occurrences of diarrhoea.

Essential: Necessary. Essential vitamins and minerals (such as vitamins and iron) are those necessary for good health.

Essential fatty acids: Fats that are necessary for a baby's growing eyes and brain. These fatty acids are not present in cow's milk or most brands of formula.

Exclusive breastfeeding: Giving a child only breastmilk and no additional food, water, or other fluids (with the exception of medicines and vitamins, if needed).

Falciparum malaria: Malaria caused by the parasite *Plasmodium falciparum*.

Feeding assessment: The process of asking questions to find out about a child's usual feeding and feeding during illness. (Appropriate questions are listed on the *COUNSEL* chart.)

Feeding problems: Differences between a child's actual feeding and feeding recommendations listed on the *COUNSEL* chart, and other problems such as difficulty breastfeeding, use of a feeding bottle, lack of active feeding, or not feeding well during illness.

Fever: As used in this course, fever includes:

- a history of fever (as reported by the mother)
- feeling hot to the touch
- an axillary temperature of 37.5°C (99.5°F) or higher, or a rectal temperature of 38°C (100.4°F) or higher.

First-level health facility: A facility such as a health centre, clinic, rural health post, dispensary, or outpatient department of a hospital, which is considered the first facility within the health system where people seek care. In this course, the term **clinic** is used for any first-level health facility.

Follow-up visit: A return visit requested by the doctor/doctor to see if treatment is working or if further treatment or referral is needed.

Gruel: A food made by boiling cereal meal or legumes in milk or water. Gruel may be made thick like a porridge or thin like a drink. For complementary feeding, gruel should be made thick.

Grunting: Soft, short sounds that a young infant makes when breathing out. Grunting occurs when a young infant is having trouble breathing.

Hepatitis B virus: One of several viruses that cause hepatitis; this virus also causes liver cancer. This virus is spread easily by blood, so needles and syringes must be sterile.

HIV: Human Immunodeficiency Virus. HIV is the virus that causes AIDS.

Hookworm: A small worm that may live as a parasite in a person's intestine and suck blood. This blood loss may lead to anaemia.

Hospital: As used in this course, any health facility with inpatient beds, supplies, and expertise to treat a very sick child.

Hygienically: Using clean utensils and clean hands, avoiding germs.

Hypernatremia: Too much sodium in the blood.

Hypoxia: A condition in which too little oxygen is reaching the organs of the body.

Illness: Sickness. As described in this course, the signs and symptoms of illness need to be assessed and classified in order to select treatment.

Immune suppression: Weakening of the immune system so that the body has little resistance to disease.

Immune system: The system that helps the body resist disease by producing antibodies or special cells to fight disease-causing agents.

Immunization status: A comparison of a child's past immunizations with the recommended immunization schedule. Immunization status describes whether or not a child has received all of the immunizations recommended for his age, and, if not, what immunizations are needed now.

Infant: As used in this course, a baby up to age 12 months.

Young infant: As used in this course, a baby age up to 2 months.

Initial visit: The first visit to a doctor/doctor for an episode of an illness or problem.

Inpatient: A patient who stays at a health facility and receives a bed and food as well as treatment.

Integrated case management process: A process for treating patients that includes consideration of all of their symptoms.

Koplik spots: Spots that occur in the mouth inside the cheek during the early stages of measles. They are small, irregular, bright red spots with a white spot in the center. They do not interfere with drinking or eating and do not need treatment.

Kwashiorkor: A type of protein-energy malnutrition due to lack of protein in the diet. A child with kwashiorkor has oedema, which may cause his limbs to appear swollen. The child may have sparse hair and dry scaly skin.

Local infections: Infections located only in a specific place on the body, for example, in the eye or in the mouth.

Low blood sugar: Too little sugar in the blood, also called hypoglycaemia.

Low birth weight: Low weight at birth, due either to poor growth in the womb or to prematurity (being born early). Children less than 2500 grams have low birth weight.

Malignant: Tending to spread and result in death.

Marasmus: A type of protein-energy malnutrition due to long-term lack of calories and protein. A child with marasmus appears to be just "skin and bones".

Mastoid: The skull bone behind the ear.

Measles complications: Problems or infections that occur during or after measles. Some examples of measles complications are: diarrhoea, pneumonia, stridor, mouth ulcers, ear infection, and eye infection. A less common complication is encephalitis, an inflammation of the brain.

Meningitis: A dangerous infection in which the spinal fluid and the membranes surrounding the brain and spinal cord become infected.

Midwife: A health care worker who assists women in childbirth and may also provide other health care.

Milk, Locally Appropriate: Dairy/ locally appropriate animal milk given instead of or in addition to breastmilk

Nasogastric (NG) tube: A tube inserted through a patient's nose to his stomach. An NG tube may be used to give ORS solution to severely dehydrated patients when IV therapy is not available, or to feed a severely malnourished child who cannot eat.

Nutrient-rich: Full of the essential nutrients. These include protein as well as vitamins and minerals.

Nutritional status: The degree to which a child shows or does not show certain signs of malnutrition or anaemia or low weight. In this course, a child's nutritional status may be classified as: SEVERE MALNUTRITION, VERY LOW WEIGHT, or NOT VERY LOW WEIGHT.

Oedema: Swelling from excess fluid under the skin. Oedema usually occurs in the lower legs and feet, sometimes elsewhere.

Opportunistic infections: Infections caused by microorganisms which the body's immune system is normally able to fight off. When the immune system is weakened, as in AIDS, opportunistic infections can take hold. For example, in a healthy person, there are organisms in the mouth which do not normally

cause infection; however, in a person with a weakened immune system, these same organisms may cause oral thrush.

Oral Rehydration Salts (ORS): A mixture of glucose and salts conforming to the WHO recommended formula (in mmol per litre): sodium 75; chloride 65, potassium 20, citrate 10, glucose 75 and osmolarity 245.

OPV: Oral polio vaccine. To prevent polio, it is given at birth, 6 weeks, 10 weeks, 14 weeks and 18 months.

Outpatient: A patient who does not stay overnight at a health facility.

Pathogen: An organism or microorganism that causes disease.

Pre-referral: Before referral to a hospital.

Premature: Born early, before 37 weeks of pregnancy.

Protein: A substance in food made up of amino acids needed for adequate growth. Meat, fish, eggs, milk, and beans are examples of foods containing protein.

Protein-energy malnutrition: A condition caused by lack of enough protein or energy in the diet, or by frequent illness.

Pulses: Legumes, such as peas, beans, or lentils.

Pustule: A reddish bump on the skin containing pus.

Radial pulse: The pulse felt over the radial artery, which is the main blood vessel at the wrist on the outside of the thumb.

Reassessment: As used in this course, to examine the child again for signs of specific illness to see if the child is improving.

Full reassessment: To do the entire assessment process on the *ASSESS & CLASSIFY* chart again to see if there has been improvement and also to assess and classify any new problems.

Recommendations: Advice, instructions that should be followed.

Recurrent convulsions: Spasms or fits that occur repeatedly.

Referral: As used in this course, sending a patient for further assessment and care at a hospital. It would also include shifting of a patient from outpatient department to inpatient section of the hospital where first level referral facilities are available.

Relactation: Starting breastfeeding again and producing breastmilk after stopping .

Respiratory distress: Discomfort from not getting enough air into the lungs.

Semi-solid food: Food that is part solid and part liquid. A soft, wet food such as gruel or porridge is semi-solid.

Septicaemia: An infection of the blood, also called "sepsis" in this course.

Severe classification: As used in this course, a very serious illness requiring urgent attention and usually referral or admission for inpatient care. Severe classifications are listed in pink-colored rows on the *ASSESS & CLASSIFY* chart.

Shock: a dangerous condition with severe weakness, lethargy, or unconsciousness, cold extremities, and fast, weak pulse. It is caused by diarrhoea with very severe dehydration, haemorrhage, burns, or sepsis.

Signs: As used in this course, physical evidence of a health problem which the doctor/doctor observes by looking, listening, or feeling. Examples of signs include: fast breathing, chest indrawing, sunken eyes, stiff neck, pus draining from the ear, etc.

Stable: Staying the same rather than getting worse.

Symptoms: As used in this course, health problems reported by the mother such as cough, diarrhoea, or ear pain.

Main symptoms: As used in this course, those symptoms which the doctor/doctor should ask the mother about when assessing the child. The four main symptoms listed on the *ASSESS & CLASSIFY* chart are: cough or difficult breathing, diarrhoea, fever, and ear problem.

Thrush: Ulcers or white patches on the inside of the mouth and tongue, caused by a yeast infection.

Trophozoites: Stage of a protozoan organism such as *Giardia lamblia* or *E. histolytica*; the stage which causes tissue damage.

Mouth ulcers: Sores on the inside of the mouth and lips or on the tongue. These may occur with measles and may be red or have white coating on them. They make it difficult to eat or drink.

Urgent referral: Sending a patient immediately for further care at a hospital.