SHENDI UNIVERSITY
FACULTY OF POST GRADUATE STUDIES
AND SCIENCTIFIC RESEARCH

EVALUATION PERCEPTIONS AND PRACTICES ON QUALITY OF IMCI AMONG HEALTH CARE WORHERS-IN ALGENEINA WEST DARFUR STATE-SUDAN-2014

By:

Ibrahim Musa Ibrahim Hassan

A Thesis Submitted in Fulfillment of Requirements for Philosophy Degree in Community Health Nursing.

Supervisor:

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October 2016

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بسم الله الرحمن الرحيم

الاستهلال

قال الله تعالى:

﴿الَّذِي خَلَقَنِي فَهُوَ يَهْدِينِ (78) وَالَّذِي هُوَ يُطْعِمُنِي وَيَسْقِينِ (79) وَإِذَا مَرِضْتُ فَهُوَ يَشْفِينِ﴾

صدق الله العظيم

سورة الشعراء، الآية 78 – 80.

DEDICATION

I dedicate this work to God Almighty my creator,

to health care workers and communities,

to my parents, wife, young daughter,

and to all children.

ACKNOWLEDGEMENT

My thanks pass to the Ministry of Higher Education & Scientific Research, University of Zalingei for their support and opportunity of study, and foremost I want to thank my advisor Prof Yousif A. Ebrahim Elssyssy, for his supervisor and mentor of my research, I could not thank him enough for all he has done to help me complete this thesis. I must also express my gratitude towards my team members whom made everything possible and always held their heads up in times of difficulty. I could never forget the effort of administration of El Genina University Faculty of applied health sciences and Ministry of health - West Darfur for their unlimited facilitation and support that they gave to me, further more I appreciate effort of my home research study (University of Shendi) for their unlimited collaboration and support.
Finally, I would like to thank my family, friends for their unending support and inspiration to work towards the promotion of a better future and success.

ABBREVIATION

AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Infection
CHD	Center for Human Development
CHW	Community Health Worker
FMOH	Federal Ministry of Health
HIV	Human Immunodeficiency Virus
ICATT	Computerized Adaptation and Training Tool
IMCI	Integrated Management of Childhood Illness
MA	Medical Assistant
MCA	Millennium Challenge Account
MCE	Multi-Country Evaluation
MDG	Millennium Development Goal
NGOs	None Government Organizations
OASIS	Organizational Assessment for Improving and Strengthening Health Financing
ORT	Oral Rehydration therapy
PHC	Primary Health Care
RBM	Roll Back Malaria
SAQ	Self-Administered Questionnaires
SRSS	Simple Random Sample size
TB	Tuberculosis
U5MR	Under-Five Mortality Rate
UNICEF	United Nations Children's Emergency Fund
WHO	World Health Organization

ABSTRACT

Evaluation Perception and practices on quality of IMCI among health workers – in Al Geneina West Darfur State-Sudan - 2014.

The study aims to evaluate perception and practices on quality of Integrated Management of Childhood Illness (IMCI), among health workers in Al-Geneina west Darfur state. It was an interventional study design; twenty-four of health workers were randomly selected from health facilities as a sample size, they trained on IMCI approach and their perception evaluated used structured questionnaire before and after intervention and during follow up. Observation checklist used to assess their performances and services availability. The results show (50.0%) of health workers received IMCI training and (45.0%) received refreshment courses. Moreover, their knowledge percentage present as follow: For assessment of child with main symptoms, (43.6%) for pretest, (44.0%) for posttest-1 and (76.0%) during follow-up(posttest-2). For classification of severe pneumonia and acute ear infection the perceptions mean was (52.9%) for pretest, (54.7%)posttest-1and (84.1%)for posttest-2). Identifying treatments and immunizations the mean was (44.3%)for pretest, (52.9%)for posttest-1 and (77.1%)during follow-up, and for Urgent referral their mean knowledge was (49.0%) before training versus (56.3%) after training and (90.1%) during follow-up. Furthermore, quality of health services organization was (87.5%), Oral rehydration therapy corner (76.0%), Infection control corner (72.0%) and Medications availability was (68.3%). From the study we consider that, despite of insufficient training, lack of infrastructures, and supplies, there are some kinds of care carrying by health workers, but more effort remain to maintain optimum child's health. The important study recommendations are: conducting regularly training to health workers and refreshment courses, motivation, supervisor and follow-up. Expand IMCI approach among community and address local and international agencies to increase participation for applying IMCI approach overall health facilities in the State.

مستخلص البحث

تقييم مفهوم وممارسات كيفية العلاج المتكامل لأمراض الطفولة للعاملين في مجال الرعاية الصحية - الجنينة ولاية غرب دارفور- السودان 2014م.

هدفت الدراسة الي تقييم مفهوم وممارسات كيفية العلاج المتكامل لأمراض الطفولة (IMCI)، للعاملين في مجال الرعاية الصحية في مدينة الجنينة ولاية غرب دارفور. صممت الدراسة بالأسلوب التداخلي، تم إختيار 24 عاملاً في مجال الرعاية الصحية بصورة عشوائية كحجم عينة الدراسة لكل المرافق الصحية، وتم تدريبهم على كيفية العلاج المتكامل لأمراض الطفولة ثم تم تقييم إدراكهم من خلال إستبيان لما قبل وما بعد المتابعة. كما تم وضع قائمة تقييم وذلك لتقييم أداء العاملين والخدمات المتاحة. أظهرت النتائج بأن (50%) من العاملين قد تلقوا تدريباً عن العلاج المتكامل لأمراض الطفولة و(45%) منهم قد تلقوا دورات تنشيطية في هذا المجال. ثم كانت معرفتهم كالأتي:

- بالنسبة لتقييم الأعراض الأساسية للطفل (43.6%) قبل الإختبار، و (44%) بعد الإختبار الأول و(76.0%) أثناء المتابعة (بعد الإختبار الثاني). لتصنيف التهاب الصدر الحاد والتهابات الأذن الحادة كانت النسب (52.9%) قبل الإختبار و (54.7%) بعد الإختبار الأول و(84.1%) بعد الإختبار الثاني. بالنسبة لتحديد العلاجات والتحصين كانت النسبة (44.3%) ما قبل الإختبار، (52.9%) لما بعد الإختبار الأول و (77.1%) أثناء المتابعة. أما بالنسبة للعلاجات الطارئة كانت معرفتهم (49.0%) قبل التدريب مقابل (56.3%) بعد التدريب و(90.1%) أثناء المتابعة. أما عن نوعية تنظيم الخدمات الصحية فقد كانت (87.5%)، املاح التروية الفموية كانت (76.0%) والعدوى (72.0%) ، وإتاحة العلاج كانت (68.3%).
- نخرج من الدراسة بأنه بالرغم من التدريب غير الكافي وضعف البنية التحتية والإمدادات إلا هنالك خدمات يقدمها العاملون، ولكننا لا نزال ننتظر جهداً أكبر في مجال صحة الطفل.

أهم التوصيات:

- تقديم تدريب مستمر للعاملين في مجال الرعاية الصحية وقيام كورسات تنشيطية والتحفيز مع متابعة المسئولين.
- تطوير برنامج العلاج المتكامل لأمراض الطفولة في المجتمع ومخاطبة الجهات المحلية والدولية لزيادة المساهمة في تطبيق البرنامج لكل المرافق الصحية بالولاية.

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CHAPTER ONE

1.1 INTRODUCTION, RATIONALE/JUSTIFICATION, AND OBJECTIVES

1.1.1 Introduction:

Integrated Management of Childhood Illness (IMCI) is a systematic approach to children's health which focuses on the whole child. This means not only focusing on curative care but also on prevention of disease. [1] IMCI is a set of integrated (combined) guidelines, instead of separate guidelines for each illness which can affect a child. Its main objective is the reduction of mortality and morbidity associated with the major causes of childhood illness. [2] Every year, nearly 11 million children die before reaching their fifth birthday. Seven in ten of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria, or malnutrition and often to a combination of these conditions. [3],[4],[5] In response to this challenge, WHO and UNICEF in the early 1990s developed Integrated Management of Childhood Illness (IMCI), a strategy designed to reduce child mortality and morbidity in developing countries. IMCI is an umbrella strategy behind which health planners, donors, paediatricians, and communities can unite. [6] The approach focuses on the major causes of deaths in children through improving case management skills of health workers, strengthening the health system, and addressing family and community practices. [3]
The IMCI initiative is in line with the Millennium Development Goal (MDG) number four which aims at reducing under-five mortality rate by two thirds by 2015. If challenges and factors influencing the implementation of IMCI case management guidelines among health care workers are addressed, then it will contribute to the achievement of MDG number Four. [2]

1.1.2 Health situation in Sudan:

Figure 1.1 Map of Republic of Sudan

Sudan, with an increasingly ageing population, faces a double burden of disease with rising rates of communicable and none communicable diseases. The Sudan Household Survey 2010 showed

that 26.8% of children aged 5 to 59 months had diarrhea, while 18.7% were sick due to suspected pneumonia in the two weeks prior to the survey. Protein energy malnutrition and micronutrient deficiencies remain a major problem among children under 5, with 12.6% and 15.7% suffering from severe underweight and stunting, respectively. The most common micronutrient deficiencies are iodine; iron and vitamin A. Concerning the MDGs, still 78 out of every 1000 children born do not live to see their fifth birthday. The maternal mortality estimated at 216 deaths per 100 000 live births in 2010 [7]. Sudan will not achieve the Millennium Development Goals (MDGs) by 2015. The purported brain drain and rapid turn-over of qualified health service providers, coupled with the unequal distribution of health facilities and limited Government investment in health have negatively affected progress towards the achievement of the MDGs and children's and women's rights. [8] Despite MDG target for malaria not being achieved, it still it remains a major health problem. In 2010, malaria led to the death of 23 persons in every 100,000 populations; while in total over 1.6 million cases were reported. The annual incidence of new TB cases for 2010 is 119 per 100,000, half of them smear positive. TB case-detection rate of 35% is well below the target of 70%, but treatment success rate at 82% is close to the WHO target of 85%. With respect to HIV-AIDS, the epidemic is classified as low among the general population estimated prevalence rate of 0.24% with concentrated epidemic in two states. [7]

Sudan is classified as having made insufficient progress in achieving MDG 4, where the levels of child and infant mortality are among the highest in the region and the world [9]. The current infant mortality rate is 60 per 1000 live births and the under-five mortality rate (U5MR) is 82 deaths per 1000 live births. The neonatal mortality rate is also high, ranging from 34 to 47 per 1000 births. [10]
Despite the fact that neonatal mortality is responsible for 40% of all under-five mortality and more than 50% of total infant mortality, it is not explicitly targeted by MDGs. [11] Addressing neonatal mortality is a major enabler to reduce child mortality and achieve the MDG 4 target. Fig.1.2 shows the distribution of under-five deaths in Sudan by age group and the estimated distribution of causes. [12]

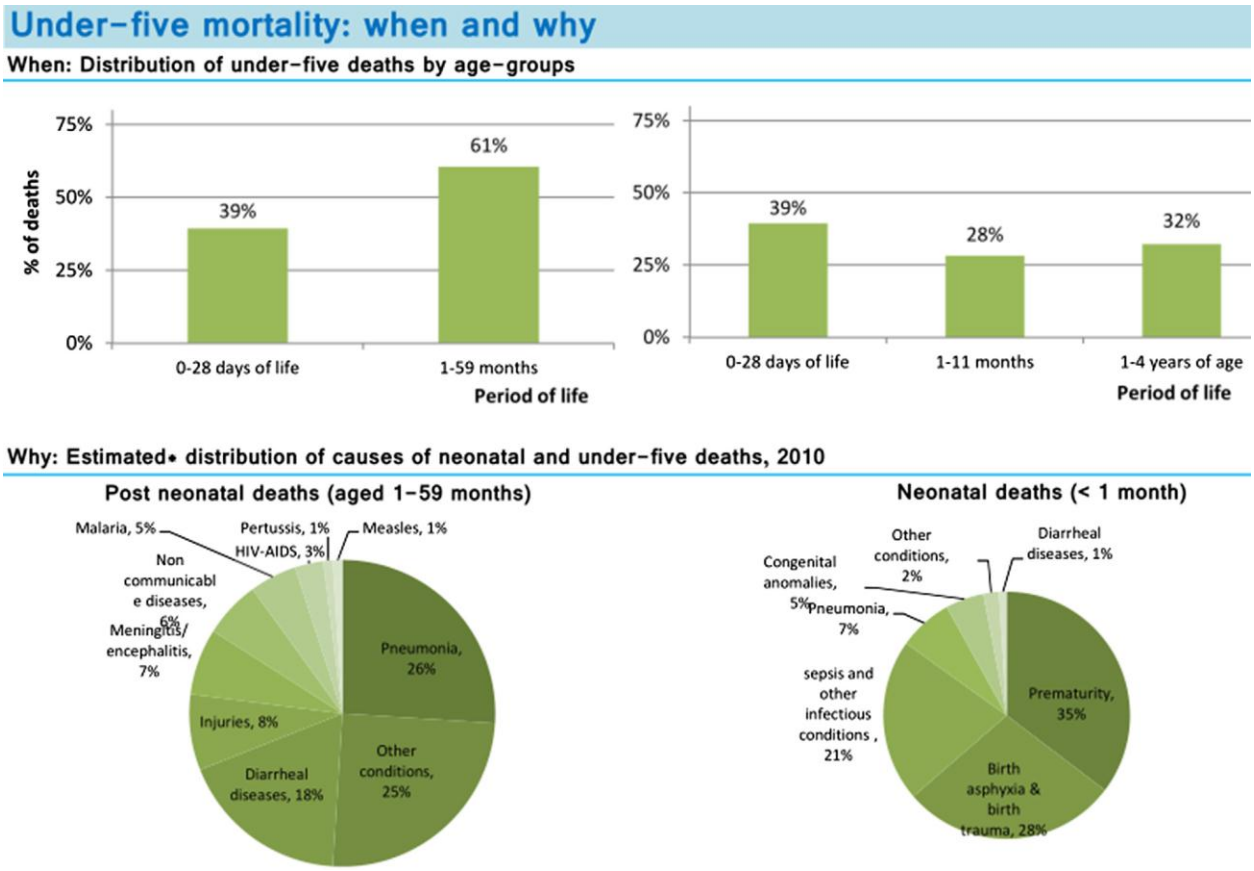

Fig. 1.2 Distribution of under-five deaths in Sudan by age groups and the estimated distribution of causes.

1.1.2.1 Health policy and system:

Sudan is in the process of stabilizing its socioeconomic status after the separation of South Sudan, while there is still conflict in Darfur, South Kordofan and Blue Nile states. Sudan's economy has suffered firstly from a fall in oil prices and more recently from the loss of revenue from South Sudan for oil transportation. In addition, there are continuing sanctions and a trade embargo. As a result, the social sector, including health is underfunded, adding to the fragility of the health sector. The health services are provided in addition to the ministries of health (federal, state and localities), by health sub-systems like insurance schemes, armed forces, and private providers. For provision of service, health care is organized at three levels: primary, secondary and tertiary level. The national health insurance fund, in addition to being an actor for financing, has its own health facilities. The armed forces and parastatal organizations like railways and Sudan Air etc. have their own network of health facilities and insurance schemes. The private sector, which is growing at a rapid pace, is concentrated in major cities and focuses on curative care. Sudan developed its national health sector strategy (2012-16) and currently, it is reviewing its national health policy (2007) with the objective to develop a new policy for 2014-2018. The country has also reviewed health system financing using OASIS approach as a prelude to

framing its national strategy for health financing. Also, the country has embarked on developing detailed roadmap for providing universal health coverage to its population. [7]

1.1.3 Statement of problem:

Considering to IMCI strategy which has been introduced to health facilities in Sudan and particularly in West Darfur, but the quality of health care during our visit to health facilities there it seems unclear, we observed some of health facilities don't have IMCI tools like a chart booklet and wall chart of clinical algorithms. IMCI guideline to be achieved needs adherence of health workers to the guideline, continuous training beside refreshment courses, availability of tools, supervision and follow up. Those elements need to be emphasized special at remote area like west Darfur. Government of the State, local and international Organization need to raise their attention for training of health workers and expand the strategy among the community. therefore, positive impact of child health will be achieving.

1.1.4 Rationale/Justification:

* Under 5-year child known to be on physical and mental growing and development, and their immune system still not completed well, there for more vulnerable to the varies diseases and deaths, efforts has been addressed by the many countries and agencies, but the mortality and morbidity among them still high, most of death occur due to diseases that can be treated and prevented.

* Furthermore, "Most of the 10 million childhood deaths occurring yearly take place in developing countries, where first-level outpatient health facilities are the primary source of health care. WHO's integrated management of childhood illness (IMCI) strategy provides evidence-based guidelines for managing ill children in health facilities lacking sophisticated diagnostic equipment. Health workers use IMCI guidelines to assess children's condition and classify illness on the basis of simple clinical symptoms and signs. The classifications guide treatment and referral. [13]

* Adopted in over 100 countries, IMCI improves health worker performance, and may lower mortality. However, research has shown that many health workers do not adhere to IMCI guidelines, particularly for the management of severe illness. Adherence is difficult to study, and the reasons that health workers do not follow IMCI guidelines are unclear. [13]

* Study done in Pakistan shows that, perception of health workers regard to IMCI strategy was the most influential constraint factor. [14] [15] furthermore the participants at the Santo Domingo workshop, including representatives from developing countries and international and donor agencies, were frank about problems in getting IMCI training into practice. [16]

* There for this study based on evaluating perception and practices on quality of IMCI among health workers and further more to participate in expanding of IMCI approach among the community and to address the collaborations of local and international Agencies.

1.1.5 Objectives:

1.1.5.1General objective:

To evaluate perceptions and practices on quality of IMCI among health workers in El Geneina locality West Darfur State-Sudan 2014

1.1.5.2 Specific objectives:

-To implement training to health workers, supervision and follow up regard to IMCI approach.
-To determine health worker's perception, performance and needs pertaining to the identification of children with diseases.
-To assess adherence of health workers to IMCI guideline was applying during child management and availability of essential drugs and related diagnostic tools.
-To evaluate impact of implemented IMCI approach on perception and performance of health workers related to their work.

CHAPTER TWO

2.1 LITERATURE REVIEW

2.1.1 Integrated Management of Childhood Illness (IMCI) in the Developing World

2.1.1.1 Background:

Every day, millions of parents seek health care for their sick children, taking them to hospitals, health centers, pharmacists, doctors and traditional healers. Surveys reveal that many sick children are not properly assessed and treated by these health care providers, and that their parents are poorly advised. At first-level health facilities in low-income countries, diagnostic supports such as radiology and laboratory services are minimal or non-existent, and drugs and equipment are often scarce. Limited supplies and equipment, combined with an irregular flow of patients, leave health workers at this level with few opportunities to practice complicated clinical procedures. Instead, they often rely on history and signs and symptoms to determine a course of management that makes the best use of the available resources, [17] not only that other study also shows the following result; Various factors are responsible for inadequate human resources in many countries, including inadequate supply, migration, poor morale, and the effects of HIV/AIDS [18],[19],[20] These factors, together with the high cost of training doctors and nurses and the low use of services based in health facilities in many areas, have rekindled interest in the possibility of substantial health gains from the use of community health workers and mid-level health workers such as clinical assistants. Several African and south Asian countries are currently investing in new cadres of community health workers as a major part of strategies to reach the Millennium Development Goals, in some cases arguing that they preferentially reach the poor who are less likely to use health facilities. For example, Ethiopia is training 30 000 community-based health extension workers (women) to focus on maternal, newborn, and child health, malaria, and HIV. India, Kenya, Uganda, Ghana, and South Africa are also considering national programmes for community health workers. [21]

In sub-Saharan Africa, about 1.2 million children under five years of age die every year of acute respiratory infections, especially pneumonia. An estimated 800,000 die of diarrheal diseases, about 500,000 of measles and some 600,000 of malaria. Each of these diseases is associated with malnutrition in more than 50% of the cases where death occurs. Most child deaths in developing countries occur at home without professional health care. [22]

The fourth MDG, a call to reduce the rate of under-five mortality by two-thirds relative to levels in 1990 over the course of 25 years, has received much attention and many countries, particularly in Sub-Saharan Africa, have made exceptional progress toward this goal. But a large fraction of these countries did still not attain the goal and some commentators have argued that MDG4, among other goals, was biased against developing countries and countries in Sub-Saharan Africa in particular. Nevertheless, proposals during the run-up to the implementation of the Sustainable

Development Goals (SDGs), the post-MDG system of goals and targets, called for replacing the target defined in relative terms and turn to a global minimum standard, a level-end goal to be attained in either 2030 or 2035. [23],[24]

In Sudan The under-five mortality rate (U5MR) has declined in the last two decades from 123/1000 live births in 1990 to 78/1000 live births in 2010, and to 73 per 1,000 live births in 2012. Sudan was not achieved the Millennium Development Goals (MDGs) by 2015. The purported brain drain and rapid turn-over of qualified health service providers, coupled with the unequal distribution of health facilities and limited Government investment in health have negatively affected progress towards the achievement of the MDGs and children's and women's rights [25].

2.1.1.2 IMCI strategy

The strategy is based on human rights that guarantee health care to all children, no matter where they live, and is implemented by addressing the gaps in knowledge, skill, and community practices regarding children's health, recognition of illness, home management of the sick child, and appropriate care seeking behavior [3]. Moreover, is a public health strategy that aims at improving the quality of health care provided to children under 5 years of age both at primary health care facilities and at home, through its three components:

- Improvement of health providers' performance;
- Improvement of related elements of health system support;
- Improvement of family and community practices [26]. The core of the IMCI strategy is integrated case management of the most common childhood problems, with a focus on the most important causes of death. [27]

2.1.1.3 Diagram of IMCI strategy:

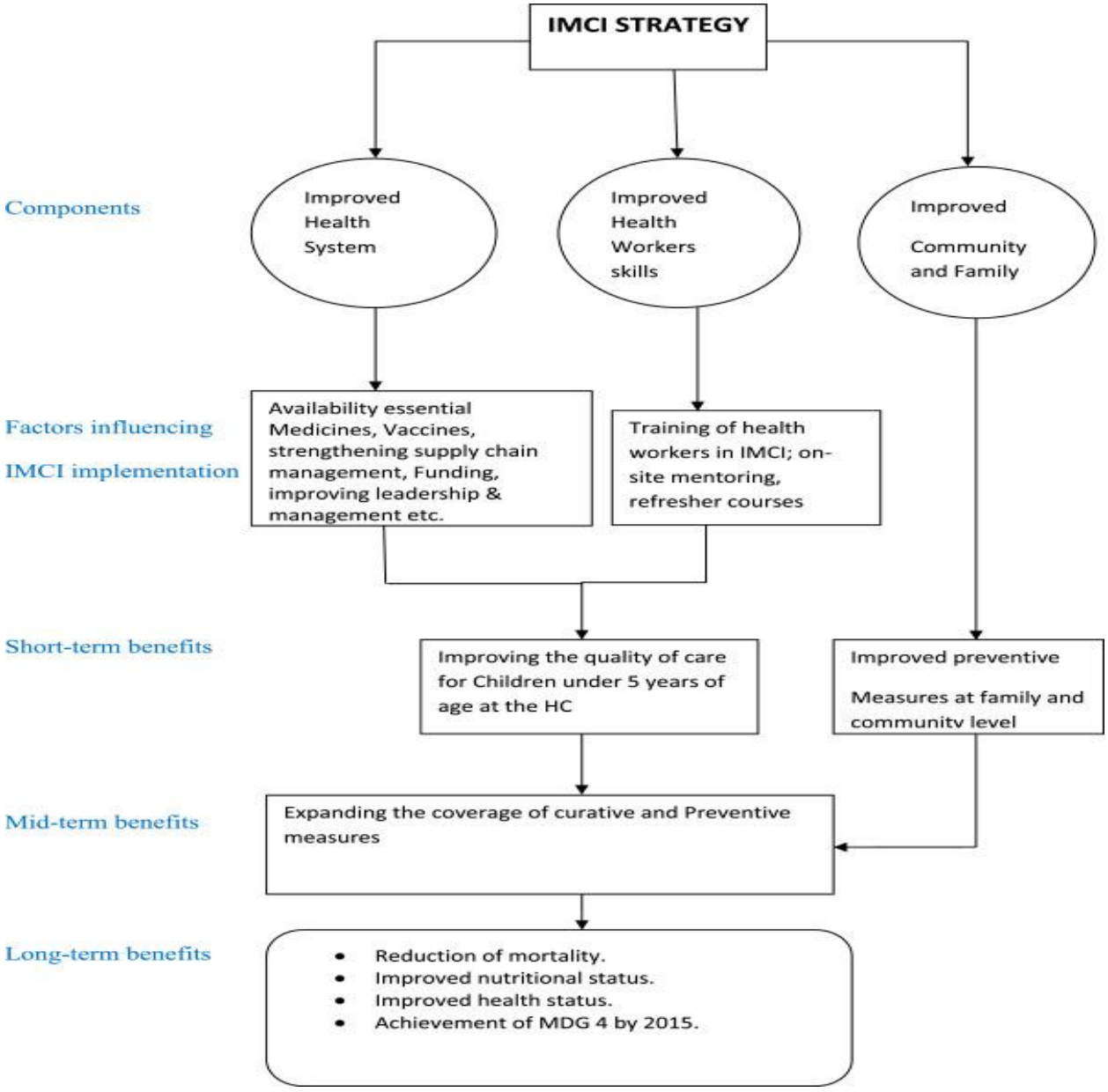

Figure 2.1 shows diagram of IMCI strategy. Access at: http://bmcpublichealth.biomedcentral.com

2.1.1.4 IMCI is better than single-condition approaches:

Children brought for medical treatment in the developing world are often suffering from more than one condition, making a single diagnosis impossible. IMCI is an integrated strategy, which takes into account the variety of factors that put children at serious risk. It ensures the combined treatment of the major childhood illnesses, emphasizing prevention of disease through immunization and improved nutrition. [17]

2.1.1.5 The integrated case management process:

The IMCI case management approach is strategy to improve case management at first level of health facilities. The guideline of case management involves the following elements: complete IMCI case management process involves the following elements:

■ Assessment: the health worker assesses the child by checking first for danger signs (or possible bacterial infection in a young infant), asking questions about common conditions, examining the child, and checking nutrition and immunization status. Assessment includes checking the child for other health problems. [27]

The general danger signs are signs of serious illness that are seen in children aged two months up to five years and will need immediate action to save the life of the child. The following box figure 2.2 shows the five general danger signs:

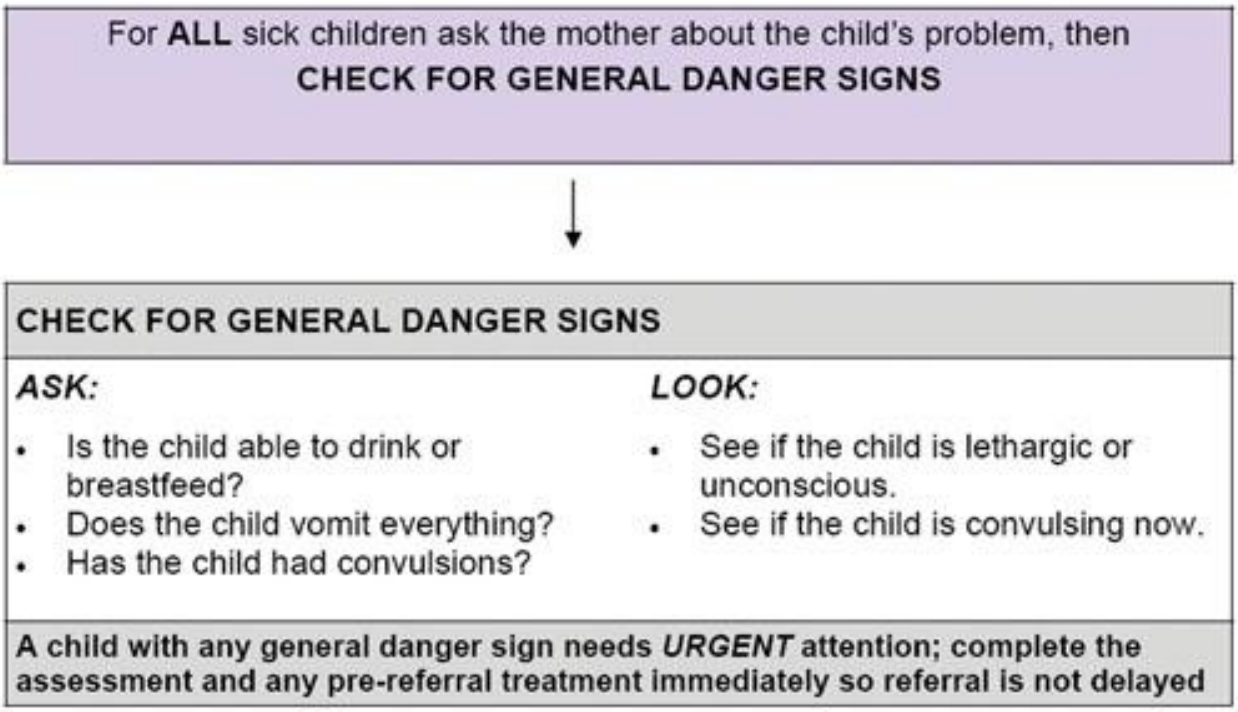

Figure 2.2 the box shows five general danger signs process.

■ Classifications: the health worker classifies child's illnesses using a color-coded triage system. Because many children have more than one condition, each illness is classified according to whether it requires:

— Urgent pre-referral treatment and referral (red colour), or

— Specific medical treatment and advice (yellow colour), or

— Simple advice on home management (green colour).

■ Identify specific treatment: If a child requires urgent referral, health worker gives essential treatment before the child is transferred. If a child needs treatment at home, health care worker

develops an integrated treatment plan for the child and give the first dose of drugs in the clinic. If a child should be immunized, health worker gives immunizations.

■ The mother or caretaker taught how to give oral drugs, and treat local infections at home, and how to feed and give fluids during illness. The mother or caretaker is advised on how recognize the signs which indicate that child should immediately be brought to clinic and is given the dates for routine follow-up; feeding practices are assessed and the mother is advised on how best to feed her child, and counsel about her own health.

■ Lastly: necessary follow-up instructions are given to mother or caregiver when to return with child to the clinic. The following figure 2.3 shows steps of IMCI case management process.

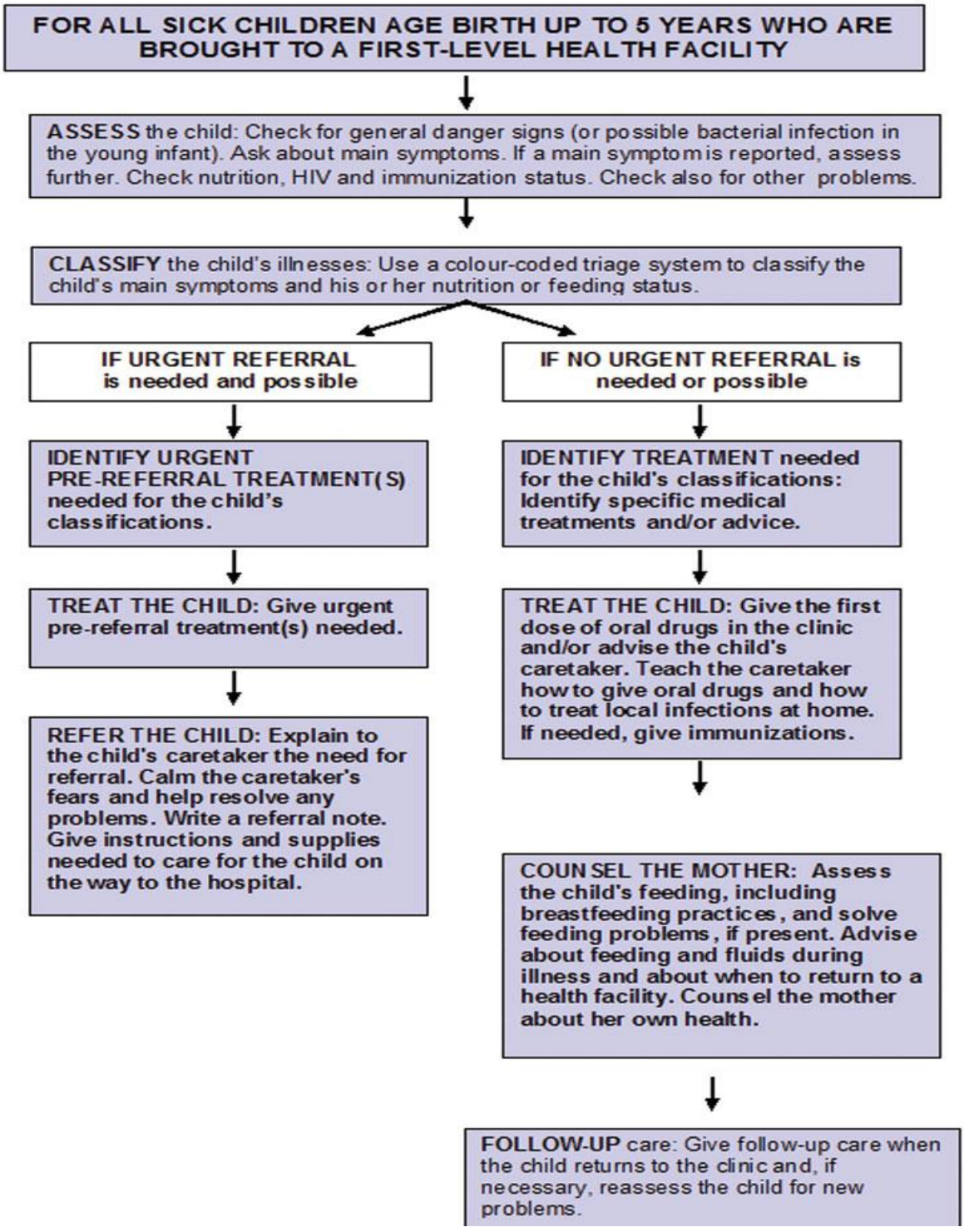

Figure 2.3 shows IMCI case management process. Access at:http://www.open.edu/openlearnworks/mod/oucontent/view.php

2.1.1.6 IMCI Training Course for First-level Health Workers

2.1.1.6.1 IMCI in-service training

Standard IMCI in-service training is an 11-day course for health workers at first-level health facilities that include hospital and health center outpatient services, health posts, dispensaries and clinics. Health workers eligible for training include doctors, medical assistants, nurses, health assistants, midwives and other paramedical health workers who treat sick children.

The 11-day course combines classroom work with hands-on clinical practice. It is designed to train health workers to apply the IMCI standard case management approach for assessing, classifying and treating sick children from birth up to five years old. [28]

Research in Kenya suggests that the IMCI in-service training package (11 days, half spent on theory, half on practical skills) does lead to considerable improvements in the diagnosis and management of serious illness in children. [6] There for IMCI Training compromise a holistic approach to assessment of children is the core of lMCI strategy implemented through its clinical guidelines that promote an evidence-based syndromic approach to case management that supports the rational, effective and affordable use of diagnostic tools and drugs. [29]

The health worker assess & classify for danger signs, main symptoms & makes a decision either to: Refer urgently, offer treatment & advice or simple advice & home management. [29] They identifies & gives treatment instructions & practical demonstration, check vaccination & vitamin A supplementation & if needed vaccinate & offer Vt. A. [29] Therefore, for the further information about IMCI program you can see IMCI chart booklet in the appendix at the end of this study.

2.1.1.6.2 Training methodology:

The methods used for clinical training have been modified by some countries. Cambodia has increased the use of explanations and case examples before seeing patients and prefers group to individual feedback. China has incorporated the use of text-based cases to increase the number of cases and assigns home reading. In addition, China has produced a single module to replace all modules, complemented by a chart booklet, a workbook and a facilitator's manual. Fiji has introduced a new module integrating all IMCI modules, reviewed and changed some exercises and added more role-plays and drills. Other training methods, including on-the-job training, distance learning and clinical mentoring, have all been discussed as options but have not yet been used widely in the Region. The IMCI chart booklet has proved to be a practical tool for helping with clinical care. Clinical practice is considered a critical element of training and all countries have preserved the clinical component when modifying the course methodology. [28]

2.1.1.6.3 The IMCI Computerized Adaptation and Training Tool (ICATT)

ICATT is a computer-based IMCI training tool. It can be used to provide computer-based group classes or individual self-directed learning. It is particularly useful for refresher training for staff who have had basic training with clinical practice. ICATT allows local updates to the IMCI guidelines to be added easily and modification of the training materials to suit local training requirements. For example, local audiovisual materials and practice exercises are easily added to

ICATT. After completing the training using ICATT, trainees undergo standardized testing and receive certification, which may be incorporated into continuing in-service education. In the longer term, it will be important to evaluate ICATT trainees over time to assess the effectiveness of the method in building and sustaining the core competencies. Computerized training is not designed to replace clinical practice with real patients, and so training with ICATT will continue to require appropriate clinical content. [28]

2.1.1.6.4 Follow-up is an integral part of IMCI training:

IMCI training includes both skills acquisition and skills reinforcement. The IMCI course is designed to help health workers acquire new skills to manage sick children more effectively. Health workers may find it difficult, however, to begin using these skills when they see children in their health facilities. They often need help to transfer what they have learned during the course to their own work situation. For this reason, follow-up after training is included as the second essential component of the IMCI training process. A follow-up visit is designed to support the transfer, application, and reinforcement of new skills acquired during training. At least one follow-up visit should be conducted within one month of the training course, in order to assist health workers and health facilities with the transition to integrated case management. Using the structured procedure for follow-up visits, a trained supervisor helps health workers to overcome problems and make the most of their training. [30]

2.1.1.6.5 Evaluation of IMCI strategy

MCA has undertaken a Multi-Country Evaluation (MCE) to evaluate the impact, cost and effectiveness of the IMCI strategy.

The results of the MCE support planning and advocacy for child health interventions by ministries of health in developing countries, and by national and international partners in development, the MCE was conducted in Brazil, Bangladesh, Peru, Uganda and the United Republic of Tanzania. The results of the MCE indicate that:

- IMCI improves health worker performance and their quality of care;
- IMCI can reduce under-five mortality and improve nutritional status, if implemented well;
- IMCI is worth the investment, as it costs up to six times less per child correctly managed than current care; child survival programmes require more attention to activities that improve family and community behavior; the implementation of child survival interventions needs to be complemented by activities that strengthen system support; a significant reduction in under-five mortality will not be attained unless large-scale intervention coverage is achieved. [17]

One study evaluating care at first-level health facilities in Brazil, Uganda, and Tanzania found that children receiving care from health workers trained in IMCI were significantly more likely to receive correct prescriptions for antimicrobial drugs, receive the first dose of the drug before leaving the health facility, and receive advice on how to administer the drug at home. [31] Another evaluation in Uganda found that training of one HCW in IMCI increased service quality by 44% per facility (as measured by the WHO-index of integrated child assessment). [32] In

Northeast Brazil, HCW's trained in IMCI were found to perform better in assessment of children, classification of disease, and communication with caregivers [33]
Another study in South Africa found improvements in assessment of danger signs in sick children, rational prescribing, and initiation of treatment in the clinic following IMCI introduction [34] In China, inappropriate prescription was shown to decrease from 44% to 3% for injection drugs, and from 60% to 6% for antibiotics after IMCI implementation. [35] In Morocco, correct prescription of antibiotics was also shown to significantly improve by nearly 30%. [36]

2.1.1.7 Strategies for national implementation

The WHO's World Health Report defined health systems as including "all the activities whose primary purpose is to promote, restore or maintain health". [37] Since then there has been a growing consensus that effective health programs require strong, well-functioning health systems. [37], [38] Weak health systems have not only been noted to hinder implementation of IMCI, but also a variety of community health programs globally. [38],[39] In 2006, the WHO recommended that in order to strengthen health systems, focus must be directed at six building blocks: service delivery; health workforce; information; medical products, vaccines, and technologies; financing; and leadership and governance. [40],[36]

2.1.1.8 Quality of care:

Quality and safety are ultimately determined by the degree to which health care improves important patient outcomes. However, documenting variations in morbidity and mortality is labor intensive. The definition of quality also becomes narrower or more expansive, depending on how narrowly or broadly we define the concept of health and our responsibility for it. It makes a difference in the assessment of our performance whether we see ourselves as responsible for bringing about improvements only in specific aspects of physical or physiological function or whether we include psychological and social function as well. Donabedian classify quality of care under three categories: structure, process, and outcome elements which have several measures. Structural components include materials, equipment, personnel and training. Some of the process components are adequacy of diagnosis, treatment and prevention procedures, use of case management guidelines and skills of health workers and supervision. And outcome include the effects of care on the health status of patients and populations. Improvements in the patient's knowledge and salutary changes in the patient's behavior and the degree of the patient's satisfaction with care [41]. Furthermore, study of case management was found to be deficient in both Benin and Zambia, where it was found to be inconsistent and not standardized, with incomplete assessment of children's signs and symptoms, incorrect diagnosis and treatment of potentially life threatening illnesses, and failure to refer seriously ill children to hospitals [42],[43] Moreover, In Nigeria, shortcomings in equipment, training, supervision and

non-use of national case management algorithms, in addition to a range of quality measures, contributed to inadequacy in the quality of health service delivery at the PHC level. [44] Quality improvement, however, should not focus too narrowly on individual competence as measured by knowledge and skills, rather than make an overall status assessment of health practices within the health system.

2.1.1.9 Coverage of IMCI implementation in Sudan

The results of the survey on the quality of outpatient child health services, FMOH, WHO March 2003 for 364 sick children in 66 IMCI implementing facilities, showed that More than half (54%) of sick children presented at health facilities were under two years, 71% of them have had severe classifications, the case that requires acceleration of preventive interventions like breast feeding and complementary feeding, RBM, increase vaccination coverage with focus on measles all are relevant to this age group and are well addressed under IMCI strategy. Among all severely ill children examined under this survey, severe pneumonia contributed to 63% of cases, 57% were febrile for one reason or another, 30% had diarrhea and 17% were having anemia based on palmar pallor. The proportion of children having severe condition or requiring treatment or specific nutrition advice was very high (73%) at dispensary level of health service, the majority of which are in rural areas and are run by medical assistants. This requires more attention to this level of care including improving capabilities of human resources through pre-service and in-service training programmes. [45] On the other hand, National Ministry of Health-Sudan made a report on Integrated Management of Child Health (IMCI) in period from January 2008 to December 2010 shows IMCI coverage by the different institutes and states, the following table 2.1 and figure 2.4 were examples of it:

Table 2.1 shows IMCI Health facilities coverage per state up to end of 2010

State	localities	Implementing localities	Targeted Health facilities	Implementing Health facilities	%
Geizera	7	7	752	290	38.5
Sinnar	7	7	202	169	83.6
Blue Nile	6	6	125	125	100
Gedarif	10	10	304	159	52
Kassala	11	11	279	156	56
Red Sea	10	7	286	57	20
Khartoum	7	7	460	341	74
River Nile	6	6	228	217	95
Northern	7	4	246	46	18.6
N. Kordofan	18	3	376	106	28

S. Kordofan	19	8	288	112	39
White Nile	8	7	359	123	34
North Darfour	15	5	136	111	82
South Darfour	15	8	136	111	82
West Darfour	15	5	86	71	82.5
Total	143	96	4225	2165	51.2

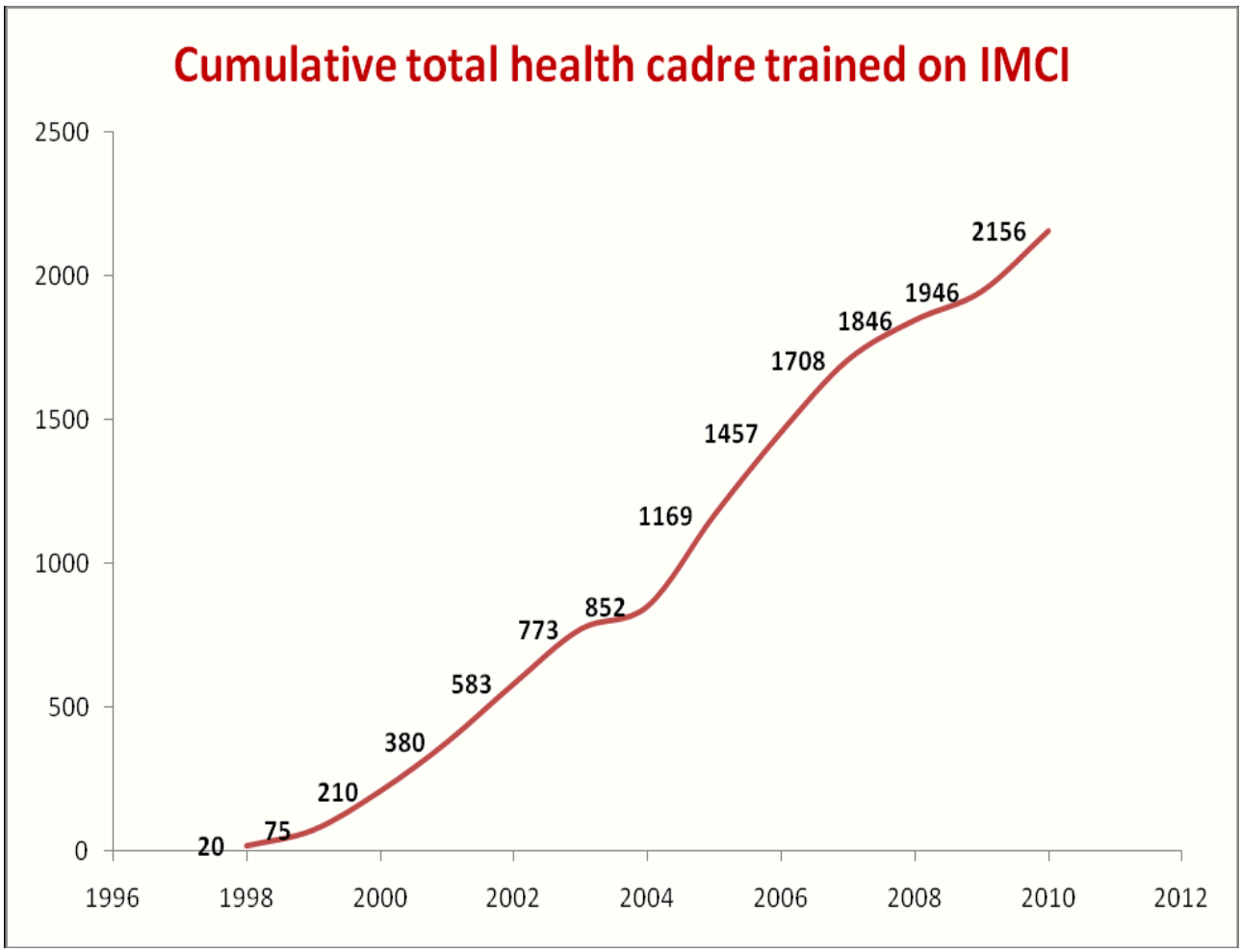

Figure 2.4 Cumulative total health workers trained on IMCI up to end of 2010

2.1.1.10 Child hood illness:

Seven out of ten childhood deaths in developing countries can be attributed to just five main causes, or often some combination of them. And around the world, three out of every four children who seek health care are suffering at least one of these conditions. [46]

2.1.1.10.1 Pneumonia:

Acute respiratory infection (ARI) kill over two million children under five annually. Up to 40% of all children seen in health clinics are suffering from them and May deaths attributed to others causes are, in fact, "hidden" are (ARI) deaths. Pneumonia is the biggest killer of young children; globally accounting for nearly one in five deaths among children less than 5 years of age in 2011. [47] WHO/CHDs approach enables health workers to make rapid accurate and live-saving decisions. [46] And the same study shows that, a systematic review demonstrated that adoption of a standardized case management approach reduced under-5 pneumonia deaths by 70% in developing country settings. [47] Recent operational research in Kenya showed that the numbers of correct diagnoses by health workers are remarkably low e.g., only 8% classified severe pneumonia correctly**.** [6] In most cases, pneumonia can be effectively treated with low cost-oral antibiotics. Health workers following WHO/CHDs approach learn the important of classifying severity of respiratory infections by observing the child for two key signs of pneumonia-chest indrawing and fast breathing- and decide whether the child can be treated on the spot or needs urgent referral. [46]

2.1.1.10.2 Diarrhea:

Globally, diarrhoea is the second most common cause of death in children younger than 5 years. [48] Diarrhoea is more of a symptom than a disease. It is often a reflection of gastrointestinal infection and other diseases, such as typhoid, cholera and shigella Diarrhoea is considered a symptom of wider socioeconomic inequality within and between populations Directly or indirectly, developing countries such as Ghana continue to undertake development projects that contribute to reducing the risk of early death, and, in the last two decades, it has been reported that some improvements have been made, including improvement in water and sanitation. [49] For the enteropathogens, study has been done in China shows the most common pathogen detected in this five-year among children under the age five were rotavirus and norovirus were. [50] healthcare professionals showed adequate knowledge of the etiology of diarrheal diseases and the most frequent signs of severe dehydration. [51],[52] But diarrhea can in most cases be prevented or treated. The correct strategy for the treatment of diarrhea could save the lives of up to 90% of children who currently die from the disease. Diarrhea may be caused by wide variety of infections but health workers following WHO recommendations learn to make rapid treatment decisions based on easily recognizable signs. By establishing duration of the diarrhea, assessing the severity of dehydration and the presence of the blood in stools, the trained health worker is able to categories the type of diarrhea and decide on appropriate treatment. This approach is both live-saving and cost-effective. As an important part of WHO/CHDs approach, health

workers enable parents to care for children for diarrhea with diarrhea at home, using the three rules of home management of diarrhea-increase fluid, continue feeding and recognize the danger signs that mean their child needs further treatment at a health facility. [46]

2.1.1.10.3 Malaria:

Nearly 600,000 children die of malaria each year most of them in sub-Saharan Africa. Young children are particularly vulnerable because they not have developed the partial immunity that result from surviving repeated infections.

Malaria is wide spread tropical disease caused by a parasite transmitted to human by mosquitoes. WHO/HCDs integrated approach enable health workers to make more accurate assessment of children with fever, providing them treatment they need, further referral if necessary, avoiding use excessive drugs. [46]

2.1.1.10.4 Measles:

Measles is a common disease that infects over 4 million children and kills over 800,000 under-fives each year.

Measles is very largely preventable using safe, low-cost vaccines, since the introduction of measles vaccine in the 1960s; the disease has become rare in the industrialized world and much reduced in developing countries. And yet over 2,000 children die each day from measles, often in association with diarrhea and pneumonia.

WHO/CHDs integrated approach is particularly appropriate for measles control.

Trained health workers learn to recognize the serious complication of measles that need rapid referral for more specialized treatment, and give the support and advice parent need to care for less serious ill children at home. [46]

2.1.1.10.5 Ear problem:

A child with an ear problem may have an ear infection. When a child has an ear infection, pus collects behind the ear drum and causes pain and often fever. If the infection is not treated, the ear drum may burst. The pus discharges, and the child feels less pain. The fever and other symptoms may stop, but the child suffers from poor hearing because the ear drum has a hole in it. Usually the ear drum heals by itself. At other times the discharge continues, the ear drum does not heal and the child becomes deaf in that ear. Sometimes the infection can spread from the ear to the bone behind the ear (the mastoid) causing mastoiditis. Infection can also spread from the ear to the brain causing meningitis. These are severe diseases. They need urgent attention and referral. Ear infections rarely cause death. However, they cause many days of illness in children. Ear infections are the main cause of deafness in developing countries, and deafness causes learning problems in school. [46]

2.1.1.10.6 Malnutrition:

Although malnutrition is rarely listed as a direct cause, it contributes to more than half of all childhood death. Malnutrition and infectious disease are linked a downward spiral, each exacerbating the effects of other. For most children, lack access to food is not the only cause of malnutrition, poor feeding practice and infection, or combination of the two, are both major factor of infection-particularly frequent or persistent diarrhea, pneumonia, measles and malaria-undermine nutrition status. Poor feeding practice-inadequate breastfeeding, offering the wrong food-giving insufficient quantities, and not ensuring that the child gets or eats his share-contribute to malnutrition.

IMCI trained health workers check the nutritional status and feeding practices of every child under two and those with low weight for their age. [46] The prevalence study done in Khartoum the results showed that socioeconomic factor, poor nutrition, and mothers' knowledge and feeding practices led to increase in the prevalence of malnutrition. MUAC indicator showed that 20.9% of children were badly nourished and 79.1% of the children were well nourished. In addition, to poor economic situation, the study found that about 15.4% of children were underweight, 8.8% were moderate underweight and 6.6% were severe underweight. The prevalence of wasting was 21.1% (12.3% moderate and 8.8% severe) and the prevalence of stunting was 24.9% (15.1% moderate and 9.7% severe). The World Health Organization standard showed that the prevalence of global malnutrition, moderate malnutrition and severe malnutrition was 12.8%, 8.0% and 13.6%, respectively. The National Center for Health Statistics reference showed that the prevalence of global malnutrition, moderate malnutrition and severe malnutrition was 23.1%, 10.2% and 12.9%, respectively. [53]

2.1.1.10.7 Anemia:

Anemia is a reduced number of red cells or a reduced amount of hemoglobin in each red cell. Iron deficiency anemia is considered to be the most common cause of anemia, but other causes include deficiencies in folate, Vitamin B12, and Vitamin A. Besides iron deficiency, a child can also develop anemia as a result of:

-Infections

-Parasites, such as hookworm or whipworm, that can cause blood loss from the gut.

-Malaria, which can destroy red cells rapidly. Children can develop anemia if they have repeated episodes of malaria or if malaria was inadequately treated. The anemia may develop slowly. Often, anemia in these children is due to both malnutrition and malaria. [54]

2.1.1.10.8 Breast feeding: in the front lines of prevention:

Breastfeeding play an essential and sometimes under estimated role in treatment and prevention of childhood illness. As many 10% of all deaths of children under five could be prevented by a modest increase in breast feed rates worldwide, and for this reason, the promotion and support breast feeding is a key feature of IMCI.

Breast feeding protect babies and young children from arrange of potentially fatal conditions. When mother breast feed exclusively (that, without giving any other food or fluid including

water) during at least the first four months and if possible six months of life, there is a dramatic decrease in episode of diarrhea and to a lesser extent of respiratory infections. [46]

Counseling and support:

Mothers often give their babies other food and fluid before six months because they doubt their breast milk supply is adequate and do not know how to improve the situation. [46]

CHAPTER THREE

3.1 MATERIALS AND METHODS

3.1.1 Study design:

The study conducted was interventional study design. It was conducted to health workers of different health facilities in El Geneina Town-West Darfur State where most of cases receive their treatments.

3.1.2 Study area:

Geography: West Darfur State is in Sudan's western Darfur region, bordering Chad to the west. Within Darfur West Darfur State, borders North Darfur State to the northwest and Central Darfur State to the southeast. The Capital is El Geneina town, and the population is 1,006,801 (2006 (est)). [55] West Darfur State has Fifteen locality with diversity of ethnicities and cultures. El Geneina locality is one of that's localities with an average population of around (200,000). And it has 25 health center and clinic, 20 of them inside of the Town and 5 out of the Town. Moreover, it has one Governmental hospital, Military hospital and many private clinics. The majority of the staff who are working there, they are paramedical staff exception of Four centers which have one medical doctor for each.

The following figure 3.1 shows Map of West Darfur State and El Geneina Town.

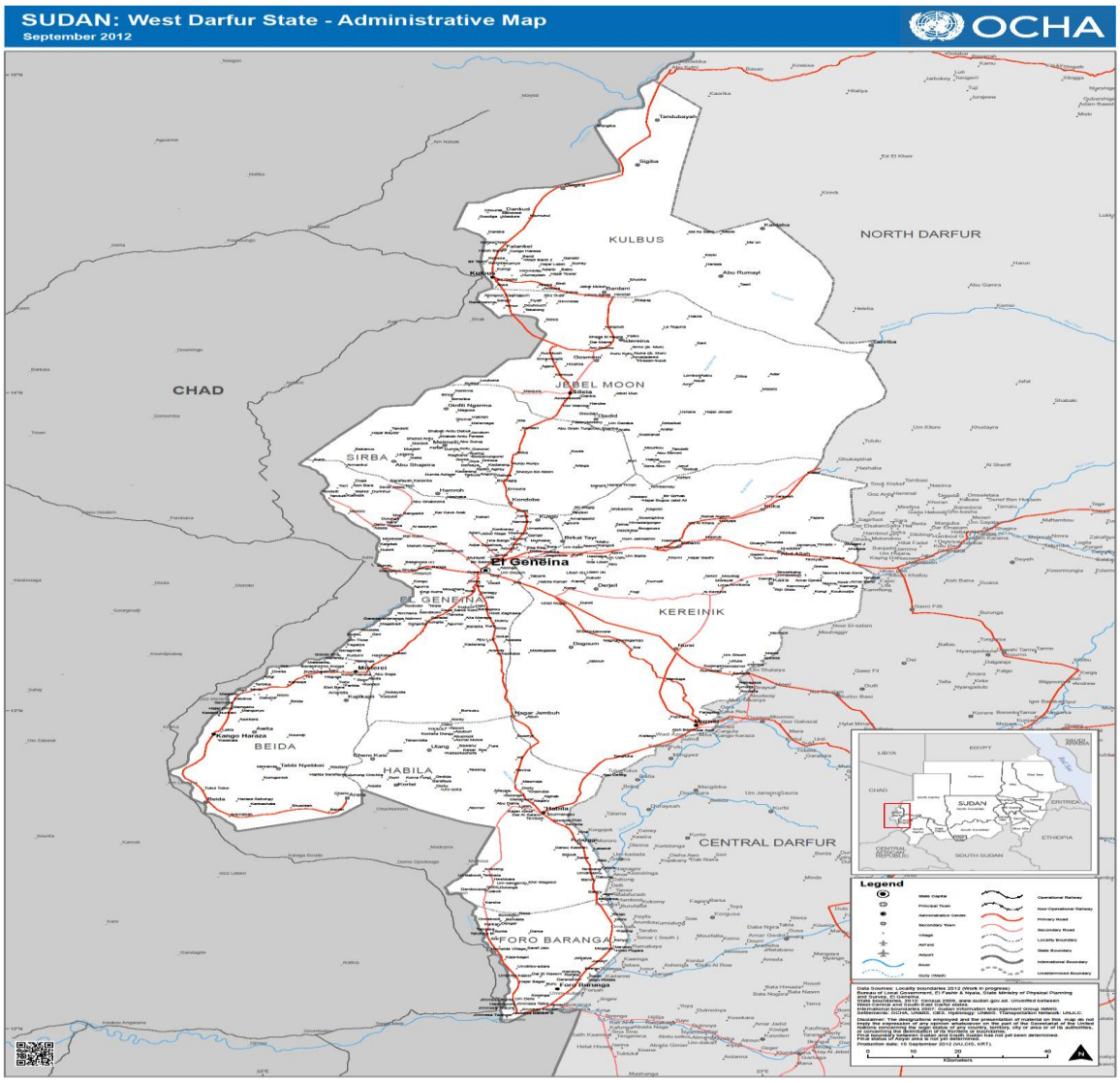

Figure 3.1 showing map of West Darfur state and El Geneina area.

3.1.3 Study population:

Currently numbers of health workers are 79 cadres at whole 25 health center and clinic in El Geneina locality. The study was targeted health workers (Medical Assistants (MA), Nurses, and Community Health Workers (CHWs)) who work in the different 20 health centers and clinics inside El Geneina Town, and they are 71 cadres.

3.1.4 Sampling:

Systemic Random Sample Size (SRSS) was carried to selected the study sample size; we have made a list of all health personnel from various 20 health facilities inside the Town and it was 71cadres. The initial sample was selected using lottery system then all of the study sample =24 person has been selected regularly used SRSS.

3.1.5 Data collection methods and tools:

The Structured questionnaire for evaluating health worker's perceptions and practices on quality of IMCI has been adapted, it contained demographic data of health workers, type of training they received, knowledge about general danger signs, and main symptoms. Assess and classify ill child, urgent referral, treatment, counseling the mother, and follow up according to IMCI guideline. 24 Self-Administered Questionnaires (SAQ) has been admistered to 24 health workers before training as pretest; then collected after one of administered day. And repeated after the training it was posttest-1, after one year we repeated the same questionnaires as posttest-2, there for the data has been collected. Moreover, observation checklist was used to assess health worker's performances and practices regarded to IMCI quality of care, and to assess quality of health services likes.

3.1.6 Study variables:

The following variables were included in this study:

- Characteristics of child
- Characteristic and behavior of health workers
- IMCI Case management:
    - Assess the sick child or sick young infant
    - Classify the illness
    - Identify treatment
    - Treat the child or young infant
    - Counsel the mother
    - Give follow-up care

-Observation for availability and quality of:

- Health services organization
- Oral rehydration therapy corner
- Infections control
- Job aid and supplies
- Medicine

Characteristics of child

- age: recorded in months and grouped as recommended by the who into:
    a) between 2 and 11 months
    b) between 12 months and 5 years

Health worker's characteristics perception and practices

- Gender: male, female
- Profession: auxiliary nurse, graduated nurse, medical assistant, community health workers.
- Education level: primary school: secondary school, university, post graduate.
- Experience years: less than one year, 1-3years, 4-6years, 7-10 years, more than 10 years.

Variables regarding health care worker were identified from the questionnaire and check list.

Assess the sick child or sick young infant

Check for general danger signs

- Child able to drink or breastfeed
- Child is lethargic or unconscious.
- Child vomit everything
- Child had convulsions

All cases present with danger signs putted it in red row according to IMCI guideline, for urgent referral.

Assessment process was as included the following variables:

- Cough or difficult breathing
- Diarrhoea
- Fever
- Ear problem
- Anaemia
- Immunization status and
- Assess child's feeding

Classification of the illness during the study was as follow:

Cough or difficult breathing included the following variables:

If the child is fast breathing is:

2 months up to 12 months 50 breaths per minute or more

12 months up to 5 years 40 breaths per minute or more

Classification of cough in relation to the assessment as follow:

Severe pneumonia or very severe disease,

pneumonia, and No pneumonia: cough or cold

Diarrhoea included the following variables:

The following were considering for classification:

- Blood in the stool
- Lethargic or unconscious?
- Restless or irritable?
- Sunken eyes.
- Child not able to drink or drinking poorly?
- Drinking eagerly, thirsty?
- Skin pinch go back:
- Very slowly (longer than 2 seconds)?
- Slowly?

Classification of diarrhea related to assessment can be classified for **dehydration, persistent diarrhoea** and **dysentery.**

For dehydration classifications we use the following variable in study:

Severe dehydration

Some dehydration

No dehydration

For classification of persistent diarrhea variables:

Severe persistent diarrhoea
Persistent diarrhea. And for Dysentery variable blood in stool was used to classified dysentery.

Malaria

The following were considering for classification malaria regard to Fever in (high, low and no) malaria risk: Very severe febrile disease, malaria, fever malaria unlikely

Measles

The following were considering for classification measles (if measles now or within the last 3 months). There are three possible classifications for measles has been used in this study: severe complicated measles, Measles with eye or mouth complications and Measles.

Ear problem

The sign which we included in this study to classify ear problem as follow:
Ear pain
Pus draining from the ear.
Ear discharge
Tender swelling behind the ear.
And the classification ear problem according to IMCI guidelines as follow:
Mastoiditis, acute ear infection, chronic ear infection, no ear infection

Malnutrition variable was;

Visible severe wasting.
Palmar pallor.
Oedema of both feet.
Weight for age.
The following were considering for classification:
Severe malnutrition or severe anaemia, anaemia or very low weight and no anaemia and not very low weight
And the variable used in this study to classify Jaundice for young infant was; only Yellow eyes and skin if age is more than 24 hours.
Variable for IMCI chart colors was used in this study for classification were; red, yellow, and green.

Immunization status:

Immunization status is checked for **all** sick children brought to health facility.
Counseling the mother about how to give medications, important of fluid, herself, and when to return. Furthermore, starting of complementary food within 6 months was included in the study question.

Treat the ill child:

Amoxicillin dose of (250mg tablet) for a 5-week-old infant who weight 3.5kg was questioned. Moreover, Cotrimoxazole adult tablet for a 2-year-old child weights 12kg classify as pneumonia was included in this study, and antibiotic for treatment Dysentery at home addition to fluid, Zinc supplement, and follow up.

3.1.7 Data management:

The questionnaires have been collected and kept in order, Statistical Package for the Social Sciences (SPSS) program has been used for data entry and analysis, the collected data was done by double entered into and analyzed using SPSS software version16.

The findings obtained were presented using tables, graphic charts and the findings have been discussed in depth and all possible explanations and inferences reported.

3.1.8 Ethical consideration:

Define ethics as a system of moral values concerned with the degree to which research procedures adhere to professional, legal and social obligations to the study participants. [56]

During the study the following ethical issues have been considered:

- The consent to proceed with the research was obtained from the state ministry of health coordinator and selected health facilities administration.
- The purpose of the study was explained to the respondents and consent obtained before proceeding with the study.
- The information obtained was kept private, confidential and anonymous.
- No names were asked for; Serial numbers in the questionnaires were used for analysis purposes only, and all health centers and clinics were coded for confidentiality.

CHAPTER FOUR

4. RESULTS

This chapter shows the interventional study findings from the 24 health workers related to their perception and practices on quality of IMCI at 20 health centers and clinics inside El Geneina Town, and the results of the study were presented as following:

4.1 Demographic characteristic of study group

Table 4.1. Gender, Professional, and Educational

Figure 4.1 Experiences

4.2 IMCI training

Figure 4.2 Types of IMCI training receives by the health workers

4.3 Child's assessment

Table 4.3.1 Perceptions of health workers on assessment of *Four main symptoms*

Table 4.3.2 Perceptions of health workers on assessment of *Five conditions*

Table 4.3.3 Perceptions of health care workers for assessment of *general danger signs*

Table 4.3.4 Perceptions of health care workers for assessment of *cut-off breathing*

Table 4.3.5 Perceptions of health care workers for assessment of *cough*

Table 4.3.6 Perceptions of health care workers for assessment of *malnutrition and anemia*

4.4 Classifications of child's illness

Table 4.4.1 Perceptions of health care workers for classification of *severe pneumonia and acute ear infection*

Table 4.4.2 Perception of health care workers for classification of *MASTOIDITIS* and *JAUNDICE:*

Table 4.4.3 Perceptions of health care workers for *classification severe malnutrition*

Table 4.4.4 Perception of health care workers for *classification diarrhea*

Table 4.4.5 Perception of health care workers for *classification fever*

Table 4.4.6 Perceptions of health care workers regard *classification cases under red color of IMCI guideline*

4.5 Identifying treatments and immunizations

4.6 Urgent referral

4.7 Counseling the mother table

4.8 Health worker's performance and health services

4.9 Medication availability and jobs aids

4.1 Demographic characteristic of study group

Table 4.1 Gender, Professional, and Educational

N=24	Frequency	Percentage
Gender		
Male	8	33.3%
Female	16	66.7%
Professional		
Auxiliary nurse	4	16.7%
Graduated nurse	7	29.2%
Medical assistant	12	50.0%
Community health worker	1	4.2%
Educational		
Primary school	0	0%
Secondary school	6	25.0%
University	18	75.0%
Post graduate	0	0%

From above table 4.1 the demographical facts of the study group presented as 8(33.3%) of the health care workers were male and 16 (66.7%) were female, for their professions 4 (16.7%) were Auxiliary nurses, 7(29.2%) Graduated nurses, 12 (50.0%) Medical assistants and only 1 (4.2%) was Community health worker, and clearly show that medical assistant was half of the study group because most of health center in Sudan were seen by MA, however the community health workers were the minority of participant. For education 18(75%) of health care workers were university degrees' holder and 6(25%) were secondary school, and no primary school or post graduate degree holder.

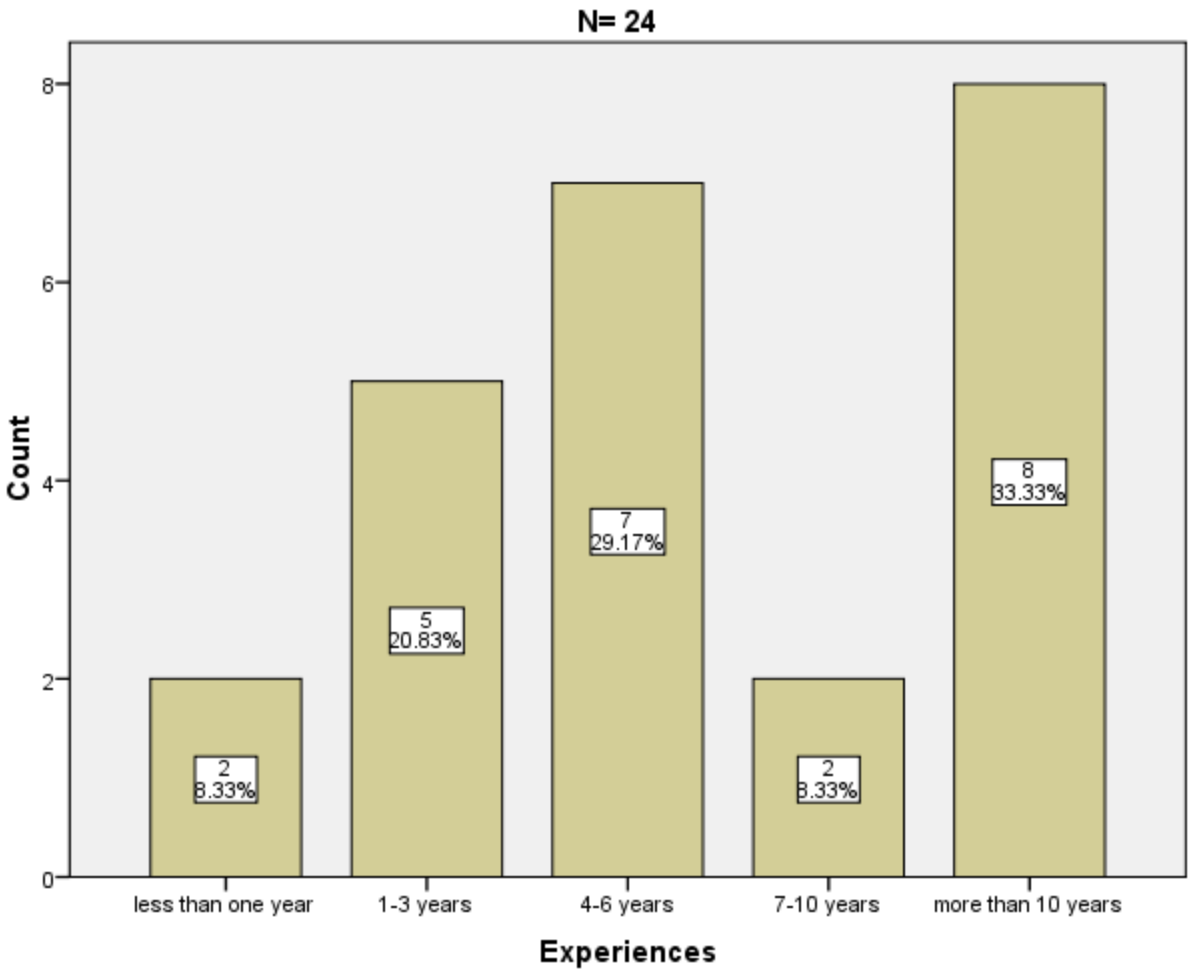

Figure 4.1 Health care workers Experiences

From figure 4.1, most of health workers have experiences, 8(33.3%) of them have experiences over 10 year followed by 7(29.2%) those experiences 4-6 years, 5(20.8%) experiences 1-3 years, while more than 10 years and less than one year were equal 2(8.3%) for each.

4.2 IMCI training

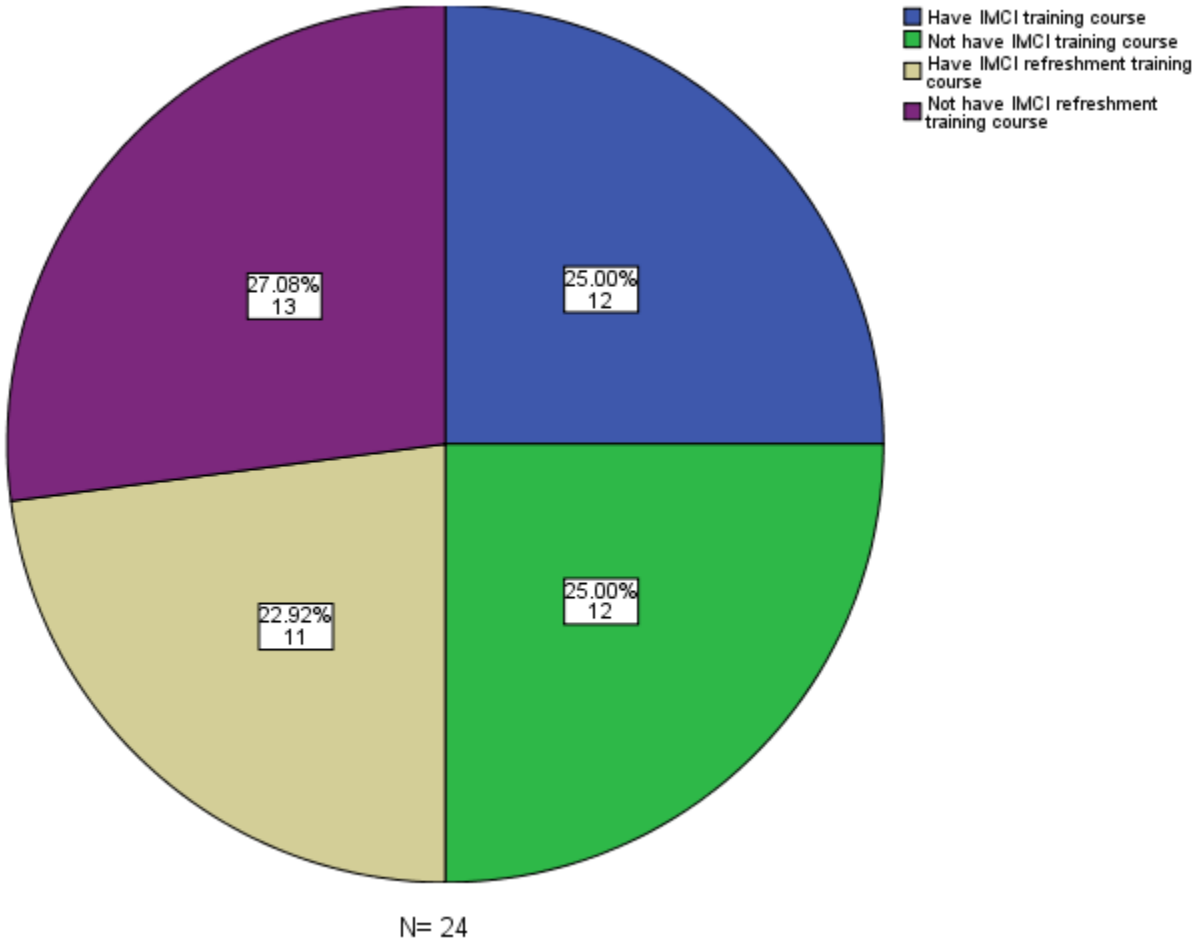

Figure 4.2 Types of IMCI training received by the health workers

From figure 4.2 the study shows that, only 12(25%) of health workers received IMCI training, others12(25%) were not received it, and 11(22.92%) of them have received refreshment training course, while 13(27.08%) were not received.

4.3 Child's assessment

Table 4.3.1 Perceptions of health workers on *assessment of Four main symptoms:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The Four main symptoms for which every sick child should be checked						
Malnutrition	6	15.4	12	24.0	2	8.0
Anemia	6	15.4	8	16.0	1	4.0
Cough, diarrhea, malnutrition, ear problem	10	25.6	8	16.0	3	12.0
cough, diarrhea, fever, ear problem	17	43.6	22	44.0	19	76.0
Total	**39**	**100**	**40**	**100**	**25**	**100**
P value	**0.025**					

N= 24

Table 4.3.2 Perceptions of health workers on *assessment of Five conditions:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The two conditions beside diarrhea, measles and malnutrition mentioned by health workers.						
Acute respiratory infections, primarily pneumonia	11	34.4	22	43.1	24	52.2
Malaria	14	43.8	24	47.1	22	47.8
Tuberculosis	0	0	0	0	0	0
HIV&AIDS	7	21.9	4	7.8	0	0
Diabetes	0	0	1	2.0	0	0
Total	**32**	**100**	**51**	**100**	**46**	**100**
P value	**0.024**					

N= 24

Table 4.3.1 above shows that, the knowledge of health care workers on four main symptoms that should be checked for every sick child, the answer was 17(43.6%) for pretest and 22(44%) for posttest-1 and for posttest-2 was 19(76.0%). And for the mention two conditions beside diarrhea, measles and malnutrition **table 4.3.2** above, shows 11(34.4%) for pretest, 22(43.1%) for posttest-1 and for posttest-2 was 24(52.2%), were answered as acute respiratory infections- primarily pneumonia, while 14(43.8%) for pretest, 24(47.1%) for posttest-1 and 22(47.8) for posttest-2 were answered as malaria.

From below the **table 4.3.3** for the five general danger signs that every sick child should be refer to hospital, the result of our respondents knowledge was 17(18.9%) for pretest, 19(21.3%) for posttest-1, and 22(20%) for posttest-2 answered as not able to drink or breastfeed, for the next sign their answer was 15(16.7%) for pretest, 16(18.0%) for posttest-1, and 21(19.1%) for posttest-2 as convulsions during this illness, moreover the answers as vomiting everything was 17(18.9%) for pretest, 19(21.3) for posttest-1, and 22(20%) for posttest-2, and as lethargic or unconsciousness the answered came as 18(20.0%) for pretest, 15(16.9%) for posttest-1, and 24(21.8) for posttest-2, and lastly they answered for the last sign convulsing now, the result was present 18(20%) for pretest, 18(20.3%) for posttest-1, and 21(19.1%) for posttest-2.

The knowledge about the cut-off rate for fast breathing in a child who is 11 months old, **table 4.3.4** below displays the result of our respondents as follow, 6(25.0%) for pretest, 11(42.3%) for posttest-1, 21(87.5%) for posttest-2 as 50 breaths per minute or more.

Table 4.3.3 Perceptions of health care workers for *assessment of general danger signs*

Variable	**Pretest**		**Posttest-1**		**Posttest-2**	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The five general danger signs, that every thick should urgently refer to hospital for treatment						
Not able to drink or breastfeed	17	18.9	19	21.3	22	20
Severe cough	5	5.6	2	2.2	0	0
Convulsions during this illness	15	16.7	16	18.0	21	19.1
vomiting everything	17	18.9	19	21.3	22	20
lethargic or unconsciousness	18	20.0	15	16.9	24	21.8
convulsing now	18	20.0	18	20.2	21	19.1
Total	**90**	**100**	**89**	**100**	**110**	**100**
P value	**0.816**					

Table 4.3.4 Perceptions of health care workers for *assessment of cut-off breathing*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The cut-off rate for fast breathing in a child who is 11 months' old						
60 breaths per minute or more	2	8.3	3	11.5	2	8.3
50 breaths per minute or more	6	25.0	11	42.3	21	87.5
40 breaths per minute or more	13	54.2	9	34.6	1	4.2
30 breaths per minute or more	3	12.5	3	11.5	0	0
Total	**24**	**100**	**26**	**100**	**24**	**100**
P value	**0.002**					

From the following below **table 4.3.5** shows the assessment of health workers for A 14-month-old child with cough who brought to an outpatient clinic the result was 3(10.3%) for pretest, 6(18.8%) for posttest-1, and 20(26%) for posttest-2 as general danger signs, while the result as common main symptoms such as cough or difficult breathing, Diarrhea, fever and ear problems was 21(72.4%) for pretest, 21(65.6%) for posttest-1, and 19(24.7%) for posttest-2, moreover for Malnutrition and Anemia was 2(6.9%) for pretest, 2(6.2%) for posttest-1, 18(23.4%) for posttest-2, and their assessment for Immunization status was 3(10.3%) for pretest, 3(9.4) for posttest-1, 20(26%) for posttest-2.

The knowledge of health workers for which should be checked for malnutrition and anemia **table 4.3.6** below displays the result of our respondents as follow, 13(38.2%) for pretest and 13(38.2) for posttest-1, 22(75.9%) for posttest-2 answer as all children brought to the clinic should be assessed.

Table 4.3.5 Perceptions of health care workers for *assessment of cough:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Assessment of A 14-month-old child brought to clinic with cough						
General danger signs	3	10.3	6	18.8	20	26
Common main symptoms such as cough or difficult breathing, Diarrhea, fever and ear problems	21	72.4	21	65.6	19	24.7
Trauma	0	0	0	0	0	0
Malnutrition and anemia	2	6.9	2	6.2	18	23.4
Immunization status	3	10.3	3	9.4	20	26.0
Developmental milestone	0	0	0	0	0	0
Total	**29**	**100**	**32**	**100**	**77**	**100**
P value	**0.015**					

N= 24

Table 4.3.6 Perceptions of health care workers for *assessment of malnutrition and anemia:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Check for malnutrition and anemia						
Only children with feeding problems	4	11.8	13	38.2	3	10.3
Only children who are younger than 12 Months old	4	11.8	1	2.9	0	0
All children brought to the clinic	13	38.2	13	38.2	22	75.9
only children who are not breastfed	3	8.8	2	5.9	2	6.9
only children with Diarrhea	8	23.5	5	14.7	2	6.9
only children with malaria	2	5.9	0	0	0	0
Total	**34**	**100**	**31**	**100**	**29**	**100**
P value	**0.037**					

Table 4.4.1 perceptions of health care workers for *classification of severe pneumonia and acute ear infection:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Classification of 10 months old child, has cough lasted two days, breathing rate 46 breaths per minute and chest has indrawing						
No pneumonia: cough or cold	7	15.0	7	22.7	0	0
Pneumonia	7	15.0	8	20.5	3	12.5
severe pneumonia or very severe disease	6	25.0	11	27.3	19	79.2
very severe febrile disease	4	45.0	3	29.5	2	8.3
Classification of child has ear pain and pus draining from the ear for 10 days, no tender swelling behind the ear						
Acute ear infection	21	80.8	23	82.1	24	88.9
Chronic ear infection	2	7.7	4	14.3	1	3.7
Mastoiditis	1	3.8	1	3.6	1	3.7
not enough signs to classify this child	2	7.7	0	0	1	3.7
Mean of HCWs perceptions	**52.9**		**54.7**		**84.05**	

From above **table 4.4.1** the study shows the perceptions of health care workers in classification of ill child according to IMCI approach, and for A10 months old child, has had a cough that lasted two days, has a breathing rate of 46 breaths per minute and chest indrawing, the classification was as severe pneumonia or very severe disease the result was 6(25.0%) for pretest, 11(27.3%) for posttest, and 19(79.2%) for posttest-2. And the classification for a child has had ear pain and pus draining from the ear for 10 days, and no tender swelling behind the ear, the answer presented as acute ear infection 21(80.8%) for pretest, 23(82.1%) for posttest-1, and 24(88.9%) for posttest-2.

Table 4.4.2 Perception of health care workers for *classification of MASTOIDITIS and JAUNDICE:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The signs to be classified as having MASTOIDITIS						
Severe ear pain	13	52.0	12	22.6	1	4.2
Redness behind the ear	1	4.0	7	13.2	0	0
Pus draining from one of the ears	1	4.0	6	11.3	1	4.2
pus draining from both ears	1	4.0	4	7.5	2	8.3
Tender swelling behind the ear	9	36.0	24	45.3	20	83.3
The signs to be classified as having JAUNDICE						
Yellow palms and soles if age is more than 24 hours	5	17.9	10	27.8	22	91.7
Only yellow eyes and skin if age is more than 24 hours	12	42.9	13	36.1	1	4.2
Any jaundice if age less than 24 hours	10	35.7	11	30.6	1	4.2
Pus draining from the eyes	1	3.6	0	0	0	0
No signs suggesting jaundice	0	0	2	5.6	0	0
Mean of HCWs perceptions	**34.95**		**36.55**		**87.5**	

As displayed in above, **table 4.4.2** for the signs to classified as having MASTOIDITIS, the study result shows health workers knowledge as follow, 9(36.0%) for pretest, 24(45.3%) for posttest-1, and 20(83.3%) for posttest-2 as tender swelling behind the ear. And for signs that must be classified as having JAUNDIC, 5(17.9%) for pretest, 10(27.8%) for posttest-1, and 22(91.7%) for posttest-2 as yellow palms and soles if age is more than 24 hours.

Table 4.4.3 Perceptions of health care workers for *classification severe malnutrition:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
The Two signs that are used to classify severe malnutrition						
Small arm circumference	1	2.6	6	14.0	2	4.3
Visible severe wasting	11	28.9	13	30.2	21	44.7
Oedema of both feet	19	50.0	20	46.5	22	46.8
severe dehydration	5	13.2	2	4.7	2	4.3
growth faltering	2	5.3	2	4.7	0	0
Total	**38**	**100**	**43**	**100**	**47**	**100**
P value	**0.080**					

Table 4.4.4 Perception of health care workers for *classification diarrhea:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
To classify the dehydration status of young infant with Diarrhea you will look:						
At the general condition of the child (does the infant move when stimulated or does not move even when stimulated? Restless and irritable)	13	25.0	14	31.1	21	32.8
For sunken eyes	17	32.7	16	35.6	23	35.9
For Oedema of both feet	2	3.8	2	4.4	1	1.6
If the young infant is drinking eagerly or poorly	10	19.2	13	28.9	19	29.7
For visible severe wasting	5	9.6	0	0	0	0
For a swollen abdomen	5	9.6	0	0	0	0
Total	**52**	**100**	**45**	**100**	**64**	**100**
P value	**0.061**					

From above **table 4.4.3** knowledge of health workers for two signs that used to classify severe malnutrition, the result was11(28.9%) for pretest, 13(30.0%) for posttest-1, 21(44.7%) for posttest-2 **as** visible severe wasting. And **as** Oedema of both feet the result

was19(50.0%) for pretest, 20(46.5%) for posttest-1, 22(46.8%) for posttese-2.
And from **table 4.4.4** classification of dehydration status for young infant with Diarrhea the result of study was13(25.0%) for pretest, 14(31.1%) posttest, and 21(32.8) for posttest-2 gave answered as to look at the general condition of the child (does the infant move when stimulated or does not move even when stimulated? Restless and irritable), and next result was17(32.7%) for pretest, 16(35.6%) posttest-1, 23(35.5) posttest-2 **as** to look for sunken eyes, moreover **as** to look for if the young infant is drinking eagerly or poorly the result was 10(19.2%) pretest, 13(28.9%) for posttest-1, 19(29.3%) for posttest-2.

Table 4.4.5 Perception of health care workers for *classification fever:*

	Pretest	**Posttest-1**	**Posttest-2**

Variable	Frequency	%	Frequency	%	Frequency	%
A child with fever plus any general danger sign should be classified as:						
Uncomplicated malaria	2	7.7	1	2.9	2	8.3
Acute ear infection	6	23.1	6	17.1	1	4.2
Measles	3	11.5	5	14.3	2	8.3
very severe febrile disease or severe malaria	15	57.7	23	65.7	19	79.2
Mastoiditis	0	0	0	0	0	0
Total	**26**	**100**	**35**	**100**	**24**	**100**
P value	**0.345**					

N=24

Table 4.4.6 Perceptions of health care workers regard *classification cases under red color of IMCI guideline:*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
In the IMCI guideline, the child will be classified under the red color when he has the						
Chest indrawing	14	25.9	15	25.9	21	27.3
Oedema of both feet	6	11.1	7	12.1	19	24.7
Sunken eyes	14	25.9	15	25.9	20	26.0
Convulsions	20	37.0	21	36.2	17	22.1
Total	**54**	**100**	**58**	**100**	**77**	**100**
P value	**0.220**					

N=24

From the above **table 4.4.5** the study shows classification of health workers for A child with fever plus any general danger sign the result was, 15(57.7%) pretest, 23(65.7%) for posttest-1, 19(79.2%) for posttest-2 **as** very severe febrile disease or severe malaria.

And as displayed in above **table 4.4.6** according to IMCI guideline, the child will be classified under the red color when he has; the following shows their result 14(25.9%) was for pretest, 15(25.9%) for posttest-1, and 21(27.3%) was for posttest-2 **as** has chest indrawing, while 6(11.1%) for pretest, 7(12.1%) posttest-1, and 19(24.7%) for posttest-2 **as** Oedema of both feet, and 14(25.9) for pretest, 15(25.9%) for posttest-1, and 20(26.0%) for posttest-2 **as** Sunken eyes, moreover 20(37.0%) for pretest, 21(36.2%) for posttest-1, and 17(22.1%) for posttest-2 **as** has convulsions.

4.5 Identifying treatments and immunizations

Table 4.5 Perceptions of health care workers for *treatment and immunization of children*

Perceptions	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Treatment and immunization of children						
Dose and schedule of amoxicillin (250 mg tablet) for a 5-week-old infant who weighs 3.5 kilograms and has local bacterial infection	11	39.3	12	46.2	19	79.2
Treatment of A 2-year-old child has had Diarrhea for several days. Not dehydrated, but has in his stool	12	48.0	16	61.5	19	79.2
Immunization of child Age less than 5 years and did not receive Pentavalent vaccine as recommended	13	56.5	15	65.2	19	79.2
Dose and schedule of Cotrimoxazole for A 2-year-old child who weighs 12kg, classified as having pneumonia	8	33.3	10	38.5	17	70.8
Mean of HCWs perceptions	**44.28**		**52.85**		**77.1**	

From the above table 4.5 study show the knowledge of health care workers. The following was representing their knowledge for the dose and schedule of amoxicillin (250 mg tablet) for a 5-week-old infant who weighs 3.5 kilograms and has local bacterial infection was 11(39.3%) pretest, 12(46.2%) posttest-1, 19(79.2%) posttest-2 answered **as**¼ tablet - 2 times a day - for 5 Days. For treatment of A 2-year-old child has had Diarrhea for several days, he was not dehydrated, but blood in his stool, the result was12(48.0%) pretest, 16(61.5%) posttest-1, 19(79.2%) for posttest-2 response **as** to Start antibiotic for dysentery, give antibiotic to take home, advise on feeding and fluids, zinc supplement, and tell her to return in 2 days. And for child less than 5 years of age and did not receive immunization for Penta vaccine as recommended they answered **as** 13(56.5%) pretest, 15(65.2%) posttest-1, 19(79.2%) for posttest-2 they answered **as** necessary to Immunize the child any time, and give the remaining doses 4 weeks apart.

The answer for dose of Cotrimoxazole for a 2-year-old child who weighs 12 kilograms and is classified as having pneumonia was, 8(33.3%) pretest, and 10(38.5%) for posttest-1, 17(70.8%) for posttest-2 answers **as** 1 adult tablet - 2 times a day - for 5 Days.

4.6 Urgent referral

Table 4.6 health care worker's knowledge for *urgent referral needed for ill child*

Variable	Pretest		Posttest-1		Posttest-2	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**
A 6-month-old boy does not have general danger signs. He is classified with: MASTOIDITIS, NO ANEMIA, NOT VERY LOW WEIGHT AND Does he need an urgent referral	6(25.0%)	18(75.0%)	8(33.3%)	16(66.7%)	21(87.5%)	3(12.5%)
A 7-month-old girl does not have general danger signs. She is classified with: NO PNEUMONIA: COUGH OR COLD, NO DEHYDRATION, PERSISTENT DIARRHOEA, NO ANEMIA, NOT VERY LOW WEIGHT Does she need an urgent referral?	6(25.0%)	18(75.0%)	5(20.8%)	19(79.2%)	2(8.3%)	22(91.7%)
A 9-month-old boy is lethargic. He is classified with: SEVERE DEHYDRATION, NO ANEMIA, and NOT VERY LOW WEIGHT Your clinic can give IV fluids. Does he need an urgent referral?	20(83.3%)	4(16.7%)	16(66.7%)	8(33.3%)	3(12.5%)	23(87.5%)
A 2-year-old girl does not have general danger signs. She is classified with: SEVERE DEHYDRATION, SEVERE MALNUTRITION, and SEVERE ANEMIA Your clinic can give IV fluids. Does she need an urgent referral?	19(79.2%)	5(20.8%)	19(79.2%)	5(20.8%)	20(83.3%)	4(16.7%)
Mean of HCWs perceptions	**49.00**		**56.25**		**90.05**	

N=24

The above **table 4.6** shows the knowledge of health workers for if urgent need for referral of ill child or not.

And for A 6-month-old boy does not have general danger signs. He is classified with: MASTOIDITIS, NO ANEMIA, NOT VERY LOW WEIGHT, their correct answer result was 6(25.0%) pretest, 8(33.3%) posttest-1, and 21(87.5%) for posttest-2.

And the answers for A 7-month-old girl does not have general danger signs. She is classified with: NO PNEUMONIA: COUGH OR COLD, NO DEHYDRATION, PERSISTENT DIARRHOEA, NO ANEMIA, NOT VERY LOW WEIGHT was, 18(75.0%)

for pretest, 19(79.2%) was for posttest-1 and 22(91.7%) was for posttest-2. Furthermore, for A 9-month-old boy is lethargic. He is classified with: SEVERE DEHYDRATION, NO ANEMIA, and NOT VERY LOW WEIGHT, and clinic can give IV fluids, the response for pretest was 4(16.7%), posttest-1 was 8(33.3%), and 23(87.5%) was for posttest-2.

And for A 2-year-old girl does not have general danger signs. She is classified with: SEVERE DEHYDRATION, SEVERE MALNUTRITION, and SEVERE ANEMIA, clinic can give IV fluids, the answer for pretest was 19(79.2%) posttest-1 was19(79.2%), and posttest-2 was 20(83.3%).

And from the next coming **table 4.7.1** the knowledge of health workers on counseling the mother of sick child for Importance of the fluids and feeding was 17 (37.8%) for pretest 20(29.0) for posttest-1, and 18(27.7%) for posttest. For When to immediately return to clinic was 9(20%) pretest, 14(20.3%) for posttest-1, and 14(21.5%) for posttest-2. For her own health was 1(2.2%) for pretest, 11(15%) for posttest-1, and 15(23.1%) posttest-2. And for when to return for a follow-up visit, their answers was 9(20%) for pretest 14(20.3%) for posttest-1, and 15(23.1%) for posttest-2.

And from the below **table 4.7.2**, their knowledge's for starting complimentary foods at six months was 18(75.0) for pretest, 24(80.0%) for posttest-1, and 24(88.9%) for posttest-2 give answer as six months old.

4.7 Counseling the mother.

Table 4.7.1 Health care worker's knowledge for *Counseling the mother*

Variable	Pretest		Posttest-1		Posttest-2	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
According to IMCI, a mother of a sick child should be counseled about what topics						
Importance of the fluids and feeding	17	37.8	20	29.0	18	27.7
Why she needs to come to clinic	2	4.4	2	2.9	1	1.5
When to immediately return to clinic	9	20.0	14	20.3	14	21.5
Food and feeding problems	3	6.7	3	4.3	2	3.1
her own health	1	2.2	11	15.9	15	23.1
Immunization	4	8.9	5	7.2	0	0
when to return for a follow-up visit	9	20.0	14	20.3	15	23.1
Total	**45**	**100**	**69**	**100**	**65**	**100**
P.value	**0.542**					

Table 4.7.2 Health care worker's knowledge for *Counseling the mother*

	Pretest	Posttest-1	Posttest-2

Variable	Frequency	%	Frequency	%	Frequency	%
Complimentary foods should be started if the child						
Shows interest in semisolid foods	2	8.3	1	3.3	1	3.7
Does not show interest in semisolid foods	2	8.3	2	6.7	1	3.7
appears hungry after breastfeeding	2	8.3	2	6.7	1	3.7
Does not appear hungry after breast feeding	0	0	1	3.3	0	0
Is not gaining weight adequately	0	0	0	0	0	0
is six months' old	18	75.0	24	80.0	24	88.9
Total	**24**	**100**	**30**	**100**	**27**	**100**
P value	**0.441**					

N=24

4.8 Health worker's performance and health services

Table 4.8 Checklist observation of health worker's performance and services on quality of care at different health facilities

N=20	Quality of Health services organization:	Quality of Oral rehydration therapy (ORT) corner	Quality of IMCI case management/Consultation Observation	Quality of records (Document review)	Quality of Infection control at IMCI corner
Yes	87.5%	76%	78.7%	75%	72%
No	12.5%	24%	21.3%	25%	28%

From the above **table 4.8** the study shows that the quality of health services **organization** was 87.5% and quality for Oral rehydration therapy (**ORT**) **corner**76%, IMCI case management/**Consultation Observation**78.7%, Quality of records (Document review) 75%, and quality of Infection control at IMCI corner was 72%.

4.9 Medication availability and jobs aids

Table 4.9 Checklist observation of availability of job aid and medication in health facilities

N=20	Job aid and supplies availability	Medications availability
Available	60.4%	68.3%
Not available	39.6%	31.7%

The finding from **table 4.9** shows that, the availability of job aids and supplies availability was 60.4%, and not available was 39.6% and for medications availability was 68.3%, and not available was 31.7%.

CHAPTER FIVE

4.1 DISCUSSION, LIMITATION, CONCLUSION AND RECOMMENDATION

4.1.1 Discussion:

Our study results show that the introduction of IMCI is associated with improvements in the quality of healthcare for children in first-level facilities, and this section of the study presents most significant finding and study reports. 24 of health workers were randomly selected as a sample size of the study from Twenty health centers and clinics in Al Geinina town. The training of Five days was conducted to them with pre and posttest-1, followed by evaluation posttest-2; moreover, the check list was done at their work places.

4.1.1.1 Demographical data:

The study result in table 4.1 shows female (66.7%) more than male (33.3%). despite the gender was not an issue on quality of care of IMCI practice, and we not found study gave clue that the female was best in care than male in the health facilities. There for further study need to explore the factors behind gender participation in health care from different health facilities. Most of the respondents were graduated presented (75%) were from universities, and only (25%) of them got secondary school. Moreover, majority of them were Medical Assistant (MA) presented (50%), follows by graduated nurses (29.7%), auxiliary nurses (16.2%) and only (4.2%) community health workers. But in the 1970s and 1980s, community health workers were a cornerstone of primary health care as envisaged by the Alma Ata declaration. [57]

In Sudan most of the patients seen by medical assistants and nurses at different primary health facilities. And an observational multi country study done shows that, it is not more different in other country. [58] Furthermore, most of our respondents have many years of the experiences, from figure 4.1, more than (33.3%) of health workers have experience more than10 years and only (8.3%) have experience less than one year.

4.1.1.2 Types of IMCI training received by the health workers:

Training of health workers is backbone of success of IMCI approach. During Five days training to health workers we distributed IMCI hand book and chart booklet and others means for training to each one of the respondents and they show their interest for the information and knowledge they got from the training. The result shows the trained health workers on IMCI approach were (50%) figure 4.2 and this still below the optimum point according to WHO, so the WHO recommendation that at least 60% of health care workers seeing sick children in the health facilities are trained in IMCI. [59] furthermore, only 45% of health workers received refreshment training. Training of health workers in countries with IMCI implementation has been shown to have positive effects if training includes clinical practice, sufficient facilitators and use of materials relevant to local culture and language [60], [61] Study has been done in Nigeria revealed that, the IMCI training modules stipulate that health workers should be trained for 11 days and followed up 4-6 week later by the trainers to reinforce their new skills. On the other hand, the same study found that 4 days of training was better than no training and indicates a

trend for performance to improve as it led to a marked improvement in the quality of care received by sick children who attended the health centers. [62], [58] Moreover, an observational multi country study showing that the quality of care provided by health workers who received in-service IMCI training did not differ systematically between those with longer and shorter duration of preservice training. [58], [63]**,** [61] Survey of house hood has been done in Sudan 2003 remarked that; The results relative to indicators for clinical and communication skills clearly show a better performance for many of the tasks assessed of health providers trained in IMCI than those who have not been trained, including assessment, treatment and advising skills. [64],[26] Nevertheless, study has been done in Afghanistan showthe same result finding. [27] On the other hand, study has done in Tanzania which clearly show that; The main challenges identified in the implementation of IMCI are low initial training coverage among health care workers, lack of essential drugs and supplies, lack of onsite mentoring and lack of refresher courses and regular supportive supervision. [2]others study shows low health care worker compliance, one study assessing HCW adherence to IMCI guidelines in Tanzania revealed that most HCW's feel the IMCI algorithm is time-consuming, and prefer to conduct the protocol from memory after achieving basic competency and confidence in the algorithm. [65].

Low HCW compliance was also observed in several other countries. One study evaluated HCW adherence to IMCI guidelines in South Africa, and found that after 32 months of training, less than2% of health care workers refer to IMCI guidelines during pediatric visits. [66] Also, only 12% of IMCI-trained HCW's were found to check general danger signs in every child, and only 18% assessed all the main symptoms in every child. As a result, less than half of children with severe classification were correctly identified. Similar findings were reported in Bangladesh where children were often not fully assessed or correctly treated at facilities with IMCI-trained HCW's. [67], [63].
In our study we consider that, lack of training of health workers revealed the needs pertaining to the identification of children with diseases. There for, to achieve IMCI approach at public sector more training is needed which reveal one of the study objectives.

4.1.1.3 Child's assessment

-For Four main symptoms and Five conditions:

Our study shows the assessment of health workers regard to main symptoms of ill child, from **table 4.3.1** the knowledge of our respondent was (17(43.6%) for pretest and 22(44%) for posttest-1 and for posttest-2 was 19(76.0%), there for the minority of health workers know how to assess the ill child with main symptoms and that clearly present in pretest and posttest-1 and it raised during (posttest-2) with statistical significant P value = 0.025. But we consider that, more effort still need to be done to improve the respondent's skills to be highly capable in assessment of child with illness. On the other hand, for the assessment of Five conditions, their perception was poor before training and minor improvement present during follow up test the result was as displayed **table 4.3.2** shows 11(34.4%) for pretest, 22(43.1%) for posttest-1 and for posttest-2 was 24(52.2%)slightly best.

-For *general danger signs:*
In this study we found variety of concept for assessment of child with danger signs. Danger signs is highly important to be actively known by health workers to classify the child with sever disease. Missing information can lead to incorrect classification and consequences to the incorrect treatment of child. From displayed table 4.3.3 we found that the health workers have moderate information for assessment of child with danger sign and their skill not seen significant change even after intervention training P value= (0.816). Although this review focused on lack of frequency training and supplies which always needed by the IMCI approach. We consider that, more follow up and supervision was needed beside to refreshment training and further evaluation to be done to maintain good outcome.

-For *cut-off breathing* table 4.3.4 the knowledge of health workers raised from pretest to posttest-1 and posttest-2 with statistical significant p.value= 0.002**.** On the other hand, **for assessment of cough** we found their knowledge's improved after intervention with statistical significant P.value= 0.015 moreover, they were well knowledgeable and high skill to assess child with cough, this mean that in further future they will be able to classify pneumonia properly.

-For *malnutrition and anemia:* our result shows that, health workers know little before training table 4.3.6 for assessment of the child with malnutrition and anemia and the improvement appear in posttest-1 and posttest-2 with significant statistical p.value= 0.037.

4.1.1.4 Classifications of child's illness:

For classification of severe pneumonia and acute ear infection:
In our study result the classification of ill child regard to IMCI approach shows that health workers perception regard to classification of pneumonia was poor specially during pretest and the mean of HCWs perceptions was (52.9%), but the improvement present after posttest-2 and it was (84.05%). Some studies show that, most of ill children brought to health services they suffer from pneumonia and itis the biggest killer of young children; globally accounting for nearly one in five deaths among children less than 5 years of age in 2011. [47] Therefor priority of IMCI approach must to be consider over all countries to minimize mortality among under five.

For classification of MASTOIDITIS and JAUNDICE:
From table 4.4.2 our results show that (36%) of health workers actually know how to classify ***Mastoiditis*** before training and the improvement raised after intervention to (83.3%) during our follow up test. Furthermore, for classification of ***Jaundice*** our study shows that only (17.9%) of respondents know how to classify Jaundice before training and after training (follow up test) their knowledge raised to (91.7%), and it appear that the training raised perception of the respondents. On the other hand, **for *classification of severe malnutrition*** the study results show that most of health workers not well skilled to differentiate classification of child with malnutrition from table 4.4.3 the statistical was not significant P .value= 0.080 therefor, more training and follow up needed to raise up the perception of respondent. And **for *classification of diarrhea***, their perception is moderate but no significant change during pre and posttest P.

value=0.061. Therefor supervision and refreshment courses can improve the skill of health workers. One study has been done in Nigeria shows that, health workers were still not giving oral rehydration therapy to diarrhoea cases. [62]

For classification fever: our study result in table 4.4.5 shows different perception of our respondents, but majority of them know how to classify fever before the training which was (57.7%) in pretest and their perceptions raised to (79.2%) in posttest-2 which we did during the follow up. This mean that health workers were well knowledgeable for fever classification, therefore they will be good in management of malaria. On the other hand, ***classification of cases under red color of IMCI guideline:*** not far difficult for the respondents, they know how to classify a sick child under red color using IMCI guideline before training and their knowledge increased after training in present posttest-1 and posttest-2 table 4.4.6, but not significant p. value= 0.220, there for IMCI guideline for child management need more effort and holistic understanding.

4.1.1.5 Identifying treatments and immunizations:

Identifying treatments and immunizations of a sick child according to IMCI approach, during pretest table 4.5, our study shows health workers perception was presented moderately minor improvement was presented after posttest-1 and posttest-2. The mean of their knowledge was 44.28% for pretest and 52.85% for posttest-1, and for posttest-2 was 77.1%.

4.1.1.6 Urgent referral:

We consider the urgent referral is a kind of emergency case for child's life management, which need high perception and practices. And from our study we found that, the understanding of health workers regard to IMCI approach for urgent referral was vary, their perceptions mean during pretest was appeared poorly from table 4.6 was (49.00%), and slightly has been best during posttest-1 (56.25%) but the significant improvement has been happened in posttest-2 (90.05%). One study in Tanzania found that only 25% of severely ill children seen at rural health facilities with IMCI-trained HCW's were referred. [68] Over 50% of HCW's indicated that they manage severe malaria and severe pneumonia in a rural health facility without referral, and that they are confident in their ability to manage severely ill children who do not have severe anemia, severe dehydration, or difficulty breathing. Therefore, it is clear that deficiencies remain in HCW's referral of severe patients. [62]

4.1.1.7 Counseling the mother:

Child illness, follow up and feeding:

The third component of IMCI is to improve family and community practices, and it is very important can help caretaker to know how to manage the child with illness, our finding for health workers table 4.7.1regard to counseling *a sick child* mother, our respondents have minor knowledge about how counseling the mother *with a sick child before* intervention, and they need more training on IMCI approach to improve their knowledge and skills to maintain good health outcome and minimize mortality among children. There for we must focus on follow up and supervision after training. Furthermore, the counseling about *starting complimentary foods, they well knowledgeable during pre and posttest table 4.7.2.* But some studies show differently from what we found. One study in Bangladesh found that nearly none of the caregivers

of patients visiting IMCI facilities were advised on how to continue care at home. [67] Another study in South Africa found no change in caregiver knowledge regarding medication or when to return to the health facility with implementation of IMCI. [69] Therefore, it is clear that deficiencies remain in HCW's counseling to caregivers. [62].

4.1.1.8 Health workers' performance and health services:

Almost 50% of health workers have trained in IMCI approach, and we also found 50% of them was medical assistant, and during our visit to health facilities we check the performance of health workers using observation checklist in the different health facilities, from *table 4.8*the study shows quality of health services organization and it was very organized (87.5%), subsequence oral rehydration therapy(ORT) corner (76%) and infection control was (72%). Our result was reflecting good practices of health workers' performance regard to health services. Moreover, from our study we found that, (78.7%) of health workers having good quality of IMCI case management/Consultation Observation and (70%) have good quality of doing records (Document review). There for, we consider that most of health workers have good adherence for applying IMCI guideline during child management and this reveal one of the study objectives. Generally, the results which present on the table 4.8 show that, there was good quality of care regarding to IMCI approach and vice versa for majority of other table results when we evaluated their perception regard to IMCI approach used designed questionnaire given to them as pretest and posttest-1, posttest-2, their knowledge presented poorly in pretest (before training) when all of the respondents shared together, this mean some of them not received IMCI training before figure (4.2). therefore, to discover the performance level among IMCI trained staff and none IMCI trained staff more studies needed to be done to compare between them. Evaluations of IMCI in Uganda, Tanzania, Bangladesh, Brazil, Peru, South Africa, China, Armenia, Nigeria, and Morocco have shown various benefits in health service quality, mortality reduction, and health care cost savings. [62]

4.1.1.9 Medication availability and jobs aids:

From our study we found that, there was some availabilities of job aids and medications in the different health facilities. For the availability of Job aids and diagnostic tools, the percentage was (60%) and it was not sufficient to maintain good outcome for child health. Therefore, health facilities need to be equipped by more job aids. Moreover, we assessed the availability of medications regard to IMCI guideline, we found only (68.3%) of medications availability at the different health facilities, we consider the percentage was not sufficient for proper management of sick child, but it may venerable the sick child to risk, because the availability of medications especially emergency drugs is very important for many situations. Therefore, further studies are need to explore the factors and causes behind insufficiency of job aids and medications.
In Tanzania essential drugs were missing in 85% of health facilities, and in no country had the IMCI recommended drugs been fully incorporated into the national drugs list. [6] In Afghanistan 66% essential oral and pre-referral injectable medicine and equipment/supplies were available in health facilities. [70], [14] Another investigation in Nigeria found that IMCI guidelines reduced

average drug prescriptions from 4.5 to 2.3 drugs per patient, thereby reducing drug utilization and increasing national availability. Two studies have demonstrated increased availability of basic equipment and supplies at health facilities with IMCI implementation. One study in China found that availability of children's scales increased from 28% to 91%, timing devices from 89% to 97%, and utilities for mixing oral rehydration salts from 37% to 100% with the introduction of IMCI. [39] The same study also noted a significant increase in supply of all recommended drugs, vitamins, tetracycline eye ointment, and diazepam. Another investigation in Nigeria found that IMCI guidelines reduced average drug prescriptions from 4.5 to 2.3 drugs per patient, thereby reducing drug utilization and increasing national availability. [71]
We consider that there was some effort has been done for support the health facilities, but a lot was remained to be done and it was very important. During our study activities we found there was some activities of None Governmental Organizations(NGOs) at many health facilities which participated positively in health improvement, but we emphasis that, it is very important to addresses and motivation all the Agencies for making more effort to support health sectors and raise awareness of the community regard to the child health.

4.1.2 Limitation

Although there is much remains to be done, the study generates important findings in perception and practices on quality of IMCI among HCW in Al Geniena-West Darfur state. On the other hand, there were some limitations of the study, and the following statement describe the major limitations of the study:

The area of the study was restricted only in one locality of state and generalization of the result may not give resemble impact, therefor more studies needed.

Duration of training was short, furthermore close supervision, follow up of leaders after training at health facilities was semi absent to let health care workers apply the approach properly.

The sample size of the study was small which can't represent the whole state, a large sample will benefit for future research to represent the whole state.

The sample taken only from certain group of health workers, therefore it was necessary to obtain sample from all health workers and the findings will represent to all.

4.1.3 Conclusion:

The conclusion can be drawn from the following statements:
- From our study presented only (50%) of respondent received training in IMCI approach which was not enough to cover all health facilities furthermore, to reach minimum WHO recommendation point.
-Implementation of IMCI approach need well knowledge and skills for case management and from study presented low knowledge and skills, especially for assessment and classification of sick child before the intervention.

- Our training and follow up of health workers improved their competence in knowledge and skill specially during follow-up therefore, we need continuing with recommended IMCI approach and avoiding traditional ways for managing the child conditions out of IMCI umbrella.
-Medications and job aids supply play as a back bone in health facilities, and from study result was insufficient, it may affect the competence of health workers moreover, it may derive child health to risk consequence poor outcome will present.
-The findings of the study also have implications for future research to contribute in awareness community regard to IMCI and raise health worker's competence for case management furthermore decrease mortality among the children.

4.1.4 Recommendations:

Our recommendation of the study come as the following:
- Conducting training of untrained health workers; short refresher courses for the already trained health workers to reinforce their knowledge and sharpen their skills
- Continue motivations supervisions, evaluations and follow up regard to IMCI approach is needed.
-The essential medications and job aids supply is needed to maintain child health according to IMCI approach.
- Expanding of IMCI approach system among the community regard to IMCI community component.
- Address local and international agencies to increase participation for applying IMCI approach overall health facilities in the State.

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6. APPENDICES

6.1 Checklist on quality of IMCI

HC Code: _____
Health worker's code: _____ Gender: M _____ F _____
Profession: nurse: _____ medical Assistant_____ CHWs_____
Education level (……..) Experience years: ( )

Tick (√) mark front of the sentences you see to be true or false under the following given choice.

No	Sentences	Yes	No
A	Quality of Health services organization:		
1	Has IMCI corner been established?		
2	Is there any available seating area for mother and child?		
3	Enough space to see patient?		
4	Chair and Table for health worker?		
5	Updated wall chart on the wall?		
6	Waiting space for mothers and children?		
B	Quality of Oral rehydration therapy (ORT) corner:		
1	Adequate space for giving ORT?		
2	Table (for mixing ORS solution and demonstrations), chairs for caretakers?		
3	Supplies (cup, spoon, measuring /mixing utensils)?		
4	Source of safe drinking water?		
5	Functioning ORT: Children with some dehydration receive ORS solution at facility?		
C	Quality of Clinical staff trained on IMCI		
1	Is there clinical staff trained in IMCI?		
2	Is there available clinical staff trained in IMCI?		
3	Is there staff who received refresher training on updated module?		
4	Is there clinical staff supported by follow-up after training?		
D	Quality of IMCI case management/Consultation Observation	Case 1	Case2
1	Did provider follow IMCI protocol during:		
-	Assessment (General danger signs and other signs)		
-	Classification		
-	Treatment		
2	Did provider use IMCI case recording form/register?		
3	Did she do rapid test for malaria/ microscopy correctly? (Applicable only if the child with fever)		
4	Did provider inform caregiver about illness of her child?		
5	Did provider instruct caregiver how to give medicine to child?		
6	Did provider give first dose of medicine at health center?		
7	Did provider counsel about child's feeding?		
8	Did provider explain how to take care of child?		
9	Did s/he explain when to return?		
10	Did s/he use mother's card?		

11	Did mother/caregiver explain correctly how to give medicine?		
12	Did s/he explain correctly how to take care of child at home?		
13	Did s/he explain when to return to health center immediately?		
E	Quality of records (Document review)		
1	Did they send monthly report of last month?		
2	Individual patient record or register maintained?		
3	Is there correct record done?		
4	Is there Necessary referral made, including referral note and pretreatment done?		
F	Quality of Infection control at IMCI corner:		
1	Do they use disposable syringes during IM/IV injection?		
2	Safety precaution to give injection (using gloves, cleaning surface with alcohol and discarding syringes after use)?		
3	Source of water for hand wash?		
4	Soap and/or disinfectant (like chlorhexidine or alcohol) for washing hand?		
5	Safe disposal box with cover?		
G	Job aid and supplies	Available	Not Available
1	IMCI case recording form		
2	Mother's card		
3	Chart booklet		
4	Thermometer		
5	Weight machine		
6	Nebulizer Machine		
7	Microscope for malaria test		
8	Ambubag		
10	IMCI reporting format		
12	Suction Machine		
14	NG tube		
15	Disposable Syringes		
16	Insulin Syringes		
17	Absorbent clean cloth/ soft but strong		
H	Medicine		
1	ORS packet		
2	Capsule Vitamin A (50000 i.u.)		
3	Capsule Vitamin A (200000 i.u.)		
4	Tab. Amoxicillin		
5	Syrp. Amoxicillin		
6	Tab.Paed Cotrimoxazole (120mg)		
7	Tab. Cotrimoxazole (480mg)		
8	Syrp. Cotrimoxazole		
9	Tab. Ciprofloxacin (100mg)		
10	Tab. Ciprofloxacin (250mg)		

11	Tab. Nalidixic Acid (500 mg)		
12	Tab. Doxycyclin (100mg)		
13	Tab. Erythromycin		
14	Syrp. Erythromycin		
15	Inj. Cholarmphenicol		
16	Tab. Coartem (140mg)		
17	Tab. Quinine (300mg)		
18	Inj. Quinine (150mg/2ml)		
19	Inj. Quinine(300mg/2ml)		
20	Tablet Artesunate (50mg)		
21	Injection Artesunate (60 mg)		
22	Suppository Artesunate 50mg		
23	Suppository Artesunate 100mg		
24	Inj. Arthemeter		
25	Inj Diazepam 10 mg/2ml		
26	Tab. Zinc		
27	Tab. Iron – folic acid		
28	Syrup. Iron		
29	Tab/Cap. Multivitamin		
30	Tab. Albendazole		
31	Cholramphenicol eye ointment		
32	Tetracycline eye ointment		
33	Tab. Paracetamol 500mg		
34	Tab. Paracetamol 100mg		
35	Syrp. Paracetamol		
36	Syrp. Salbutamol		
37	Inhaler Salbutamol		
38	Ciprofloxacin ear drop		
39	Gentian Violet (0.25%)		
40	IV fluid: Ringer lactate Solution		
41	IV fluid: 9% Normal Saline		

Access at: www.basics.org/documents/25-IMCI-supervision-tool-and-database_Timor-Leste.pdf

6.2 INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)-QUESTIONNAIRE

HC or Clinic Code: ( ) Health worker's code: ( ) Gender: M ( ) F ( )
Profession: Auxiliary Nurse: ( ) Graduated Nurse: ( ) Medical Assistant: ( )
Community Health Workers (CHW): ( )
Education level: primary school: ( ) secondary school: ( ) university: ( )
Post graduate: ( )
Experience years: less than one year: ( ) 1-3years: ( ) 4-6years: ( ) 7-10 years: ( ) more than 10 years: ( ).
For the following question, make a cycle around the answer you see to be true:

1)Have you ever got IMCI training?
a)Yes b) No
2) Have you ever got IMCI refresh training?
a) Yes b) No

3) What are the four main symptoms for which every sick child should be checked?
a) Malnutrition c) Cough, diarrhea, malnutrition, ear problem
b) Anemia d)cough, diarrhea, fever, ear problem

4) What is a child's classification if he is 10 months old, has had a cough that lasted two days, has a breathing rate of 46 breaths per minute and chest indrawing?
a) No pneumonia: cough or cold c) severe pneumonia or very severe disease
b) Pneumonia d) very severe febrile disease

5) Approximately 70% of all childhood deaths are associated with one or more of 5 conditions. Three of these conditions are diarrhea, measles and malnutrition. The other two are:
a) Acute respiratory infections, primarily pneumonia d) HIV&AIDS
b) Malaria e) diabetes
c) Tuberculosis

6) What is the dose and schedule of amoxicillin (250 mg tablet) for a 5-week-old infant who weighs 3.5 kilograms and has local bacterial infection:

a) ¼ tablet - 2 times a day - for 5 Day's	c)1 teaspoon of syrup - 5 times a day - for 2 days
b) ½ tablet - 3 times a day - for 5 days	d)5 ml of syrup - 3 times a day - for 3 days

7) The IMCI clinical guidelines are designed for use with certain age groups. One group is 2 months up to 5 years. What is the other age group?
a) Birth up to 5 years d) 2 months up to 9 years
b) Birth up to 2 months e) 6 months up to 10 years
c) 2 months up to 1 year

8) A 2-year-old child has had Diarrhea for several days. He is not dehydrated, but the mother is alarmed because she saw blood in his stool this morning. Your treatment includes:

a) Start antibiotic for dysentery and ORS in the clinic, re-assess in 4 hours, give the Mother ORS to continue at home, advise on feeding and fluids, zinc supplement and tell her to return in 5 days

b) Start antibiotic for cholera, advice on feeding and fluids and send home

c) Start antibiotic for dysentery, give antibiotic to take home, advise on feeding and fluids, zinc supplement, and tell her to return in 2 days

d) Start antibiotic for cholera, give vitamin A, give antibiotic to take home, advice on feeding and fluids and tell her to return in 3 days

9) Feeding should be assessed in a child who:

a) Need urgent referral d) is classified as having persistent Diarrhea

b) Is less than 2 years old?

c) Is classified as having anemia, very

e) low weight and or growth faltering

10) For each of the following cases, select yes if urgent referral is needed or select No if urgent referral is not needed.

a) A 6-month-old boy does not have general danger signs. He is classified with: MASTOIDITIS, NO ANEMIA, NOT VERY LOW WEIGHT AND

Does he need an urgent referral? ____Yes _____No

b) A 7-month-old girl does not have general danger signs. She is classified with: NO PNEUMONIA: COUGH OR COLD, NO DEHYDRATION, PERSISTENT DIARRHOEA, NO ANEMIA, NOT VERY LOW WEIGHT

Does she need an urgent referral? _____Yes_____ No

c) A 9-month-old boy is lethargic. He is classified with: SEVERE DEHYDRATION, NO ANEMIA, and NOT VERY LOW WEIGHT Your clinic can give IV fluids.

Does he need an urgent referral? _____Yes_____ No

d) A 2-year-old girl does not have general danger signs. She is classified with: SEVERE DEHYDRATION, SEVERE MALNUTRITION, and SEVERE ANEMIA Your clinic can give IV fluids.

Does she need an urgent referral? _____Yes _____ No

11) If a child has had ear pain and pus draining from the ear for 10 days, and no tender swelling behind the ear, you will classify this child as having:
a) Acute ear infection c) Mastoiditis
b) Chronic ear infection d) not enough signs to classify this child

12) If a child has any of the five general danger signs, you should urgently refer him to hospital for treatment, these signs are:
a) Not able to drink or breastfeed d) vomiting everything
b) Severe cough e) lethargic or unconsciousness
c) Convulsions during this illness f) convulsing now

13) If a child less than 5 years of age and did not receive immunization for Penta vaccine as recommended, it is necessary to:
a) Increase the dose of the vaccine prescribed for that age
b) Not immunize at all - because it is too late
c) Immunize the child any time, and give the remaining doses 4 weeks apart

14) A follow-up visit in 5 days should take place if a child is classified as having which of the following condition(s):
a) Pneumonia e) very low weight-for-age and or growth faltering
b) Measles f) feeding problem
c) Persistent Diarrhea g) acute ear infection
d) Pallor

15) To be classified as having MASTOIDITIS a child must have the following signs:
a) Severe ear pain d) pus draining from both ears
b) Redness behind the ear e) tender swelling behind the ear
c) Pus draining from one of the ears

16) To be classified as having JAUNDICE a young infant must have the following signs:
a) Yellow palms and soles if age is more than 24 hours d) pus draining from the eyes
b) Only yellow eyes and skin if age is more than 24 hours e) no signs suggesting jaundice
c) Any jaundice if age less than 24 hours

17) What is the cut-off rate for fast breathing in a child who is 11 months old?
a) 60 breaths per minute or more c) 40 breaths per minute or more
b) 50 breaths per minute or more d) 30 breaths per minute or more

18) A 14-month-old child with cough is brought to an outpatient clinic. You will assess this child for

a) General danger signs
b) Common main symptoms such as cough or difficult breathing, Diarrhea, fever and ear problems
c) Trauma
d) Malnutrition and anemia
e) Immunization status
f) Developmental milestones

19) Choose the best questions for checking the mother understands about how to give an antibiotic:

a) How will you give the antibiotic?
b) Will you give the antibiotic three times Per day?
c) For how many days will you give antibiotic?
d) do you understand how to give the antibiotic?

20) According to IMCI, a mother of a sick child should be counseled about what topics:

a) Importance of the fluids and feeding
b) Why she needs to come to clinic
c) When to immediately return to clinic
d) Food and feeding problems
e) her own health
f) immunization
g) when to return for a follow-up visit

21) Complimentary foods should be started if the child:

a) Shows interest in semisolid foods
b) Does not show interest in semisolid foods
C) appears hungry after breastfeeding
d) does not appear hungry after breastfeeding
e) is not gaining weight adequately
f) is six months old

22) If a child has measles now or has had it within the last three months, and has fever and any general danger sign, he or she will be classified as having:

a) Uncomplicated malaria
b) Severe complicated measles
c) very severe febrile disease or severe malaria
d) measles with eye or mouth complication

23) What are two signs that are used to classify severe malnutrition?

a) Small arm circumference
b) Visible severe wasting
c)Oedema of both feet
d) severe dehydration
e) growth faltering

24) To classify the dehydration status of young infant with Diarrhea you will look:

a) At the general condition of the child (does the infant move when stimulated or does not move even when stimulated?
Restless and irritable)
b) For sunken eyes
c) For Oedema of both feet
d) If the young infant is drinking eagerly or poorly
e) For visible severe wasting
f) For a swollen abdomen

25) Where can the IMCI case management guidelines are used?

a) In the inpatient ward of a hospital
b) In a neonatal ward
c) In the outpatient ward of a hospital
d) at first-level health facilities
e) at the house hold level

26) Which should be checked for malnutrition and anemia?

a) Only children with feeding problems
b) Only children who are younger than 12 Months old
c) All children brought to the clinic
d) only children who are not breastfed
e) only children with Diarrhea
f) only children with malaria

27) What is the dose and schedule of Cotrimoxazole for a 2-year-old child who weighs 12 kilograms and is classified as having pneumonia?

a) 1 adult tablet - 2 times a day - for 5 Days	c) 4 pediatric tablets - 2 times a day- for 3 days
b) 1 pediatric tablet - 3 times a day- for 5 Days	d) 1 teaspoon of syrup - 5 times a day - for 2 Days

28) A child with fever plus any general danger sign should be classified as:

a) Uncomplicated malaria
b) Acute ear infection
c) Measles
d) very severe febrile disease or severe malaria
e) Mastoiditis

29) In the IMCI guideline, the child will be classified under the red color when he has the following signs:

a) Chest indrawing
b)Oedema of both feet.
c) Sunken eyes
d) Convulsions

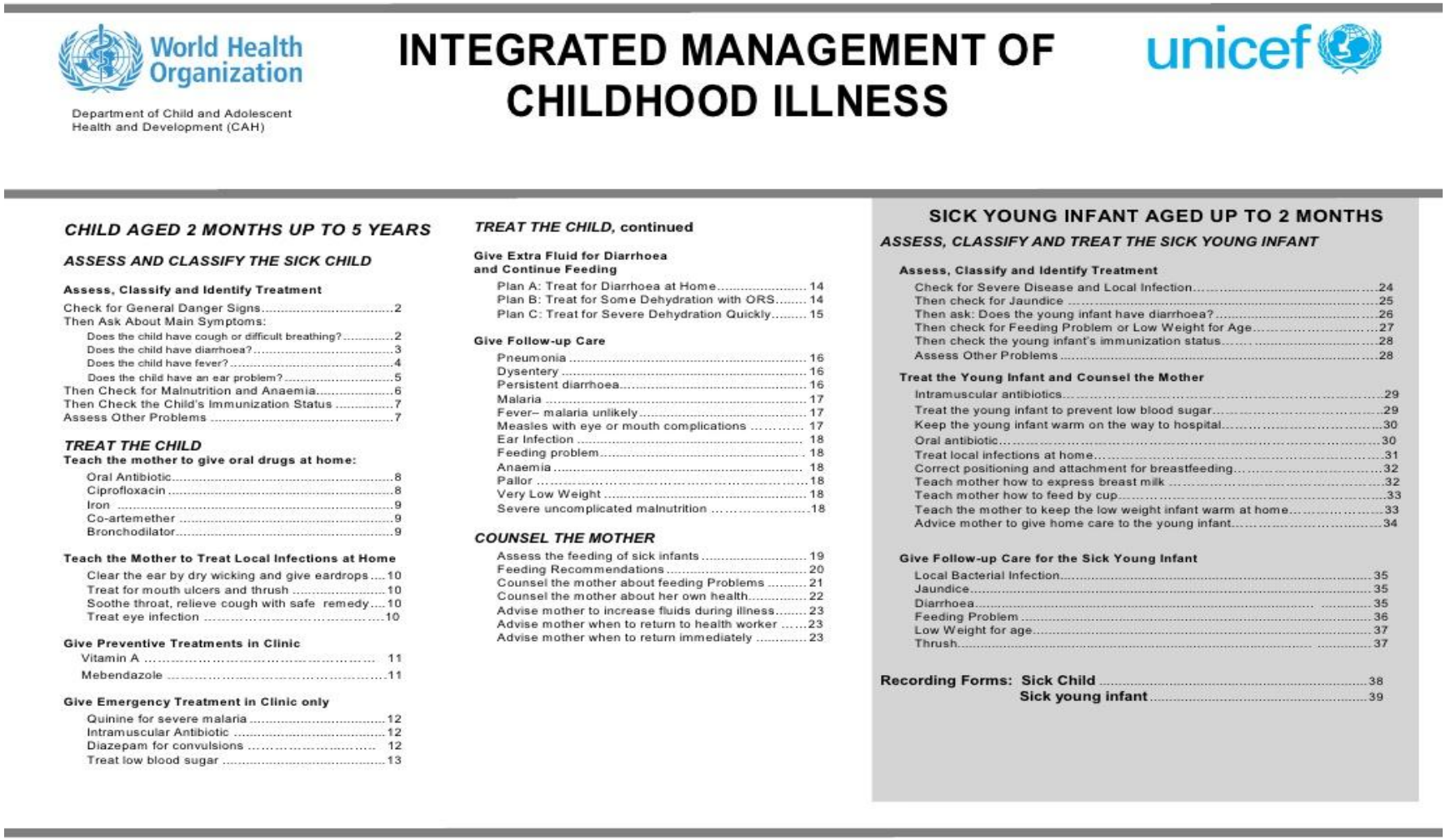
30) IMCI chart for the child illness management include the following color:

a) Red,
b) Green
c) Yellow,
d) White

NOTE: This questionnaire just for research purpose, not for follow up or remark.

Access at: bvsper.paho.org/texcom/aiepi/ICATTPeru/PostTestICATT.pdf

6.3 IMCI training course sheets (WHO chart booklet 2008)



World Health Organization

Department of Child and Adolescent Health and Development (CAH)

INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS

unicef

CHILD AGED 2 MONTHS UP TO 5 YEARS

ASSESS AND CLASSIFY THE SICK CHILD

Assess, Classify and Identify Treatment

TREAT THE CHILD

Teach the mother to give oral drugs at home:

Teach the Mother to Treat Local Infections at Home

Give Preventive Treatments in Clinic

Give Emergency Treatment in Clinic only

TREAT THE CHILD, continued

Give Extra Fluid for Diarrhoea and Continue Feeding

Give Follow-up Care

COUNSEL THE MOTHER

SICK YOUNG INFANT AGED UP TO 2 MONTHS

ASSESS, CLASSIFY AND TREAT THE SICK YOUNG INFANT

Assess, Classify and Identify Treatment

Treat the Young Infant and Counsel the Mother

Give Follow-up Care for the Sick Young Infant

Access at: http://www.slideshare.net/earl15/2008-imci-chart-booklet. On 15/5/2015

ASSESS AND CLASSIFY THE SICK CHILD AGED 2 MONTHS UP TO 5 YEARS

ASSESS

ASK THE MOTHER WHAT THE CHILD'S PROBLEMS ARE

- Determine whether this is an initial or follow-up visit for this problem.
  - if follow-up visit, use the follow-up instructions on *TREAT THE CHILD* chart
  - if initial visit, assess the child as follows:

CHECK FOR GENERAL DANGER SIGNS

ASK:	*LOOK:*
• Is the child able to drink or breastfeed? • Does the child vomit everything? • Has the child had convulsions?	• See if the child is lethargic or unconscious. • Is the child convulsing now?

A child with any general danger sign needs *URGENT* attention; complete the assessment and any pre-referral treatment immediately so that referral is not delayed.

THEN ASK ABOUT MAIN SYMPTOMS:

Does the child have cough or difficult breathing?

IF YES, ASK:	LOOK, LISTEN, FEEL:
• For how long?	• Count the breaths in one minute. • Look for chest indrawing. • Look and listen for stridor. • Look and listen for wheezing. ***If wheezing and either fast breathing or chest indrawing:*** *Give a trial of rapid acting inhaled bronchodilator for up to three times 15-20 minutes apart. Count the breaths and look for chest indrawing again, and then classify.*

} CHILD MUST BE CALM

Classify COUGH or DIFFICULT BREATHING

If the child is:	Fast breathing is:
2 months up to 12 months	**50** breaths per minute or more
12 months up to 5 years	**40** breaths per minute or more

CLASSIFY

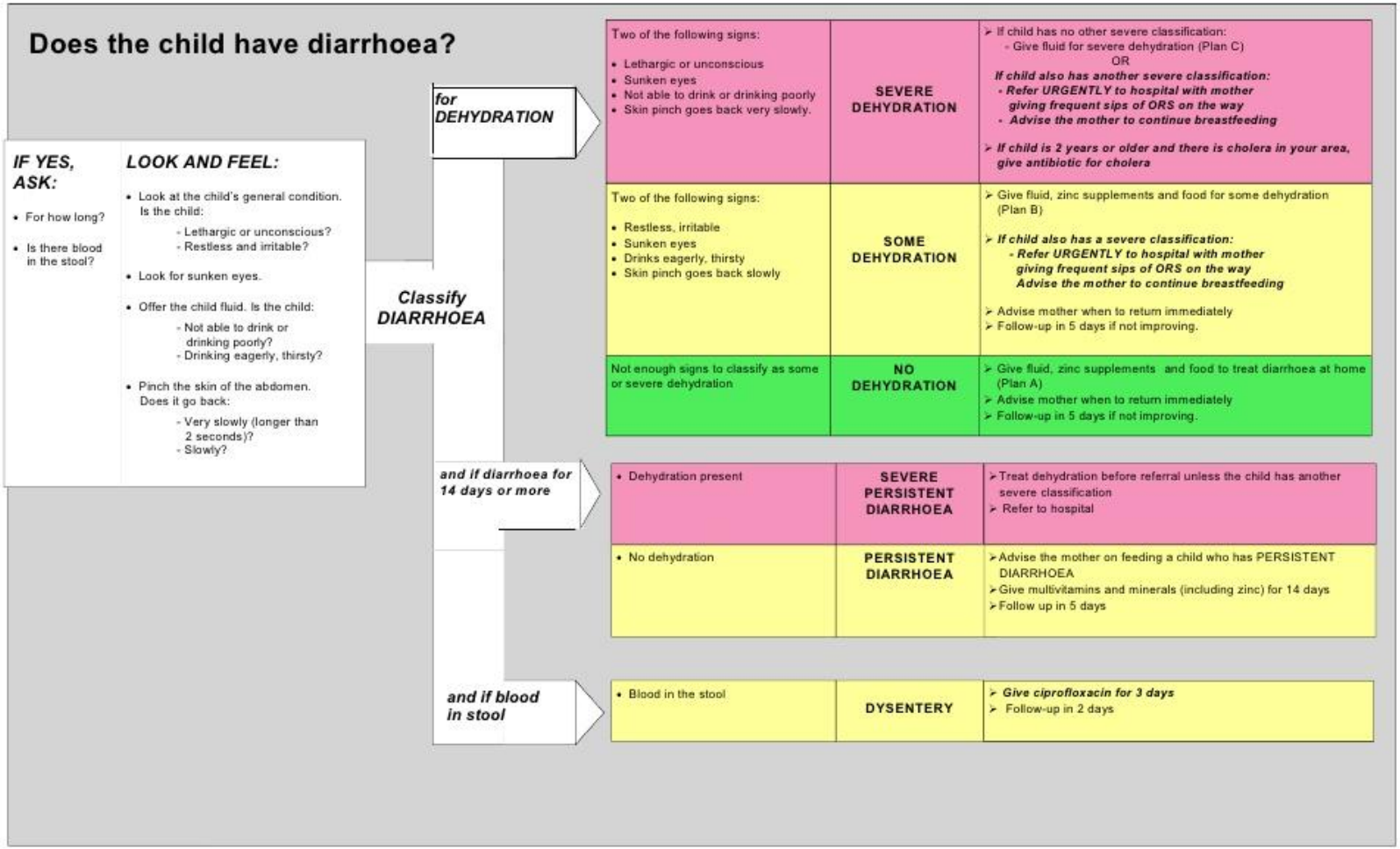
USE ALL BOXES THAT MATCH THE CHILD'S SYMPTOMS AND PROBLEMS TO CLASSIFY THE ILLNESS.

IDENTIFY TREATMENT

SIGNS	CLASSIFY AS	TREATMENT (Urgent pre-referral treatments are in bold print)
• Any general danger sign or • Chest indrawing or • Stridor in a calm child	**SEVERE PNEUMONIA OR VERY SEVERE DISEASE**	➢ ***Give first dose of an appropriate antibiotic*** ➢ ***Refer URGENTLY to hospital****
• Fast breathing	**PNEUMONIA**	➢ ***Give oral antibiotic for 3 days*** ➢ If wheezing (even if it disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days** ➢ Soothe the throat and relieve the cough with a safe remedy ➢ If coughing for more than 3 weeks or if having recurrent wheezing, refer for assessment for TB or asthma ➢ Advise the mother when to return immediately ➢ Follow-up in 2 days
• No signs of pneumonia or very severe disease	**COUGH OR COLD**	➢ If wheezing (even if it disappeared after rapidly acting bronchodilator) give an inhaled bronchodilator for 5 days** ➢ Soothe the throat and relieve the cough with a safe remedy ➢ If coughing for more than 3 weeks or if having recurrent wheezing, refer for assessment for TB or asthma ➢ Advise mother when to return immediately ➢ Follow up in 5 days if not improving

If referral is not possible, manage the child as described in **Integrated Management of Childhood Illness, Treat the Child, Annex: Where Referral Is Not Possible, and WHO guidelines for inpatient care.*

***In settings where inhaled bronchodilator is not available, oral salbutamol may be the second choice*


Does the child have diarrhoea?
IF YES, ASK:
• For how long?
• Is there blood in the stool?
LOOK AND FEEL:
• Look at the child's general condition. Is the child:
- Lethargic or unconscious?
- Restless and irritable?
• Look for sunken eyes.
• Offer the child fluid. Is the child:
- Not able to drink or drinking poorly?
- Drinking eagerly, thirsty?
• Pinch the skin of the abdomen. Does it go back:
- Very slowly (longer than 2 seconds)?
- Slowly?
Classify DIARRHOEA
for DEHYDRATION
Two of the following signs:
• Lethargic or unconscious
• Sunken eyes
• Not able to drink or drinking poorly
• Skin pinch goes back very slowly.
SEVERE DEHYDRATION
➢ If child has no other severe classification:
- Give fluid for severe dehydration (Plan C)
OR
If child also has another severe classification:
- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way
- Advise the mother to continue breastfeeding
➢ If child is 2 years or older and there is cholera in your area, give antibiotic for cholera
Two of the following signs:
• Restless, irritable
• Sunken eyes
• Drinks eagerly, thirsty
• Skin pinch goes back slowly
SOME DEHYDRATION
➢ Give fluid, zinc supplements and food for some dehydration (Plan B)
➢ If child also has a severe classification:
- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way
Advise the mother to continue breastfeeding
➢ Advise mother when to return immediately
➢ Follow-up in 5 days if not improving.
Not enough signs to classify as some or severe dehydration
NO DEHYDRATION
➢ Give fluid, zinc supplements and food to treat diarrhoea at home (Plan A)
➢ Advise mother when to return immediately
➢ Follow-up in 5 days if not improving.
and if diarrhoea for 14 days or more
• Dehydration present
SEVERE PERSISTENT DIARRHOEA
➢ Treat dehydration before referral unless the child has another severe classification
➢ Refer to hospital
• No dehydration
PERSISTENT DIARRHOEA
➢ Advise the mother on feeding a child who has PERSISTENT DIARRHOEA
➢ Give multivitamins and minerals (including zinc) for 14 days
➢ Follow up in 5 days
and if blood in stool
• Blood in the stool
DYSENTERY
➢ Give ciprofloxacin for 3 days
➢ Follow-up in 2 days

Does the child have fever?

(by history or feels hot or temperature 37.5°C** or above)

IF YES:
Decide Malaria Risk: high or low

THEN ASK:

- For how long?
- If more than 7 days, has fever been present every day?
- Has the child had measles within the last 3 months?

LOOK AND FEEL:

- Look or feel for stiff neck.
- Look for runny nose.

Look for signs of MEASLES

- Generalized rash and
- One of these: cough, runny nose, or red eyes.

If the child has measles now or within the last 3 months:

- Look for mouth ulcers. Are they deep and extensive?
- Look for pus draining from the eye.
- Look for clouding of the cornea.

High Malaria Risk

Classify FEVER

Low Malaria Risk

if MEASLES now or within last 3 months, Classify

HIGH MALARIA RISK

• Any general danger sign or • Stiff neck.	**VERY SEVERE FEBRILE DISEASE**	➢ ***Give quinine for severe malaria (first dose)*** ➢ ***Give first dose of an appropriate antibiotic*** ➢ ***Treat the child to prevent low blood sugar*** ➢ ***Give one dose of paracetamol in clinic for high fever (38.5°C or above)*** ➢ ***Refer URGENTLY to hospital***
• Fever (by history or feels hot or temperature 37.5°C** or above)	**MALARIA**	➢ ***Give oral co-artemether or other recommended antimalarial*** ➢ ***Give one dose of paracetamol in clinic for high fever (38.5°C or above)*** ➢ Advise mother when to return immediately ➢ Follow-up in 2 days if fever persists ➢ If fever is present every day for more than 7 days, refer for assessment

LOW MALARIA RISK

• Any general danger sign or • Stiff neck	**VERY SEVERE FEBRILE DISEASE**	➢ ***Give quinine for severe malaria (first dose) unless no malaria risk*** ➢ ***Give first dose of an appropriate antibiotic*** ➢ ***Treat the child to prevent low blood sugar*** ➢ ***Give one dose of paracetamol in clinic for high fever (38.5°C or above)*** ➢ ***Refer URGENTLY to hospital***
• NO runny nose and NO measles and NO other cause of fever	**MALARIA**	➢ ***Give oral co-artemether or other recommended antimalarial*** ➢ ***Give one dose of paracetamol in clinic for high fever (38.5°C or above)*** ➢ Advise mother when to return immediately ➢ Follow-up in 2 days if fever persists ➢ If fever is present every day for more than 7 days, refer for assessment
• Runny nose PRESENT or • Measles PRESENT or • Other cause of fever PRESENT	**FEVER - MALARIA UNLIKELY**	➢ ***Give one dose of paracetamol in clinic for high fever (38.5°C or above)*** ➢ Advise mother when to return immediately ➢ Follow-up in 2 days if fever persists ➢ If fever is present every day for more than 7 days, refer for assessment

• Any general danger sign or • Clouding of cornea or • Deep or extensive mouth ulcers	**SEVERE COMPLICATED MEASLES*** **	➢ ***Give Vitamin A treatment*** ➢ ***Give first dose of an appropriate antibiotic*** ➢ ***If clouding of the cornea or pus draining from the eye, apply tetracycline eye ointment*** ➢ ***Refer URGENTLY to hospital***
• Pus draining from the eye or • Mouth ulcers	**MEASLES WITH EYE OR MOUTH COMPLICATIONS*** **	➢ ***Give Vitamin A treatment*** ➢ ***If pus draining from the eye, treat eye infection with tetracycline eye ointment*** ➢ If mouth ulcers, treat with gentian violet ➢ Follow-up in 2 days.
• Measles now or within the last 3 months	**MEASLES**	➢ ***Give Vitamin A treatment***

** *These temperatures are based on axillary temperature. Rectal temperature readings are approximately 0.5°C higher.*

*** *Other important complications of measles - pneumonia, stridor, diarrhoea, ear infection, and malnutrition - are classified in other tables.*

4

Does the child have an ear problem?

• Tender swelling behind the ear.	**MASTOIDITIS**	➢ ***Give first dose of an appropriate antibiotic.*** ➢ ***Give first dose of paracetamol for pain.*** ➢ ***Refer URGENTLY to hospital.***
• Pus is seen draining from the ear and discharge is reported for less than 14 days, or • Ear pain.	**ACUTE EAR INFECTION**	➢ ***Give an antibiotic for 5 days.*** ➢ Give paracetamol for pain. ➢ Dry the ear by wicking. ➢ Follow-up in 5 days.
• Pus is seen draining from the ear and discharge is reported for 14 days or more.	**CHRONIC EAR INFECTION**	➢ Dry the ear by wicking. ➢ Treat with topical quinolone eardrops for 2 weeks ➢ Follow-up in 5 days.
• No ear pain and No pus seen draining from the ear.	**NO EAR INFECTION**	➢ No treatment.

THEN CHECK FOR MALNUTRITION AND ANAEMIA

CHECK FOR MALNUTRITION

LOOK AND FEEL:

- Look for visible severe wasting
- Look for oedema of both feet
- Determine weight for age

CLASSIFY NUTRITIONAL STATUS

• Visible severe wasting or • Oedema of both feet	**SEVERE MALNUTRITION**	➢ ***Treat the child to prevent low sugar*** ➢ ***Refer URGENTLY to a hospital***
• Very low weight for age	**VERY LOW WEIGHT**	➢ Assess the child's feeding and counsel the mother on feeding according to the feeding recommendations ➢ Advise mother when to return immediately ➢ Follow-up in 30 days
• Not very low wight for age and no other signs of malnutrition	**NOT VERY LOW WEIGHT**	➢ If child is less than 2 years old, assess the child's feeding and counsel the mother on feeding according to the feeding recommendations - If feeding problem, follow-up in 5 days ➢ Advise mother when to return immediately

CHECK FOR ANAEMIA

LOOK and FEEL:

- Look for palmar pallor. Is it:
  - Severe palmar pallor?
  - Some palmar pallor?

CLASSIFY ANAEMIA

• Severe palmar pallor	**SEVERE ANAEMIA**	➢ ***Refer URGENTLY to hospital***
• Some palmar pallor	**ANAEMIA**	➢ Give iron ➢ Give oral antimalarial if high malaria risk ➢ Give mebendazole if child is 1 year or older and has not had a dose in the previous six months ➢ Advise mother when to return immediately ➢ Follow up in 14 days
• No palmar pallor	NO ANAEMIA	If child is less than 2 years old, assess the child's feeding and counsel the mother on feeding according to the feeding recommendations - If feeding problem, follow-up in 5 days

THEN CHECK THE CHILD'S IMMUNIZATION, VITAMIN A AND DEWORMING STATUS

IMMUNIZATION SCHEDULE: Follow national guidelines

AGE	VACCINE		
Birth	BCG	OPV-0	
6 weeks	DPT+HIB-1	OPV-1	Hepatitis B1
10 weeks	DPT+HIB-2	OPV-2	Hepatitis B2
14 weeks	DPT+HIB-3	OPV-3	Hepatitis B3
9 months	Measles*		

* Second dose of measles vaccine may be given at any opportunistic moment during periodic supplementary immunisation activities as early as one month following the first dose

VITAMIN A SUPPLEMENTATION

Give every child a dose of Vitamin A every six months from the age of 6 months. Record the dose on the child's card.

ROUTINE WORM TREATMENT

Give every child mebendazole every 6 months from the age of one year. Record the dose on the child's card.

ASSESS OTHER PROBLEMS:

MAKE SURE CHILD WITH ANY GENERAL DANGER SIGN IS REFERRED after first dose of an appropriate antibiotic and other urgent treatments.

TREAT THE CHILD

CARRY OUT THE TREATMENT STEPS IDENTIFIED ON THE *ASSESS AND CLASSIFY* CHART

TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

Follow the instructions below for every oral drug to be given at home.
Also follow the instructions listed with each drug's dosage table.

- **Determine the appropriate drugs and dosage for the child's age or weight**
- **Tell the mother the reason for giving the drug to the child**
- **Demonstrate how to measure a dose**
- **Watch the mother practise measuring a dose by herself**
- **Ask the mother to give the first dose to her child**
- **Explain carefully how to give the drug, then label and package the drug. If more than one drug will be given, collect, count and package each drug separately**
- **Explain that all the tablets or syrup must be used to finish the course of treatment, even if the child gets better**
- **Check the mother's understanding before she leaves the clinic**

➢ For dysentery give Ciprofloxacin

15mg/kg/day—2 times a day for 3 days

SECOND-LINE ANTIBIOTIC FOR DYSENTERY: _____

	250 mg TABLET	500 mg TABLET
AGE	**DOSE/ tabs**	**DOSE/ tabs**
Less than 6 months	1/2 tablet	1/4 tablet
6 months up to 5 years	1 tablet	1/2 tablet

➢ Give an Appropriate Oral Antibiotic

➢ FOR PNEUMONIA, ACUTE EAR INFECTION:

FIRST-LINE ANTIBIOTIC: _____
SECOND-LINE ANTIBIOTIC: _____

	CO-TRIMOXAZOLE (trimethoprim / sulphamethoxazole) ➢ *Give two times daily for 3 days for pneumonia* ➢ *Give two times daily for 5 days for acute ear infection*			**AMOXYCILLIN*** ➢ *Give two times daily for 3 days for pneumonia* ➢ *Give two times daily for 5 days for acute ear infection*	
AGE or WEIGHT	**ADULT TABLET** (80/400mg)	**PAEDIATRIC TABLET** (20/100 mg)	**SYRUP** (40/200 mg/5ml)	**TABLET** (250 mg)	**SYRUP** (125 mg /5 ml)
2 months up to 12 months (4 - <10 kg)	1/2	2	5.0 ml	3/4	7.5 ml
12 months up to 5 years (10 - 19 kg)	1	3	7.5 ml	1.5	15 ml

* Amoxycillin should be used if there is high co-trimoxazole resistance.

➢ FOR CHOLERA:

FIRST-LINE ANTIBIOTIC FOR CHOLERA: _____
SECOND-LINE ANTIBIOTIC FOR CHOLERA: _____

	TETRACYCLINE ➢ Give 4 times daily for 3 days	**ERYTHROMYCIN** ➢ Give 4 times daily for 3 days
AGE or WEIGHT	**TABLET** 250 mg	**TABLET** 250 mg
2 years up to 5 years (12 - 19 kg)	1	1

TEACH THE MOTHER TO GIVE ORAL DRUGS AT HOME

➢ GIVE INHALED SALBUTAMOL for WHEEZING

USE OF A SPACER*

A spacer is a way of delivering the bronchodilator drugs effectively into the lungs. No child under 5 years should be given an inhaler without a spacer. A spacer works as well as a nebuliser if correctly used.

- From salbutamol metered dose inhaler (100 μg/puff) give 2 puffs.
- Repeat up to 3 times every 15 minutes before classifying pneumonia.

Spacers can be made in the following way:

- Use a 500ml drink bottle or similar.
- Cut a hole in the bottle base in the same shape as the mouthpiece of the inhaler. This can be done using a sharp knife.
- Cut the bottle between the upper quarter and the lower 3/4 and disregard the upper quarter of the bottle.
- Cut a small V in the border of the large open part of the bottle to fit to the child's nose and be used as a mask.
- Flame the edge of the cut bottle with a candle or a lighter to soften it.
- In a small baby, a mask can be made by making a similar hole in a plastic (not polystyrene) cup.
- Alternatively commercial spacers can be used if available.

To use an inhaler with a spacer:

- Remove the inhaler cap. Shake the inhaler well.
- Insert mouthpiece of the inhaler through the hole in the bottle or plastic cup.
- The child should put the opening of the bottle into his mouth and breath in and out through the mouth.
- A carer then presses down the inhaler and sprays into the bottle while the child continues to breath normally.
- Wait for three to four breaths and repeat for total of five sprays.
- For younger children place the cup over the child's mouth and use as a spacer in the same way.

** If a spacer is being used for the first time, it should be primed by 4-5 extra puffs from the inhaler.*

➢ Give Iron

- Give one dose daily for 14 days

AGE or WEIGHT	IRON/FOLATE TABLET Ferrous sulfate 200 mg + 250 μg Folate (60 mg elemental iron)	IRON SYRUP Ferrous fumarate 100 mg per 5 ml (20 mg elemental iron per ml)
2 months up to 4 months (4 - <6 kg)		1.0 ml (< 1/4 tsp)
4 months up to 12 months (6 - <10kg)		1.25 ml (1/4 tsp)
12 months up to 3 years (10 - <14 kg)	1/2 tablet	2.0 ml (<1/2 tsp)
3 years up to 5 years (14 - 19 kg)	1/2 tablet	2.5 ml (1/2 tsp)

➢ Give Oral Co-artemether

- Give the first dose of co-artemether in the clinic and observe for one hour If child vomits within an hour repeat the dose. **2nd** dose at home after 8 hours
- Then twice daily for further two days as shown below
- Co-artemether should be taken with food

	Co-artemether tablets (20mg artemether and 120mg lumefantrine)					
WEIGHT (age)	0hr	8h	24h	36h	48h	60h
5 - <15 kg (5 months up to 3 years)	1	1	1	1	1	1
15 - <20 kg (3 years up to 5 years)	2	2	2	2	2	2

TEACH THE MOTHER TO TREAT LOCAL INFECTIONS AT HOME

- **Explain to the mother what the treatment is and why it should be given**
- **Describe the treatment steps listed in the appropriate box**
- **Watch the mother as she gives the first treatment in the clinic (except for remedy for cough or sore throat)**
- **Tell her how often to do the treatment at home**
- **If needed for treatment at home, give mother a tube of tetracycline ointment or a small bottle of gentian violet**
- **Check the mother's understanding before she leaves the clinic**

Clear the Ear by Dry Wicking and Give Eardrops*

- **Do the following 3 times daily**
  - Roll clean absorbent cloth or soft, strong tissue paper into a wick
  - Place the wick in the child's ear
  - Remove the wick when wet
  - Replace the wick with a clean one and repeat these steps until the ear is dry
  - Instil quinolone eardrops* for two weeks

* Quinolone eardrops may contain ciprofloxacin, norfloxacin, or ofloxacin

Soothe the Throat, Relieve the Cough with a Safe Remedy

- Safe remedies to recommend:
  - Breast milk for a breastfed infant

_____

_____

- Harmful remedies to discourage:

_____

_____

Treat Mouth Ulcers with Gentian Violet (GV)

- **Treat the mouth ulcers twice daily**
  - Wash hands
  - Wash the child's mouth with a clean soft cloth wrapped around the finger and wet with salt water
  - Paint the mouth with 1/2 strength gentian violet (0.25% dilution)
  - Wash hands again
  - Continue using GV for 48 hours after the ulcers have been cured
  - Give paracetamol for pain relief

Treat Eye Infection with Tetracycline Eye Ointment

- Clean both eyes 4 times daily.
  - Wash hands.
  - Use clean cloth and water to gently wipe away pus.
- Then apply tetracycline eye ointment in both eyes 4 times daily.
  - Squirt a small amount of ointment on the inside of the lower lid.
  - Wash hands again.
- Treat until there is no pus discharge.
- Do not put anything else in the eye.

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GIVE VITAMIN A AND MEBENDAZOLE IN CLINIC

- **Explain to the mother why the drug is given**
- **Determine the dose appropriate for the child's weight (or age)**
- **Measure the dose accurately**

➢ Give Vitamin A

VITAMIN A SUPPLEMENTATION:

- Give first dose any time after 6 months of age to ALL CHILDREN
- Thereafter give vitamin A **every six months** to ALL CHILDREN

VITAMIN A TREATMENT:

- Give an extra dose of Vitamin A (same dose as for supplementation) as part of ***treatment*** if the child has measles or PERSISTENT DIARRHOEA.
- If the child has had a dose of Vitamin A within the past month, DO NOT GIVE VITAMIN A
- Always record the dose of Vitamin A given on the child's chart

Age	VITAMIN A DOSE
6 months up to 12 months	100 000 IU
One year and older	200 000 IU

➢ Give Mebendazole

- Give 500 mg mebendazole as a single dose in clinic if:
  - hookworm/ whipworm is a problem in your area
  - the child is 1 year of age or older, and
  - has not had a dose in the previous 6 months

GIVE THESE TREATMENTS IN THE CLINIC ONLY

- **Explain to the mother why the drug is given**
- **Determine the dose appropriate for the child's weight (or age)**
- **Use a sterile needle and sterile syringe when giving an injection**
- **Measure the dose accurately**
- **Give the drug as an intramuscular injection**
- **If the child cannot be referred, follow the instructions provided**

Give An Intramuscular Antibiotic

- **GIVE TO CHILDREN BEING REFERRED URGENTLY**
- Give ampicillin (50 mg/kg) and gentamicin (7.5mg/kg)

AMPICILLLIN

- Dilute 500mg vial with 2.1ml of sterile water (500mg/2.5ml)
- **Where there is a strong suspicion of meningitis the dose of ampicillin can be increased 4 times**

GENTAMICIN

- Use undiluted 2 ml vial (40mg/ml)
- Of the dose range provided below, use lower dose for children with weight at lower end of the category, and higher dose for children at the higher end of the category

AGE	WEIGHT	AMPICILLIN 500 mg vial	GENTAMICIN 2ml vial (at 40 mg/ml)
2 months up to 4 months	4 – <6 kg	1 ml	0.5 - 1.0 ml
4 up to 12 months	6 – <10 kg	2 ml	1.1 - 1.8 ml
12 months up to 3 years	10 – <14 kg	3 ml	1.9 - 2.7 ml
3 up to 5 years	14 – 19 kg	5 ml	2.8 - 3.5 ml

- IF REFERRAL IS NOT POSSIBLE OR DELAYED, repeat the ampicillin injection every 6 hours, and the gentamicin injection once daily

Give Diazepam to Stop Convulsions

- Turn the child to his/her side and clear the airway. Avoid putting things in the mouth
- Give 0.5mg/kg diazepam injection solution per rectum using a small syringe (like a tuberculin syringe) without a needle, or using a catheter
- Check for low blood sugar, then treat or prevent
- Give oxygen and REFER
- If convulsions have not stopped after 10 minutes repeat diazepam dose

WEIGHT	AGE	DOSE OF DIAZEPAM (10 mg / 2 ml)
< 5 kg	<6 months	0.5 ml
5 - < 10 kg	6 months up to 12 months	1.0 ml
10 - < 14 kg	12 months up to 3 years	1.5 ml
14 - 19 kg	3 years up to 5 years	2.0 ml

Give Quinine for Severe Malaria

FOR CHILDREN BEING REFERRED WITH VERY SEVERE FEBRILE DISEASE:

- Check which quinine formulation is available in your clinic
- Give first dose of intramuscular quinine and refer child urgently to hospital

IF REFERRAL IS NOT POSSIBLE:

- Give first dose of intramuscular quinine
- The child should remain lying down for one hour
- Repeat the quinine injection at 4 and 8 hours later, and then every 12 hours until the child is able to take an oral antimalarial. Do not continue quinine injections for more than 1 week

- If low risk of malaria, do not give quinine to a child less than 4 months of age

AGE or WEIGHT	INTRAMUSCULAR QUININE	
	150 mg /ml (in 2 ml)*	*300 mg /ml* (in 2 ml)*
2 months up to 4 months (4 - < 6 kg)	0.4 ml	0.2 ml
4 months up to 12 months (6 - < 10 kg)	0.6 ml	0.3 ml
12 months up to 2 years (10 - < 12 kg)	0.8 ml	0.4 ml
2 years up to 3 years (12 - < 14 kg)	1.0 ml	0.5 ml
3 years up to 5 years (14 - 19 kg)	1.2 ml	0.6 ml

*quinine salt

Treat the Child to Prevent Low Blood Sugar

- **If the child is able to breastfeed:**

  Ask the mother to breastfeed the child

- **If the child is not able to breastfeed but is able to swallow:**

  - Give expressed breast milk or breast-milk substitute
  - If neither of these is available give sugar water
  - Give 30-50 ml of milk or sugar water before departure

  To make sugar water: Dissolve 4 level teaspoons of sugar (20 grams) in a 200-ml cup of clean water

- **If the child is not able to swallow:**

  - Give 50ml of milk or sugar water by naso-gastric tube

GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

Plan A: Treat for Diarrhoea at Home

Counsel the mother on the 4 Rules of Home Treatment:
1. Give Extra Fluid 2. Give Zinc Supplements (age 2 months up to 5 years)
3. Continue Feeding 4. When to Return

1. GIVE EXTRA FLUID (as much as the child will take)

➢ **TELL THE MOTHER:**

- Breastfeed frequently and for longer at each feed
- If the child is exclusively breastfed, give ORS or clean water in addition to breast milk
- If the child is not exclusively breastfed, give one or more of the following: food-based fluids (such as soup, rice water, and yoghurt drinks), or ORS

It is especially important to give ORS at home when:

- *the child has been treated with Plan B or Plan C during this visit*
- *the child cannot return to a clinic if the diarrhoea gets worse*

➢ **TEACH THE MOTHER HOW TO MIX AND GIVE ORS. GIVE THE MOTHER 2 PACKETS OF ORS TO USE AT HOME.**

➢ **SHOW THE MOTHER HOW MUCH FLUID TO GIVE IN ADDITION TO THE USUAL FLUID INTAKE:**

Up to 2 years: 50 to 100 ml after each loose stool
2 years or more: 100 to 200 ml after each loose stool

Tell the mother to:

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes then continue - but more slowly
- Continue giving extra fluid until the diarrhoea stops

2. GIVE ZINC **(age 2 months up to 5 years)**

➢ **TELL THE MOTHER HOW MUCH ZINC TO GIVE (20 mg tab) :**

2 months up to 6 months —— 1/2 tablet daily for 14 days
6 months or more —— 1 tablet daily for 14 days

➢ **SHOW THE MOTHER HOW TO GIVE ZINC SUPPLEMENTS**

- Infants—dissolve tablet in a small amount of expressed breast milk, ORS or clean water in a cup
- Older children - tablets can be chewed or dissolved in a small amount of clean water in a cup

3. CONTINUE FEEDING (exclusive breastfeeding if age less than 6 months)

4. WHEN TO RETURN

Plan B: Treat for Some Dehydration with ORS

In the clinic, give recommended amount of ORS over 4-hour period

➢ **DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS**

AGE*	Up to 4 months	4 months up to 12 months	12 months up to 2 years	2 years up to 5 years
WEIGHT	< 6 kg	6 - < 10 kg	10 - < 12 kg	12 - <20kg
Amount of fluid (ml) over 4 hours	200 - 450	450 - 800	800 - 960	960 - 1600

** Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight in kg times 75.*

- If the child wants more ORS than shown, give more
- For infants below 6 months who are not breastfed, also give 100-200ml clean water during this period

➢ **SHOW THE MOTHER HOW TO GIVE ORS SOLUTION:**

- Give frequent small sips from a cup
- If the child vomits, wait 10 minutes then continue - but more slowly
- Continue breastfeeding whenever the child wants

➢ **AFTER 4 HOURS:**

- Reassess the child and classify the child for dehydration
- Select the appropriate plan to continue treatment
- Begin feeding the child in clinic

➢ **IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:**

- Show her how to prepare ORS solution at home
- Show her how much ORS to give to finish 4-hour treatment at home
- Give her instructions how to prepare salt and sugar solution for use at home
- Explain the 4 Rules of Home Treatment:

1. *GIVE EXTRA FLUID*
2. *GIVE ZINC* (age 2 months up to 5 years)
3. *CONTINUE FEEDING (exclusive breastfeeding if age less than 6 months)*
4. *WHEN TO RETURN*

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GIVE EXTRA FLUID FOR DIARRHOEA AND CONTINUE FEEDING

(See FOOD advice on COUNSEL THE MOTHER chart)

Plan C: Treat for Severe Dehydration Quickly

FOLLOW THE ARROWS. IF ANSWER IS "YES", GO ACROSS. IF "NO", GO DOWN

Can you give intravenous (IV) fluid immediately? — YES →

- **Start IV fluid immediately**.
- If the child can drink, give ORS by mouth while the drip is set up.
- Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows:

AGE	First give 30ml/kg in:	Then give 70ml/kg in
Infants (under 12 months)	1 hour	5 hours
Children (12 months up to 5 years)	30 minutes	2½ hours

- **Reassess the child every 1- 2 hours.** If hydration status is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink: usually after 3-4 hours (infants) or 1-2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

NO ↓

Is IV treatment available nearby (within 30 minutes)? — YES →

- **Refer URGENTLY to hospital for IV treatment**.
- If the child can drink, provide the mother with ORS solution and show her how to give frequent sips during the trip or give ORS by naso-gastic tube.

NO ↓

Are you trained to use a naso-gastric (NG) tube for rehydration? — YES →

NO ↓

Can the child drink? — YES →

- **Start rehydration by tube (or mouth) with ORS solution**: give 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
- **Reassess the child every 1-2 hours while waiting for transfer:**
  - If there is repeated vomiting or abdominal distension, give the fluid more slowly.
  - If the hydration status is not improving after 3 hours, send the child for IV therapy.
- After 6 hours reassess the child. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.

NO ↓

Refer URGENTLY to hospital for IV or NG treatment

NOTE:

- If the child is not referred to hospital, observe the child at least 6 hours after rehydration to be sure the mother can maintain hydration giving the child ORS solution by mouth.

IMMUNIZE EVERY SICK CHILD, AS NEEDED

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GIVE FOLLOW-UP CARE

- **Care for the child who returns for follow-up using all the boxes that match the child's previous classification**
- **If the child has any new problems, assess, classify and treat the new problem as on the *ASSESS AND CLASSIFY* chart**

➢ PNEUMONIA

After 2 days:

Check the child for general danger signs.
Assess the child for cough or difficult breathing. } *See ASSESS & CLASSIFY chart.*

Ask:

- Is the child breathing slower?
- Is there less fever?
- Is the child eating better?

Treatment:

- If ***chest indrawing or a general danger sign***, give a dose of second-line antibiotic or intramuscular chloramphenicol. Then refer URGENTLY to hospital.
- If ***breathing rate, fever and eating are the same***, change to the second-line antibiotic and advise the mother to return in 2 days or refer. (If this child had measles within the last 3 months, refer.)
- If ***breathing slower, less fever, or eating better***, complete the 3 days of antibiotic.

➢ PERSISTENT DIARRHOEA

After 5 days:

Ask:

- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

Treatment:

- If **the diarrhoea has not stopped** (child is still having 3 or more loose stools per day) do a full assessment of the child. Treat for dehydration if present. Then refer to hospital.
- If **the diarrhoea has stopped** (child having less than 3 loose stools per day), tell the mother to follow the usual feeding recommendations for the child's age.

➢ DYSENTERY:

After 2 days:

Assess the child for diarrhoea *> See ASSESS & CLASSIFY chart*

Ask:

- Are there fewer stools?
- Is there less blood in the stool?
- Is there less fever?
- Is there less abdominal pain?
- Is the child eating better?

Treatment:

- If the child is **dehydrated**, treat for dehydration.
- If **number of stools, blood in the stools, fever, abdominal pain, or eating is worse or the same:**

  Change to second-line oral antibiotic recommended for dysentery in your area. Give it for 5 days. Advise the mother to return in 2 days. If you do not have the second line antibiotic, REFER TO HOSPITAL.

  Exceptions: if the child is less than 12 months old or was dehydrated on the first visit, or if he had measles within the last 3 months, refer to hospital.

- **If fewer stools, less fever, less abdominal pain, and eating better**, continue giving ciprofloxacin until finished.

  Ensure that the mother understands the oral rehydration method fully and that she also understands the need for an extra meal each day for a week.

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GIVE FOLLOW-UP CARE

- **Care for the child who returns for follow-up using all the boxes that match the child's previous classification**
- **If the child has any new problems, assess, classify and treat the new problem as on the *ASSESS AND CLASSIFY* chart**

➢ MALARIA (Low or High Malaria Risk)

If fever persists after 2 days, or returns within 14 days:

Do a full reassessment of the child > *See ASSESS & CLASSIFY chart.*
Assess for other causes of fever.

Treatment:

- If the child has ***any general danger sign or stiff neck***, treat as VERY SEVERE FEBRILE DISEASE.
- If the child has any ***cause of fever other than malaria***, provide treatment.
- If ***malaria is the only apparent cause of fever:***
  - Treat with the second-line oral antimalarial (if no second-line antimalarial is available, refer to hospital.) Advise the mother to return again in 2 days if the fever persists.
  - If fever has been present for 7 days, refer for assessment.

➢ FEVER-MALARIA UNLIKELY (Low Malaria Risk)

If fever persists after 2 days:

Do a full reassessment of the child > *See ASSESS & CLASSIFY chart.*
Assess for other causes of fever.

Treatment:

- If the child has ***any general danger sign or stiff neck***, treat as VERY SEVERE FEBRILE DISEASE.
- If the child has any ***cause of fever other than malaria***, provide treatment.
- If ***malaria is the only apparent cause of fever:***
  - Treat with the first-line oral antimalarial. Advise the mother to return again in 2 days if the fever persists.
  - If fever has been present for 7 days, refer for assessment.

➢ MEASLES WITH EYE OR MOUTH COMPLICATIONS

After 2 days:

Look for red eyes and pus draining from the eyes.
Look at mouth ulcers.
Smell the mouth.

Treatment for Eye Infection:

- If ***pus is draining from the eye***, ask the mother to describe how she has treated the eye infection. If treatment has been correct, refer to hospital. If treatment has not been correct, teach mother correct treatment.
- If ***the pus is gone but redness remains***, continue the treatment.
- If ***no pus or redness***, stop the treatment.

Treatment for Mouth Ulcers:

- If ***mouth ulcers are worse, or there is a very foul smell coming from the mouth***, refer to hospital.
- If ***mouth ulcers are the same or better***, continue using half-strength gentian violet for a total of 5 days.

GIVE FOLLOW-UP CARE

- **Care for the child who returns for follow-up using all the boxes that match the child's previous classification**
- **If the child has any new problems, assess, classify and treat the new problem as on the *ASSESS AND CLASSIFY* chart**

EAR INFECTION

After 5 days:

Reassess for ear problem. > *See ASSESS & CLASSIFY chart.*
Measure the child's temperature.

Treatment:

- If there is ***tender swelling behind the ear or high fever (38.5°C or above)***, refer URGENTLY to hospital.
- ***Acute ear infection:*** if ***ear pain or discharge*** persists, treat with 5 more days of the same antibiotic. Continue wicking to dry the ear. Follow-up in 5 days.
- ***Chronic ear infection:*** Check that the mother is wicking the ear correctly. Encourage her to continue.
- If ***no ear pain or discharge***, praise the mother for her careful treatment. If she has not yet finished the 5 days of antibiotic, tell her to use all of it before stopping.

FEEDING PROBLEM

After 5 days:

Reassess feeding > *See questions at the top of the COUNSEL chart.*
Ask about any feeding problems found on the initial visit.

- Counsel the mother about any new or continuing feeding problems. If you counsel the mother to make significant changes in feeding, ask her to bring the child back again.
- If the child is very low weight for age, ask the mother to return 30 days after the initial visit to measure the child's weight gain.

ANAEMIA

After 14 days:

- Give iron. Advise mother to return in 14 days for more iron.
- Continue giving iron every 14 days for 2 months.
- If the child has palmar pallor after 2 months, refer for assessment.

VERY LOW WEIGHT

After 30 days:

Weigh the child and determine if the child is still very low weight for age.
Reassess feeding. > *See questions at the top of the COUNSEL chart.*

Treatment:

- If the child is ***no longer very low weight for age***, praise the mother and encourage her to continue.
- If the child is still ***very low weight for age***, counsel the mother about any feeding problem found. Ask the mother to return again in one month. Continue to see the child monthly until the child is feeding well and gaining weight regularly or is no longer very low weight for age.

Exception:

If you do not think that feeding will improve, or if the child has ***lost weight***, refer the child.

COUNSEL THE MOTHER

➢ Assess the Feeding of Sick Infants under 2 years (or if child has very low weight for age)

Ask questions about the child's usual feeding and feeding during this illness. Compare the mother's answers to the ***Feeding Recommendations*** for the child's age.

***ASK* — How are you feeding your child?**

If the infant is receiving *any* breast milk, ASK:

- How many times during the day?
- Do you also breastfeed during the night?

Does the infant take any other food or fluids?

- What food or fluids?
- How many times per day?
- What do you use to feed the child?

If very low weight for age, ASK:

- How large are servings?
- Does the child receive his own serving?
- Who feeds the child and how?

During this illness, has the infant's feeding changed?

- If yes, how?

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FEEDING RECOMMENDATIONS DURING SICKNESS AND HEALTH

Up to 6 Months of Age

- Breastfeed as often as the child wants, day and night, at least 8 times in 24 hours.
- Do not give other foods or fluids.

6 Months up to 12 Months

- Breastfeed as often as the child wants.
- Give adequate servings of:

_____
_____
_____
_____ *

  - 3 times per day if breastfed plus snacks
  - 5 times per day if not breastfed.

12 Months up to 2 Years

- Breastfeed as often as the child wants.
- Give adequate servings of:

_____
_____
_____
_____ *

or family foods 3 or 4 times per day plus snacks.

2 Years and Older

- Give family foods at 3 meals each day. Also, twice daily, give nutritious food between meals, such as:

_____
_____
_____
_____
_____

* *A good quality diet should be adequate in quantity and include an energy-rich food (for example, thick cereal with added oil); meat, fish, eggs or pulses; and fruits and vegetables.*

Feeding Recommendations for a child who has PERSISTENT DIARRHOEA

- If still breastfeeding, give more frequent, longer breastfeeds, day and night.
- If taking other milk:
  - replace with increased breastfeeding OR
  - replace with fermented milk products, such as yoghurt OR replace half the milk with nutrient-rich semisolid food

COUNSEL THE MOTHER ABOUT FEEDING PROBLEMS

If the child is not being fed as described in the above recommendations, counsel the mother accordingly. In addition:

- **If the mother reports difficulty with breastfeeding, assess breastfeeding (see *YOUNG INFANT* chart). As needed, show the mother correct positioning and attachment for breastfeeding.**
- **If the child is less than 6 months old and is taking other milk or foods:**
  - Build mother's confidence that she can produce all the breast milk that the child needs.
  - Suggest giving more frequent, longer breastfeeds day or night, and gradually reducing other milk or foods.

  If other milk needs to be continued, counsel the mother to:
  - Breastfeed as much as possible, including at night.
  - Make sure that other milk is a locally appropriate breast milk substitute.
  - Make sure other milk is correctly and hygienically prepared and given in adequate amounts.
  - Finish prepared milk within an hour.

- **If the mother is using a bottle to feed the child:**
  - Recommend substituting a cup for bottle.
  - Show the mother how to feed the child with a cup.
- **If the child is not feeding well during illness, counsel the mother to:**
  - Breastfeed more frequently and for longer if possible.
  - Use soft, varied, appetizing, favourite foods to encourage the child to eat as much as possible, and offer frequent small feeds.
  - Clear a blocked nose if it interferes with feeding.
  - Expect that appetite will improve as child gets better.

- **If the child has a poor appetite:**
  - Plan small, frequent meals.
  - Give milk rather than other fluids except where there is diarrhoea with some dehydration.
  - Give snacks between meals.
  - Give high energy foods.
  - Check regularly.
- **If the child has sore mouth or ulcers:**
  - Give soft foods that will not burn the mouth, such as eggs, mashed potatoes, pumpkin or avocado.
  - Avoid spicy, salty or acid foods.
  - Chop foods finely.
  - Give cold drinks or ice, if available.

COUNSEL THE MOTHER ABOUT HER OWN HEALTH

- If the mother is sick, provide care for her, or refer her for help.
- If she has a breast problem (such as engorgement, sore nipples, breast infection), provide care for her or refer her for help.
- Advise her to eat well to keep up her own strength and health.
- Check the mother's immunization status and give her tetanus toxoid if needed.
- Make sure she has access to:
  - Family planning
  - Counselling on STD and AIDS prevention.

FLUID

Advise the Mother to Increase Fluid During Illness

FOR ANY SICK CHILD:

- If child is breastfed, breastfeed more frequently and for longer at each feed. If child is taking breast-milk substitutes, increase the amount of milk given
- Increase other fluids. For example, give soup, rice water, yoghurt drinks or clean water.

FOR CHILD WITH DIARRHOEA:

- Giving extra fluid can be lifesaving. Give fluid according to Plan A or Plan B on the *TREAT THE CHILD* chart

WHEN TO RETURN

Advise the Mother When to Return to Health Worker

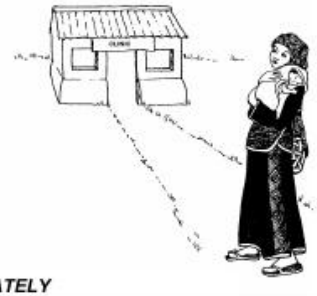
FOLLOW-UP VISIT

Advise the mother to come for follow-up at the earliest time listed for the child's problems.

If the child has:	Return for first follow-up in:
• PNEUMONIA • DYSENTERY • MALARIA, if fever persists • FEVER-MALARIA UNLIKELY, if fever persists • MEASLES WITH EYE OR MOUTH COMPLICATIONS	**2 days**
• PERSISTENT DIARRHOEA • ACUTE EAR INFECTION • CHRONIC EAR INFECTION • FEEDING PROBLEM • COUGH OR COLD, if not improving	**5 days**
• ANAEMIA	**14 days**
• VERY LOW WEIGHT FOR AGE	**30 days**

NEXT WELL CHILD VISIT

Advise mother when to return for next immunization according to immunization schedule.



WHEN TO RETURN IMMEDIATELY

Advise mother to return immediately if the child has any of these signs:	
Any sick child	• Not able to drink or breastfeed • Becomes sicker • Develops a fever
If child has COUGH OR COLD, also return if:	• Fast breathing • Difficult breathing
If child has Diarrhoea, also return if:	• Blood in stool • Drinking poorly

ASSESS, CLASSIFY AND TREAT THE SICK YOUNG INFANT AGED UP TO 2 MONTHS

DO A RAPID APRAISAL OF ALL WAITING INFANTS

ASK THE MOTHER WHAT THE YOUNG INFANT'S PROBLEMS ARE

- Determine if this is an initial or follow-up visit for this problem.
  - if follow-up visit, use the follow-up instructions
  - if initial visit, assess the young infant as follows:

USE ALL BOXES THAT MATCH INFANT'S SYMPTOMS AND PROBLEMS TO CLASSIFY THE ILLNESS.

CHECK FOR VERY SEVERE DISEASE AND LOCAL BACTERIAL INFECTION

ASK:

- Is the infant having difficulty in feeding?
- Has the infant had convulsions (fits)?

LOOK, LISTEN, FEEL:

- Count the breaths in one minute. Repeat the count if 60 or more breaths per minute.
- Look for severe chest indrawing.

} YOUNG INFANT MUST BE CALM

- Measure axillary temperature.
- Look at the umbilicus. Is it red or draining pus?
- Look for skin pustules.
- Look at the young infant's movements. *If infant is sleeping, ask the mother to wake him/her.*
  - Does the infant move on his/her own?

  If the infant is not moving, gently stimulate him/her.
  - Does the infant move only when stimulated but then stops?
  - Does the infant not move at all ?

Classify ALL YOUNG INFANTS

SIGNS	CLASSIFY AS	TREATMENT (Urgent pre-referral treatments are in bold print)
Any one of the following signs • Not feeding well or • Convulsions or • Fast breathing (60 breaths per minute or more) or • Severe chest indrawing or • Fever (37.5°C* or above) or • Low body temperature (less than 35.5°C*) or • Movement only when stimulated or no movement at all	**VERY SEVERE DISEASE**	➢ ***Give first dose of intramuscular antibiotics.*** ➢ ***Treat to prevent low blood sugar.*** ➢ ***Refer URGENTLY to hospital.***** ➢ ***Advise mother how to keep the infant warm on the way to the hospital.***
• Umbilicus red or draining pus • Skin pustules	**LOCAL BACTERIAL INFECTION**	➢ ***Give an appropriate oral antibiotic.*** ➢ Teach mother to treat local infections at home. ➢ Advise mother to give home care for the young infant. ➢ Follow up in 2 days.
• None of the signs of very severe disease or local bacterial infection	**SEVERE DISEASE OR LOCAL INFECTION UNLIKELY**	➢ Advise mother to give home care for the young infant.

* *These thresholds are based on axillary temperature. The thresholds for rectal temperature readings are approximately 0.5°C higher.*

** *If referral is not possible, see* ***Integrated Management of Childhood Illness****, Management of the sick young infant module, Annex 2 "Where referral is not possible"*

THEN CHECK FOR JAUNDICE

LOOK, LISTEN, FEEL:

If jaundice present, ***ASK:***

- When did jaundice first appear?

- Look for jaundice (yellow eyes or skin).
- Look at the young infant's palms and soles. Are they yellow?

Classify Jaundice

SIGNS	CLASSIFY AS	TREATMENT (Urgent pre-referral treatments are in bold print)
• Any jaundice if age less than 24 hours or • Yellow palms and soles at any age	**SEVERE JAUNDICE**	➢ ***Treat to prevent low blood sugar.*** ➢ ***Refer URGENTLY to hospital.*** ➢ ***Advise mother how to keep the infant warm on the way to the hospital.***
• Jaundice appearing after 24 hours of age and • Palms and soles not yellow	**JAUNDICE**	➢ Advise the mother to give home care for the young infant ➢ Advise mother to return immediately if palms and soles appear yellow. ➢ If the young infant is older than 3 weeks, refer to a hospital for assessment. ➢ Follow-up in 1 day.
• No jaundice	**NO JAUNDICE**	➢ Advise the mother to give home care for the young infant.

THEN ASK: Does the young infant have diarrhoea*?

IF YES, LOOK AND FEEL:

- Look at the young infant's general condition:

- Infant's movements
  - Does the infant move on his/her own?
  - Does the infant move only when stimulated but then stops?
  - Does the infant not move at all ?

- Is the infant restless and irritable?

- Look for sunken eyes.

- Pinch the skin of the abdomen.
  Does it go back:
  - Very slowly (longer than 2 seconds)?
  - or slowly?

Classify DIARRHOEA FOR DEHYDRATION

SIGNS	CLASSIFY AS	TREATMENT (Urgent pre-referral treatments are in bold print)
Two of the following signs: • Movement only when stimulated or no movement at all • Sunken eyes • Skin pinch goes back very slowly.	**SEVERE DEHYDRATION**	➢ If infant has no other severe classification: - Give fluid for severe dehydration (Plan C) OR ***If infant also has another severe classification:*** ***- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way*** ***- Advise the mother to continue breastfeeding***
Two of the following signs: • Restless, irritable • Sunken eyes • Skin pinch goes back slowly.	**SOME DEHYDRATION**	➢ Give fluid and for some dehydration and continue breastfeeding (Plan B). ➢ ***If infant has any severe classification:*** ***- Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way.*** ***- Advise mother to continue breastfeeding.*** ➢ Advise mother when to return immediately ➢ Follow-up in 2 days if not improving
• Not enough signs to classify as some or severe dehydration.	**NO DEHYDRATION**	➢ Give fluids to treat for diarrhoea at home and continue breastfeeding (Plan A) ➢ Advise mother when to return immediately ➢ Follow up in 2 days if not improving

* ***What is diarrhoea in a young infant?***

A young infant has diarrhoea if the stools have changed from usual pattern and are many and watery (more water than fecal matter).

The normally frequent or semi-solid stools of a breastfed baby are not diarrhoea.

THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT FOR AGE

If an infant has no indications to refer urgently to hospital:

ASK:

- Is the infant breastfed? If yes, how many times in 24 hours?
- Does the infant usually receive any other foods or drinks? If yes, how often?
- If yes, what do you use to feed the infant?

LOOK, LISTEN,FEEL:

- Determine weight for age.
- Look for ulcers or white patches in the mouth (thrush).

ASSESS BREASTFEEDING:

- Has the infant breastfed in the previous hour?

If the infant has not fed in the previous hour, ask the mother to put her infant to the breast. Observe the breastfeed for 4 minutes.

(If the infant was fed during the last hour, ask the mother if she can wait and tell you when the infant is willing to feed again.)

- Is the infant well attached?

not well attached *good attachment*

TO CHECK ATTACHMENT, LOOK FOR:

- *More areola seen above infant's top lip than below bottom lip*
- *Mouth wide open*
- *Lower lip turned outwards*
- *Chin touching breast*

(All of these signs should be present if the attachment is good).

- Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?

not suckling effectively *suckling effectively*

Clear a blocked nose if it interferes with breastfeeding.

Classify FEEDING

SIGNS	CLASSIFY AS	TREATMENT (Urgent pre-referral treatments are in bold print)
• Not well attached to breast or • Not suckling effectively, or	**FEEDING PROBLEM OR LOW WEIGHT FOR AGE**	➢ If not well attached or not suckling effectively, teach correct positioning and attachment. • If not able to attach well immediately, teach the mother to express breast milk and feed by a cup
• Less than 8 breastfeeds in 24 hours, or		➢ If breastfeeding less than 8 times in 24 hours, advise to increase frequency of feeding. Advise her to breastfeed as often and for as long as the infant wants, day and night.
• Receives other foods or drinks, or		➢ If receiving other foods or drinks, counsel mother about breastfeeding more, reducing other foods or drinks, and using a cup. • If not breastfeeding at all: - Refer for breastfeeding counselling and possible relactation. - Advise about correctly preparing breastmilk substitutes and using a cup.
• Low weight for age, or		➢ Advise the mother how to feed and keep the low weight infant warm at home
• Thrush (ulcers or white patches in mouth)		➢ If thrush, teach the mother to treat thrush at home.
		➢ Advise mother to give home care for the young infant.
		➢ Follow-up any feeding problem or thrush in 2 days.
		➢ Follow-up low weight for age in 14 days.
• Not low weight for age and no other signs of inadequate feeding.	**NO FEEDING PROBLEM**	➢ Advise mother to give home care for the young infant. ➢ Praise the mother for feeding the infant well.

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THEN CHECK THE YOUNG INFANT'S IMMUNIZATION AND VITAMIN A STATUS:

	AGE	VACCINE			VITAMIN A
IMMUNIZATION SCHEDULE:	**Birth**	BCG	OPV-0		200 000 IU to the mother within 6 weeks of delivery
	6 weeks	DPT+HIB-1	OPV-1	Hepatitis B 1	
	10 weeks	DPT+HIB-2	OPV-2	Hepatitis B 2	

- **Give all missed doses on this visit.**
- Immunize sick infants unless being referred.
- Advise the caretaker when to return for the next dose.

ASSESS OTHER PROBLEMS

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

➢ *Give First Dose of Intramuscular Antibiotics*

- Give first dose of ampicillin intramuscularly and
- Give first dose of gentamicin intramuscularly.

WEIGHT	AMPICILLIN Dose: 50 mg per kg To a vial of 250 mg Add 1.3 ml sterile water = 250 mg/1.5 ml	GENTAMICIN Undiluted 2 ml vial containing 20 mg = 2 ml at 10 mg/ml OR Add 6 ml sterile water to 2 ml vial containing 80 mg* = 8 ml at 10 mg/ml	
		AGE <7 days Dose: 5 mg per kg	AGE≥7 days Dose: 7.5 mg per kg
1-<1.5 kg	0.4 ml	0.6 ml	0.9 ml
1.5-<2 kg	0.5 ml	0.9 ml	1.3 ml
2-<2.5 kg	0.7 ml	1.1 ml	1.7 ml
2.5-<3 kg	0.8 ml	1.4 ml	2.0 ml
3-<3.5 kg	1.0 ml	1.6 ml	2.4 ml
3.5-<4 kg	1.1 ml	1.9 ml	2.8 ml
4-<4.5 kg	1.3 ml	2.1 ml	3.2 ml

**Avoid using undiluted 40 mg/ml gentamicin.*

- Referral is the best option for a young infant classified as VERY SEVERE DISEASE. If referral is not possible, continue to give ampicillin and gentamicin for at least 5 days. Give ampicillin two times daily to infants less than one week of age and 3 times daily to infants one week or older. Give gentamicin once daily.

➢ *Treat the Young Infant to Prevent Low Blood Sugar*

- ***If the young infant is able to breastfeed:***

  Ask the mother to breastfeed the young infant.

- ***If the young infant is not able to breastfeed but is able to swallow:***

  Give 20-50 ml (10 ml/kg) expressed breast milk before departure. If not possible to give expressed breast milk, give 20-50 ml (10 ml/kg) sugar water (***To make sugar water: Dissolve 4 level teaspoons of sugar (20 grams) in a 200-ml cup of clean water).***

- ***If the young infant is not able to swallow:***

  Give 20-50 ml (10 ml/kg) of expressed breast milk or sugar water by naso-gastric tube.

TREAT THE YOUNG INFANT

➢ *Teach the Mother How to Keep the Young Infant Warm on the Way to the Hospital*

- ➢ Provide skin to skin contact, OR
- ➢ Keep the young infant clothed or covered as much as possible all the time. Dress the young infant with extra clothing including hat, gloves, socks and wrap the infant in a soft dry cloth and cover with a blanket.

➢ *Give an Appropriate Oral Antibiotic for local infection*

For local bacterial infection:

First-line antibiotic : _____
Second-line antibiotic: _____

	COTRIMOXAZOLE (trimethoprim + sulphamethoxazole) ➢ Give two times daily for 5 days			**AMOXICILLIN** ➢ Give two times daily for 5 days	
AGE or WEIGHT	Adult Tablet single strength (80 mg trimethoprim + 400 mg sulphamethoxazole)	Paediatric Tablet (20 mg trimethoprim +100 mg sulphamethoxazole)	Syrup (40 mg trimethoprim +200 mg sulphamethoxazole)	Tablet 250 mg	Syrup 125 mg in 5 ml
Birth up to 1 month (<4 kg)		1/2*	1.25 ml*	1/4	2.5 ml
1 month up to 2 months (4-<6 kg)	1/4	1	2.5 ml	1/2	5 ml

** Avoid cotrimoxazole in infants less than 1 month of age who are premature or jaundiced.*

TREAT THE YOUNG INFANT AND COUNSEL THE MOTHER

➢ *Teach the Mother How to Treat Local Infections at Home*

- Explain how the treatment is given.
- Watch her as she does the first treatment in the clinic.
- Tell her to return to the clinic if the infection worsens.

To Treat Skin Pustules or Umbilical Infection

The mother should do the treatment twice daily for 5 days:

- Wash hands
- Gently wash off pus and crusts with soap and water
- Dry the area
- Paint the skin or umbilicus/cord with full strength gentian violet (0.5%)
- Wash hands again

To Treat Thrush (ulcers or white patches in mouth)

The mother should do the treatment four times daily for 7 days:

- Wash hands
- Paint the mouth with half-strength gentian violet (0.25%) using a clean soft cloth wrapped around the finger
- Wash hands again

➢ *To Treat Diarrhoea, See TREAT THE CHILD CHART.*

➢ *Immunize Every Sick Young Infant, as needed.*

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COUNSEL THE MOTHER

➢ *Teach Correct Positioning and Attachment for Breastfeeding*

- Show the mother how to hold her infant
  - with the infant's head and body in line
  - with the infant approaching breast with nose opposite to the nipple
  - with the infant held close to the mother's body
  - with the infant's whole body supported, not just neck and shoulders.

- Show her how to help the infant to attach. She should:
  - touch her infant's lips with her nipple
  - wait until her infant's mouth is opening wide
  - move her infant quickly onto her breast, aiming the infant's lower lip well below the nipple.

- Look for signs of good attachment and effective suckling. If the attachment or suckling is not good, try again.

➢ *Teach the Mother How to Express Breast Milk*

Ask the mother to:

- Wash her hands thoroughly.
- Make herself comfortable.
- Hold a wide necked container under her nipple and areola.
- Place her thumb on top of the breast and the first finger on the under side of the breast so they are opposite each other (at least 4 cm from the tip of the nipple).
- Compress and release the breast tissue between her finger and thumb a few times.
- If the milk does not appear she should re-position her thumb and finger closer to the nipple and compress and release the breast as before.
- Compress and release all the way around the breast, keeping her fingers the same distance from the nipple. Be careful not to squeeze the nipple or to rub the skin or move her thumb or finger on the skin.
- Express one breast until the milk just drips, then express the other breast until the milk just drips.
- Alternate between breasts 5 or 6 times, for at least 20 to 30 minutes.
- Stop expressing when the milk no longer flows but drips from the start.

COUNSEL THE MOTHER

➢ *Teach the Mother How to Feed by a Cup*

- Put a cloth on the infant's front to protect his clothes as some milk can spill
- Hold the infant semi-upright on the lap.
- Put a measured amount of milk in the cup.
- Hold the cup so that it rests lightly on the infant's lower lip.
- Tip the cup so that the milk just reaches the infant's lips.
- Allow the infant to take the milk himself. DO NOT pour the milk into the infant's mouth.

➢ *Teach the Mother How to Keep the Low Weight Infant Warm at Home*

- Keep the young infant in the same bed with the mother.

- Keep the room warm (at least 25°C) with home heating device and make sure that there is no draught of cold air.

- Avoid bathing the low weight infant. When washing or bathing, do it in a very warm room with warm water, dry immediately and thoroughly after bathing and clothe the young infant immediately.

- Change clothes (e.g. nappies) whenever they are wet.

- Provide skin to skin contact as much as possible, day and night. For skin to skin contact:
  - Dress the infant in a warm shirt open at the front, a nappy, hat and socks.
  - Place the infant in skin to skin contact on the mother's chest between the mother's breasts. Keep the infant's head turned to one side
  - Cover the infant with mother's clothes (and an additional warm blanket in cold weather)

- When not in skin to skin contact, keep the young infant clothed or covered as much as possible at all times. Dress the young infant with extra clothing including hat and socks, loosely wrap the young infant in a soft dry cloth and cover with a blanket.

- Check frequently if the hands and feet are warm. If cold, re-warm the baby using skin to skin contact.

- Breastfeed (or give expressed breast milk by cup) the infant frequently

COUNSEL THE MOTHER

➢ Advise the Mother to Give Home Care for the Young Infant

1. **EXCLUSIVELY BREASTFEED THE YOUNG INFANT**
   Give only breastfeeds to the young infant.
   Breastfeed frequently, as often and for as long as the infant wants.

2. **MAKE SURE THAT THE YOUNG INFANT IS KEPT WARM AT ALL TIMES.**
   In cool weather cover the infant's head and feet and dress the infant with extra clothing.

3. **WHEN TO RETURN:**

Follow up visit	
If the infant has:	**Return for first follow-up in:**
• JAUNDICE	1 day
• LOCAL BACTERIAL INFECTION • FEEDING PROBLEM • THRUSH • DIARRHOEA	2 days
• LOW WEIGHT FOR AGE	14 days

WHEN TO RETURN IMMEDIATELY:

Advise the caretaker to return immediately if the young infant has any of these signs:

- ➢ Breastfeeding poorly
- ➢ Reduced activity
- ➢ Becomes sicker
- ➢ Develops a fever
- ➢ Feels unusually cold
- ➢ Fast breathing
- ➢ Difficult breathing
- ➢ Palms and soles appear yellow

GIVE FOLLOW-UP CARE FOR THE YOUNG INFANT

ASSESS EVERY YOUNG INFANT FOR "VERY SEVERE DISEASE" DURING FOLLOW UP VISIT.

➢ *LOCAL BACTERIAL INFECTION*

After 2 days:
Look at the umbilicus. Is it red or draining pus?
Look for skin pustules.

Treatment:

- If umbilical ***pus or redness remains same or is worse***, refer to hospital. If ***pus and redness are improved***, tell the mother to continue giving the 5 days of antibiotic and continue treating the local infection at home.
- If skin pustules are ***same or worse***, refer to hospital. If ***improved***, tell the mother to continue giving the 5 days of antibiotic and continue treating the local infection at home.

➢ *JAUNDICE*

After 1 day:
Look for jaundice. Are palms and soles yellow?

- If palms and soles are yellow, refer to hospital.
- If palms and soles are not yellow, but jaundice has not decreased, advise the mother home care and ask her to return for follow up in 1 day.
- If jaundice has started decreasing, reassure the mother and ask her to continue home care. Ask her to return for follow up at three weeks of age. If jaundice continues beyond three weeks of age , refer the young infant to a hospital for further assessment.

➢ *DIARRHOEA*

After 2 days:
Ask: -Has the diarrhoea stopped ?

Treatment:

- If the diarrhoea has not stopped, assess and treat the young infant for diarrhoea. >SEE "Does the Young Infant Have Diarrhoea ?"
- If the diarrhoea has stopped, tell the mother to continue exclusive breastfeeding.

GIVE FOLLOW-UP CARE FOR THE YOUNG INFANT

➢ *FEEDING PROBLEM*

After 2 days:

Reassess feeding. > See "Then Check for Feeding Problem or Low Weight" above.
Ask about any feeding problems found on the initial visit.

- Counsel the mother about any new or continuing feeding problems. If you counsel the mother to make significant changes in feeding, ask her to bring the young infant back again.
- If the young infant is low weight for age, ask the mother to return 14 days after the initial visit to measure the young infant's weight gain.

Exception:
If you do not think that feeding will improve, or if the young infant has ***lost weight***, refer to hospital.

GIVE FOLLOW-UP CARE FOR THE YOUNG INFANT

➢ *LOW WEIGHT FOR AGE*

After 14 days:
Weigh the young infant and determine if the infant is still low weight for age.
Reassess feeding. > See "Then Check for Feeding Problem or Low Weight" above.

- If the infant is ***no longer low weight for age***, praise the mother and encourage her to continue.
- If the infant is ***still low weight for age, but is feeding well***, praise the mother. Ask her to have her infant weighed again within a month or when she returns for immunization.
- If the infant is ***still low weight for age and still has a feeding problem***, counsel the mother about the feeding problem. Ask the mother to return again in 14 days (or when she returns for immunization, if this is within 14 days). Continue to see the young infant every few weeks until the infant is feeding well and gaining weight regularly or is no longer low weight for age.

  Exception:
  If you do not think that feeding will improve, or if the young infant has ***lost weight***, refer to hospital.

➢ *THRUSH*

After 2 days:
Look for ulcers or white patches in the mouth (thrush).
Reassess feeding. > See "Then Check for Feeding Problem or Low Weight" above.

- If ***thrush is worse***, or the infant has ***problems with attachment or suckling***, refer to hospital.
- If ***thrush is the same or better***, and if the infant is ***feeding well***, continue half-strength gentian violet for a total of 7 days.

MANAGEMENT OF THE SICK CHILD AGED 2 MONTHS UP TO 5 YEARS

Name: _____ Age: _____ Weight: _____ kg Temperature: _____°C

ASK: What are the child's problems? _____ Initial visit? ___ Follow-up Visit? ___

ASSESS (Circle all signs present) **CLASSIFY**

CHECK FOR GENERAL DANGER SIGNS NOT ABLE TO DRINK OR BREASTFEED VOMITS EVERYTHING CONVULSIONS LETHARGIC OR UNCONSCIOUS CONVULSING NOW	General danger signs present? Yes___ No___ **Remember to use danger sign when selecting classifications**
DOES THE CHILD HAVE COUGH OR DIFFICULT BREATHING? Yes___ No___ • For how long? ____ Days • Count the breaths in one minute. _____ breaths per minute. Fast breathing? • Look for chest indrawing. • Look and listen for stridor • Look and listen for wheezing.	
DOES THE CHILD HAVE DIARRHOEA? Yes ___ No ___ • For how long? _____ Days • Is there blood in the stools? • Look at the child's general condition.Is the child: Lethargic or unconscious? Restless or irritable? • Look for sunken eyes. • Offer the child fluid. Is the child: Not able to drink or drinking poorly? Drinking eagerly, thirsty? • Pinch the skin of the abdomen. Does it go back: Very slowly (longer than 2 seconds)? Slowly?	
DOES THE CHILD HAVE FEVER? (by history/feels hot/temperature 37.5°C or above) Yes___ No___ Decide Malaria Risk: High Low • For how long? _____ Days • If more than 7 days, has fever been present every day? • Has child had measles within the last three months? • Look or feel for stiff neck. • Look for runny nose. Look for signs of MEASLES: • Generalized rash and • One of these: cough, runny nose, or red eyes. **If the child has measles now or within the last 3 months:** • Look for mouth ulcers. If Yes, are they deep and extensive? • Look for pus draining from the eye. • Look for clouding of the cornea.	
DOES THE CHILD HAVE AN EAR PROBLEM? Yes___ No___ • Is there ear pain? • Is there ear discharge? If Yes, for how long? ___ Days • Look for pus draining from the ear. • Feel for tender swelling behind the ear.	
THEN CHECK FOR MALNUTRITION AND ANAEMIA • Look for visible severe wasting. • Look for oedema of both feet. • Determine weight for age. Very Low ___ Not Very Low ___ • Look for palmar pallor. Severe palmar pallor? Some palmar pallor?	
CHECK THE CHILD'S IMMUNIZATION STATUS Circle immunizations needed today. _____ BCG _____ DPT1 + HIB 1 _____ DPT2 + HIB 2 _____ DPT3 + HIB 3 _____ Vitamin A _____ Mebendazole _____ OPV 0 _____ OPV 1 _____ OPV 2 _____ OPV 3 _____ Measles	Return for next immunization on: _____ (Date)
ASSESS CHILD'S FEEDING if child has ANAEMIA OR VERY LOW WEIGHT or is less than 2 years old. • Do you breastfeed your child? Yes____ No ____ If Yes, how many times in 24 hours? ___ times. Do you breastfeed during the night? Yes___ No___ • Does the child take any other food or fluids? Yes___ No ___ If Yes, what food or fluids? _____ How many times per day? ___ times. What do you use to feed the child? _____ If very low weght for age: How large are servings? _____ Does the child receive his own serving? ___ Who feeds the child and how? _____ • During the illness, has the child's feeding changed? Yes ____ No ____ If Yes, how? ASSESS OTHER PROBLEMS Ask about mother's own health	FEEDING PROBLEMS

MANAGEMENT OF THE SICK YOUNG INFANT AGED UP TO 2 MONTHS

Name: _____ Age: _____ Weight: _____ kg Temperature: _____°C

ASK: What are the infant's problems? _____ Initial visit? ___ Follow-up visit? ___

ASSESS (Circle all signs present) **CLASSIFY**

CHECK FOR VERY SEVERE DISEASE AND LOCAL BACTERIAL INFECTION

Classify all young infants

- Is the infant having difficulty in feeding?
- Has the infant had convulsions (fits)?
- Count the breaths in one minute. _____ breaths per minute
  Repeat if 60 breaths or more _____ Fast breathing?
- Look for severe chest indrawing.
- Fever (temperature 37.5°C or above).
- Low body temperature (less than 35.5°C)
- Look at the umbilicus. Is it red or draining pus?
- Look for skin pustules.
- Look at the young infant's movements.
  Does the infant move only when stimulated?
  Does the infant not move at all?

THEN CHECK FOR JAUNDICE

- If jaundice present, when did jaundice first appear?
- Look for jaundice (yellow eyes or skin)
- Look at the young infant's palms and soles. Are they yellow?

DOES THE YOUNG INFANT HAVE DIARRHOEA? **Yes _____ No _____**

- Look at the young infant's general condition.
  Does the infant move only when stimulated?
  Does the infant not move at all?
  Is the infant restless or irritable?
- Look for sunken eyes.
- Pinch the skin of the abdomen. Does it go back:
  Very slowly (longer than 2 seconds)?
  Slowly?

If the infant has no indications to refer urgently to hospital
THEN CHECK FOR FEEDING PROBLEM OR LOW WEIGHT FOR AGE

- Is the infant breastfed? Yes _____ No _____
  If Yes, how many times in 24 hours? _____ times
- Does the infant usually receive any other foods or drinks? Yes _____ No _____
  If Yes, how often?
  If Yes, what do you use to feed the infant?
- Determine weight for age. Low ___ Not Low _____
- Look for ulcers or white patches in the mouth (thrush).

ASSESS BREASTFEEDING:

- Has the infant breastfed in the previous hour?

If infant has not fed in the previous hour, ask the mother to put her infant to the breast. Observe the breastfeed for 4 minutes.

- Is the infant able to attach? To check attachment, look for:
  - More areola seen above infant's top lip than below bottom lip — Yes ___ No ___
  - Mouth wide open — Yes ___ No ___
  - Lower lip turned outwards — Yes ___ No ___
  - Chin touching breast — Yes ___ No ___

  not well attached *good attachment*
- Is the infant suckling effectively (that is, slow deep sucks, sometimes pausing)?

  not suckling effectively *suckling effectively*

CHECK THE YOUNG INFANT'S IMMUNIZATION AND VITAMIN A STATUS Circle immunizations needed today.

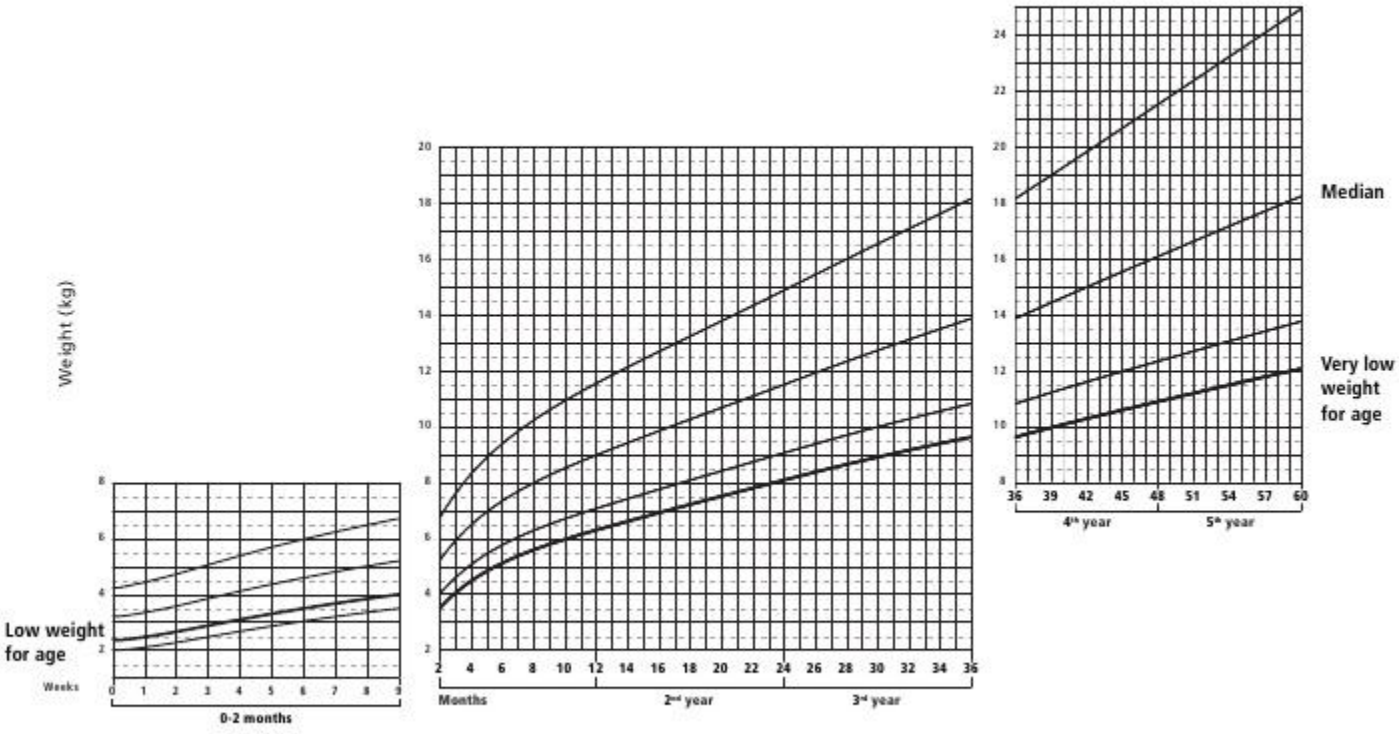
Return for next immunization on:

_____ (Date)

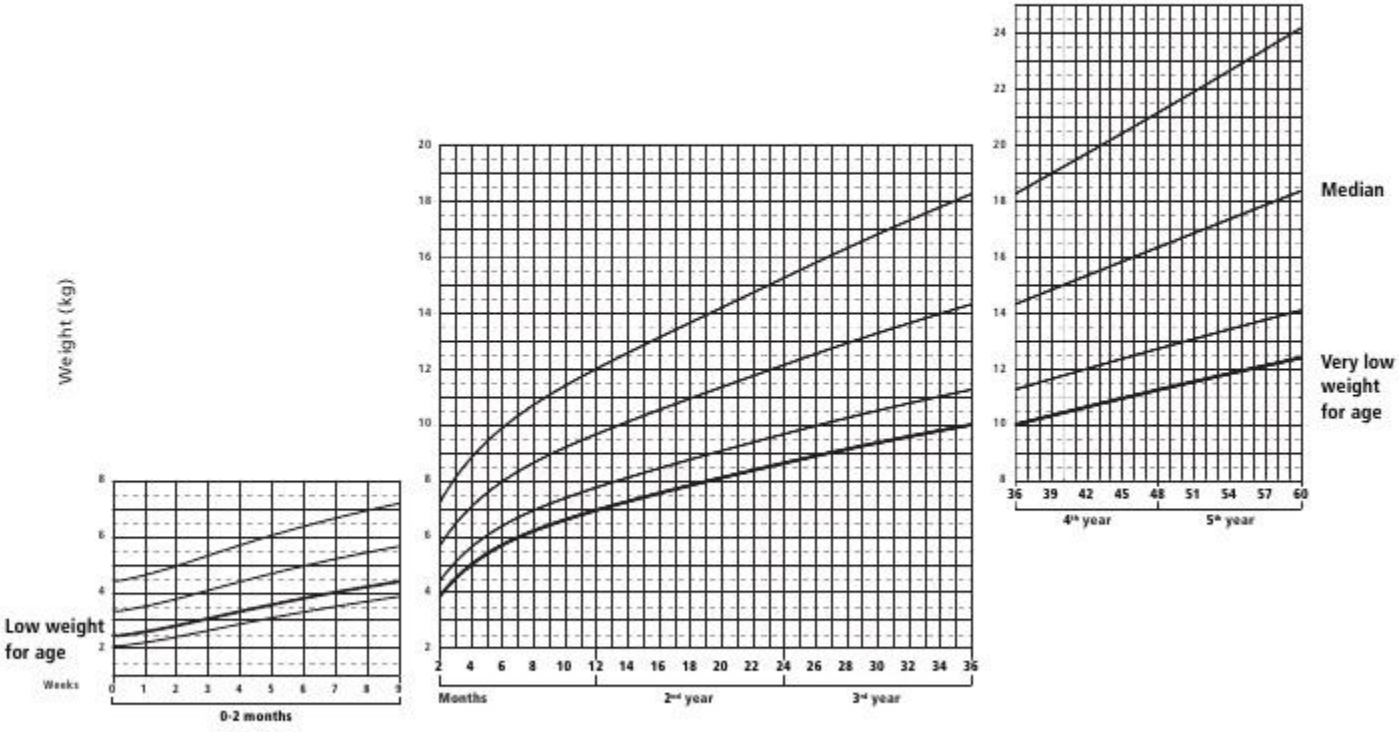
BCG	DPT1 + HIB1	DPT2+ HIB2
OPV 0	OPV1	OPV2
Vitamin A to mother	Hepatitis B1	Hepatitis B2

ASSESS OTHER PROBLEMS Ask about mother's own health

Weight-for-age chart for girls



Weight-for-age chart for boys



Integrated Management of Childhood Illness Chart booklet

Process of updating the chart booklet

The generic IMCI chart booklet was developed and published in 1995 based on evidence existing at that time (*Reference: Integrated management of Childhood Illness Adaptation Guide: C. Technical basis for adapting clinical guidelines, 1998)*. New evidence on the management of acute respiratory infections, diarrhoeal diseases, malaria, ear infections and infant feeding, published between 1995 and 2004, was summarized in the document *"Technical updates of the guidelines on IMCI : evidence and recommendations for further adaptations, 2005"*.

Evidence reviews supported the formulation of recommendations in each of these areas (see document and the references). Reviews were usually followed by technical consultations where the recommendations and their technical bases were discussed and consensus reached. Similarly, a review and several expert meetings were held to update the young infant section of IMCI to include "care of the newborn in the first week of life". More recently, findings of a multi-centre study (Lancet, 2008) led to the development of simplified recommendations for the assessment of severe infections in the newborn

Who was involved and their declaration of interests

The following experts were involved in the development of the updated newborn recommendations: Zulfiqar Bhutta, Ayivi Blaise, Wally Carlo, Rolando Cerezo, Magdy Omar, Pavel Mazmanyan, MK Bhan, Helenlouise Taylor, Gary Darmstadt, Vinod Paul, Anne Rimoin, Linda Wright and WHO staff from Regional and Headquarter offices. Dr. Gul Rehman and a team of CAH staff members drafted the updated chart booklet based on the above. Dr Antonio Pio did the technical editing of the draft IMCI chart booklet, in addition to participating in its peer-review. Other persons who reviewed the draft chart booklet and provided comments include Ashok Deorari, Teshome Desta,, Assaye Kassie, Dinh Phuang Hoa, Harish Kumar, Vinod Paul and Siddhorth Ramzi.. Their contributions are acknowledged.

None of the above experts declared any conflict of interest.

The Department plans to review the need for an update of this chart booklet by 2011.

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6.4 SIGNED DECLATION SHEETS

SHENDI UNIVERSITY
FACULTY OF POST GRADUATE STUDIES AND
SCIENCTIFIC RESEARCH

Candidate's declaration:
I Ibrahim Musa Ibrahim Hassan, declare that this thesis and work presented is my own original research Evaluating Perception and practices on quality of IMCI among health care workers- west Darfur Sudan.
I confirm that,
This thesis has not previously been submitted for degree of qualification in any other institution, University or board.
Where I have consulted the published work of others this is always clearly attributed.
Where I have quoted from the work of others, the sources are always given. With exception of such quotation, this thesis is entirely my own work.

Signature..... Date....05/5/2017...

Supervisor declaration:

I Prof. Yousif A. Ebrahim Elssyssy hereby certifies that the work entitles Evaluating Perception and practices on quality of IMCI among health workers- west Darfur Sudan was prepared by above named student, and was submitted to Shendi University, Post Graduate Studies and Scientific Research, as fulfillment of the requirement for philosophy doctorate in Community Health Nursing. And for mentioned work, to the best of my knowledge is the said student's work.

Signature..... Date....8-5-2017....

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