

LANDSCAPE ANALYSIS

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To Provide Insight on Barriers and Facilitators to
Policy Translation and Commodity Access in the
Public and Private Sector for Child Survival in Pakistan

Analytical Report & Accountability Framework

Prepared by Contech International, Pakistan for UNICEF Pakistan

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ACKNOWLEDGEMENT

“Landscape Analysis to provide Insight on Barriers and Facilitators to Policy Translation and Commodity Access in the Public and Private Sector” is a project funded by Bill and Melinda Gates Foundation (BMGF) and UNICEF to contribute to increased child survival in Pakistan and is implemented by Contech International. Contech International highly values the support extended by MNHSR&C, DRAP, Provincial Health Departments, MNCH programs, members of provincial Child Survival Groups (CSG), Sindh Child Survival Programme, paediatricians, Pakistan Paediatric Association, WHO and other development partners in enhancing the quality and scientific rigor of the study as well as the report. We are also grateful to the pharmaceutical manufacturers who provided us with their invaluable insights about the industry and to the all those who were involved in and facilitated the data collection: Federal, Provincial and District Health Managers; data collection teams including field teams and the support staff. We would also like to extend our gratitude to facility and pharmacy in-charges, community health workers, GPs and parents/ care-givers whose participation and freedom of expression allowed us to gather relevant and reliable information for this report. Last but not the least, we would like to express our gratitude to UNICEF’s national and provincial project implementation teams and UNICEF Project Monitoring, Evaluation and Research (PMER) Unit for their unstinted support and invaluable feedback during the process of this landscape analysis. We hope that the study findings and the frameworks hence developed will make a valuable contribution in improving child survival in Pakistan.

LIST OF ACRONYMS AND ABBREVIATIONS

Amoxicillin DT	Amoxicillin Dispersible Tablets
ARI	Acute Respiratory Infection
BHUs	Basic Health Units
CEO	Chief Executive Officer
CPSP	College of Physicians and Surgeons Pakistan
DFID	Department for International Development
DHIS	District Health Information System
DOC	Driver of Change
EDO	Executive District Officer
EML	Essential Medicine List
EPI	Expanded Program On Immunization
FGDs	Focus Group Discussions
FLCF	First Level Care Facility
FPAP	Family Planning Association of Pakistan
GAPPD	Global Action Plan for Pneumonia & Diarrhoea
GPs	General Practitioners
ICCM	Integrated Community Case Management
IMNCI	Integrated Management of Neonatal and Childhood Illnesses
IYCF	Infant and Young Child Feeding
JAF	Joint Accountability Framework
KII	Key Informant Interviews
LHW	Lady Health Worker
M&E	Monitoring & Evaluation
MNCH	Maternal Neonatal Child Health
NIH	National Institution of Health
ORS	Oral Rehydration Solution
PATS	Pakistan's Approach to Total Sanitation
PIEA	Political Institutional Economy Analysis
PMDC	Pakistan Medical and Dental council
PMER	Planning Monitoring Reporting and Evaluation
PMRC	Pakistan Health (Medical) Research Council
PPA	Pakistan Paediatric Association
RHCs	Rural Health Centres
RMNCH	Reproductive Maternal Neonatal Child Health
SOPs	Standard Operating Procedures
TOC	Theory of Change
U5	Under-five
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WHO	World Health Organization
Zinc-DT	Zinc Dispersible tablets

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EXECUTIVE SUMMARY

This report presents the findings of a landscape analysis on Pneumonia and Diarrhea among children of Pakistan, which have long been regarded as diseases of poverty, closely related to living conditions with poor hygiene and sanitation, malnutrition as well as limited access to other basic necessities. Hence there is a dire need to move beyond obvious medical concerns at micro level, to a more complex macro level strategy focusing on economic, social and political issues. The Global Action Plan for the Prevention and Control of Pneumonia and Diarrhea (GAPPD) has ranked Pakistan as third highest with the score of 46 (**UN Inter-agency Group for Child Mortality Estimation, 2015**).

UNICEF and Bill and Melinda Gates Foundation (BMGF) established a partnership to contribute to increased child survival in Pakistan, through improving prevention, diagnosis and treatment of Pneumonia and diarrhoea in children under-five years of age. The Project “Accelerating Policy Change, Translation and Implementation for Pneumonia and Diarrhoea Commodities in Pakistan”, is being implemented in close coordination with the Government of Pakistan and relevant stakeholders to ensure sustainable changes. The overarching project objective is to improve management of childhood diarrhoea and Pneumonia and increase child survival by the end of 2019. This has to be done through ensuring that the relevant national policies are revised, understood and adhered to in order to guarantee quality treatment and availability of essential commodities. These commodities include Amoxicillin DT, Zinc DT, Low osmolarity ORS (LoORS), ARI timers, Pulse Oximeters and Oxygen.

The goal of this baseline Landscape Analysis study was to provide insight on barriers and facilitators to policy translation and commodity access in the public and private sectors at national and provincial level. Specific objectives were to:

- Identify gaps in existing policies relevant to Child Survival Strategies in the context of GAPPD
- Assess the prescribing behaviours and treatment approaches among public and private sector service providers and the LHW program
- Recommend steps for inclusion of Pneumonia and Diarrhea commodities into essential medicine lists, procurement lists based on evidence-based briefing papers and policy notes including GAPPD on the benefits of Amoxicillin-DT, Zinc-DT, co-packaged ORS and Zinc, Pulse Oximeters, and Oxygen
- Map key stakeholders and activists at all levels; and
- Draft a framework to define the roles and responsibilities of key implementing stakeholders for child survival groups (CSGs).

It was a cross-sectional study that primarily involved desk reviews and qualitative research. Research was conducted at Federal level and also in provinces of Punjab and Sindh. Provincial capitals along with two districts of Punjab (Pakpattan and Bahawalnagar) and three districts of Sindh (Tharparkar, Shikarpur, and Tando Muhammad Khan) were covered. Primary data was collected through in-depth interviews as well as focus group discussions conducted with officials at policy and strategy development level (representatives from MNHSR&C, DRAP, provincial health departments; health sector reform units; IRMNCH/MNCH and LHW programmes; donors and development partners); district managers (CEO/DHO, DHIS Coordinator); health-service providers (health providers at both public and private facilities, outreach field staff, in-charges of medical stores); service-users (parents/guardians of children receiving services for Pneumonia and Diarrhea at both public and private health facilities). In total 112 in-depth interviews and 5 focus group discussions were conducted.

The research findings have been arranged into policy environment, clinical management, pharmaceutical feasibility and accountability framework.

Findings revealed that for facilitating commodity access, a robust **policy change** is required, which would lay the necessary foundations for translating policy into operational processes. After the eighteenth amendment, the provincial health departments developed their own health sector strategies, which are on the verge of completing the terms for which they were drafted and will be reviewed in the next year. This provides an opportunity to incorporate the necessary policy changes required to enhance the focus on morbidity and mortality in children due to Pneumonia and Diarrhea. It is pertinent to mention here that the health department of Sindh has already developed a draft of Child Survival Strategy highlighting issues concerning child health. Moreover, Sindh and Punjab have made some progress by incorporating dispersible tablets (DTs) in the provincial essential medicine lists, while there is a need for updating IMNCI guidelines and health information systems according to the global recommendations for Pneumonia and Diarrhea. CSGs were found to have a huge potential for coordinating these efforts. Considering service delivery is mainly provided in private facilities, there is a critical need to engage the private sector. Furthermore, replacing the old regimen of treatment with the DTs would require augmented advocacy efforts for increased political commitment.

In order to comprehend the current **clinical management practices and prescribing behaviours**, perspective of different stakeholders at the service delivery level for this research was considered. A general understanding prevailed among almost all respondents that lack of hygiene; poor sanitation and unclean drinking water were the root causes of Pneumonia and Diarrhea. Concept of dispersible tablet was not found to be particularly prevalent, especially among facility and pharmacy in-charges. "Tablet" was instantly perceived as a hard substance, difficult for children to swallow, hence unsuitable for their consumption. However, all respondents demonstrated a certain level of acceptability towards the adoption of new commodities. It was established that prescribing behaviour of the healthcare providers needed to be modified through engaging healthcare commissions, PPA, FPAP as well as pharmaceutical manufacturers.

Feasibility analysis conducted to assess the market potential for updated Pneumonia and Diarrhea commodities revealed that presently the local industry is meeting 70% demand of all the finished products. The quality of locally manufactured drugs is regulated by Drug Regulatory Authority of Pakistan (DRAP), which on average takes 15-18 months to process registration of a new product. This process however, could be expedited if the public interest demands so. Although DRAP's rules currently do not allow marketing of co-packaged Zinc and ORS, but has no restriction on co-packaging of the same after purchase. While one local company was found to be licensed and manufacturing Amoxicillin DT, over 15 companies were already registered with DRAP to manufacture Zinc DT and Low Osmolarity ORS. Five medium to large sized key ISO 9001 certified pharmaceutical manufacturers, located in north, south and central region of the country, exhibited the required production capacity and expressed willingness to fully meet nationwide need and readiness to cooperate with UN agencies in launching advocacy campaigns to enhance demand.

Based on the findings and recommendations, a **joint accountability framework** was prepared that identified the interventions with the allocation of responsibility. This framework assigned indicators to every intervention for measuring the progress. The accountability framework has been crafted after meticulously taking into consideration the formal and informal factors that might facilitate or hinder the processes mapped out for the following identified outcomes:

- Putting in place updated Policies and Strategies.
- Incorporation of global recommendations in clinical management practices.
- Local Production of Proposed Commodities.
- Strengthening of supply chain and logistics management of new commodities.
- Budgeting for the new/Updated Commodities



INTRODUCTION

INTRODUCTION

Nearly 396,800 children die in Pakistan every year in contrast to 99,200 who die in the entire developed world (Lozano et al., 2011). The divide between industrialised and developing countries is greater on child mortality than on any other issue as no other mortality is as unequal. Improving child health and survival remains at the center of global health initiatives. In Pakistan, child health services are under-developed and under-resourced, access to commodities to manage childhood Pneumonia and Diarrhea remains a serious and major concern, with expected outcomes not predictably achieved and wide variations existing within healthcare systems. This also indicates that there is limited knowledge regarding the access to the commodities for management of childhood Pneumonia and Diarrhea, leading to rationale of this research for devising a practical, feasible and workable accountability framework to ensure commodities access in both public and private sectors of Pakistan.

In view of this situation, UNICEF and Bill and Melinda Gates Foundation (BMGF) established a partnership to contribute to increased child survival in Pakistan through improving the diagnosis and treatment of Pneumonia and Diarrhea in children under 5 years of age. The project “Accelerating policy change, translation and implementation for Pneumonia and Diarrhea commodities in Pakistan”, is being implemented in close coordination with the Government of Pakistan and relevant stakeholders to ensure sustainable improvements. It has an overarching goal to ensure that relevant national policies are in place, understood, and adhered to in order to ensure quality treatment and availability of the essential commodities for improving management of childhood Pneumonia and Diarrhea for increasing child survival by the end of the year 2019. The project also focuses on incorporating Pneumonia and Diarrhea treatment commodities into essential medicines lists, advocacy for increased resource allocation for these commodities; and to catalyze the initial stages of the commodities procurement process with government authorities and pharmaceutical manufacturers, while updating and strengthening relevant supply chain and logistics management systems. Specifically, the project will ensure the availability of 06 commodities – including Dispersible Tablets (DT) of Amoxicillin and Zinc, Low Osmolarity ORS, Co-packaged ORS and Zinc, ARI Timers, Pulse Oximeters, and Oxygen – for both public and private sector service delivery.

1.1 CHILD HEALTH SERVICES IN PAKISTAN

Pakistan has one of the best healthcare infrastructures in developing world with a system of basic health units and referral pathways; however, access to commodities at different levels of health system is very variable and fails to provide a holistic coverage (National MNCH Programme, 2006). The healthcare system provided by the government is almost similar in structure and functioning in all the provinces and districts. There is a hierarchy

Figure 1: Comparison of Global under-five mortality rates with Pakistan



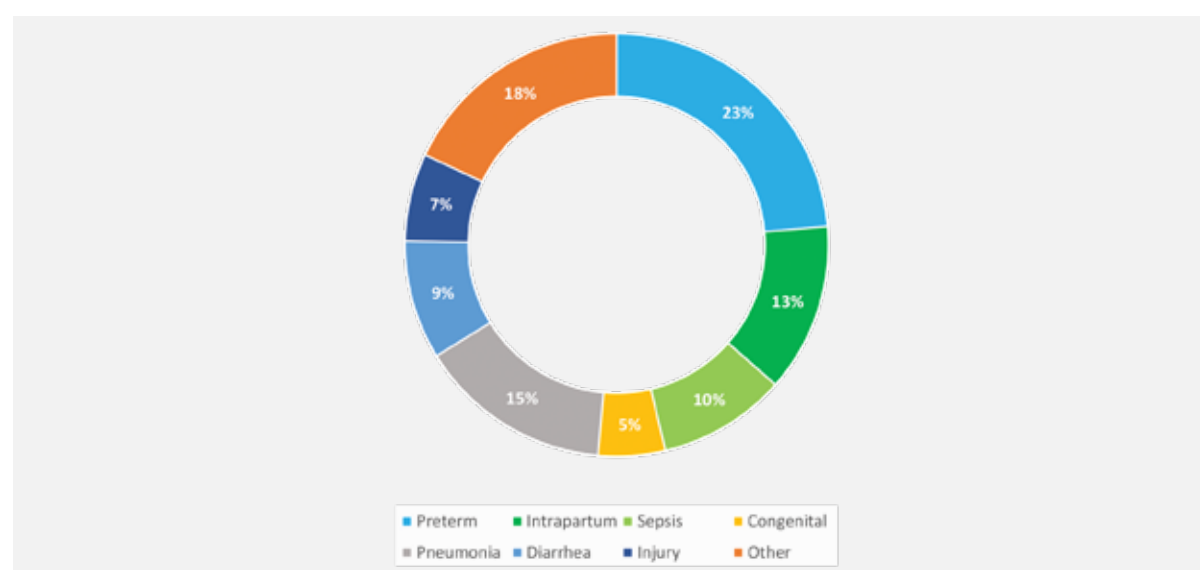
Table 1: Under-five mortality rates in each province of Pakistan

Provinces	Under Five Mortality Rate (per 1,000 live births)
Punjab	105
Sindh	93
Baluchistan	111
Khyber Pakhtunkhwa	70

Source: PDHS 2012-13

according to which it operates: tertiary level hospitals in large cities, secondary level hospitals within districts and Tehsils/Taluka, primary level healthcare facilities including Basic Health Units (BHUs) at Union Council division, Rural Health Centres (RHCs) at Markaz division, and outreach workers. Private sector also participate actively in health service provision, as majority of sick children in urban areas and a significant proportion in semi-urban areas use private sector facilities for child health services. Delivery system of health services within the country holds many deficiencies like limited geographical access to facilities, poor physical infrastructure, unavailability of adequately trained staff, paucity of medical equipment and supplies and inadequate referral services (Rosen & Conly, 1996), culminating into questionable healthcare for the children of Pakistan. National household surveys conducted in Pakistan (Pakistan Integrated Household Survey, 2001 and PDHS, 2008 and 2013) further illustrate the staggering situation of childhood health services and survival of children beyond the age of five. Even though over the last decade, there is significant reduction in infant and childhood mortality but still it is one of the five nations contributing to half of the world's child mortality, with Infant Mortality Rate at 53.9 and Under Five Mortality Rate at 79 per 1,000 live births (PDHS, 2013). Despite a decline in under-five mortality over year's country still lag behind to achieve Sustainable Goals target. Presently greatest burden of this mortality is on Province of Baluchistan and Punjab. Table below gives contribution of each province in burden of under-five deaths.

Estimates made by the UNICEF and WHO in 2015, showed that Pneumonia (15%) and Diarrhea (9%) are one of the major contributors to childhood deaths in Pakistan, as illustrated in the figure below.

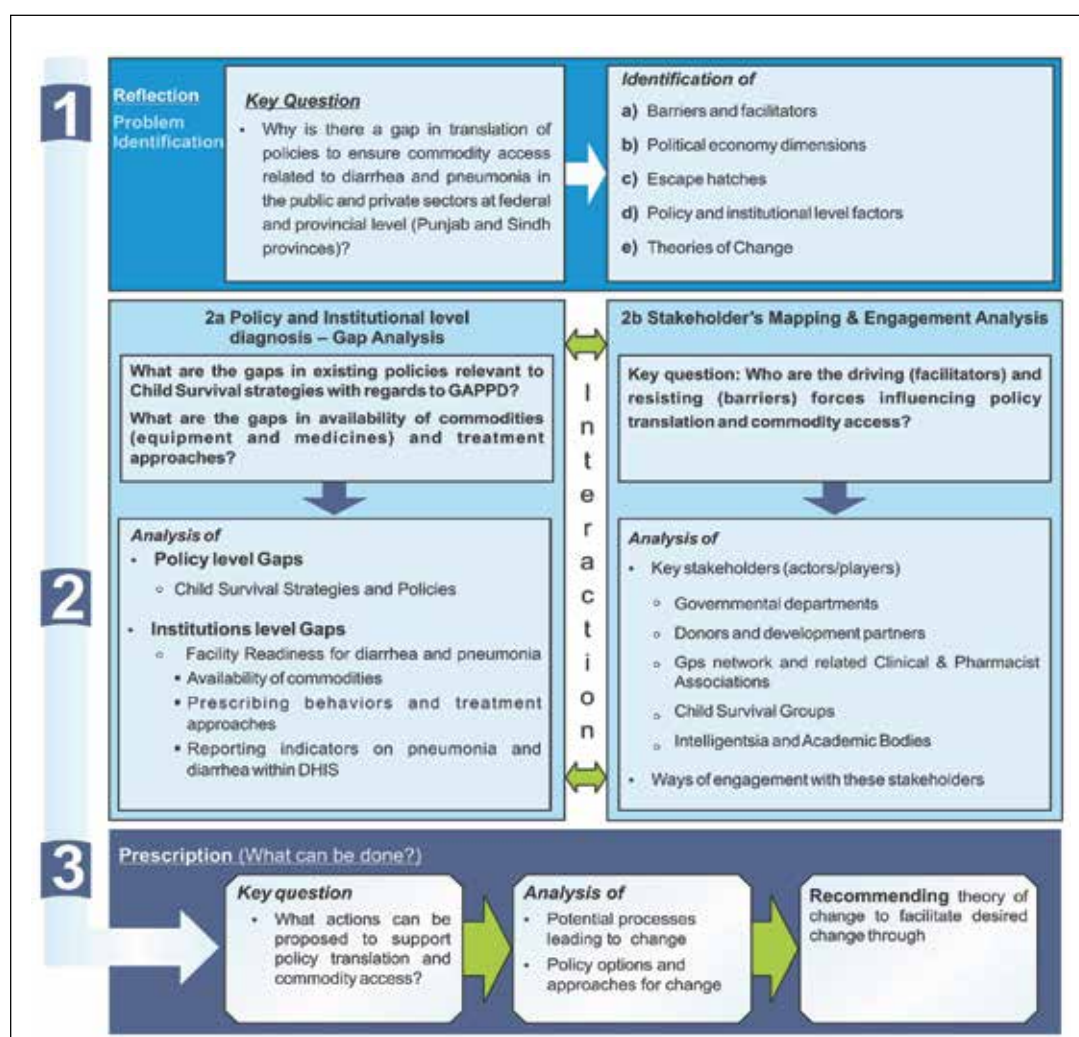
Figure 2: Causes of under-five mortality in Pakistan during year 2015

1.2 RESEARCH FRAMEWORK

The landscape analysis was conducted to identify the barriers and facilitators for the availability of the updated essential commodities for Pneumonia and Diarrhea. This analysis intends to bridge the gaps in bringing about specific policy change, its translation and implementation for the Pneumonia and Diarrhea commodities, while keeping in view the political economy context of Pakistan. The findings of baseline landscape analysis are used to assign specific roles and responsibilities to the relevant stakeholders in the form of a joint accountability framework. A key component of this study was to conduct a pharmaceutical manufacturing feasibility for the local production of updated commodities, while taking into consideration market forces and the potential demand.

The landscape analysis encompasses all levels from policy to the end user at community level by assessing the factors influencing policy translation and commodity access that will lead to reduction in the disease burden. The study further aimed at exploring the opportunities for engaging pharmaceutical companies and other relevant stakeholders for manufacturing and provision of updated Pneumonia and Diarrhea related commodities in Pakistan. The landscape analysis is based on the following comprehensive conceptual framework, adapted from problem-driven frameworks of World Bank and Overseas Development Institute.

Figure 3: Research Framework of Landscape Analysis



1.3 AIMS AND OBJECTIVE

The goal of this baseline landscape analysis study was to provide insight on barriers and facilitators to policy translation and commodity access in the public and private sectors at national and provincial levels. The audience of the research would mainly be the government, academia, UN agencies and pharmaceutical companies. It is envisaged that this landscape analysis would not only benefit in evidence based policy making but would contribute in policy translation at the highest level. This study report is in overall compliance with the ToRs (see Annex 1) and its specific objectives which were to:

- Review and provide insight on barriers and facilitators to policy translation and commodity access in public and private sector;
- Identification of gaps in existing policies relevant Child Survival strategies with their relevance to GAPPD;
- Assess the prescribing behaviors and treatment approaches among public and private sector service providers and vertical programs LHW program;
- Recommend the steps for inclusion of Pneumonia and Diarrhea commodities into essential medicine lists, procurement lists based on evidence-based briefing papers and policy notes including GAPPD on the benefits of Amoxicillin-DT, Zinc-DT, Co-packaged ORS and Zinc, Pulse Oximeters, and Oxygen;
- Mapping in details of key stakeholders and activist at all levels;
- Draft a framework to define the roles and responsibilities of key implementing stakeholders to utilize further for child survival working groups.

LITERATURE REVIEW



This chapter synthesizes literature reviewed for conducting the landscape analysis and subsequently developing the accountability framework and feasibility analysis.

In the first section, description of global scenario along with Federal and provincial level policies and strategies are reviewed. This section further captures the existing management practices for Pneumonia and Diarrhea – including the shift from tablets/syrups to dispersible tablets; use of Low Osmolarity ORS, Oxygen, ARI timers, Pulse Oximeters. It concludes with a brief description of global context and best practices across the developing world.

2.1 GLOBAL SCENARIO

Since 1990 a remarkable decline in child mortality has been observed. Children under five years of age who died in year 1990 to 2015 have dropped significantly, i.e. from 12.7 million to 5.9 million. The under-five mortality rate (U5MR) dropped 53% and the annual rate of decline accelerated from 1.8% during 1990-2000 to 3.9% in next five year span of 2000 to 2015 (Taylor, Schumacher & Davis, 2016). Owing to substantial progress in reducing child mortality during last decade, there still remains a difference in equity of progress between and within countries. Dimensions of these inequities are complex and can include economic status, geographic location, parents' education level, urban and rural residence, ethnic group and gender.

This is evident from fact that almost 9 out of 10 deaths of children under the age of five occur in low- and lower middle income countries. Similarly, children from poor households in those countries are 1.9 times more likely to die than children from richest households (Arregoces et al, 2015). Children therefore, continue to die of preventable causes and more so if they are disadvantaged by the conditions in which they live.

Child survival must be the heart of global health and development goals, only then Sustainable Development Goal of under-five mortality, target of **25 per 1,000** live births is to be attained by 2030 (Becerra-Posada, 2015).

The complexity in defining quality perhaps stems from the fact that there are gaps in our knowledge regarding the type of services required, and the expectations of populations and healthcare workers regarding the outcomes associated with these services. In the face of advancements in medical sciences and technology, the performance of healthcare delivery system seems to have floundered when it comes to consistently providing high quality care to all (Institute of Medicine, 2001). One of the most commonly cited definitions of quality, in the context of the healthcare delivery system, defines it as the extent to which the services rendered by the

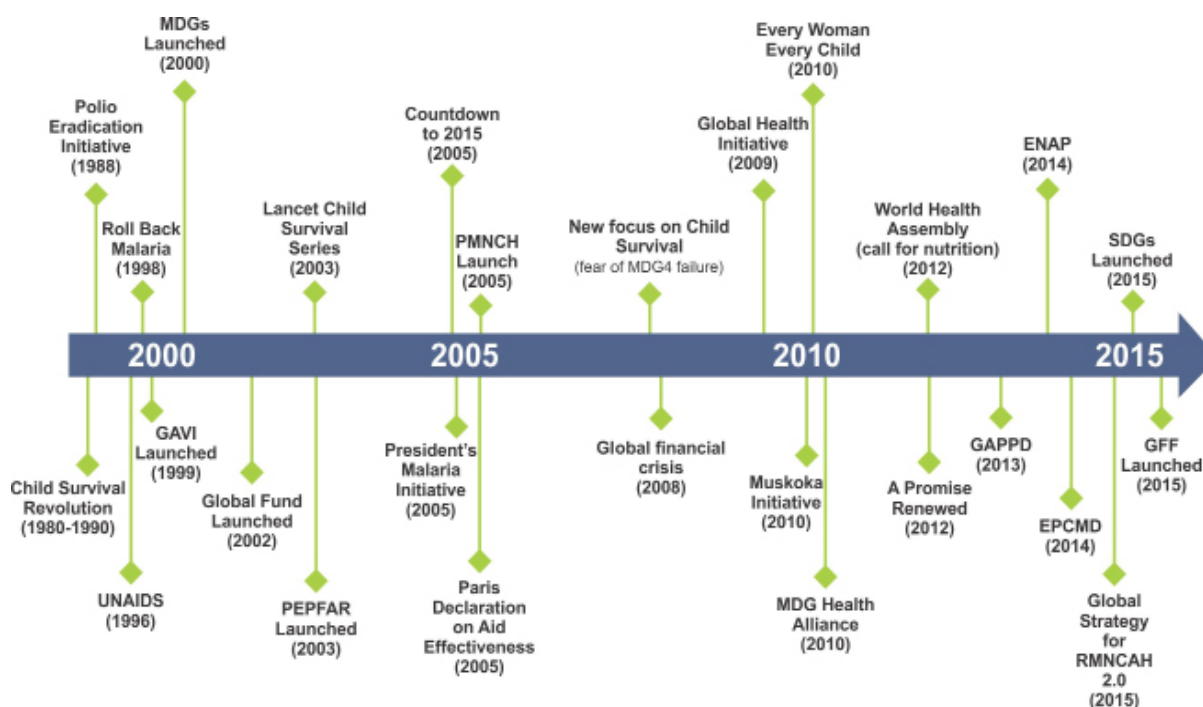
health sector for individuals and populations, increases the likelihood of achieving the desired health outcomes that are consistent with current professional knowledge in diagnostic and treatment processes of healthcare (Institute of Medicine, 2004).

Pinning down definitive criteria for quality is an arduous task and it is nothing more than a set of value judgments that are applicable to several aspects, properties, ingredients or dimensions of a process called medical care (Lee & Jones, 1933).

Some hold the view that quality is a function of what happens at the frontline (Wilcock, 2010). This means that eventually quality strictly depends upon how care is delivered to the recipients of health services. This propagates a more patient centered approach and asserts that quality depends on whether patients receive the care that they need and more importantly, whether the care received is effective (Campbell et al, 2000). This is reaffirmed in another definition where quality of healthcare has been expressed as a compound of clinical effectiveness, safety and patient experience (Darzi, 2008). Other health experts house the opinion that quality should be more focused on outcomes rather than patients. The World Health Organization however, addresses the quality quandary differently, the initial definition of quality put forth by the organization specified it as 'proper performance (according to standards) of interventions that are known to be safe, that are affordable by the society in question, and that have the ability to produce an impact on mortality, morbidity, disability and malnutrition' (WHO, 1988). Later, this definition evolved as it was realized that quality was more of a contextual phenomenon that required local interpretation by health policy makers and managers, so that policies and practices can be tailored according to the specific needs of the system. Thus, quality improvement means taking a snap shot of the whole system, paying close attention to individual service users and the community at large, and emphasizing on delivering effective, efficient, accessible, acceptable, equitable and safe healthcare service to all (WHO, 2006). As it can be gleaned from the aforementioned discussion, there are myriad definitions associated with quality healthcare services. The important question to ask at this point however is why quality is so important. The answer to this question can be sought by looking at the relevance of the issue in hand.

Since late 90s', there had been emphasis on child health, either through global goals (MDGs and SDGs), IMNCI and iCCM programs or Pneumonia and Diarrhea programs (Taylor, Schumacher & Davis, 2016). Following figure demonstrates the miles stones and main initiatives that were taken globally in child health development between 1980 and 2015.

Figure 4: Key Events and Turning Points in Child Health



Source: Reproduced from, Mapping Global Leadership

A significant focus of Millennium Development Goals was on improving child health development between 1980 and 2015. In late 1990s integrated approach to child health known as Integrated Management of Childhood Illness (IMCI) was launched. It includes preventive and curative elements that are implemented by families and communities as well as by health facilities (WHO, 2017). A consequence to the challenges of IMNCI was the development of Integrated Community Case Management (iCCM). It targets a subset of most important IMNCI interventions; case management of Pneumonia, Diarrhea and malaria and was put together in a simpler package more suitable to community health systems (Taylor, Schumacher & Davis, 2016).

During 1980s, ORS was introduced for treating Diarrhea, which lead to significant decline in child mortality. However, starting from mid-1990s to the first decade of the 2000s, progress came to halt. Demand for ORS in communities did not increase because it did not prove to be a quick cure. On the other hand, the growth of other priorities such as malaria, HIV/AIDs, and immunization shifted the focus; Diarrhea case management moved under IMNCI and executed at a smaller scale (Santosham et al, 2010). With passage of time more optimal ORS formulations were developed, and in 2004 WHO and UNICEF recommended addition of Zinc to prevention and treatment guidelines. Global Zinc Task Force, established in 2005, set out to accelerate the adoption of Zinc in high concentration countries. In 2006, in an effort to regenerate Diarrhea programs, WHO, UNICEF, USAID and Johns Hopkins University jointly released detailed guidelines for countries, but progress was slow and use did not increase. In 2011, Diarrhea Pneumonia Working Group (DPWG), brought together efforts for both disease conditions and to support the increase of programs in 10 high concentration countries (Taylor, Schumacher & Davis, 2016).

Acute Respiratory Infection (ARI) programs were initiated in 1990s, based on evidence from studies that childhood Pneumonia could be diagnosed and treated with antibiotics in community settings. Mass implementation of

antibiotic treatment, especially at the community level, met resistance. In 1995, with the absorption of Pneumonia into IMNCI, attention and resources disappeared, as was the case with Diarrhea. In the early to mid-2000s, child survival publications and mortality estimates raised the importance of Pneumonia and the potential impact of effective interventions. Simultaneously, GAVI and Bill Gates Foundation provided funding for the development of new vaccines that would prevent Pneumonia (pneumococcal/Hib). GAVI funded Pneumonia DIP and the Hib initiative aimed at country adoption of the new vaccines. Nonetheless, for treatment interventions, concern did not begin to rise until 2006, when WHO and UNICEF released “Pneumonia: The Forgotten Killer of Children”. This drive became more apparent in 2009 with the development of the WHO/UNICEF- led Global Action Plan for Pneumonia and Diarrhea (GAPPD) that involved countries through informal consultations-and with iCCM there were attempts to expand access (Berlan, 2015; Taylor, Schumacher & Davis, 2016).

2.2 GLOBAL ACTION PLAN FOR PNEUMONIA AND DIARRHEA (GAPPD)

WHO and UNICEF launched a comprehensive Diarrhea control plan in 2009, meanwhile in same year Global Action Plan for Pneumonia Prevention and Control was launched (WHO & UNICEF, 2013). Health professionals around the globe owned both the agendas, but expressed a need of an integrated approach for Pneumonia and Diarrhea. WHO and UNICEF took the initiative and conceptualized an integrated approach for tackling Pneumonia and Diarrhea, resulting in launch of Global Action Plan for Pneumonia and Diarrhea in April 2013 (Qazi et al, 2015). GAPPD is a framework which emphasizes on integrated approach to protect, prevent and treat both the diseases (WHO & UNICEF, 2013).

Figure 5: Protect Prevent and Treat framework of GAPPD



Source: Adapted PATH: Tackling the deadliest diseases for the world's poorest children.

Source: Reproduced from, *Ending Preventable Child Deaths from Pneumonia and Diarrhea by 2025: The integrated Global Action Plan for Pneumonia and Diarrhea (GAPPD)*, 2013.

2.2.1 Protect, Prevent and Treat Framework

Global Action Plan for Pneumonia and Diarrhea 2013, has an ambitious goal of ending preventable childhood deaths by 2025, and to achieve that, it provides a set of priorities and interventions to scale-up progress at country level (Yao & Yang, 2014). Though integrated Global Action Plan for Pneumonia and Diarrhea introduces a cohesive approach to ending preventable Pneumonia and Diarrhea deaths. But to reach every child requires a scaling-up and targeting of interventions known to prevent, and control Pneumonia and Diarrhea. Enabling this vision requires a coordination and collaboration from child health related programs, parents, communities, community health workers (CHWs), civil society and private sector (WHO & UNICEF).

2.2.2 GAPPD Goals for 2025

United Nations Global Strategy for Women's and Children's Health was launched in 2010 (United Nation Secretary General, 2012), based on continuum of care approach to services and with an aim to save 16 million lives. Following to it in 2012 (UNICEF, 2013), a call to action for child survival challenged the world to reduce child mortality to 20 fewer child deaths per 1,000 live births in every country by 2035. Therefore, GAPPD has established specific goals for 2025, which are ambitious and require significant political will, commitment and mobilization of some additional resources to achieve desired results (WHO & UNICEF, 2013). Coverage targets for GAPPD protect, prevent and treat framework are also defined so as to achieve goals. Selected targets are already being monitored through a variety of processes, and progress is measured through Health information systems, Demographic Health Surveys (DHS), Multiple Indicator Cluster Survey (MICS), mortality and morbidity estimates (WHO & UNICEF, 2013).

2.3 NATIONAL AND PROVINCIAL POLICIES FOR CHILDHOOD ILLNESSES

GAPPD goals for eliminating preventable child deaths from Pneumonia and Diarrhea by 2025 are ambitious, but entirely achievable. Therefore, it recommends a continuous coordination from all stakeholders to increase political will for eliminating Pneumonia and Diarrhea, foster inter-sectoral collaboration, increase efficiency through prioritization of interventions based on local context, increase investments in health policy and systems research, and strengthen accountability for results and resources (Chopra et al, 2013). Along with effective interventions, Pakistan needs a concerted action in these priority areas at national and provincial level (Qazi et al, 2015), therefore a national and provincial policies, programs for child health are reviewed to analyses the commitment at state level.

2.3.1 National Health Vision

Provincial ministers and secretaries of health have committed to supporting and overseeing the implementation of the national vision. The main challenge impeding further reduction of maternal and child mortality are insecurity and the countrywide misdistribution of the limited human resources in the health sector; a shortage of female doctors and paramedics at the primary healthcare level, and of skilled birth attendants at the community level; inequitable access to care; low quality of interventions and limited capacity in planning, management and evaluation; the cultural and geographic isolation of women; and poor access to improved drinking water and sanitation. There is a need to support the delivery of quality services; build capacities to improve managerial skills and ensure security of lifesaving medicines, commodities and equipment; ensure equitable distribution of human resources with community outreach; target evidence-based, cost-effective and community-based interventions promoting education and mobilization; and encourage supportive supervision, monitoring and evaluation.

A sound strategy on human resources is needed to fill the gap at primary care level along with improving the quality of training programs (MNHSR&C, 2015).

National Vision for coordinated priority actions to address challenges of reproductive, maternal, newborn and child health and nutrition: ten years to better health (2016-2025), reflects an augmenting political commitment to maternal, newborn, and child health (Nishtar et al. 2013). This 10-point vision aimed to provide overarching strategic guidance with regard to key actions to be undertaken by national and provincial stakeholders. With the eighteenth amendment to the constitution of Pakistan, the subject of health was devolved to the provinces. Resultantly, the provinces developed their own health sector strategies and a National Health Vision was developed at the national level National Health Vision 2016-2025, “which is a key to achieve Universal Health Coverage (UHC),” said Federal Minister for MNHSR&C. Aligned with country’s vision 2025, National Health Vision was published in 2016. Overarching principles of vision are transformation and change, equity, and resilience and accountability. These are further translated into key policy directions, such as vigilant use of existing funds, investing for social protection, performance accountability of government services, coordinated production of key targets with the private sector, regulation, producing human resources for rural health markets, and standardized, quality services commencing from the primary health sector (Planning Commission, 2015). It can therefore, be elaborated that health vision has holistic focus on system strengthening.

2.3.2 Pakistan National Drug Policy

National Drug Policy of Pakistan was drafted back in year 2000, with a purpose to ensure regular availability of essential drugs of acceptability efficacy, safety and quality at affordable prices to all irrespective of their socio-economic status or place of living. Though formation of drug policy is an integral component of national health policy, however since 2000 policy is not updated (Pharmacist Federation of Pakistan, n.d).

2.3.3 Pakistan’s Approach to Total Sanitation PATS

According to PDHS (2013), in Pakistan almost half (59%) of households have an improved toilet facility. GAPPD recommends improved sanitation facility to prevent Diarrhea and Pneumonia (WHO & UNICEF, 2013), therefore, significance of sanitation policy at national and provincial level cannot be ignored.

Pakistan published its National Sanitation Policy in 2006; it provides guidelines and support to the Federal, provincial and local governments and other developing authorities (Ministry of Environment, 2006).

Pakistan Approach to Total Sanitation (PATS) is for achieving and sustaining an open defecation free environment both in rural and urban areas, with emphasis on behavior change and social mobilization for enhancing the demand side of sanitation (Ministry of Environment, 2011). In Punjab and Sindh, UNICEF is supporting Water, Sanitation and Hygiene (WASH) program in their activities, and aims to end open defecation in 3,600 villages of Punjab and 13 districts of Sindh by 2018 (UNICEF, 2015).

2.3.4 National Essential Medicine List 2016

National Essential Medicines List (2016), published by Drug Regulatory Authority of Pakistan, is an adaptation

According to WHO (2014), “the availability of medicines in public sector facilities is only 39 percent, indicating a dearth of medicines for treatment.”

of 19th WHO Model List of essential Medicines of 2015. NEML was drafted by the Division of Pharmacy Services and is based on Pakistan's disease burden, priority health conditions and affordability criteria. NEML 2016 is a list of 416 core drugs provided by government at primary and secondary healthcare facilities. With reference to UNICEF and WHO recommended commodities for Pneumonia and Diarrhea, NEML includes low-osmolarity ORS, Zinc Sulfate (20 mg) and Amoxicillin in solid oral dosage form (250mg & 500mg as trihydrate (DRAP, 2016).

2.3.5 Integrated Management of Newborn and Childhood Illnesses

IMNCI is an approved and recommended strategy by WHO for reducing infant and childhood mortality and morbidity through integrated management of major causes. Pakistan is implementing this strategy since late 90's, but not at the required scale. Since 2001 it has only been implemented in 10 districts across Pakistan. Objective of IMNCI is to provide treatment to patients through comprehensive approach however; it is not limited to curative but incorporate preventive and promotive aspect of child health. It focuses on improvement of clinical management skills of healthcare personnel, strengthening healthcare delivery system for effective management of childhood illness and improving the family and community practices (Amin et.al, 2013). Rather IMNCI offers a holistic approach to manage childhood morbidity through three components; Case management training, strengthening of health system, improvement of family and community practices for child health and development. WHO's Multi country evaluation (MCE) states that IMNCI can improve health worker performance and their quality of care, IMNCI can reduce under-five mortality and improve nutritional status, if invested in IMNCI it costs up to six time less per child healthcare (WHO, 2017)

2.3.6 Punjab Health Sector Strategy (2012:2020)

Punjab Health Sector Strategy was developed in 2012 by Government of Punjab with support of Punjab Health Sector Reforms Programmes (PHRSP). It is drafted with an ambient of improvement in coverage and utilization of quality essential health services, particularly in low performing districts of Punjab. Health sector strategy emphasized on child health under the RMNCH and Nutrition initiatives.

2.3.7 Sindh Health Sector Strategy (2012-2020)

Considering the health situation of province and to prioritize the service delivery in an integrated manner, Sindh Health Sector Strategy was drafted. In order to improve Child health, strategic actions are proposed at broader level however, strategic action in relevance to Pneumonia and Diarrhea includes:

Moreover, overall system actions required for enhanced child healthcare and to reduce mortality and morbidity are part of strategy (Zaidi, 2012).

“Capacity building of staff also emphasizing on Pneumonia and Diarrhea related training of healthcare workers”

2.3.8 Essential Medicine List of Punjab, 2016

Essential Medicine List of Punjab (GoP, 2016) is adaptation from 19th WHO recommended essential medicines List. It aligns with the WHO and UNICEF recommended Pneumonia and Diarrhea commodities including, low osmolarity ORS, Amoxcillin (solid dosage form) and Zinc Sulphate (Solid Dosage form) for Pneumonia and Diarrhea (List of Essential Medicines, 2016).

2.3.9 Essential Medicine List of Sindh, 2014

Essential Medicine List of Sindh (2014), is again an adaptation of 19th WHO recommended Essential Medicines

List and National Essential Medicine List of 2013. It includes, Diarrhea and Pneumonia commodities (low-Osmolarity ORS, 20 mg dispersible tablet of Zinc Sulphate and recommended by WHO and UNICEF, among which low osmolarity ORS and 20 mg dispersible tablet of Zinc Sulphate meets the global guidelines.

2.4 MANAGEMENT PRACTICES FOR PNEUMONIA AND DIARRHEA

2.4.1 Improved Care Seeking and Referral

Early recognition of Pneumonia and Diarrhea signs and symptoms and rapid care seeking, ensures that children approach to a healthcare provider, who can assess and treat them according to WHO and UNICEF recommended IMNCI and iCCM guidelines in facility and community settings (UNICEF, 2015). It is reported by UNICEF in year 2015, that proportion of children seeking care from healthcare provider for symptoms of Pneumonia has increased globally, but the pace is slow as over the past 15 years the rate of care seeking increased by only 8 percentage points – from 55 per cent in 2000 to 63 per cent in 2015 (UNICEF, 2015).

Pakistan Demographic and Health Survey (PDHS) 2013, reports low care seeking behavior for Pneumonia and Diarrhea. Among under-five year children suffering from Pneumonia a high percentage of care seeking behavior was observed in Sindh or Gilgit Baltistan (81.6% and 81.5% respectively) whereas, in Khyber Pakhtunkhwa only 29.3% of children suffering from Pneumonia sought care from a health care provider (PDHS, 2013).

On the other side, low care-seeking behavior had been observed for Diarrhea. Disparities are observed between regions as 73% of under-five children in Sindh sought care from a healthcare provider whereas; trend was low in Baluchistan and Khyber Pakhtunkhwa as it was 43.4% and 23% respectively (PDHS, 2013). Qamar et al, (2016) in his study “Predictors of Diarrheal mortality and patterns of caregiver health seeking behavior in Karachi, Pakistan”, to explore factors associated with Diarrheal deaths, specifically care seeking behavior among caretakers of children living in peri-urban communities of Karachi. Results of study indicate that an appropriate care seeking behavior predicts survival in children with Diarrhea in Pakistan. However, multiple factors such as social norms, culture, community dynamics, household economics, and health services related factors, individual's experiences with healthcare provider, contributes in low health seeking behavior among masses.

Multiple indicators Cluster Survey of Sindh (2014), shows that, within districts of Sindh district Jamshoro, Sujawal and Jacobabad (84.3%, 82.9% and 80.1% respectively) show high care seeking for children from Diarrhea whereas, it was least (44.7%) in district Ghotki. In case of Pneumonia, percentage of care seeking was highest in district Karachi East (96.9%) and was least in district Ghotki 53.1%. There was huge disparity in preference for care seeking from public and private healthcare facilities for both Pneumonia and Diarrhea patient load was observed on private healthcare providers in all districts.

Care seeking behavior of children suffering from Diarrhea was least in Muzaffargarh (49.1%) and highest in Lahore 86.7%. Moreover, private healthcare providers were preferred in all districts of Punjab. Child Survival and Health Grants Program (CSHGP) introduced an implementation framework for community case management to improve the community care-seeking behavior. Implementation framework is based on three key elements including (Child Survival & Health Grants program, 2016):

- Improving partnerships between health facilities and communities they serve.
- Increasing appropriate and accessible healthcare and information from community-based providers.
- Integrating promotion of key family practices critical for child health and nutrition.

2.4.2 Supply of Low Osmolarity ORS

UNICEF and WHO recommends low-osmolarity ORS for treatment of Diarrhea, as the earlier composition of ORS does not reduce stool output or duration of Diarrhea.

For this reason, since last two decades numerous studies were undertaken for introducing 'improved' ORS. The objective of these studies was to introduce a product that would be at least as safe and effective as standard ORS for preventing or treating dehydration from all types of Diarrhea but which, in addition, would reduce stool output or have other important clinical benefits. One successful approach was to reduce the osmolarity of ORS solution, so as to avoid possible adverse effects of hyper-tonicity on net fluid absorption. This was done by reducing the solution's glucose and salt (NaCl) concentrations (WHO, 2002).

2.4.2.1 Efficacy of Low Osmolarity ORS

Efficacy of ORS for treatment of children with Diarrhea was improved by reducing sodium concentration to 75 meq/l, its glucose concentration to 75 mmol/l, and its total osmolarity to 245 mOsm/l. Studies proved that use of low osmolarity ORS reduces IV supplement need to 33%, stool output to 20% and vomiting by 30% (WHO & UNICEF, 2002).

2.4.2.2 Effectiveness/Efficacy

For children with acute non-cholera Diarrhea, reduced osmolarity ORS solutions (215-245 mOsm/l) with 75 mEq/l or less of sodium and 75-90 mmol/l of glucose are safe. When compared with standard ORS solution, these solutions were associated with reduced stool output, reduced vomiting and, especially, reduced need for unscheduled IV therapy. With regard to reduced stool output and reduced vomiting, this benefit may be somewhat greater for solutions with <75 mEq/l sodium (210-260 mOsm/l) than for a solution with 75 mEq/l sodium (245 mOsm/l). However, in terms of reduced need for unscheduled IV therapy, the benefit was similar for solutions with 75 mEq/l sodium (245 mOsm/l) and for those with <75 mEq/l sodium (210-260 mOsm/l) (WHO & UNICEF, 2002). Monograph of low osmolarity ORS is published in fourth edition of the International Pharmacopoeia, this revised monograph provides, quality specifications for the reduced osmolarity formula ORS, recommended by WHO and UNICEF (WHO, n.d).

2.5 ZINC DISPERSIBLE TABLETS

Dispersible tablets are uncoated or film-coated tablets that can be dispersed in liquid it usually disintegrate within three minutes when put in water or a small amount of breast milk. Zinc plays a critical role in overall health and development of infants and young children but among children of under developed and developing countries its deficiencies are wide spread. During Diarrheal episodes Zinc further depletes therefore, replacing this important micronutrient is essential for child recovery.

WHO and UNICEF recommend a daily dosage of 20 mg of Zinc supplements for 10 days for children suffering with Diarrhea and 10 mg for infants under six months (Bhutta et al, 2000).

WHO and UNICEF in 2004, jointly recommended Zinc treatment for 10–14 days, in addition to low-osmolarity ORS, as an adjunct therapy that reduces the duration and severity of a Diarrhea episode and the likelihood of subsequent infections in the two to three months following treatment. This recommendation is based on scientific consensus and recognition that Zinc and low-osmolarity ORS together can reduce mortality due to Diarrhea (Black, 2003). Questions on Zinc usage were recently added to household surveys. UNICEF and its partners are working closely with manufacturers to increase Zinc availability. UNICEF is the largest buyer of Zinc tablets, accounting for over 80 per cent of international procurement. UNICEF's Zinc procurement began in 2006 and has increased substantially since. However, despite this progress, global Zinc supply is dismally low compared with global need. In Pakistan use of Zinc supplement with ORS for treatment of Diarrhea is very low as show in PDHS, 2013. Zinc Production Group indicates the prescribed amount of active ingredient in a single tablet or in a specified volume of an oral solution. Tablets may contain either 10 or 20 mg of Zinc and the concentration of Zinc in oral solutions may be 10mg/5mL. Decisions about the best strength to be used should depend on better adherence to treatment by patient, taking into consideration other issues as well, such as price, medicine delivery, and duration of treatment (10- or 14-day treatment). Preferably, in any given country, only one strength of tablets or oral solution should be available to avoid dosing errors. If 10-mg Zinc tablets are chosen, it will mean that older children will have to take two tablets each day; if 20-mg Zinc tablets are chosen, it will mean that for younger infants only half a tablet will be given each day and therefore tablets will have to be scored to facilitate this. With oral solutions, because it is difficult to accurately measure half a teaspoon of solution, it is recommended that oral solution of Zinc contain 10mg of elemental Zinc per 5 mL, that is to say per one teaspoon. It means that infants below 6 months of age will receive one teaspoon, while older children will need 2 teaspoons of oral solution per day.

2.5.1.1 ORS and Zinc Co-Packaging Promotion by USAID in Afghanistan

In a 15 million dollar project, USAID collaborated with UNICEF and the Government of Afghanistan to increase the low coverage of Zinc and ORS treatment in the country. The project focused on capacity building of health workers, midwives, nurses and doctors at primary healthcare levels and increasing community access through the community health workers (USAID, 2016).

At its completion the project had successfully procured and distributed one million Zinc and ORS co-packs, which were effectively distributed to one million under-5 Diarrhea patients. Over 250 healthcare workers and 3400 CHWs had also been trained. Additionally, flash cards and storybooks depicting management of Diarrhea with Zinc and ORS were developed, pretested, revised, and printed under the supervision of the MoPH health promotion department (USAID, 2016). Further measures included revision of training modules for management of Diarrhea with Zinc and ORS, development of Zinc and ORS co- branding communication strategy to align with the MoPH health promotion strategy and the development of implementation plans by each province. Four zonal consultative workshops were also held for the implementation of the Zinc and ORS project for over 120 provincial health officers from all the provinces. For distribution of ORS and Zinc co-pack and educational materials, UNICEF coordinated with the Afghan Social Marketing Organization (ASMO) (USAID, 2016).

2.5.1.2 Zinc Prescription and Administration in Mali

As part of the small-scale pilot phase of a multi-center study examining the operational impacts of Zinc introduction in multiple countries, Zinc was provided to children suffering from Diarrhea in the Bougouni district in Mali. The project trained health center staff and CHWs in Diarrhea case management with Zinc and ORS and counseled parents on child feeding and Diarrhea prevention and treatment. Patients were provided 14 count blister packs with attached pictorials and labels detailing use and dosage. Interviewers conducted

follow up interviews with all children prescribed the medicine and examined timing and management of the Zinc administered, purchasing patterns and problems in administering the tablets as well as any adverse side effects. To document reactions and patterns, semi qualitative interviews were conducted with 37 caretakers, 18 CHWs and 2 health facility nurses. Consent was taken in each participating village from the village elders (Winch et al, 2006).

Community response to the tablets proved to be very favorable; parents appreciated the clean and comprehensive packaging and most were very happy with the results, particularly the regaining of the child appetite and return to normality (Winch et al, 2006).

2.5.1.3. MoHP / USAID: The POUZN Project in Nepal for Zinc Scale-up through private sector

In 2005, answering the Ministry of Health and Population's call for financial and technical assistance to support integration of Zinc into the government's Diarrhea management program, USAID, in collaboration with UNICEF, provided commodities, training and technical assistance to help strengthen the skills of the public sector. Additionally, USAID also funded a project with similar aims, implemented by the Abt Associates in partnership with Population Services International.

This project, the Social Marketing for Diarrheal Disease Control Plus: Point-of-Use Water Disinfection and Zinc Treatment (POUZN) Project, aimed to introduce pediatric Zinc as the standard treatment for Diarrhea, through the private sector (Wang, Wenjuan & Vicki MacDonald, 2009). The project was implemented in 2 phases, the first beginning in December 2006 and running till September 2007, and the second spanning 6 months from April-September 2008. Phase I focused specifically on 3 districts in the Kathmandu valley. The project procured product for the public sector, trained staff from both the private and public sectors and also supported behavior change communications for both. The POUZN team also worked closely with the Child Health Division throughout to implement activities and also monitor them (Wang, Wenjuan & Vicki MacDonald, 2009).

Phase II worked on extending the private sector program to an additional 27 public sector IMNCI focus districts. MoHP took the lead in organizing trainings and ensuring product supply and POUZN worked on training the private sector (Wang, Wenjuan & Vicki MacDonald, 2009).

At the end of the project neither the public nor the private sectors had any Zinc products to offer to the market so Zinc tablets manufactured by the French company Nutriset were chosen for Zinc treatment programs. In 2007, 3 major manufacturers were given the task of producing the Zinc tablets that would eventually replace the imported item. By August 2008, it was found that the Zinc tablets were available in 75% of all target districts and a survey revealed that due to easy access, use of the tablets was steadily growing among patient. A mass media campaign also proved to be largely helpful when it came to raising awareness levels among the local community (Wang, Wenjuan & Vicki MacDonald, 2009). Over the 3 year period from 2005 to 2008 Zinc usage increased from 0.4% to 15.4% as a result of the efforts of the POUZN Project (Wang, Wenjuan & Vicki MacDonald, 2009).

2.6 AMOXICILLIN DISPERSIBLE TABLETS

WHO recommends a 250mg amoxicillin DT, to be taken twice daily for 3-5 days.

This recommendation is based on the findings of two trials (Haider 2011), which compared 3 days of amoxicillin with 5 days of amoxicillin (ISCAP 2004 and MASCOT 2004). These trials were conducted in children aged 2 to 59 months presenting with non-severe Pneumonia in India and Pakistan. Both trials used regimens of

three-times daily in both treatment arms. The move towards a twice regimen appears to be based on a single pharmacokinetic trial of 66 children (Fonseca 2003).

Dispersible amoxicillin offers significant benefits over suspensions in terms of cost, product stability and ease of transport. There is limited evidence to support a change in policy to recommend amoxicillin 25mg/kg twice daily for 3 to 5 days.

Benefits of short courses of amoxicillin

No trials directly comparing amoxicillin given for 5 days versus amoxicillin for 7 days were found. 3 days of amoxicillin may be as effective as 5 days at reducing treatment failure (2 trials, 4012 participants, RR 1.11, 95% CI 0.94 to 1.33, moderate quality evidence).

3 days of amoxicillin may not result in more relapses than 5 days (2 trials, 3577 participants, RR 1.05, 95% CI 0.68 to 1.60, moderate quality evidence).

Compliance over 3 days is probably better than compliance over 5 days (1 trial, 2188 participants, and mean adherence over 3 days 94% vs over 5 days 85%, moderate quality evidence).

Benefits of amoxicillin twice daily instead of three times daily

No trials directly comparing these two treatment regimens were found which gave efficacy data.

One pharmacokinetic study quoted by the WHO concluded that a twice daily regimen was a feasible alternative (Fonseca 2003).

2.7 PULSE OXIMETRY

Pulse Oximetry is a small device which stands as the standard for detection of hypoxemia in children, and in guiding whether children need oxygen support or not. Introduced in the 1980s, it is now widely used in modern healthcare systems acting as an essential, life-saving tool (Stop Pneumonia, 2016).

Unfortunately, Pulse Oximetry remains scarce in low-income settings, many of which have by far the highest incidence. At the relatively high initial cost, the technology has been slow to be adopted by poorer communities where the technology is sold for even higher prices to balance the low demand and difficulty of market creation. The fact that hospitals also have to compete for funds with other departments also proves to be a significant barrier and the often-low capital investment limits accessibility. The fragility and replacement of the probe is another determining factor. The delicate probes need to be replaced every year and sometimes, even before due to their easily damageable nature (Stop Pneumonia, 2016).

2.8 ARI TIMERS

Childhood Pneumonia is very difficult to diagnose. Apart from symptoms like high fever and chronic cough, WHO recommended another diagnostic sign which is rapid respiratory rate which can be calculated using an Acute

Respiratory Infection (ARI) Timer. Prompt care seeking and early, accurate diagnosis is pivotal in preventing the untimely death of children from Pneumonia. Supporting health workers in determining how long they need to count a child's breaths, UNICEF and WHO developed ARI Timer in 1990s. In last five years nearly half a million timers have been supplied by WHO and UNICEF in over 70 countries (UNICEF, 2017).

2.9 OXYGEN THERAPY

Oxygen supplementation is one of the oldest ways of providing assistance in treating Pneumonia in patients who cannot breathe adequately on their own. It should be started as early as the first appearance of cyanosis of the finger nails. (Guedel 1925). Hypoxemia (insufficient oxygen in the blood) is the major fatal complication of Pneumonia, increasing the risk for death many times. It is estimated that at least 13.3% of children with Pneumonia have hypoxemia, corresponding to 1.86 million cases of hypoxemic Pneumonia each year (WHO 2016).

The frequency of hypoxemia is about 5 and 8 times higher in children with ARI in emergency departments and in patient wards, respectively, than in cases cared for in out-patient clinics (Lozano 2001).

It is also associated with a two- to five-fold increase in the risk of death from Pneumonia (Duke, Mgone, Frank 2001). It is therefore important that hypoxemia is detected early and accurately and oxygen administration initiated immediately to those needing it. Although hypoxemia is defined by varying thresholds of oxygen saturation depending on altitude current general guidelines suggest oxygen administration to a child with a measured oxygen saturation < 90% (Lozano 1994). Where oxygen saturation is not available, current guidelines recommend that oxygen should be administered to all children with very severe Pneumonia and those with a respiratory rate ≥ 70 breaths per minute amongst those with severe Pneumonia (WHO 1991). Management of oxygen supplementation is divided into nasal cannula and mechanical ventilation.

Mechanical ventilation is life-supporting ventilation that requires the use of a ventilator, or respirator. Mechanical ventilation is of two types; non-invasive ventilation (NIV) and invasive ventilation. The former provides ventilatory support to a patient through a firmly fitted facial or nasal mask and the latter through a tube inserted into the windpipe through the mouth or the nose or a hole made in the windpipe through the front of the throat (Zhang, Fang, Dong, Wu, Deng 2012). For children, oxygen is often given using a tent that fits over the crib. Currently prescription for oxygen therapy is quite common for individuals with Pneumonia. However, in rural hospitals of developing countries, oxygen supplies are poor and detection of hypoxemia is difficult. When available, supplemental oxygen is one of the first prescriptions caregivers write into the treatment plan for a child with hypoxemia and Pneumonia (Duke et.al, 2008).





DESIGN & METHODOLOGY

This chapter describes the research design and methodology adopted for this landscape analysis in detail. From research purpose to data collection, to ethical considerations, this chapter attempts to capture every detail of the research process.

3.1 RESEARCH PURPOSE

The purpose of the research was to assess the treatment of Pneumonia and Diarrhea through:

- a) Availability of commodities (equipment and medicines).
- b) Prescribing behaviors and treatment approaches among public and private sector service provider's and vertical programs (LHW program).
- c) Availability of treatment medicines in public sector facilities and medical stores in the surrounding areas of private provider's facilities.
- d) Reporting indicators within DHIS and perspective of the clients exiting the healthcare facility.

3.2 RESEARCH DESIGN

This was a cross-sectional study that mainly utilized primary qualitative research techniques as well as desk research. Primary data was collected through key informant interviews, focus group discussions, policy dialogues, facility readiness assessment for Diarrhea and Pneumonia treatment, consultations and consensus building with relevant stakeholders in order to meet the research objectives. Secondary data was based on existing national and international child survival policies and strategies related to Pneumonia and Diarrhea. The research is also supplemented by a dissemination plan (see Annex 4) in order to reach out to the wider community.

3.3 MAIN RESEARCH QUESTIONS

This research design revolved around the following basic research questions which were further incorporated in interview and FGD guides.

- What are the gaps in existing policies relevant to child survival strategies with regard to GAPPD?
- Why is there a gap in translation of policies to ensure commodity access related to diarrhoea and Pneumonia?
- What are the gaps in availability of commodities (equipment and medicines) and treatment approaches?
- What is the existing availability and production status of updated formation of commodities for management of childhood Pneumonia and diarrhoea as per GAPPD?
- What are the driving (facilitators) and resisting (barriers) forces influencing policy translation and commodity access?
- What action can be proposed to support policy translation and commodity access?

3.4 RESEARCH TOOLKIT

To prepare comprehensive and well-informed qualitative tools for primary data collection, consultations were held with key stakeholders in order to appraise their expectations from the entire research process. These stakeholders included government officials from the health departments of the four provinces, UNICEF program team, WHO officials, officials from Policy Unit in Punjab, members of child survival groups in Punjab and Sindh. These sessions informed the scope of the research and facilitated in defining the research questions. They also provided opportunities for building consensus through participatory and consultative approach at both Federal and provincial level. Based on these consultations, tools (qualitative guides, protocols and questionnaires) were devised (see Annex 2), sensitized to local cultural settings and shared with UNICEF team for any possible feedback. Subsequently they were also pretested in relevant field setting and further revised. Pretesting facilitated in determining any possible problems faced in data collection including contextual interpretations and time management for administering tools. Tools were finally translated into Urdu which was the local language. Observation checklists, interviews (structured and semi-structured) and focus group discussions aimed at ascertaining the availability of Pneumonia and Diarrhea commodities, skills and competence of the providers, and capabilities of overall healthcare system. These tools ultimately guided the development of a joint accountability framework to ensure the access to commodities by both public and private sector service providers. Interviews, consultative sessions and FGD guides were translated into Urdu and pretested to ensure clarity and coherence. Subsequently guides were adjusted according to the feedback drawn from the pre-test exercise and provided to the field teams after finalisation.

For secondary research, existing child survival policies, strategies and guidelines related to Pneumonia and Diarrhea were reviewed at global, national and local levels to provide a background of the current scenario. This provided a foundation to draw comparisons and identify gaps in commodity access and policy translation in the public and private sectors.

3.5 GEOGRAPHIC FOCUS

The geographic scope of this study, as defined by UNICEF team, only included the provinces of Punjab and Sindh at district level. However in an attempt to paint a more holistic national picture, general overviews of current scenarios of policy and management surrounding Pneumonia and Diarrhea in Baluchistan and KP have been provided at provincial level. Thus the main focus was on Federal level as well as provinces of Punjab and Sindh. Qualitative assessment was conducted in national and provincial capitals; Quetta and Peshawar in Baluchistan and Khyber Pakhtunkhwa respectively. Tharparkar, Shikarpur, and Tando Muhammad Khan were the three priority districts Sindh while Pakpattan and Bahawalnagar were the chosen ones in Punjab. Initially one of the districts to be focused in Punjab was DG Khan, however NOC could not be obtained to conduct research there, hence it was replaced with Pakpattan.

3.6 SAMPLE COMPOSITION

The study sample comprised of professionals at policy and strategy development level (representatives from Federal ministry, provincial and district health departments; health sector reform units; IRMNCH/MNCH; donors and development partners); district managers (CEO District Health Authority in Punjab, District Health Officers (DHO) in Sindh, DHIS Coordinator); representatives of child survival group, officials from DRAP; leading pharmaceutical manufacturers of Zinc DT, Amoxicillin DT and Low Osmolarity ORS, health-service providers (GPs at both public and private facilities, outreach field staff i.e. community health workers, in-charges of health facilities and pharmacies); service-users (parents/guardians of children under treatment). Selection of health

facilities to interview facility in-charges was assisted by District Health Authority in Punjab and District Health Officers (DHO) in Sindh. GPs and Pharmacy in-charges were then selected in the same vicinity to minimize biases of the catchment area population. Similarly, LHWs were also selected from the same RHC. Parents/guardians exiting public as well as private health facilities in the same locality with children under 5 getting treatment for Diarrhea and Pneumonia were selected. As this study aimed to gain insights into prescribing behaviours of the 5 districts in Punjab and Sindh and was qualitative in nature, a purposive sampling technique was adopted. The sample size or the numbers of research participants was agreed upon with the UNICEF team. Purposive sampling methodology facilitated in making sampling choices that assisted in deepening understanding of the prescribing behaviours which was the focus of the research. A total of 5 focus group discussions (FGDs), with participants ranging from 8 to 10 in number, and 112 Key Informant Interviews (KIs) were conducted with aforementioned target groups. Description of respondents for sampling matrix along with research techniques used is provided in the Table 2:

Table 2: Qualitative Sampling Matrix

Research Technique	Respondent	No.
Key Informant Interviews	Federal Ministry, Associations and DRAP	4
	Representatives from Provincial Health Departments	10
	Development Partners and Donor Agencies	3
	Officials from Pharmaceutical Manufacturing Companies	10
	Managers at District Health Departments	10
	In-charges of Health Facilities	10
	General Practitioners	15
	In-charges of Pharmacies	15
	Parents/Guardian for Exit Interviews	35
	Community-based/Outreach Service Providers	5
Focus Group Discussions	Community-based/Outreach Service Providers	5
	Total Number of Sessions	117

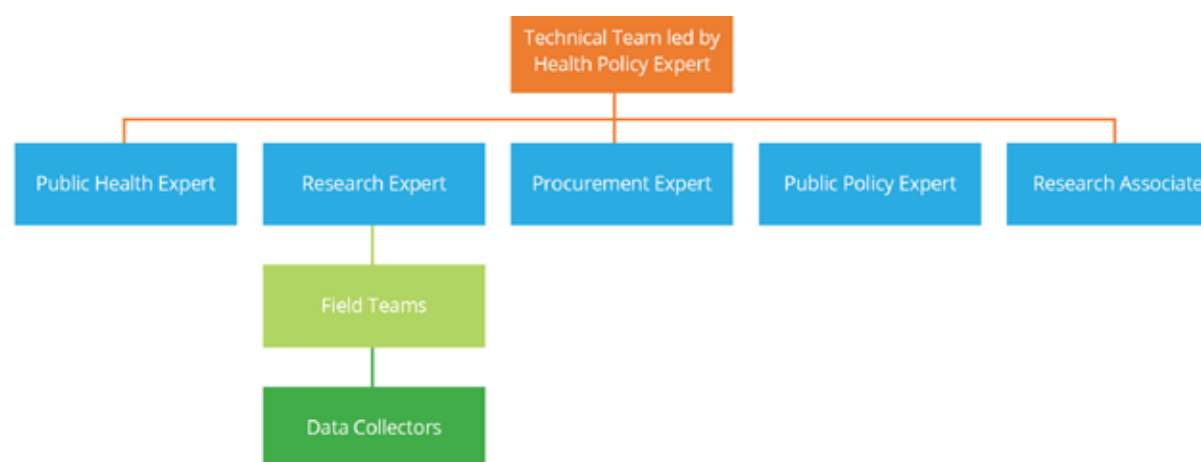
3.7 THE INCEPTION PHASE

Contech team worked in close collaboration with UNICEF from the inception to the completion of this landscape analysis report. Immediately after signing of contract, an inception meeting for the proposed study with UNICEF team was held. The main agenda of the meeting was to develop consensus on deliverables including study design, methodology, implementation strategies and work plan. After incorporating feedback received from UNICEF team, a comprehensive work plan entailing key activities along with a timeline was prepared. Moreover, an inception report was also submitted with details of each research process and stage along with a research methodology matrix. This was approved by UNICEF team and led to the initiation of the research work.

3.8 RESEARCH TEAM

A team having necessary skill mix was formed for conducting an effective and quality research. Figure 6 demonstrates research team with its hierarchy. This research was led by a health policy expert who delegated tasks to experts in the field of public health, research, procurement and public policy. Research expert supervised field teams who further supervised data collectors. Each field team composed of two data collectors, an interviewer and a note-taker for KIIs and for FGDs a moderator/facilitator and a note-taker formed the field team. Field teams were monitored by field supervisors. A research associate was also on-board for this research.

Figure 6: Organogram of the Research Team



3.9 PREPARING FOR FIELDWORK

Central level training workshops and orientation to train the data collection teams (interviewers and supervisors) in order to achieve uniform standards and quality control were conducted on 29th and 30th August 2017. Trainings were conducted in accordance with training agenda (see Annex 3), in a systematic manner and a conducive environment to promote better understanding and learning. Accommodation was arranged for the trainees and trainers at training sites. Training content constituted of goals and purpose of study, ethical considerations, interviewing techniques, techniques of filling out tools, field procedures, quality assurance, timely completion of data collection and detailed review of qualitative guides for interviews and focus group discussions. These sessions also included finalization of micro plans, availability of all printed materials, e.g. tools, training manual, maps, name-tags and note pads etc. Mock interviews between participants were also

conducted and field simulations with actual study respondents were held as well. Training manuals were also developed and provided to each member of the field team. These contained clear instructions and guidelines for interviewers to refer to in case of any confusion. Field teams were also trained to overcome any inherent biases during data collection. For example, it was expected that pharmacy in-charges would not have a very positive feedback on the GPs. Similarly LHWs were anticipated to have a high regard and high level of satisfaction with Lady Health Supervisors (LHSs). This was further proved by the collected data. Nonetheless field teams were already taught to filter such information.

Field team for conducting in-depth interviews comprised of 2 interviewers while for FGDs the team constituted of 3 members. Recruitment of interviewers for the fieldwork was done from relevant geographic locations to overcome cultural and language barriers. Each data collection team was designated a female or/and male interviewer depending on the target audience, along with a male regional supervisor to create a gender balance. The gender of the interviewee was matched with the gender of the primary interviewer in order to create a comfort level and address gender specific sensitivities.

3.10 DATA COLLECTION

Total duration of fieldwork was 30 days, including travel time. Interviews of officials at policy level were conducted by a research team of two from Contech's head office. Interviews of personnel involved in the treatment and management of Diarrhea and Pneumonia were conducted by the field teams who were provided prior training. Male regional supervisors observed the interviewers to ensure that the interviews were conducted properly, asking questions appropriately accompanied by taking notes. Informed consents were obtained before the beginning of each session. All transcripts (in local language) and audio recordings for the study were submitted to Contech's operations office in Lahore. They were then reviewed and translated into English language. After transcription, a team of experts transferred the transcripts into an analytical matrix formed in Microsoft Excel. This process was completed by 15th October 2017.

3.11 CONTENT ANALYSIS

Upon completion of data collection, the entire data set was transcribed and compiled. This included the audio recordings which were translated in English along with the field data generated from interviews and discussions which were not audio recorded. These findings were then analysed in the context of study objectives as stipulated in the research proposal. A comprehensive coding framework was developed and after coding, the narrative was sorted into the pre-identified themes. Data was read over and over again, making comparisons and connections until no further codes could be developed and the data was found to be saturated. Coding was guided by grounded theory and done using a complex, bottom-up, inductive approach to find patterns emerging across the data set. Coding was followed by thematic analysis, categorizing and classifying of overarching themes from the emergent data. Content analysis facilitated in identifying gaps for improving the management of Diarrhea and Pneumonia and for making the requisite policy changes from the developed themes and categories. This provided foundation for theory of change and also facilitated in conceptualizing a prospective for accountability framework.

3.12 QUALITY ASSURANCE

Quality assurance was maintained at all stages of the research, right from the inception of the research to the submission of the report. Conscious effort was made to ensure that the quality of data is not compromised at any stage of the research process. While the research was being designed, consultations were constantly held with

all stakeholders in order to meet their needs and to refine scope of the research. There was continuous liaison with UNICEF team to ensure requirements were matched. Prior to the departure of field teams, all logistics and support were checked to ensure that the teams faced no resource constraint during data collection. The field activity was constantly monitored through telephonic calls on daily basis. During monitoring visits, field teams were observed during interviewing process, and feedback was provided to them on their performance. Research teams even conducted random spot checks, questionnaire completion reviews and data verifications to check the efficiency of the data collection. During the report writing phase, feedback was also taken from team along with other stakeholders and their comments were taken into consideration. During the report writing phase, findings were shared with UNICEF PMER Unit, officials from MNCH program, Child survival group members paediatricians, healthcare commission, PPA, FPAP, WHO and other development partners through presentations and discussions. The aim of such sessions was to understand their point of view and incorporate their feedback while interpreting the field data. The report was internally peer reviewed by Contech Technical Review Committee comprising of senior experienced public health experts and was externally peer reviewed. It was also shared and reviewed by paediatricians, UNICEF team, other development partners and government officials. The feedback was incorporated after continuous rounds of consultative sessions.

3.13 ETHICAL CONSIDERATIONS

The study involved no clinical or preventive trial; hence there was no major ethical issue in this study. NOC was obtained from the Home Department before the fieldwork began in the districts. The field teams were already oriented on ethical issues during training sessions. A brief introduction of the research was provided to the respondents at the beginning of the session highlighting the benefits of their participation and any possible risks. Permission was formally sought from the respondents to participate in the research and informed consent forms were signed by them at the beginning of each interview session. Those who could not sign consent forms demonstrated their approval with a fingerprint, in the presence of the interviewer.

The content of the consent form was read out to the respondents and their apprehensions were clarified. It was also specified that their participation was voluntary and they could refuse to answer any particular questions or even withdraw entirely from the session at any time, without any notice or obligation. Each session was audio recorded where permitted by the respondents, otherwise fieldnotes were taken by the interviewer. Data was collected in a manner that was comfortable for each participant, in which he/she was able to speak openly and honestly. As promised, their anonymity was maintained throughout the study, and personal identifiers were removed from the data. None of the researchers had any conflict of interest. Keeping privacy and confidentiality of the respondents in consideration, all hard and soft copies of the collected data was kept securely and only authorized personnel of Contech had access to this database and its backup.

Addressing Gender and Child Rights Issues

This particular research entailed addressing gender, child rights and social exclusion barriers, hence the aforementioned notion was kept in consideration during varied phases including research/activity designing, consultations and stakeholder engagement, staff hiring and training, M&E and subsequent data analysis. During training of field teams, gender and child rights orientation was given as part of the study design. Study approaches and activities were reviewed for sensitivity in understanding the involved gender roles, norms and dynamics as well as child rights according to CRC. All phases of study were passed through sieve of gender, social exclusion, child rights and equity, ensuring the findings were cognisant of the factors.

Gender is one of the organizing principles of Pakistani society. Local traditions and culture embody values pre-

determining gender values in society. There is considerable diversity in the status of women as well as rights of the children across classes, regions, and rural/urban divide due to uneven socioeconomic development and the impact of tribal, feudal, and social formations on women and children's lives.

Traditional norms surrounding the behaviour of women, including gender inequality, limited socioeconomic standing, low literacy rates, early marriage during adolescence, and high fertility, limit women's ability to act in their own interest and compromise access to reproductive healthcare and family planning services.

Children and youth (0-24 years of age) who make up over 60% of the population, still remain underserved by the health system. The rights of these children and youth are sensitive to social and cultural considerations including gender, language and religion.

3.14 STUDY LIMITATIONS

Like any other research, this landscape analysis also faced certain limitations, which restricted the scope during the research process. Due to peak summers, observance of Ramadan and lag time during Eid holidays, data collection process was started with some delay. Another limitation was that only five districts in Punjab and Sindh were selected as part of this research design, which resulted in data that may not be generalized or representative of entire provinces. Moreover, seeking security approval was also a major challenge for data collection in districts of southern Punjab. However, it was mitigated through maintaining a continuous liaison with the Provincial Home Department. NOC to conduct research in Muzaffargarh could not be obtained due to security reasons; hence mitigation strategy adopted after mutual consultation with UNICEF team was to replace Muzaffargarh with Pakpattan. Some of the KIIs were rescheduled quite a few times in order to make the sessions more convenient for the respondents. This limitation was mitigated by maintaining a continuous rapport and liaison with relevant respondents.



RESULTS & FINDINGS

This chapter provides findings of the qualitative research as expressed by the policy makers, planners, managers, service providers in the in-depth interviews and FGDs. Findings start with description of the policy environment, followed by management practices for childhood Pneumonia and Diarrhea, concluded by perspective from users of child health services.

4.1 POLICY ENVIRONMENT

The goal of the project is to ensure that the relevant national policies are in place, understood and adhered to in order to ensure availability of the essential commodities for improving management of childhood Diarrhea and Pneumonia and increasing child survival by the end of 2019. The scope of the study was to identify the barriers and facilitators to the process of this policy change. In this regard, detailed consultations were held with the civil servants, vertical program managers, leading paediatricians, health policy experts, public health experts, MNCH specialists, and representatives from development partners and technical experts at the Federal and provincial level. Moreover, health officials and vertical program coordinators at the district level were consulted for an in depth analysis into the factors that might facilitate or hinder the management of Pneumonia and Diarrhea according to the global recommendations. The analysis of the findings is being presented in the thematic areas relevant to the policy change, translation and implementation.

4.1.1 Political Will & Commitment

It was reported that recently the focus on the health has increased at the political level. Specifically, Punjab has improved the health budget and the health department has been bifurcated into two departments for an efficient service delivery. However, the managers stressed the need of advocacy with the Federal and provincial governments for the commitment required to manage the Pneumonia and Diarrhea at the health system level. Quoting the example of efforts to control the Dengue fever in Punjab and Polio in Sindh, managers highlighted the need of a strong political commitment at the top level. However, it was noted that these special efforts have compromised the focus on efforts like EPI, as expressed by a Technical Expert in Sindh,

“All our efforts are funnelled towards the eradication of other diseases which has neglected treatment of diseases like Pneumonia and Diarrhea.”

Similar concerns were echoed by the health managers in Punjab as well. Another overwhelming suggestion that came from the managers and the technical experts was that the government should take the lead role in its implementation. Donor led programs have to be championed by the government in order to make it sustainable. Moreover, it was suggested that the Child Survival group should include a member from the health secretariat. An overwhelming finding was that those projects have more success rates where they are backed by bureaucracy.

Furthermore it was found out that the recent IT based communication platforms have increased the

communication between the stakeholders. These platforms have increased the connectivity of the provincial management with the district health offices. One manager stated, “Mostly we are receiving orders on Whatsapp and we are required to submit our response after the compliance of orders.” Furthermore, the support by UNICEF was found out to be a major pushing force required to bring the desired change.

4.1.2 Focus of Policy & Strategies

In spite of being aware that Diarrhea and Pneumonia are major killers of children, it was reported that no defined child health policy existed at any governance level. However, the Government of Sindh has taken the lead and drafted ‘New Born Survival Strategy’ keeping Sindh Health Sector Strategy as a base document. Some key interventions proposed in Draft ‘Child Health Strategy of Sindh’ are Sick new born care units; Under 5 care units; Helping baby breathing training; Infection prevention; Use of Chlorhexidine and Kangaroo Mother Care interventions.

Some of these activities such as Chlorhexidine and Kangaroo Mother Care have already been initiated through the support of developing partners. It was informed that the Sindh government has notified the establishment of Under 5 Clinics in 2012, but this idea couldn't be turned into reality until now. It was told that the health department has now started the process of establishing Under 5 care units in the DHQ hospitals only to be extended down to the hierarchies later on. System experts cited lack of focus on the child survival as a reason for drafting a separate strategy.

A provincial manager in the Sindh Health department stressed the need of a robust office of the Director General Health Services in these words:

“The post of Director MCH within DG office needs to be strengthened by provision of necessary staff and equipment to effectively oversee and control all maternal and child health related activities.”

On the other side, there was no child health strategy in the government of Punjab. Furthermore, it was revealed that both Punjab and Sindh have created District Action Plans and District Operational Plans addressing the child health services, which also included management of Pneumonia and Diarrhea.

It was found out that last year all the districts in Sindh have prepared their second medium term District Action Plans with the support from the USAID's Health Systems Strengthening Project. It was revealed by most of the managers interviewed in Sindh, that as a part of the planning process, they placed Pneumonia and Diarrhea among the top priorities of the district. Subsequently, the districts planned activities and interventions for these commodities. Mostly, these activities comprised of outreach activities and trainings for the healthcare providers. However, at the same time, these managers expressed their helplessness because Pneumonia and Diarrhea being silent killers were not creating the political will and commitment required to tackle these diseases at a massive level. This came out as an overarching theme. It was suggested that the national health vision and policy and provincial strategies must put an emphatic focus on child health, with special reference to Pneumonia and Diarrhea. Managers strongly suggested the introduction of the interventions related to Pneumonia and Diarrhea in the strategic and operational plans of the Federal and Provincial governments.

4.1.3 Child Survival Group

The Child Survival Group in Punjab has conducted six quarterly meetings so far. The Child Survival group created its own core group that meets fortnightly to check the progress of implementation, which is later shared with other CSG members. Similarly, Child Survival group in Sindh has conducted five meetings so far and has made some progress on the matters related to Pneumonia and Diarrhea. It was suggested that the recommendations

of CSG be made binding upon the government instead of the traditional role of advisory given to such groups. Moreover a provincial manager stressed the importance of assessing the meetings of CSG on scoring criteria for efficiency and accountability.

4.1.4 Environment for Updating Commodities

Availability of medicine is a very critical factor that determines the outcomes in the different facets of health service delivery. The quality enforcement of the drugs in the market was described by one manager as:

"We are getting daily alerts about spurious and sub-standard drugs; even some are manufactured by registered firms."

Representative of a District Health Authority in Punjab described the additional demand of medicine in these words: ***"The district can spend up to 5 lac rupees per year on the purchase of medicines to meet sudden increase in demand of medicines arising out of any disease out-break. However, .. this amount is reserved to cover days and relocate medicines from one health facility to another to meet emergency needs."***

Furthermore, managers strongly urged the need of generating local evidence for greater acceptance of commodities. In this context, examples came out of the PAIMAN project and introduction of Chlorhexidine in Pakistan. Moreover, an overwhelming number of managers urged the need of cogent arguments for the use of updated commodities. Specially, the replacement of suspension with the dispersible tablets needed to be supported with robust arguments. The role of pharmaceutical pressure was specially mentioned. It was pointed out that once the local pharmaceutical manufacturers start producing the dispersible tablets, it would create a positive pressure on the public and private sector.

There was no evidence based drug quantification and forecasting system found in Punjab. However, Sindh has recently developed and implemented an evidence-based system that generates the demand on need. This system has the ability to quantify the demand of the individual medicines at each and every facility. This system has the ability to estimate the cost of the medicine either on the basis of the caseload or on the prevalence basis as well. However, it was not clear whether the districts were procuring the medicines according to these cost estimation tools. Some managers urged the need of a decentralized procurement to meet the needs of medicine at the district level.

Furthermore, it was shared that the USAID is running a program called USP-PQM (Promoting the quality of medicines). This program provides technical assistance to strengthen medicines regulatory capacity and quality assurance systems in developing countries. PQM also supports the manufacture of quality-assured priority medicines for malaria; HIV/AIDS; tuberculosis; neglected tropical diseases; and maternal, newborn, and child health (MNCH). PQM's third result area is the utilization of information on medical products for decision-making. A notable pharmaceutical expert suggested a consultation with the PQM.

4.1.4.1 Updating Essential Medicine List

Essential medicine lists are made to ensure the availability of critical and important medicines in the public health facilities. Managers from Sindh told that the updated commodities have already been made part of the revised EML. However, the managers of Punjab stated that these commodities are not part of the provincial EML. This is because stakeholders need to be convinced about the effectiveness of the updated commodities especially, the benefits of the dispersible tablets. A provincial manager in the Punjab government noted: ***"We will have to test the acceptability of these tablets in the community."***

A senior official in the Punjab government clearly stated that updation of new commodities in EML would not be difficult if concerned program (IRMNCH) recommends inclusion. Further, co-packaging of Zinc with ORS has already been successfully tested in the District Gujrat of Punjab, along with training of community service providers on the use of this commodity.

4.1.4.2 Transition of Commodities

Provincial managers in Sindh revealed that UNICEF has ensured provision of supply of commodities for up to 2 years (till 2019) and has probably already arranged the required stock from its own resource. Furthermore, they stressed the need of continuous supply from regular budgeting procedures of DoH. The managers were not aware of any market availability of these commodities. It was informed that MCHIP has made some significant progress including training and provision of ARI timers, pulse oximeters relevant to Pneumonia and Diarrhea in Sindh.

4.1.5 Policy for Health Information Systems

Managers pointed out that Pneumonia is not listed as a separate disease in DHIS. Similarly, it was told that Diarrhea is listed with dysentery. Managers supported the idea of including Pneumonia and Diarrhea separately in health information systems of public health facilities after a broad consultation with all stakeholders. Few managers questioned the practicality of the inclusion of Pneumonia and Diarrhea in DHIS at the BHU level.

4.1.5.1 Upgrading the Information Systems

Considering the significant role of MIS system in combating mortality and morbidity due to Pneumonia and Diarrhea, KII's were conducted with DHIS focal person of Sindh and Punjab. It was informed that in Punjab, a new PC-1 is being developed for up-grading DHIS and is expected to be finalized soon. DHIS-II will have mechanism to collect and disseminate data of disease prevalence on daily basis and generate alert for any suspected disease out-break/epidemic to ensure timely response. Also it will have provision for data sharing at district, provincial, Federal level and inter-provincial level. Moreover, it will integrate MIS systems of all vertical programs as currently it is only integrated with IRMNCH. Furthermore, it was shared that it has been approved to update the DHIS and MIS of LHWs to reflect the new commodities. This change will report the stock outs of Amoxicillin DT and Zinc DT in the DHIS. The recording and reporting tools of the LHWs will have columns and rows to document Amoxicillin DT, Zinc DT and ARI timers, on which they will be trained.

Provincial managers informed that the Sindh is also in the process of upgrading and revising DHIS tools and procedure manual. It was revealed that the final draft has been prepared after consultations with the stakeholders and it was informed that the revised tools and manuals will go into printing. It was reported that new draft of DHIS, includes indicators about availability of Zinc DT, Amoxicillin DT and Low osmolarity ORS in the stock available at the facility. It also has a provision of entering OPD data for Diarrhea and dysentery separately for under 5 children (previously there was provision for entry of combined data only). Moreover, an age slot has been added to differentiate data of neonatal deaths from infant and U5 deaths. Managers told that the drafts of DHIS tools and procedures manual of Sindh, shall only be finalized after incorporating feedback of trainees participating in ToTs. They expressed their hope that the material shall be printed by the end of this year, with support of UNICEF. It was informed that all the GAPPD recommendations have been included in the updated DHIS. Furthermore, it was told that master trainers will be trained which will train medics and paramedics on the use of these tools. It was hoped that these trainings will help a lot to change the prescribing behavior of the healthcare providers in the public sector.

4.1.5.2 Flow of Information

The managers shared the flow of data where they said that the DHIS data is compiled at the district level to be transmitted to the provincial headquarters. On the other hand, the vertical programs have their own streams of data, which are compiled at the district level and then the data takes the form of Provincial MIS. This information is later shared with the main stakeholders.

4.1.5.3 Validity and Reliability of Data

Managers almost at every level of the system stressed the need of a reliable information system for effective decision-making. A leading paediatrician noted:

“We don’t have reliable statistics on Pneumonia and Diarrhea and so it becomes very difficult to respond to these diseases at systems level.”

Provincial experts expressed serious reservations regarding the validity and reliability of data in DHIS and MIS of LHWs. According to the managers in Sindh, LQAS is not routinely done which results in the decline of data quality. However, the managers in Punjab revealed that the GoPunjab is preparing a ‘Data Validation Manual’ for improving the quality of data.

4.1.5.4 Analysis and Data Utilization

According to the managers in both the provinces, data has rarely been used as evidence in policymaking and service delivery. One senior district health official from Punjab expressed the need of regular feedback on DHIS data. The main reason behind the problem turned out to be the lack of dedicated staff for data analysis including epidemiologists at the district and provincial level.

4.1.6 IMNCI Guidelines and Training

Lack of adequate human resources was found out to be a main barrier in the effective management of Pneumonia and Diarrhea. A provincial manager from Punjab stated,

“To provide optimum services, a 100% increase is required in the existing pool of sanctioned posts for nearly all cadres to meet international standard of patient doctor and nurse patient ratio.”

Health managers from Sindh told that recently a shortened version (6 days) of IMNCI trainings has started. The trainings in Sindh highlighted the importance of the usage of Zinc DT, Amoxicillin DT and low osmolarity ORS in the management of Pneumonia and Diarrhea. Furthermore, WHO has abridged and updated the in-service IMNCI training manual and soon the pre-service and community components will be updated as well. Also, 3-days trainings of community workers on the use of Zinc DT, Amoxicillin DT, Low Osmolarity ORS and ARI Timer will soon be initiated under accelerated action plan (AAP).

It was found out that UNICEF has already pledged to support these. Furthermore, it was found out that in Sindh province, PPA is playing a very proactive role in engaging the private sector and raising awareness about the topics relevant to child health through media campaigns, seminars and health education sessions. Furthermore, it was shared that the PPA is building capacity of its members on the topics like management of Pneumonia and Diarrhea in children.

Managers from Punjab noted that there has been no training conducted on IMNCI for last two years. However, it was shared that IRMNCH program has started trainings for emergency management of Pneumonia and

Diarrhea at 24/7 BHUs. In this regard, a training manual had been prepared for healthcare providers. However, the importance of the continuous refresher trainings was highlighted by the managers in both provinces. A leading paediatrician stressed the need of pre-service trainings for effective management of Pneumonia and Diarrhea. Furthermore, it was stressed by the experts at all levels that there is a strong need for emphasis in medical school training as well.

4.1.7 Policy Environment related to LHWs

Managers from both the provinces agreed on the role and scope of services of community workers. Their role was defined to be early diagnosis, initial management and referral of the cases. Managers stressed the need of hiring more LHWs for the coverage of uncovered areas. One prominent paediatrician noted:

“Role of community health workers is very critical in early detection, management and referral of cases. Similarly, if complicated cases were referred by BHU to the higher level in timely manner, then it would be of huge significance.”

Due to their door-to-door services, LHWs have a very critical role in reducing the rate of mortality and morbidity caused due to childhood diseases. As per mandate of the program, the respondents were confident that LHWs can act as a catalyst in reducing mortality and morbidity through addressing all three components of GAPPD i.e. treat, prevent and promote. As said by a District Manager of program,

“LHWs are playing multiple roles at one time which comprises prevention, first aid treatment and follow up. They give awareness to the mothers of children about hand wash, sanitation etc. LHWs role is also very critical in vaccination.”

It was reported that LHWs have been using Amoxicillin, Paracetamole, Zinc Sulphate and ORS as a first aid management for Pneumonia and Diarrhea.

4.1.7.1 LHW Coverage

Almost all of the managers unanimously voiced the need of reducing households covered by LHWs to 1000 households from current level of 1200-1500 household per LHW. According to them, this number of households was putting strain on performance of LHWs and was affecting their efficiency in delivering the services. Managers noted that human resource is available for recruitment and selection but the financial constraints limit their ability to hire more LHWs for the required coverage.

4.1.7.2 LHW Program after 18th Amendment

Most of the managers expressed their satisfaction on pace of the LHW program after devolution. Initially, after the eighteenth amendment, the program faced some serious issues in budgeting, salaries, recruitment, selection and other related matters. However most of these problems have been overcome and now program is running smoothly. The health managers expressed satisfaction on performance of the program at the district level. They were of the view that due to devolution of powers, pace of implementation has increased and the districts have more autonomy in program implementation. However, the managers uniformly voiced the concern of certain political influence on the program.

4.1.7.3 Guidelines for the LHW program

According to the health managers in Punjab and Sindh, LHWs are provided guidelines by the National Program.

These comprehensive guidelines are about prevention, treatment and follow up mechanism. These guidelines are pictorial and are in the form of cards like “Sehat Ki Dastak”.

4.1.7.4 LHW's Coordination and Communication

It was highlighted by managers in both the provinces that it is highly important that the program develops effective coordination mechanism with other stakeholders working in districts like PPHI, IHS, HANDS, Indus, and Merlin, etc.

4.1.7.5 Monitoring of LHWs

It was found out that the LHWs are being monitored at two levels. The district health administration performs regular monitoring and supervisory visits. Secondly, LHS is also supposed to visit 20-25 LHWs on monthly basis and check the stock outs, its' excess or misuse of medicine. Special visits are also arranged in case of any emergency or extraordinary situation. It was suggested that for better monitoring and supervision of LHWs, DCs should be given powers of accountability but not necessarily the right of termination of LHWs. Vertical programs especially the LHW program is facing serious obstacles in monitoring due to financial constraints. Barriers like lack of funds for repair and maintenance and POL came out as factors severely affecting the ability of programs to conduct monitoring.

4.1.8 Monitoring and Learning

Technical experts and health managers uniformly stressed the need of a robust monitoring system for effective implementation for any intervention. It was found that the facility and community based staff is supervised by district health managers. Districts have autonomy to plan their own supervisory and monitoring visits, which are notified to primary level facilities. Similarly, DHQ hospitals are monitored on weekly basis; whereas THQ Hospitals, RHCs and BHUs are visited randomly. Managers stressed the need of an integrated monitoring system that involves the vertical programs as well.

It was found that the Sindh with the support of USAID has built a system for monitoring. The District Health Planning and Management teams have been established for planning and monitoring at the district level. It was found that the districts planned monitoring and supervisory visits at the district level. A monitoring and evaluation cell in the office of DGHS gathers all the data. A dedicated focal person is responsible for monitoring of vertical programs and prioritized health challenges.

Punjab has made significant progress in the accountability of health related interventions. It was found that each district of Punjab has a District monitoring officer. This official has a dedicated team of MEAs (Monitoring and Evaluation Assistants). These MEAs report specified indicators on android platforms developed by Punjab Information Technology board. These indicators are then compiled in PITB, later to be shared with the Policy and Strategic Planning Unit (PSPU) and the Chief Minister of Punjab's Special Monitoring Unit (CM-SMU). PSPU was found to have played major role in monitoring related processes of government. More importantly, it was found to be responsible for ensuring commodities availability through monitoring in public health sector facilities. CM-SMU is tasked with accountability related to prioritized areas of intervention including health, education, law and order, livestock, clean drinking water and municipal waste management. The district health managers are made accountable on periodic basis on these prioritized areas before the Chief Minister. This monitoring system has arguably created a huge sense of accountability within the province. Moreover, it was an overwhelming suggestion by the technical experts and health managers that there should be a mechanism in place that continually conducts research on the different facets of Pneumonia and Diarrhea. They stressed that it is important to dig deep into the epidemiology of Pneumonia and Diarrhea to create local evidence for action both at clinical and the management level.

4.1.9 Baluchistan: Perspective of the Province

Interviews and discussions with personnel from the health department in Quetta revealed that their healthcare system is relatively less developed than those in other provinces. According to the respondents, political commitment and willingness towards refining the health system exists, however, the capacity and ability to implement improvements is limited. Public sector coverage is less than 50% in the province, while FPAP and PPA play an active role in providing support for the private sector. Political instability has been a major impediment in getting external support in the province. Thus, there is also a lack of donor and development partners activities in the province. There isn't any robust monitoring mechanism for health related interventions and hence no platform to oversee the healthcare activities. Nonetheless, it is believed that sufficient focus on child survival and child survival strategy does exist. Pneumonia and Diarrhea are one of the most prevalent diseases among children in the province and it is assumed that there is enough emphasis on these diseases. In the past, there has been a considerable focus on these diseases, which however dwindled as the directorate of communicable disease control (CDC) gradually became defunct. Trainings for healthcare providers related to child survival are also provided on continuous basis along with trainings on IMNCI guidelines. However, treatment of Pneumonia and Diarrhea is not an integral part of medical school trainings. Conversely, DHIS does contain Pneumonia and Diarrhea, while Diarrhea and dysentery are not differentiated. Unfortunately DHIS is not used in decision-making process nor is the data analyzed at district level. Data analysis is carried at a more macro level which is the provincial level, although there is no mechanism to quantify demand at this level.

Essential Medicine List (EML) has been updated in 2017 in the province. DRAP is responsible for the updating and maintenance of EML, while Baluchistan PPRA MSD is responsible for updating the public procurement list. Supply chain management of medicines is not very efficient. Districts cannot procure medicines based on their needs nor is supply sufficient to meet the demand. Stock-out of commodities at health facilities is one of the major concerns. Similarly, Zinc or amoxicillin stock-out is not reported in the DHIS. Zinc sulphate is not being purchased regularly in the public procurement. Likewise, neither Zinc nor low osmolarity ORS is being regularly prescribed for the treatment of Diarrhea. Nutrition program and USAID's DELIVER project is providing support in improving government's supply chain mechanism yet the healthcare system is up against a lot of challenges.

The healthcare professionals gave numerous suggestions and recommendations for improving and strengthening the healthcare system. Child Survival Group in Baluchistan needs to be established on similar format as the other provinces. Procurement expertise should be introduced in the healthcare department. They also suggested that vertical programs should be aligned with programs like LHW and MNCH Program, while policy and strategic framework needs to be updated for health programs. They also demonstrated keenness in assisting a detailed landscape analysis in the province and also in developing new and improving existing strategies in combating Pneumonia and Diarrhea along with their implementation. They were willing to collaborate with development partners like UNICEF to implement strategies to enhance child survival in the province.

4.1.10 KP: Perspective of the Province

Interviews and discussions with personnel from the health department in KP revealed that the province has a single point agenda to achieve Universal Health Coverage. Department of Health is committed to cover 69 Million populations through Sehat Insaaf Program, a social health insurance model. Just like in Baluchistan, healthcare officials in KP showed eagerness in supporting a landscape analysis in the province and also in developing and implementing child survival strategies. They were also looking forward to collaborate with development partners in order to combat Pneumonia and Diarrhea in the province. Their project-based work is integrated through support from DFID including for health programs like MNCH, LHW, Nutrition and EPI. Disbursement of

funds from the district is quite a challenge. Funds are transferred to the districts through PFC and each district then releases only 11% of total budget to cater for health operational expenditures. EML has been updated in 2017. Department of Health has notified 'very essential list of medicines for MNCH' to include LO ORS, Zinc DT and preferably Amoxil DT. In case if they are not included in MCC list, the districts are instructed to procure them through local purchase following KPPRA rules. On the contrary, MHSDP includes these commodities, but not in DT form. According to DLIs, LHWs should have Zinc and Amoxicillin for the management of Diarrhea and Pneumonia. Low Osmolarity ORS is also being procured and provided with health facilities.

Summary of Findings from Policy Environment Analysis

- Advocacy needs to be done at the highest level because child deaths due to Pneumonia and Diarrhea don't create the necessary political push
- Government of Sindh has drafted first Child Health Strategy which focuses on necessary interventions at the strategic level
- Provincial Health Sector Strategy of Punjab lacks an emphatic focus on Child survival
- No Child Survival Group was found at the Federal Level
- Recommendations of the CSG need to be made incumbent upon the government.
- LHWs have a very important role in reducing mortality and morbidity due to Pneumonia and Diarrhea
- Sindh has evidence based medicine cost estimation while Punjab has no such procedure
- Sindh has already included the Amoxicillin and Zinc in the EML with the word "preferred"
- Essential Medicine Lists at the Federal and Punjab level contain Amoxicillin and Zinc in the "Solid Oral Dosage Form"
- USAID USP-PQM is already working to promote the quality of medicines in Pakistan
- Validity and reliability of data gathered from district and received at the highest point is questionable, data is not analyzed at the district level
- Sindh and Punjab have already started the process of updating the DHIS and LHW MIS
- CM-SMU serves as a great opportunity for monitoring of key areas of health in Punjab.
- Need for a dedicated focal person for Pneumonia and Diarrhea in the office of DGHS Sindh for monitoring purposes

4.2 MANAGEMENT OF PNEUMONIA & DIARRHEA

This section is based on qualitative data analysis of responses from various stakeholders who are involved in management of Pneumonia and Diarrhea. It aims to explore the prescribing behaviors, capacity of service providers, availability of medicines and relevant medical equipment, healthcare seeking preferences and general areas of concern for each of the stakeholders. Responses of stakeholders were synthesized into coherent themes and sub-themes and ultimately organized into formal research findings. General practitioners (GPs) and pharmacy in-charges were interviewed in private sector. From public sector, at facility level, facility in-charges were interviewed and focus group discussions were conducted with lady health workers (LHWs) while at community level, parents /caregivers of sick children were interviewed. The sample focused on five districts from both Punjab and Sindh; two from Punjab (Pakpattan and Bahawalnagar) and three from Sindh (Tharparker, Shikarpur and Tando Muhammad Khan).

4.2.1 Perceptions of Facility In-charges

Diarrhea and Pneumonia were reported as the most common diseases by all the facility in-charges who were interviewed. Pneumonia cases were significantly fewer as it is a seasonal disease and the survey was conducted during the warm season. Many responses highlighted other health concerns that seemed to be widespread in their catchment areas, which included skin allergies, malaria, respiratory tract infections and dysentery. A facility in-charge in Punjab explained that ***“...almost 50% children suffering from upper respiratory tract infections, 15% suffering from skin allergies and 20% are suffering from Diarrhea, (they) are brought to this facility. The cases of Pneumonia are very rare these days.”***

Most patients came from poor households; many did not have access to basic facilities, with lack of cleanliness being the biggest concern. Poor standard of living, low literacy rates and impure/contaminated water were held responsible by the facility in-charges as major hazards of such living conditions. A parent from Punjab complained, ***“There is unavailability of pure/clean water for drinking and community uses same contaminated water for cooking meals, washing utensils and hands, causing disease.”***

Facility in-charges were aware of this reality, and many even held it responsible as the primary component of the community's susceptibility to diseases. A facility in-charge from Sindh asserted, ***“The (low) literacy rate is also one of the main factors behind spread of such diseases. The community in the catchment area is not aware about the practice of hygiene and how infections are spread.”***

A facility in-charge from Punjab expressed the need for health awareness at community level, ***“... People are very poor and cannot afford good living standards...Health information sessions should be arranged to give awareness to community about nutrition and hygienic conditions.”***

4.2.1.1 Common Forms of Treatment

With reference to accessing treatment, facility in-charges most frequently mentioned self-treatment, quack doctors and allopathic treatment. Hospitals were often stated as the last resort with many patients only visiting after being dissatisfied with other alternatives.

Self-treatment – Mostly facility in-charges believed self-treatment to be a popular form of treatment, often being the first step taken by the patient for combatting disease. This could largely be attributed to the fact that many people lived far away from proper health facilities with transport being a big concern. A facility in-charge from Sindh reflected, ***“..Mostly people try to get cured through self-medication. If they fail, then they head towards health facilities.”***

However, a facility in-charge from Sindh had a different perspective on self-treatment and assumed it could lead to adverse health effects, further aggravating the condition of the patients. According to him, ***“Severe Diarrhea and Pneumonia is caused by the self-medication. About 30% people took tablets from market and assumed them to be appropriate for cure.”***

Quack Doctors – Quack doctors also seemed to be largely preferred by the communities. A facility in-charge from Punjab specified that “People first consult quacks for such purposes and if there is no relief then only they visit RHCs.”

Allopathic Treatment – There were also some respondents who deemed allopathic treatment as the most preferred form of treatment in their area. Facility in-charge from both Punjab and Sindh did agree allopathic treatment as preferred treatment of such diseases.

4.2.2 Trainings

Almost all factors related to trainings were affected by lack of funding. This section outlines the themes that emerged regarding the training of facility in-charges:

4.2.2.1 Lack of Funding

General resentment prevailed regarding the amount of funds allocated for conducting trainings. Lack of trainings was associated with shortage of funds. A facility in-charge from Sindh expressed his frustration,

“My staff and I have not received any call for any training in the last two years...”

4.2.2.2 Training Needs

All facility in-charges unanimously agreed that there is a substantial need for trainings and they would definitely benefit the facility and its workers, which would in turn prove beneficial for entire community. Facility in-charges believed that there was not only a need for training staff in treating these diseases but also for inventory management including forecasting and quantification of medicines. A facility in-charge expressed that,

“It is unfortunate that the health facility staff, especially the paramedics, did not receive any training for treating Diarrhea and Pneumonia in the last many years.”

At the same time, most facility in-charges claimed their health facilities were fully equipped to deal with all childhood diseases, reporting competent and skilled staff. An in-charge of a facility in Sindh reflected,

“This health facility is well known & upgraded as RHC. The staff, especially the paramedics is competent in their work. Their skills to manage the childhood diseases are up to mark. Such in-service trainings can enhance the competence level in terms of diagnosis of diseases, its categorization and treatment.”

Nonetheless, a few reported that such trainings did take place. A facility in-charge from Punjab added,

“LHWs associated with our facility got training on prevention of Diarrhea and hepatitis B, which will be followed by training of us doctors on hepatitis B, but not on Diarrhea.”

4.2.2.3 Quality of Trainings

Many respondents complained about trainings being unsatisfactory, mismanaged and often conducted by unqualified trainers. Substandard quality of trainings was also associated with lack of funding and priority. A facility in-charge from Punjab shared,

“Normally DM or EDO gives such trainings. For training on Pneumonia, child specialists should be invited as trainer.”

4.2.2.4 Venue & Transportation Costs

Venue of the trainings and transportation to the venue was a cause of concern for most medical staff. They faced difficulty in receiving reimbursement for their allocated traveling and daily allowances (TA/DA) as mentioned by some of the facility in-charges. Lack of funding was considered the main reason for such inadequacy. A facility in-charge from Sindh mentioned the convenience of having the training in their health facility,

“... if they arrange the training in our health facility, it will be very beneficial because the staff would be present there.”

Another one from Sindh added, ***“If the management arranges the training at far off venues, it will be very difficult for health staff... because the relevant department does not pay TA/DA...”***

4.2.2.5 Initiative/Responsibility: Government versus 3rd Parties

Facility in-charges seemed to be cognizant that pharmaceutical companies, donors and INGOs were more active in taking initiatives for the trainings than the government itself. Most facility in-charges reported that third party groups, particularly pharmaceuticals and NGOs, were organizing the training sessions. A facility in-charge from Sindh stated, ***“... We received our last training... arranged by the NGO working for nutrition on IYCF and Breast Feeding.”***

4.2.2.6 Refresher Trainings

According to multiple responses, refresher courses are not arranged often, and in many cases, almost never; mainly due to lack of funds and a distinct lack of interest on the government's part. Facility in-charge from Punjab reiterated this view,

“There is no trend of refresher of such trainings...”

Another facility in-charge from Punjab declared,

“The main reasons for the lack of funding for such activities include no or poor planning and the fact that refresher trainings for human resources of relevant departments are not government's priority.”

A facility in-charge from Sindh shared about the long time lapse since his last training,

“I got my last training about ARI problems 4-5 years ago, but still no refresher training has been conducted due to lack of funding.”

4.2.2.7 Protocols and Guidelines

There seemed to be mixed responses about availability of protocols. Some facilities in-charges claimed that their facilities were fully equipped with charts and guidelines while others seemed to lack them entirely. There wasn't any particular trend among provinces, or even districts; it seemed to vary on a facility-to-facility basis. Whether their facilities had access to protocols or not, all respondents conceded that protocols and guidelines were both useful and necessary to provide the best possible treatment to the patients. This was discussed by a facility in-charge from Sindh,

“Such guidelines inform the diagnosis and treatment process, how to evaluate the severity and what procedure to follow for the treatment of such diseases etc.”

A facility in-charge from Punjab explained about the availability and usefulness of such tools,

“Yes we have complete guidelines and protocols (like IMNCI guideline) ... These guidelines taught us how to diagnose, what are the sign and symptoms, how to treat and how and when to refer to a higher health facility. These guidelines/ protocols are up to mark and completely practical.”

On the contrary, there were also facilities that did not have access to such standard guidelines. A facility in-charge from Sindh described, ***“Guidelines or protocols about Pneumonia and Diarrhea are not available here... There is nothing about Diarrhea and Pneumonia in the shape of booklets or instructions (SOPs).”***

4.2.3 Facility Management of Diarrhea and Pneumonia

Access to equipment varied depending on which facility the respondent represented. Some facilities claimed they were well equipped to treat Pneumonia patients, and respondents even said they had the support of their designated higher-ups, stating that shortcomings were met with encouraging responses. A facility in-charge from Punjab supported this notion,

“We don’t have any shortage of equipment or medicines at our facility. If there is any such lacking, we demand supply of such material from the relevant department and receive a positive response.”

However, there were also respondents that reported negligence and disinterest on the part of higher authorities when it came to lack of equipment. This in turn led to the facilities being ill equipped and hence incompetent in dealing with Pneumonia and Diarrhea cases. A facility in-charge from Sindh complained,

“In our health facility, there are no oxygen cylinders...”

An in-charge from Punjab added, ***“Chest x-ray is essential for the diagnosis of Pneumonia. This facility is not available in our premises.”***

Ambulance services seemed to be dismal and lacking according to most of the responses. Many facilities didn’t have access to ambulances at all and the ones that did, faced problems with funding for usage and maintenance. A facility in-charge from Punjab highlighted poor management of ambulance service, ***“... for severe cases, we call 1122 for ambulance. We have issues of administration and management of ambulance as it now under 1122.”***

A facility in-charge from Sindh revealed, ***“We have an ambulance but, due to the shortage of fuel, it is on stand.”***

Almost all responses indicated that severe cases were referred to higher facilities due to lack of required expertise and inadequate equipment to deal with severe cases.

4.2.4 New Form of Medication

Low osmolarity ORS seemed to be present in most health facilities with the in-charges having sound knowledge of how to administer it during the patient’s treatment. A facility in-charge from Sindh verified, ***“Low osmolarity ORS is better than regular ORS. Low osmolarity ORS has good quantity of sodium, potassium etc...”*** However, there were also such health facilities that did not have low osmolarity ORS, supposedly due to the high cost. A facility in-charge from Punjab emphasized its benefits and higher costs, ***“Low osmolarity ORS is more beneficial than regular ORS because absorption is better in low osmolarity and it is more isotonic as compared to regular ORS. However, Low osmolarity ORS is not provided at our facility... The reason can be its higher price than regular ORS.”***

When facility in-charges discussed DTs and Zinc DT in particular, their availability, acceptability and practicality of usage emerged as major themes. These three factors were linked with each other as well as with the awareness about DTs as a form of medicine. Usage of DTs was mostly discussed in comparison with syrup. Facility in-charges shared varying responses regarding the awareness of DTs; some were familiar with them while most of them hadn't even heard of them. A comprehensive response about DTs came from a facility in-charge in Punjab while comparing syrup to DT;

“Antibiotics are used in routine for the treatment of Pneumonia...I have heard of antibiotics in DTs form. Syrup is a better option. Syrup is easily taken. DTs are not easy in use and have a bitter taste. But DTs are more effective. Such DTs are not available in the market. I don't have any idea about people's perception about DTs, mainly because DTs are not available at our facility.”

4.2.4.1 Availability & Acceptability of New Medicines

Majority of facility in-charges believed that Zinc DTs were unavailable in the market. They also associated the unavailability of DTs to lack of awareness of such form of medicine. A facility in-charge from Punjab said, ***“... I have never heard about Zinc DTs. The community's perception can only be known if DTs are available in the market and are prescribed by doctors.”*** Among the few exceptions who were aware of Zinc DTs stated, ***“...Zinc DTs are not provided at our facility, so I don't have any idea about its advantage over syrup or vice versa.”***

DTs garnered varying views from the facility in-charges on its acceptability in the community. A few, who didn't seem to be entirely sure about DT medication, answered saying it might generate a positive response from the community. Similarly, many assumed that they would not be able to win over community support due to various factors. However, some maintained that if doctors prescribed them regularly, they might become popular in the community.

4.2.4.2 Practicality

Practicality of DTs brought various aspects of its usage under question by the facility in-charges. The factors that were the cause of their concern included quantity/dosage, solubility in water, oral intake/ ease in swallowing, taste and smell. A facility in-charge from Sindh discussed the viability of DTs elaborately,

“I don't think that DTs are more effective or suitable than the syrups... according to my knowledge, DTs are tasteless, do not dissolve properly in water and patients can't remember their dosage. DTs are also unavailable.”

A facility in-charge from Punjab shared, ***“Community's perception about DTs is not positive as such. They don't like using DT because it has no taste, it is difficult to swallow and does not smell good.”*** This resonated with another facility in-charge from Sindh who added on the taste aspect, ***“... sometimes people can refuse DTs because of bitter and unpleasant taste.”***

4.2.4.3 Inventory Management of Medicines

Mostly facility in-charges claimed that there were no stock outs. However, majority shared their grievances in this regard and suggested improvement in inventory management of the medicines.

4.2.4.4 Inadequacy of Budget

Many facility in-charges complained of inadequate budget and a need for an increase. A facility in-charge from Punjab vented, **“... Supplies are not according to the demand... overall budget of medicines and LP budget should be increased.”** Some facility in-charges mentioned that due to limited budget, patients were asked to buy medicines from elsewhere and some of them could not afford the purchase. Hence, facility in-charges insisted that government should increase the budget so everyone could avail the free service. A facility in-charge from Sindh reflected,

“Budget should be increased, quality of medicines should be improved and the delivery process of the medicines should be made fast and prompt.”

4.2.4.5 Undersupply of Medicines

Most of the facility in-charges denied being provided with adequate stock of medicines to meet the demand. They believed that their estimations, patterns of diseases and seasons should be kept under consideration while providing supplies. They held limited budget responsible for insufficient supplies. A facility in-charge from Sindh explained,

“If we demand the medicines for 1000 patients, the higher authorities dispatch medicines only sufficient for 500 patients for a year.”

4.2.4.6 Tracking of Shortages

Many facility in-charges suggested that there should be a tracking mechanism for keeping a check on stock every week or at least every month by the higher authorities. It was believed that they should immediately meet such shortages by replenishing the stocks. A facility in-charge from Punjab precisely stated,

“There should be a check and balance system to maintain uninterrupted supply of medicines and commodities.”

4.2.4.7 Opinion about LHWs

Facility in-charges held conflicting views about the performance of LHWs affiliated with their unit. Some were quite satisfied with their in-field counterparts while others were highly disappointed. Those who were pleased with their performance, acknowledged their role in treating diseases as well as their contribution in the society. A facility in-charge from Sindh revealed, **“The LHWs role is critical, beneficial and result oriented to overcome these diseases...They can bring stability and awareness at a societal level.”** Another one from Sindh reinforced,

“Our LHWs and CMWs are very committed to overcoming Pneumonia and Diarrheal diseases. They are our front women when it comes to curing any disease at street level. We must train them to treat all diseases...”

Nonetheless, there were facility in-charges who had doubts about the competence of LHWs. A facility in-charge from Punjab clarified, **“...these workers don't have the required temperament to perform their actual roles. There should be a penalizing and rewarding system for such workers to improve their performance.”**

Another facility in-charge from Punjab reiterated a similar view, **“They don't know how to deal with cases of Pneumonia and Diarrhea. They don't know about severity of such diseases...If more dosage is given, patient can become critical. They do not have the required educational background for management of such diseases.”**

Summary of Perspective of Facility In-charges

- Keen on training but dissatisfied with the funding, quality and venue for it. Getting TA/DA for trainings was nearly impossible, held government responsible for it.
- Ambulance service was in a dismal state
- There was certain level of awareness, acceptability and availability of Low Osmolarity ORS
- Awareness, acceptability, availability and practical usage of Zinc DTs was not positive
- There was an inadequate budget for continuous supply of medicines- shortages were not tracked nor met in a timely manner.
- LHWs were ill-equipped in terms of supplies and trainings
- LHWs needed to be motivated and incentivized, and made accountable

There were mixed opinion on how well equipped LHWs were; some assumed they were provided with adequate supplies while the rest believed otherwise. Nevertheless, majority of facility in-charges unanimously agreed that there was an extreme need to train LHWs on a regular basis to enhance and improve their performance.

4.2.5 Perceptions of General Practitioners

General Practitioners (GPs) interviewed in Sindh and Punjab mentioned Diarrhea and Pneumonia as the most common diseases in their catchment areas, along with skin, stomach and chest/respiratory infections and fever. Most common causes of these diseases as mentioned by the GPs were lack of hygiene, poor sanitation, malnutrition, unhealthy nutrition, contaminated water, low breast feeding, environmental pollution and changing weather. A GP from Punjab believed that, ***“Such diseases can be prevented if clean water and healthy diet is accessible in the community.”***

Some GPs also mentioned the social factors responsible for these diseases including poverty, illiteracy and lack of awareness. Most commonly mentioned symptoms of Pneumonia were respiratory problems, irregular breast-feeding patterns, high body temperature. On the contrary most popular symptoms for Diarrhea were sunken eyes, dehydration, pale skin, fever and loose motions. GPs who discussed the difference between Diarrhea and dysentery stated that the difference between them were the passage of blood. A GP from Punjab expounded,

“In Diarrhea, there are loose watery motions, vomiting and fever whereas, in dysentery blood comes with stools. Dysentery can be caused by both viral and bacterial infection.”

Some GPs were of the opinion that allopathic treatment was adopted as the last resort while a few believed that there was sufficient awareness to consult a GP right away. Self-medication was also revealed as a popular mode of treatment. Spiritual healing was also mentioned by a few.

Most popular way of treatment of Pneumonia was through antibiotics; most commonly stated were Augmentin, Ciprofloxacin, and Amoxicillin along with nebulizers. Almost all GPs believed that oxygen was important for the

treatment of Pneumonia. Majority of GPs found syrup to be more convenient for children, however a few also mentioned antibiotic injections. Most shared treatment for Diarrhea included Zinc syrup, ORS and antibiotics (Flagyl, Ciprofloxacin, Novidate). Intravenous infusions were also stated by a few GPs.

4.2.5.1 Treatment Practices of GPs

Awareness, availability and affordability, were the three factors that were highlighted by GPs when they discussed usage of Zinc DTs and low osmolarity ORS. There were mixed responses about the awareness of Zinc DTs and low osmolarity ORS in treating Diarrhea. Some GPs were aware of these modes of treatment. This awareness was relatively lower in Punjab. Among GPs, who were aware of low osmolarity ORS, some considered it better than the regular one, while others considered the opposite. Generally, GPs were unsure about its availability in the market. Similarly, most GPs were unaware of Zinc dispersible tablets (DTs) and amongst the few who were aware, they were unsure of their availability in the market. A GP from Punjab revealed, ***“Yes, oral Zinc has very important role in treatment... I have never heard about Zinc DTs before.”*** Another GP from Punjab said, ***“..have heard of Zinc DTs. They are better than syrup because of their ready to use nature. But such Zinc DTs are not available in the market.”*** Among the GPs who were aware about Zinc DT, some were doubtful of its practicality. A GP from Sindh justified syrup's preference in these words, ***“Dispersible tablets dissolve in water, because the water is contaminated so syrup is better than dispersible tablets.”*** A GP from Punjab supported Zinc syrup because, ***“Syrup has taste. Taste is main factor of acceptance or rejection of such medicine.”***

There were mixed responses of GPs as to whether the treatment of Diarrhea and Pneumonia was affordable in their catchment area or not. The GPs also had varying opinions about the approximate cost of Pneumonia and Diarrhea treatment. A couple of GPs from Sindh estimated the cost to be PKR 200-300, while another one from Sindh believed the treatment cost to be between PKR 500-700. One of the GPs in Sindh voiced the lack of cost effectiveness of the nebulizers, ***“... in private hospitals the cost of nebulizing the child is PKR 600, which is not affordable for poor people.”***

Some GPs also emphasized social issues like poverty, illiteracy and unemployment, which caused impediment in acquiring proper treatment. A few GPs mentioned that injections were relatively more expensive. Almost all GPs believed that although oxygen was important for the treatment, most of the GPs from Punjab categorically mentioned that their facility did not have oxygen and it appeared that the reason was affordability. GPs frequently cited that the severe cases were referred to a higher public health facility. Most GPs claimed to be quite sympathetic towards their patients and said that they try to be considerate and corporate with them as much as possible. Most of them expressed that they prescribed inexpensive medicines, which were easily available.

4.2.5.2 Trainings of GPs

This section is a discussion on issues that are relevant to trainings of GPs. It highlights the need for trainings and those who should be responsible for conducting them. All GPs unanimously agreed that there is a need for trainings and that it would facilitate them and their staff to a great extent. Just a few GPs revealed that they had been provided with some sort of training; still none of the GPs said that there had been any refresher training. DHDC and IMNCI trainings were mentioned. However, majority of the GPs were not provided with any training. The willingness to attend these trainings was quite high among the GPs, regardless of where they would be held. Common suggestions for the venue was at district level or at THQ. Most of the GPs emphasized the need

for trainings to keep them updated with the latest developments in the field. A GP from Sindh elaborated, ***“We have done MBBS in 1996-97... now treatment approaches have changed and we must know about them.”*** Apart from regular trainings, the quality of the training was also very important. A GP from Punjab who had received such training was not satisfied with its quality, ***“I found shortcoming in such trainings in terms of communications skills.”***

One third of the GPs said that they were provided with guidelines and protocols. The remaining GPs were either at least aware of the existence of such protocols or were totally unaware. Those who were completely unaware, used their experience in treating patients. Most of the GPs were of the opinion that a need existed for training for the correct and appropriate use of protocols. The practicality of the use of protocols was also questionable. Hence, designing protocols effectively and customizing them to the local needs required to be quite beneficial.

Except for one, all GPs from Punjab emphasized their competency in dealing with childhood diseases before acknowledging the need for conducting such trainings. One stated, ***“I feel, I have skills/competency to diagnose and treat patients with such diseases. I have received no such training in my whole life.”*** Training was also perceived as a form of acknowledgement of their contribution to the society.

4.2.5.3 Government Role in Trainings

Resentment towards the government was prevalent among the responses. Most GPs held government responsible for such trainings not being conducted. A GP from Punjab stated that, ***“It’s not priority of the government.”*** There was also a common perception among the GPs that pharmaceutical companies and health department carried out such trainings. It also seemed that GPs working in private clinics particularly felt left out as they associated the lack provision of guidelines to the private setup. Similarly for the under-provision of these guidelines, protocols, and their trainings, almost all GPs held government responsible.

Summary of Perspective of GPs

- Unavailability of clean drinking water was the root cause of all diseases
- Acceptability of DT required testing prior to scale up
- Keen on trainings, wanted government to play a more active role in organizing trainings, wanted government to act more responsible

4.2.6 Perceptions of Pharmacy In-Charges

According to pharmacy in-charges, the most commonly prescribed antibiotics for the treatment of respiratory tract infections were Amoxil (Amoxicillin), Oxidil (Ceftriaxone), Novidat (Ciprofloxacin) along with Zinc Sulphate in syrup form. The pharmacy in-charges interviewed were aware of the use of Zinc in the treatment of Diarrhea. Other popular treatment for Diarrhea included ORS and Flagyl.

One third of the Pharmacy in-charges of Sindh categorically mentioned receiving a percentage of 8-30% prescription from government hospitals. According to them, rest were from private facilities. However, the

remaining two thirds of the Pharmacy in-charges had mixed views. A few believed that prescriptions from private hospitals dominated, some were of the opinion that they received more from public sector health facilities, whereas the rest believed that there was no difference. A pharmacy in-charge from Punjab stated, ***“I receive prescriptions from both public and private health facilities. It is 50:50 ratios.”***

A pharmacy in-charge held government responsible for the substandard quality and poor logistics of the medicines and shared an elaborate feedback,

“Government does not apply required checks and balances for the approval of such medicines in market. Other than Government’s inefficiency, the specific temperature for medicine is not maintained in the chain supply process which really affects the quality of medicine when it reaches pharmacies.”

4.2.6.1 Comparing Practices of GPs and Specialists

Some pharmacists believed that specialists prescribed expensive medicines, while some thought otherwise. Some of the Pharmacy in-charges in Sindh, believed that there was no particular difference in the prescribing patterns of GPs and specialists. Nonetheless, a general resentment towards the prescribing behavior of GPs existed. Patterns discussed in this section emerged in the responses of Pharmacy in-charges, while comparing the two medical practitioners.

Financial Gains – A couple of pharmacists from Sindh believed that primary interest of the doctors was patients’ wellbeing. Some pharmacists were also of the opinion that there were two types of medical practitioners, those who were driven by self-interest and those who had the patient’s health as their priority. A pharmacy in-charge from Punjab held the view,

“In case of some doctors, it is only self-interest and in case of others it is mainly usefulness of medicine the reason behind prescriptions by doctors.”

However, there was a widespread notion that medical practitioners kept personal gains in consideration while prescribing medicines. Pharmacy in-charges were more skeptical about GPs and believed that most of them worked for their own financial gains and prescribed medicines accordingly. A pharmacist from Sindh mentioned, ***“Most of the GP work on commission basis and prescribe more medicine...”*** This resonated with another pharmacy in-charge from Punjab who conveyed,

“Doctors while prescribing any medicine, instead of considering factors like purchasing power of the patient, consider their own business or financial interests.”

Another common perception about GPs among Pharmacy in-charges was that they provided medicines themselves instead of referring to a pharmacy. A pharmacy in-charge from Punjab claimed, ***“We rarely receive any prescription from GPs as they ...have their own medical store or stock of relevant medicine.”*** Pharmacy in-charges categorically mentioned two factors in their responses about GPs’ prescribing behaviors through which they maximized their gains; quality and quantity of medicines.

Quality of Care – There was a widespread perception that specialists prescribed better quality of medicines, while GPs prescribed low quality. This can be attributed to the view that GPs prescribed substandard medicine to achieve their personal interest. There was also a popular belief that GPs prescribed a greater number of medicines to satisfy their financial goals. A GP from Sindh was of the view that,

“... the main difference between Specialists and GPs is that GPs prescribe more and expensive medicines, however specialists prescribe cheap and lesser quantity of medicine.”

Long Term vs. Short Term Treatment – It can be inferred that pharmacy in-charges assumed that GPs provided temporary relief, while specialists actually able to diagnose and cure the illness. A pharmacy in-charge from Sindh elaborated,

“Specialists prescribe medicine to address the cause; however, the GPs prescribe medicines for the relief of pain and fever while the problem still persists.”

4.2.6.2 Placing Purchase Orders

Pharmacy in-charges quite frequently stated that they arranged for new as well as existing medicines in demand, in case they went out of stock. According to their view, placing orders for medicines were dependent upon various factors including: Demand, Price, Quality/Brand, Side effects and Season.

A pharmacy in-charge from Punjab encapsulated most of these determinants in his response; ***“if specific product is in demand and doesn’t have any side effects and is not very expensive, then, we place new orders for such new medicine. We don’t place orders of new medicine from merely profit point of view.”***

A pharmacy in-charge from Sindh emphasized the demand factor and also explained that they were able to assess it well, ***“We focus on running items. We see the demand of doctors and prescribed medicines to place order for new medicines and assess if we need to change the order.”***

A pharmacy in-charge from Sindh analyzed the brand and price dynamics in the following words: ***“We routinely consider placing order for any new drug. We prefer new, cheap and better medicines over the old ones.”***

There was also a prevalent notion that during a certain season, the demand for Diarrhea medicines increases and it was commonly referred as season of Diarrhea. A pharmacy in-charge from Punjab explained that, ***“... it also varies according to seasonal nature of illnesses...”*** A pharmacy in-charge from Sindh stressed, ***“Procuring a new medicine is based on the changes in weather. New illnesses emerge because of changes in weather...”***

4.2.6.3 Market Opportunities for DTs

The current market for DTs is not very developed according to the GPs and there are many areas that need attention including demand and supply along with awareness about such new form of medicines. Topics focused in this section emerged as themes with regards to market for DTs. A common view among the pharmacy in-charges was that there wasn’t much demand for DTs and they were willing to keep them if demand existed. All the Pharmacy in-charges interviewed did not have amoxicillin and Zinc in DT forms in their stores. A few pharmacy in-charges categorically mentioned that he had it in “syrup and injection” form only. The pharmacy in-charges were unanimous that they would keep DTs in stock for sale, if there were a demand for it and if doctors prescribed it. A common answer among Pharmacy in-charges was,

“I will keep Amoxicillin and Zinc DTs in my medical store if prescribed by doctors. Prescription of such medicine by doctors can really promote the demand and sale of such medicine.” A pharmacy in-charge from Sindh reiterated this opinion.

Some pharmacy in-charges believed that there was a lack of availability of DTs in the market and they were

willing to keep them in their store if they were easily accessible. A pharmacy in-charge from Sindh justified not keeping DTs in his store due to its unavailability, ***“There is no specific reason as such for not having such medicine in DTs. It is simply not available in market.”***

Unawareness among Pharmacy In-Charges and Customers – There seemed to be a lack of understanding among the Pharmacy in-charges as to what DTs were. A pharmacy in-charge from Sindh expressed, ***“We do not have any information about that tablet...”*** Those pharmacy in-charges who were well informed about DTs, believed that there was a lack of understanding amongst the customers about the use of DTs. A pharmacy in-charge from Punjab revealed, ***“People have no awareness about usage and usefulness of DTs.”***

Suggestions for Promotion – The main suggestion to promote DTs was to create and increase demand through prescription from medical practitioners. A pharmacy in-charge from Punjab gave a detailed feedback on how to promote DTs, ***“samples should be available in the market and tool of advertising should be used to promote its demand and sale through different media.”*** Creating awareness about DTs in order to promote them was quite important according to pharmacy in-charges. They also believed that medical representatives and doctors had a role to play in this. A pharmacy in-charge from Punjab emphasized this need,

“... people should also have some awareness about usage and usefulness of such medicine...medical reps should suggest pharmaceutical companies to make such medicine in DTs given their usefulness in treatment of Pneumonia and Diarrhea.”

Such awareness would also be beneficial for over the counter sales. A pharmacy in-charge from Punjab assumed that over counter sale of DTs would rise, if their prescriptions increase.

Syrup versus DT – A general inclination among pharmacy in-charges was towards the syrup. A pharmacy in-charge from Punjab communicated that, ***“As per our experience, patients prefer syrup over dispersible tablet form...”*** However, there were many factors that effected this decision making process of the customers according to the pharmacy in-charges.

Faith in the Doctor – Most of the pharmacy in-charges were of the opinion that customers did not have any particular preference for syrup or DT. They believed that the clients were not well informed or well educated to make a decision on their own and blindly followed whatever was prescribed by the doctor. A pharmacy in-charge from Punjab mentioned, ***“Client has no say or awareness regarding the medicine, they go with the form that is prescribed.”*** A pharmacy in-charge from Sindh said, ***“...We follow whatever is mentioned on doctor’s prescription.”***

Cost-Effectiveness – Upon asking Pharmacy in-charges about the relative popularity of the syrup and DTs, they expressed that cost effectiveness would serve as one of the determining factors. While talking in the context, a pharmacy in-charge from Sindh mentioned, ***“... sale of DT form will be relatively more and less costly than the syrup.”*** Similarly a pharmacy in-charge from Punjab was of the opinion that ***“... the main determining factor for patients to buy medicine is their purchasing power...”*** This implied that the customer would choose between syrup and DT according to the pricing.

Taste/Smell as a Determinant – There was a common perception among some pharmacy in-charges that syrup had a particular taste/smell that was either preferred by children or unpopular among them. A pharmacy

in-charge from Punjab explained why DT would be preferred over syrup, ***“Patient will prefer DTs over syrup because syrup has smell issue and DTs are more effective.”***

Some of the Pharmacy in-charges were of the view that syrup was a better option because of its taste. A pharmacy in-charge from Punjab expanded,

“The only preferred form of medicine for children is syrup because it is easy to use and comes in different flavors like banana, strawberry etc. DTs don’t have any taste.”

Tablets: Not for Children – Pharmacy in-charges who were unaware what DTs were and even a few of those who claimed to be aware about DTs, they believed that tablets were not suitable for children. It seemed that the word “tablet” prompted the notion that tablets were hard to swallow by children; hence syrup was a better choice. This perception was more prevalent in Sindh as pharmacy in-charges from this region had the following view, ***“The children who cannot consume tablets are given syrup.”*** and ***“Demand of syrup in children is comparatively more.”***

4.2.6.4 Selecting a Pharmacy

There were various considerations for customers in choosing a pharmacy as discussed by the pharmacy in-charges and they believed it was customers’ personal choice as to what aspect they preferred. Most pharmacy in-charges mentioned that it was at the discretion of the customer to get medicines from wherever they wanted. They assumed that customers came to them by choice and were not referred by anyone. A pharmacy in-charge from Punjab affirmed, ***“Patients come to our pharmacy by choice without being referred or influenced by doctors.”*** Another pharmacy in-charge from Punjab verified, ***“Neither private nor government health facility refer patients for procuring medicines to us, although we usually offer discounts as well.”***

A few Pharmacy in-charges mentioned the significance of pharmacy’s location and how it affected the customers’ preference and purchasing behavior. A pharmacy in-charge from Sindh explained, ***“There is a hospital right opposite the medical store. The patients directly go to that medical store from hospital.”*** A pharmacy in-charge from Punjab elaborated why he didn’t receive many prescriptions, ***“the reason for not receiving prescriptions ... is location of my medical store, it is situated in the rural area away from the nearby BHU.”***

4.2.7 Perceptions of Lady Health Workers

This section is a discourse on the major overarching themes that emerged from the focus group discussions held with LHWs. They were conducted in 5 districts; 2 in Punjab and 3 in Sindh. It mainly highlights how they operate, their challenges and general suggestions for improvement.

4.2.7.1 Treating Diarrhea and Pneumonia

Diarrhea presented itself as a problem throughout, with approximately 6-8 reported cases each month in all sampled areas. Tando Mohammad Khan in Sindh especially, seemed to be undergoing an epidemic of sorts with 65% of all homes housing a patient. Pneumonia proved to be less alarming, only rising during the winter seasons, and claiming an average of 3-4 victims each month.

The LHWs generally seemed to be knowledgeable about the signs and symptoms of the diseases, and could easily diagnose patients using the department’s issued guidelines and handbooks. The LHWs stated that their

experience also played a crucial role in quick and effective diagnosis and treatment of their patients. However, despite being able to diagnose cases, they neither had the authority nor the equipment to treat severe case.

Consequently, their role did not extend beyond basic first aid and making referrals to health facilities. Pneumonia cases were immediately referred to the nearest health center along with Panadol tablets and instructions to protect the patient from the cold. Mild Diarrhea was treated with a consecutive dosage of Zinc followed by ORS but moderate-severe cases were also referred. In outbreak situations, these patients were referred on an emergency basis. The LHW mentioned that since handling such cases wasn't that much of a problem, increased training sessions and provision of necessary equipment would allow them to deal with such cases instead of referring them to a higher health authority.

4.2.7.2 Supplies and Equipment

Most of the LHWs seemed to be miserably underequipped and undersupplied. Quite a few did not have access to the WHO guidelines; charts or posters, and none had access to the supporting audiovisual material. Medical supply was also mostly lacking in the majority of the districts with the health workers only being provided ORS and small amounts of Zinc for Diarrhea patients and nothing for Pneumonia. The dismal situation left the LHWs largely unprepared to counter cases effectively.

Things seemed to be considerably better in Tando Mohammad Khan, which presented a stark contrast with the other Sindh districts, where the LHWs had access to multiple forms of treatment protocol and referral guidelines like charts, posters and booklets, and had even developed the televised 'Story of Meena' as a way to spread community awareness. As for medicines, LHWs had access to an adequate supply of ORS, Antipyretics, Cotrimaxazole and Septran for Diarrhea and Ampicillin for Pneumonia.

Punjab too, was undersupplied in terms of equipment and awareness material. The LHWs received small amounts of medicines through mail each month, which proved to be mostly adequate when dealing with the limited number of patients.

4.2.7.3 Training

Training schedules seemed to be quite varying throughout the districts. Most of the Sindh districts had received their last training a while ago, with no follow-ups being arranged. The district of Tando Mohammad Khan had never received any training at all. In Punjab, the situation seemed slightly better; the last sessions had been held quite recently, about 3-4 months ago, and one LHW even reported that she had received additional training as part of MCH week.

Over all, the LHWs reported being satisfied with the trainings, saying they were extremely informative. Nonetheless, they complained about the irregular and unreliable scheduling and lack of refresher courses. The LHWs called for periodic training sessions and an updated curriculum teaching them new skills and practices, so they may be able to deliver services comparable to international standards.

4.2.7.4 Monitoring and Supervision

All the LHWs responded with overwhelming appreciation for their designated superiors i.e. the Lady Health Supervisors (LHSs), and seemed to be very satisfied with the supervision mechanism in place. They stated that LHSs were both encouraging and supportive. The LHWs enjoyed a good rapport with their respective LHSs, who often took responsibility for any mistakes on their part, but were also slightly strict so that there was no such

repetition. LHWs maintained that their supervisors often arrange surprise visits to evaluate their performance and even visit patients' households asking for feedback. They claimed that higher authorities like DHOs, District Coordinators and Assistant District Coordinators also arranged similar visits.

4.2.7.5 Maintenance of Records

According to LHWs, a meticulous record was kept of each case they dealt with and of all the referrals they provided. Records of Pneumonia and Diarrhea were updated daily and submitted to the LHSs and District Coordinators on a monthly basis. Routinely recorded reports, outlining all referrals made during the month were also submitted.

LHWs in Punjab reported that the government wasn't providing the referral slips allocated to use for referral and record maintenance. Consequently, they were using self-printed alternatives, giving one copy to the patient and keeping another for record. The LHWs reported quick and comprehensive feedback from their superiors and suggested digitalization of the reporting system to ensure prompt response in case of outbreaks.

4.2.7.6 Liaison with Health Facilities and Other Workers

All the LHWs reported that their health facility networks did not spread beyond the centers they were linked to and stated that they did not have any linkages with higher-level facilities like RHCs, THQs and DHQs. As a result, all patients were referred to the local BHU. Although they weren't provided with conveyance or ambulance services, most patients reported competent doctors, good treatment and supportive staff.

According to the LHW interviewed in the districts covered, only a few (2 in Punjab, 1 from Sindh) had community health workers (CMWs) operating within them and the number of working CMWs were also informed to be quite insignificant. The respondents further explained that both groups shared neither informal nor formal ties, working mostly by themselves, and denied collaborating with the local CMWs for any health related services or activities.

4.2.7.7 Comfort Level in the Field

Though the LHWs worked within their own catchment area, most of them reported some degree of discomfort when going out onto the field; some stated they faced problems due to the troubling domestic situations and enmity between various groups, others reported safety concerns while walking through the streets alone. They added that they always tried to take along a female companion. However, overall most communities were described as cooperative and well informed about LHW services.

4.2.7.8 Community Awareness and Acceptability

LHWs reported that although cultural restrictions and taboos still came into play, society was generally seeing a shift towards modern methods of treatment. Many people, though still somewhat reliant on home remedies like rice-water and honey, actively sought out medical aid and advice from the LHWs. The community of Pakpattan especially, had shown a considerable improvement after an effective awareness campaign launched by the LHWs.

Summary of Perspective of LHWs

- Claimed to be ill-equipped with medical supplies, tools and guidelines
- Expressed a need for continuous training sessions
- Communicated that a certain sense of insecurity/ lack of safety prevailed while going out in the field
- Wanted record maintenance of cases to be computerized

Nonetheless, this was not the case in all districts; the level of community awareness seemed to be mostly unsettling in the district of Tando Mohammad Khan, where the community faced a lot of problems due to lack of clean drinking water and proper sewage system. Participants reported that people seemed to largely lack awareness, when it came to maintaining cleanliness: not washing their hands after using the toilets and failing to cover food items.

4.2.8 Perceptions of Parents/Caretakers

Most parents complained that their child was suffering from abdominal pain, fever, vomiting, dehydration, loose motions, breathing problems, allergies, throat infection and flu. Malaria, Pneumonia and Diarrhea were the most common diseases mentioned by parents affecting children and were used repeatedly and interchangeably in parents' responses. Diarrhea, specifically, seemed to be relatively more widespread, while Pneumonia cases increased during the winter season. A parent from Sindh explained, ***"We have Diarrhea, Pneumonia and malaria due to mosquito bites, hot weather and unclean water."*** Another parent from Sindh reiterated this view, ***"We have a lot of patients of Diarrhea, fever and abdominal pain in our village. Diarrhea mostly occurs in children due to lack of clean drinking water and lack of cleanliness."***

Apart from the above-mentioned diseases, many parents stated that skin allergies and other seasonal infections caused severe health hazards. A parent from Punjab expressed that ***"The diseases which normally affects patients here are viral infections and skin allergies."*** Another parent from Sindh added, ***"... fortunately there haven't been any diseases of children under the age of five which have become the reason for his/her death."***

However, a parent from Sindh had another perspective on deaths of children; he said ***"We have Diarrhea, Pneumonia and malaria due to mosquito bites. Deaths occur due to lack of food. Diarrhea occurs due to lack of cleanliness..."*** Hence, it was widely understood that malnutrition lead to deaths. Doctors, NGOs, LHWs and TV advertisements were considered main sources in spreading awareness about Pneumonia and Diarrhea. Most of the parents claimed that they had been entirely unaware of these diseases before being provided information by these sources.

4.2.8.1 Causes of Diseases

Majority of parents seemed quite well informed about the causes of diseases. Most commonly mentioned causes of diseases by the parents were poor hygiene, lack of clean drinking, malnutrition and seasonal changes. According to parents, fixing these aspects would serve as appropriate preventive measures.

Poor Hygiene Conditions – All respondents stressed upon cleanliness and hygiene as a basic preventive measure in combating diseases. Most parents interviewed seemed to be without access to proper sanitation facilities. Many believed that a cleaner environment would result in a healthier community and that a lack of one was the biggest cause of diseases among children. Poor sanitation and dust were also associated with unhygienic conditions. Parents stressed on the importance of adopting healthy habits in order to ward off diseases. Many believed practicing and encouraging cleanliness was a key factor in the war against diseases.

A parent from Punjab emphasized, *“... through the use of healthy habits we can eradicate these diseases.”* Some parents acknowledged the role of stakeholders like doctors, NGOs and TV commercials in creating awareness about benefits of maintaining cleanliness.

Unavailability of Clean Drinking Water – Many people blamed lack of clean drinking water as the main contributor of diseases in the community. Awareness about importance of clean drinking water was prevalent among parents and they complained about its inaccessibility. Almost every parent was frustrated about the quality of water. A detailed response came from a parent in Punjab;

“In our area ... Lack of clean drinking source is the main factor promoting Pneumonia and Diarrhea on our side.”

Malnutrition – Multiple parents cited malnutrition and unhealthy diet as the prime cause of child mortality, contraction of diseases and general unhealthiness. Parents related child mortality to lack of availability of food rather than diseases. A parent from Sindh elaborated, *“In our area, there are too many mosquitos but nobody dies because of any disease, instead there are many casualties because of food deficiency.”* Many parents mentioned that lack of healthy and hygienic food also led to many diseases. A parent from Sindh discussed his child's condition and unhealthy eating habits, *“He kept vomiting for 10 days...He buys chips and candies from market which might be the reason behind his condition.”*

Extreme Temperature Changes – Changing weather, seasonal variation along with sudden and extreme change in temperature was also held responsible in promoting diseases. Drinking cold water, getting wet in the rain, exposure to heat were some of the activities mentioned in this context. Parents were aware that cold weather had to be countered with warm clothing.

According to a parent in Punjab,

“Pneumonia can be prevented by keeping the children warm in winter season and preventing them from drinking chilled water. As for Diarrhea it can be prevented by avoiding unhygienic food and by stopping children from putting random things in their mouths.”

4.2.8.2 Accessing Treatment

Most parents accessed medical treatment through government facilities, self-medication and as a last resort through private hospitals. Home remedies, spiritual healing and hakeem treatment (Tibb) were most popular other forms of treatment. When inquired about peer or cultural pressure in seeking any health services, majority of the parents revealed that no such pressure existed. Most parents attributed improved literacy and increase in awareness as the major factor for such notion.

Government health facilities seemed to be preferred above all other alternatives for treatment. While seeking

treatment at government facilities, some parents specifically mentioned that two factors were quite important; free services and accessibility.

Free Services – It was observed that many parents weren't satisfied with the services they received at a government hospital. Nonetheless, some parents said that they would visit again as those facilities provided free medication and they were the best possible option for treatment for most of the poverty stricken households. According to a parent from Sindh, ***"We like to visit this center most of the time. Medicines are available here too. If my child didn't get well, I'll again visit this same place because we cannot afford other health centers."*** However some parents complained of substandard services and medicines not being free of cost.

Accessibility – Many respondents complained that they found it hard to access the remote and far-flung government health facilities, being forced to either rely on home remedies or seek treatment in the expensive private hospitals. A parent from Punjab stated, ***"People have to go to private medical centers for availing the medical services because government health facilities are very far away from the access of people."*** Another respondent from Sindh backed this up by saying, ***"We treat our child at home due to long distance."*** Another parent from Sindh shared similar view, ***"...Travelling to the city is time consuming and expensive. BHU should remain open for 24 hours..."***

However, this was not the case with all parents and government health facilities were easily accessible for some of the parents. A parent from Punjab spoke in favor of accessibility of government hospital in these words; ***"Government medical services are free of cost and in access of every person. That is why we like to come in government medical facilities. We don't face any difficulty in reaching this center."***

Self-Medication and home remedies – Hardly a few parents opted for self-treatment yet it is worth mentioning as a source of treatment. A parent from Sindh elaborated on self-medication, ***"Poor people treat children at home first ... They also ask Molvi Sahab of the village for prayers. They give ORS to their child at home. If my child does not get better, we go to another hospital for treatment."*** Home remedies were an option for parents due to convenience and cost-effectiveness. Many people preferred home remedies as the first step resort, before seeking help at a hospital. A parent from Punjab stated, ***"We use home remedies at first because doctor is far away. Treatment is expensive and poverty is widespread..."***

Private Hospitals – Private hospitals seemed to be viewed as one of the last resorts for treatment, with parents only opting for them after having received unsatisfactory services from the government facilities. The main reason for this was high service charges that private facilities entailed. A respondent from Sindh ruled out private facilities entirely, saying; ***"We cannot afford treatment at private hospital."***

Spiritual Healing – Spiritual healing was also one of the acceptable means of treatment for some. Quite a few parents mentioned that they utilized spiritual treatment, nonetheless majority preferred hospitals and other health facilities. There were also some cases where respondents used both options simultaneously, often as a bridge between modern medication and deep-rooted cultural and religious sentiments.

Hakeem Treatment (Tibb) – Very few parents mentioned that treatment by Hakeem was one of the forms of treatment they used. Much of this is owed to traditional values as can be seen from the response of this parent from Punjab; ***"We visit Hakeem at first and then visit the hospital because of our elder's advice. Our elders prefer Hakeem."***

4.2.8.3 Factors Effecting Health Facilities Visits

There were many factors that affected the health facility visits of parents with sick children. However, parents had different priorities for choosing a healthcare center. In one case a factor took precedence for a parent while in another, it was not even a consideration. For example location of a facility was important for certain parents whereas getting personal attention from the doctor was a priority for others. Nevertheless, every factor played a certain role in the parents decision-making process.

Free Treatment/Medicines – Free treatment and medicines played a significant role in drawing patients to government health facilities. Cheaper and more cost effective services were one of the reasons. A parent from Sindh justified his preference, ***“I came here for the first time and ... will come here again because they ... provide medicines free of cost.”*** However, this was not always the case. Some parents’ priority was to provide best treatment they could to their children regardless of the cost. One of the parents expressed, ***“Although it is bit expensive but nothing is more precious than our children.”***

Nonetheless availability of required medicines was also an issue. Many respondents complained about unavailability of medicines in the health facilities, which were supposed to be providing them free of cost. This would leave the patients no option but to buy them from elsewhere resulting in hefty bills and transportation costs.

Quality of Treatment – Parents also chose health facility on the basis of quality and standard of healthcare provision. A parent from Sindh acknowledged the services provided by his selected hospital, ***“We usually go there to get our children treated...Medical staff here is very experienced.”*** Another parent reiterated, ***“We prefer ... this doctor because they ...provide us good services and quality.”***

Patient Satisfaction – Satisfactory services and personal touch of the doctors was very important for the parents as many of them categorically pointed it out. A parent from Punjab expressed his/her despair,

“... our experience is not good in government hospitals because medical staff’s behavior is not friendly towards us. They don’t pay any attention towards our complaints.”

Another parent from Punjab complained, ***“We go through a lot of difficulty in reaching the hospital and then the doctor is not available in the hospital...”*** Few parents expressed their satisfaction in these words: ***“The doctor examined our child carefully and listened to our complaints properly.”***

Location, Commuting Time and Distance – The convenience of travelling to the health facility greatly impacted the parents. Most of the parents revealed that health facilities being nearer to their homes was the reason for visiting it. However, some parents had to go through the inconvenience of travelling a long way because they did not have a choice. A parent from Sindh explained, ***“Government medical facility is very far away from us. We don’t have any mode of transport for reaching the BHU.”*** Nonetheless, for some parents distance was irrelevant and quality of medical service was more important.

Availability of the Doctor – Easy accessibility of doctors was one of the important factors for parents in selecting a medical facility for their children. A parent from Sindh asserted that how important availability of doctor was for him, ***“Treatment is free of cost here and pediatrician is also available in this hospital.”*** Another parent shared a similar view, ***“This hospital is nearby our home and the main thing is that the child specialist is always available in that hospital...”*** Many parents also complained that that accessibility of doctors and other medical services should be 24 hours.

Long Waiting Time – Long waiting time before seeing the doctor was a big cause of concern for majority of parents. Many expressed their frustration about crowded spaces and long waiting lines before getting medical care. A typical response of the parents was,

“Peak rush hour sometimes creates problems because during that we have to wait long for our turn. We come here through public transport which adds to the problems.”

Infrastructure & Support Facilities – Parents complained about the infrastructure and support facilities at the healthcare centers they attended. Lack of space, hygiene, clean drinking water and seating arrangement were commonly mentioned by parents. A parent from Punjab vented, ***“There is no proper sitting arrangement and clean water...”*** Another parent commented on congested space, ***“... one thing that creates problem during waiting is insufficient space.”***

Satisfaction with Information Provision – There were mixed reviews by parents on whether they were provided sufficient information about diagnosis and follow-up visits. Some parents were quite satisfied with their experiences, while some were utterly disappointed. Satisfied parents claimed that doctors conducted comprehensive check-ups, asked them to revisit for a follow-up examination and also encouraged to return in case of emergencies. A parent from Sindh reinforced this view,

“Doctor advised us to visit after some days. He also asked to visit for routine checkup. In case of emergency, I can visit the doctor prior to given time.”

On the contrary, it was observed that many doctors weren't that thorough and almost dismissive at times, failing to elaborate on patients' symptoms and sending them off with unexplained prescriptions and intravenous transfusions. Such parents sought services elsewhere. A parent from Sindh complained, ***“Doctor didn't tell me anything, he just asked me to take the prescription and get the medicine.”*** Dissatisfied parents displayed eagerness to go to a higher health facility. This resonated with a parent from Sindh,

“They didn't tell us what to do in case the child's condition become critical. In that case we will go to Civil Hospital.”

However, some patients also found the higher health facilities to be their only option due to free medication, accessibility and availability of doctors, despite being disappointed with their results.

Parents' Preconceived Notions – Parents attended a particular health facility due to their own personal preferences based on their past experiences or simply through their own preconceived notions. Some had a preference for a particular doctor, some for a specific hospital and some for certain medicines.

Summary of Perspective of Parents/Guardians

- Wanted access to clean drinking water and clean and hygienic surroundings.
- Wanted government facilities to provide good quality services including free of cost medicines, availability of all medicines, better accessibility to the facility (through transport or through proximity within the community), 24 hours availability of doctors, less waiting time to see a doctor, infrastructure and support facilities at the hospital (less congested space, seating arrangement, clean drinking water).
- Wanted governments to act more responsible towards their wellbeing and wanted governments efforts more visible in the healthcare system.

4.2.8.4 Suggestions for Improvement

The parents had plenty of suggestions for improving health facilities. Some categorically mentioned aspects for improvement including, free medication, availability of pediatricians and lady doctors, 24-hour service, better lab testing, more staff recruitments, more spacious health facilities etc. Moreover, all medicines should be available at the hospital. In a nutshell, respondents wanted improvements in all the determinants, which have been discussed in this section.



FEASIBILITY ANALYSIS

5.1 INTRODUCTION

According to National Demographic and Health Survey (2013), prevalence of Diarrhea has shown a gradual increase in under five children since 1990; from 15 percent in 1990-91 to 22 percent in 2006-7 and then to 23 percent in 2012-13. It was highest among children between the ages of 6-11 months. During the same period, about 16 percent children reported in the OPD with symptoms of Acute Respiratory Infection (ARI), including Pneumonia. Though about 65 percent of these children sought treatment, only 41.5 percent received antimicrobial therapy.

According to fresh count (PBS, 2017), Pakistan has a total population of 207, 774,520, of which 30,750,628 (14.8%) are under the age of 5 years. Among this age group, **7,072,644** suffer from Diarrhea and **4,920,100** have ARI each year.

GAPPD (2013) recommends use of low osmolarity ORS and Zinc for the treatment of Diarrhea and appropriate antimicrobial (e.g. Amoxicillin) for the treatment of Pneumonia to reduce Under 5 morbidity and mortality. Dispersible tablets (DT) of amoxicillin and Zinc and low osmolarity ORS is the current treatment of choice recommended by the WHO for children. The GAPPD also recommends to co-packaged ORS with Zinc. Lower osmolarity formulation for oral rehydration salts (ORS) reduces the need for parenteral therapy and shortens duration of Diarrheal episode; while addition of Zinc supplementation in the treatment regimen for 10–14 days is said to further decrease the duration and severity of disease and risk of subsequent infections in 2–3 months after treatment. Global experience suggests that low osmolarity ORS and Zinc are less expensive, safe and easy to dispense and significantly lower morbidity and mortality relating to Diarrhea.

Locally produced Zinc products, that meet the cGMP standards for international procurement, are now increasingly becoming available in Pakistan and the original ORS formulation is switching to low osmolarity ORS. It is found that this product is more efficacious and 17% cheaper because it requires less salt and glucose and therefore less packaging. Dispersible tablet (DT) is now a preferred formulation for Zinc and Amoxicillin than suspension, for having more rapid and high absorption from pregastric parts of GIT enhancing bioavailability and efficacy, ease of preparation, reliability of dosing, not needing refrigeration and relatively longer shelf life.

5.2 PHARMACEUTICAL MARKET AND REGULATION

Pakistan has a very vibrant and progressive pharma industry, comprising of about 660 local pharmaceutical manufacturing units, meeting international cGMP standards and registered with Drug Regulatory Authority of Pakistan (DRAP). It also includes 25 multinational pharmaceutical companies. The total size of pharma industry may be around 800 if those in the process of being registered and passing through the scrutiny processes of Quality Control Section of DRAP are also included. Pakistan pharmaceutical Industry meets around 70 percent of country's demand of finished medicines. In terms of share market, the domestic pharma market is almost equally divided between the nationals and the multinational companies. During the past decade, national pharmaceutical industry has shown a progressive growth and has invested substantially in upgrading itself. Currently the industry has the capacity to manufacture a variety of product ranging from simple pills to sophisticated biotech, oncology and value-added Generic compounds.

Pakistan, having population of over 200 million, is a developing pharmaceutical market. Its pharmaceutical spending accounts for less than 1 percent of the country's GDP; a bit higher than average when compared with regional countries in the South East Asia. With strengthening of the generics sector, the share of generics is expected to increase further due to weaning of major patent drugs. The Pakistan pharmaceutical industry had an export turnover of over \$212 million from 2014 to 2015. Many units of Pakistan pharmaceutical industry are approved by regulatory authorities all over the world. The sales in international market have gone almost double during last five years and are likely to increase further with new regional and global opportunities.

The Pakistan pharmaceutical industry provides high-quality essential drugs at affordable prices to millions. It is not only growing into technologically strong and self-reliant national pharmaceutical industry but also capturing more and more international markets. The Pakistan Pharmaceutical Manufacturers Association had adopted "Vision 2025" for the national pharmaceutical industry, under which it is envisioned to increase the exports of medicines to \$5 billion in the coming 10 years. Pakistan pharmaceutical Industry is exporting to Egypt, Philippines, Sri Lanka, Afghanistan, Iraq, Myanmar, Nepal, Nigeria, Sudan, Tajikistan, Tanzania, Uganda, Uzbekistan, Kenya Cambodia, Kirghizstan and Vietnam. The prospects of further expansion of exports are getting brighter day by day due to competitive price and good quality.

In order to promote local pharmaceutical industry, there should be least reliance on the products of other countries, but Pakistan being a signatory to WTO, cannot put restrictions on imports, unlike countries, which are still non-signatory to WTO, such as Bangladesh. Similarly, tariff on local industry by the government needs extensive review to facilitate it in competing countries exporting medicines and supplies at more affordable ranges, like India and China, while still maintaining their competitive edge. Most such medicines are manufactured in WHO approved sites of these countries and respective governments keep tariff low to promote exports.

Regulatory Mechanism – The Drug Regulatory Authority of Pakistan (DRAP) was established to provide for effective coordination and enforcement of Drugs Act, 1976 and to bring harmony in interprovincial trade and commerce of drugs and therapeutic goods. The authority is responsible for regulation manufacturing, import, export, storage, distribution and sale of therapeutic goods. The DRAP ensures safety of people and regulate production of drugs by issuing license to legitimate manufacturers and registering drugs fulfilling international standard of cGMPs. All unregistered drugs are considered spurious and un-lawful. Pharmaceutical Evaluations and Registration Division is responsible for the evaluation, assessment and registration of pharmaceuticals drugs for human beings, animals and to perform other functions connected therewith and assigned by the Board.

5.2.1 Governing Structure of DRAP

The board sets policy directions for administration and monitoring activities under a chairperson, Secretary MoNHSRC of BS-22. It is comprised of fifteen (15) members, including the CEO (as Secretary), Health Secretaries of all the provinces and six (06) Technical Expert Members. The Authority is run by Chief Executive Officer and his team of fifteen (15) Directors. It has 13 divisions, including Pharmaceutical Evaluations and Registration, Medical Devices and Medical Cosmetic, Biological Drugs, Costing and Pricing, Legal Affairs, Drug Licensing, Quality Assurance and Quality Testing, Budget and Accounts and Health and OTC Products (non-drugs).

5.2.2 Registration Process

According to the CEO DRAP, formulation of molecules of any new drug (whose generic is not already registered) coming to Pakistan must be registered first with Authorities of any one of 14 referral countries, selected on the

basis of possessing stringent regulatory framework and a strong legal system. These include USA, Australia, Japan, UK, Germany, Switzerland, Netherland, Norway, Austria and New Zealand. This is because the standard of clinical trials of these countries are most reliable and do not require repetition in Pakistan. Once approval is granted, such formulation is included in the pharmacopeia and companies importing such molecules later do not require re-registration. In compliance with the Drug Act 2012, a checklist for Scrutinization of Registration Application/Dossiers was developed by the Pharmaceutical Evaluation Cell within DRAP to evaluate registration applications. The Registration Board approved a Checklist (Form 5) containing 33 items in its 240th meeting, which is to be filled and submitted to DRAP by the pharmaceutical Company seeking registration of specific drug along with supporting data/documents, including proposed master formulation based on physiochemical characteristics of active and Inactive components of formulation. Along with above, the applicant (Production Manager and Director/Managing Director of the manufacturing company) has to give written undertaking counter signed by Quality Control Manager, to submit the following:

- Stability Studies
- Pharmaceutical Development Studies (Proposed Master Formulations, Rationale, physiochemical characteristics and detail of drug substance)
- Validation of analytical testing methods
- Process Validation

The data and findings of stability testing are submitted to DRAP with application for inspection. This is discussed in the DRAP's board and its inspection team visits the company to conduct onsite inspection for CRF 21 compliance and to verify results. After fulfillment of all the requirements, the drug in question is formerly accepted for registration. For the imported drugs, the registration process is essentially same accept for few additional requirements. The company has to meet following conditions before getting imported product registered in Pakistan for marketing, distribution and sales. It must have:

- a) Original and legalized GMP certificate of country of origin proving compliance OR
- b) Free Sale Certificate of drug from regulatory body of country of origin
- c) Sole Agency Agreement (SAA) with manufacturer of the imported drug for getting the product registered in Pakistan.
- d) Certificate of Pharmaceutical Product (COPP)
- e) Approved prescribing Information (PI)
- f) Credentials/Site Master file
- g) Authentic Clinical Data/Clinical Trial
- h) Clinical justification
- i) Few samples of finished product

If the manufacturer does not belong to any of the reference countries (e.g. China, Malaysia) but the drug molecule is already entered in the pharmacopeia, then DRAP's TWO member Inspection team visits the manufacturer. However, if the manufacturer has already been inspected and approved by US FDA, then this step is exempted. 2-3 experts examine reports of these visits before putting the case in DRAP Board for approval.

5.2.2.1 Timeline for technical approval

It used to take more time earlier due to loads of pending cases of the past, but the situation has improved. If the product's molecule is already in the Pharmacopeia, then it takes up to one year for the whole process to get completed. However, in certain cases, such as medicines for the control of dengue, hepatitis C, cancer and thalassemia, the process is accelerated out of queue through 'Expedited Review Process' in the high public interest. The process can similarly be expedited for any new product (newly developed molecule or a formulation, such as Zinc in dispersible form), if needed on urgent basis in the public interest. But such cases must be strongly supported by authentic research studies, preferably local, to get Board's approval.

5.2.2.2 Timeline for Pricing Process

After the registration process is completed and registration letter is issued by the Authority, the file is sent for pricing to ADPC section, which evaluate the proposal on a set criteria and approves the rate accordingly. If approved, the file is referred to the Federal ministry for final notification. The Federal ministry after scrutiny forwards the case to the cabinet division for the approval of Federal Government. As per new ruling of Supreme Court, Federal Government means Prime Minister and the Federal Cabinet. The timeline of pricing process is difficult to predict because of the busy schedule of politicians, however it may take minimum of 3-4 months.

5.2.2.3 Quality Assurance and Pharmacovigilance

This falls under the ambit of Quality Control and Quality Assurance Section of DRAP. There are teams of Drug Inspectors, both at the Federal level as well as Provincial level. While Drug Inspectors of Federal Government (25) inspect each Manufacturing Unit, at-least twice a year (>1300); those of Provincial Governments (150 with Punjab Government) are assigned market surveillance. The samples collected randomly during surveillance, from pharmacies, hospital, clinics and homes, are tested in the Central and Provincial Drug Testing Laboratories. On average, around 70,000 tests are done in Central DTL in one year. There are 8 Drug Testing labs in Punjab, and one each in Sindh, KP and Baluchistan. If the drug is found to be sub-standard, the case is referred to the Provincial Quality Control Boards or to Drug Courts, which is authorized to take any punitive action. Periodic campaigns are run by DRAP against the spurious drugs in collaboration with FIA and raid is conducted at the sites, where productions of spurious drugs are reported. According to the DRAP rules, the production in-charge of the Pharmaceutical Industry should be qualified B. Pharmacist with 10 years' experience (a proposal to reduce experience requirement to 6-8 years is currently under consideration). And similarly, in-charge QA and QC should be equally qualified or be a qualified chemist.

Respondents of our survey were of the view that, ***“Good quality clinical studies of international standard are sparsely conducted in Pakistan. Although 1% profit is collected from all pharmaceuticals for R & D, but barely few research projects are submitted to us.”***

At present, only 18 clinical trials are being conducted all over Pakistan due to lack of training and effective accountability. DRAP has developed new rules for the bio-studies in the light of WHO guidelines and the draft has been sent to the Federal cabinet for approval. There are 4 designated labs in the private sector; including Husain Ebrahim Jamal Institute of Chemistry Laboratory (HEJ Lab) and one in Dow Medical College in Karachi, which are fully capable for conducting bio-equivalence studies. The DRAP does not carry out bio-equivalence studies. It only reviews reports submitted to it by any of these standard labs. Unfortunately, such local studies are rarely conducted in Pakistan, which is a major deficiency. There is a need to conduct comparative studies locally, as there is also apprehension whether low osmolarity ORS should actually be recommended for children residing in Pakistan, where in extreme hot weather and intense sweating more electrolytes are liable to be lost compared to any western country.

5.3 CURRENT MARKET TRENDS

Pattern of prescriptions reaching at private pharmacies from healthcare providers including General Practitioners (GPs) and Specialists was studied in selected districts of Sindh and Punjab. It was seen that although these pharmacies mostly catered to prescriptions of private practitioners, prescriptions from public sector facilities were also not so uncommon. On average 10-15% prescriptions reportedly emerged from public sector facilities (e.g. BHUs and RHCs), but the demand reached up to fifty percent in one of study district of Punjab. A good percentage of such prescriptions albeit were for intravenous injections and fluids. When stock out position of Pneumonia and Diarrhea commodities was discussed with facility in-charges, most claimed not suffering from any stock outs. They, however admitted at the same time, 'We never received quantity as per demand and had to resort to local purchase (LP) during disease outbreak season.'

For the treatment of Acute Respiratory Infections/Pneumonia, quinolones were the most commonly prescribed antimicrobial, followed by 3rd generation cephalosporin, Amoxicillin, Co-amoxiclav, Cotrimoxazole and 1st generation cephalosporin. For the treatment of Diarrhea, ORS and metronidazole were most commonly prescribed drugs. Majority of prescriptions, by specialists and GPs alike, contained Zinc suspension in Sindh, but in Punjab while specialists' prescriptions often contained Zinc, most GPs did not recommend it.

A definite association was observed between the visits of medical representatives, provision of incentives and prescription trend of most care providers, particularly in the private sector. Most pharmacies visited by the survey teams had stock of Amoxicillin and Zinc in syrup form, but did not keep dispersible formulations of either Amoxicillin or Zinc in their stock for lack of such demand by the healthcare providers. This was further verified, when prescriptions issued to the clients by care providers at the health facilities were reviewed.

In the opinion of most pharmacy in-charges, people tend to accept whatever formulation (whether syrup or DT) was prescribed by his/her physician as long as medicine remained within affordable range. The same view was also endorsed by majority of clients interviewed; one of whom said, ***"I provide my children whatever my clinician considers best, whether in syrup or tablet or any other form."*** When asked, Pharmacists expressed willingness to keep dispersible formulations in stock provided adequate demand is generated through prescriptions.

In case of non-availability of prescription drug, nearly half of the pharmacy in-charges arranged it from other sources, a little over quarter referred the client to other source while the rest either provided substitute or simply regretted. Over the counter sale of drug on demand without prescription was hardly refused. Majority of pharmacy in-charges felt no hesitation in prescribing medicines themselves, if so demanded by clients.

Rural community was more inclined to accept dispersible tablets, since it believed tablets were more effective than syrup. According to a Pharma Market Advisor/ Analyst, most people residing in the rural set-up believe, ***"...Tablet which gets dissolved in water carries more TASEER and thus speed-up recovery."*** This tendency may be exploited to create demand for the dispersible commodities of Zinc and Amoxicillin in the rural community. In the urban areas, particularly mega cities like Lahore, anecdotal evidence from large-scale distributors and established retailers has revealed that overall demand for Zinc remains low and is particularly sparse for dispersible formulation. Similarly the demand for low osmolarity ORS is not very different. Most of these commodities are currently being supplied to cater to specific demand of pedestrians at select institutions.

5.3.1 Supply of Pneumonia and Diarrhea Commodities

Supply of Pneumonia and Diarrhea commodities was assessed by reviewing availability status of these commodities, at targeted public sector and private sector health facilities (GP Clinic) and its surrounding pharmacies.

Overall, syrup amoxicillin, syrup Zinc and parenteral fluids (Ringers lactate and 0.45% Normal/Dextrose Saline) were available at most of the assessed public sector health facilities in the rural areas. Low Osmolarity ORS was available in about half of the facilities. Amoxicillin injection was also available at majority of the health facilities. Amoxicillin DT, Zinc DT and Co-packaged ORS with Zinc were however, not found at any of targeted facilities at the time of survey in both Sindh and Punjab. Amoxicillin and Zinc DT or Co-packaging of ORS with Zinc, were not found at any of the assessed health facilities in the Punjab and Sindh. As mentioned above, supply of updated Diarrhea and Pneumonia commodities by the pharmaceutical companies is even limited in the urban areas, including mega cities as Lahore.

5.3.1.1 Unique Tertiary Care Supply Model

In Punjab, the peak demand is generated at The Children Hospital and The Institute of Child Health Lahore, an 1100 bed premier children's tertiary care health facility of the Province, which receives 2800-3000 patients in its OPD daily. The institution has devised a unique supply model to cater to the need of Diarrhea commodities. Though it makes the bulk purchase from local manufacturers, but owing to the inherent capacity, it also manufactures Zinc and ORS within the facility. If the standard is validated and found to be cost effective, it may be replicated at other tertiary care institutions in the country.

At the Children Hospital and the Institute of Child Health Lahore, around 1200 dosages of Zinc Sulphate (10/20 mg); 1000 in syrup form and 200 (20 percent) in sachet form, are dispensed every day, suffice to serve 12 days need of about 100 patients (3.3. to 3.5 percent of total OPD). While a key local pharmaceutical company manufactures the suspension, the sachets are prepared inside the hospital under supervision of the Department of Pharmacy. Similarly, while on average 80 sachets of Low osmolarity ORS of key local brand are issued daily in the OPD, ready to use self-prepared supply of low osmolarity ORS through 19 liter bottles is maintained 24/7 for the Emergency Department.

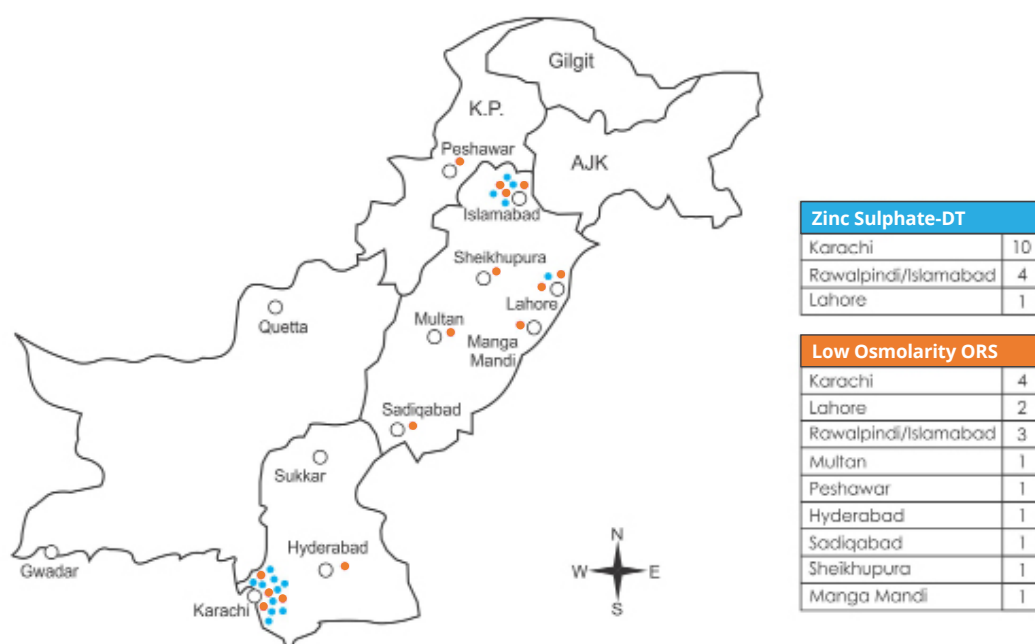
5.3.1.2 Situation at Pharmacies

At all surveyed pharmacies, 125 mg strength of amoxicillin syrup was found across the board, while most pharmacies also contained syrup 250 mg as well. The situation was similar in Punjab and Sindh. Zinc Syrup was available in all the assessed pharmacies of Sindh, while in Punjab, it was available at over two third of pharmacies. Low Osmolarity ORS was available in nearly all the pharmacies visited in Sindh but only in one third of those visited in Punjab. Ringers lactate Solution was available at most of the drugstores and over half of this also stocked 0.45% Normal Saline/Dextrose Saline. Dispersible formulations of Zinc and Amoxicillin and co-packaged ORS with Zinc were not found at any of the pharmacies visited in Sindh and Punjab. Dispersible formulations of Zinc and Amoxicillin, or any co-packed formulation, were not available at any of the pharmacies visited during the survey.

5.3.2 Market Analysis

According to the current computerized data of DRAP, only one local company has so far registered itself for the production of Amoxicillin DT and fifteen companies have been registered or are in the process, for production of Zinc DT. Countrywide location of these manufacturers is as follows.

Figure 7: Location of Manufacturers of Zinc DT and Low Osm ORS



Nearly 12 Pharmaceuticals reportedly possess the license to manufacture Low Osmolarity ORS. In order to capture the market, data of fifteen such companies was gathered.

5.3.3 Profiles of Potential Pharmaceuticals

Fifteen large to medium sized key local pharmaceutical companies were approached, out of which five manufacturers expressed willingness to join hands with UNICEF in enhancing production of Pneumonia and Diarrhea commodities in line with WHO recommendations. The manufacturing potential of these pharmaceutical companies for Amoxicillin DT, Zinc DT and Low Osmolarity ORS is depicted in the following table.

Table 3: Pharmaceutical manufacturers producing updated commodities

Pharmaceuticals	Amoxicillin DT	Zinc DT	Low Osm ORS
M/S ZAFA	ü	ü	X
M/S FEROSONS	X	Reg. in Process*	ü
M/S ATCO	X	Reg. in Process*	ü
M/S AMSON	X	ü	X
M/S WELL n WELL	X	ü	ü

**Expected to complete before June 2018*

It is pertinent to mention that four of the above companies are also manufacturing Zinc Syrup. These were established at different times, from 61 years to 10 years ago, and are located at three different regions of the country (location given in the map below); two in South (Karachi), one in central Punjab (Lahore) and two in North (Islamabad Capital Territory).

Figure 8: Location of Willing Manufacturers



In order to capture the market, brief profiles of each is provided in the following section:

5.3.3.1 ZAFA Laboratories and Pharmaceuticals

ZAFA Pharmaceuticals Private Limited, an ISO certified (QMS 9001, 2000) organization, was founded in 1973. It has nine manufacturing divisions/plants located in Karachi, Lahore and Khartoum. Though it imports most of active pharmaceutical ingredients (API) from recognized sources, it also manufactures few APIs and glastec ampules. The company strongly believes in medicines for all and thus has a motto of, ***"Nobody should suffer from want of medication."***

Overall, ZAFA Group (ZAFA Pharmaceutical Laboratories, ZAFA Chemie, Balsam Pharmaceutical Sudan, Glastic Ampules Pvt Ltd and Boulevard) has employee strength of over 5600. It has a large export market spread over African continent and in several of Middle Eastern and South American countries and has a nationwide distribution network. It is manufacturing Zinc syrup (WHO certified) for past many years and Zinc DT for the last 4 years and Amoxicillin DT for one year. There is no significant price difference between syrup and DT formulations. Company's product & sale volume and production status with respect to Pneumonia and Diarrhea commodities is given below.

Table 4: Profile of ZAFA Laboratories and Pharmaceuticals

Product Volume	400+
Sale Volume (annual)M/S FEROSONS	4-5 Billion
Pneumonia & Diarrhea Commodities	Dispermox (Amoxicillin) DT, Syrup, Injection Zindigi (Zinc Sulphate); DT, Syrup
Contact detail	ZAFA Pharmaceutical Laboratories (Private) Ltd. L-1/B, Block-22, Federal 'B' Industrial Area, Karachi-75950. Phone: (92-21) 36807100, 36378682, 36346719, 36349226 - 7 Fax: (92-21) 36346761, 36312814 Email: zafaph@cyber.net.pk

5.3.3.2 FEROSONS Laboratories and Pharmaceuticals

FEROSONS Laboratories is an ISO certified (QMS 9001) public limited pharmaceutical company, founded in 1956 and was listed on the country's stock exchanges in 1960. It's Head Office and Biotech Factory are located in Lahore, while Branch Office & a manufacturing plant at Nowshera.

It is an organization, with two cGMP compliant manufacturing facilities (one for solid/liquid dosage and one for biological drugs production) and has a distribution network across Pakistan. They believe in putting patients first, and therefore has a motto, ***"Our purpose for existence and ultimate measure of success is our impact on the improvement of human lives."***

Ferosons possesses leadership brands in the areas of gastroenterology, hepatology, cardiology, urology and oncology and is maintaining exclusive agreements with a number of international partners for distribution, selling and co-manufacturing of products in Pakistan including the Bagó Group of Argentina, Bio Gaia of Sweden, Boston Scientific Corporation, GE Healthcare and Gilead Sciences, Inc. of the USA. The company has employee strength of over 1000. It has a large export market, including; Afghanistan, Cambodia, Kenya, Kyrgyzstan, Myanmar, Nepal, Nigeria, Philippines, Sri Lanka, Sudan, Tajikistan, Tanzania, Uganda, Uzbekistan and Vietnam. Company's product & sale volume and production status of Pneumonia and Diarrhea commodities is given below.

Table 5: Profile of FEROSONS Laboratories and Pharmaceutical

Product Volume	400+
Sale Volume (annual)M/S FEROSONS	10 billion
Pneumonia & Diarrhea Commodities	Zinxus (Zinc Sulphate); Syrup, DT Ferolyte (Low osmolarity ORS)
Contact detail	Head office / Biotech factory: 5 KM Sundar Raiwind Road, Raiwind, Lahore Phone: +92(42)36026700; Fax:+92(42)36026702 Email: info@ferosons.labs.com Branch Office & Plant: P.O. Ferosons, Amangarh-Nowshera (KP)

5.3.3.3 ATCO Laboratories and Pharmaceuticals

ATCO Laboratories Limited, an ISO-QMS 9001 certified pharmaceutical company, was founded in 1978. The company is located in Karachi and manufactures a wide range of finished pharmaceuticals and bio-pharmaceutical products on its State-of-the-Art cGMP compliant facility. It produces tablets, capsules, oral liquids and semi-solid dosage forms and feels responsible to, ***“Delight the customers; the patient, prescribers and partners and meet their needs satisfactorily on a long-term horizon.”***

ATCO Laboratories has employee strength of over 700 and has a large export market, mainly spread over African and Central Asian countries and include Uganda, Kenya, Sudan, Nigeria, Senegal, Rwanda, Sri Lanka, Uzbekistan, Tajikistan, Vietnam, Turkmenistan, Laos, Myanmar, Tanzania and Afghanistan.

It is manufacturing Zinc syrup for past many years and is ready to start manufacturing Zinc DT. The clinical trial for Zinc DT is under process. It is already manufacturing and marketing Low Osmolarity ORS. Company's product & sale volume and production status of Pneumonia and Diarrhea commodities is given below.

Table 6: Profile of ATCO Laboratories and Pharmaceuticals

Product Volume	228
Sale Volume (annual)	> 5.7 Billion
Pneumonia & Diarrhea Commodities	Zincat (Zinc Sulphate); Syrup, DT Osmolar (Low Osmolarity ORS); in Banana, Orange flavors
Contact detail	Address : Pl. No. B-18, Manghopir Road, SITE Landmarks : Manghopir Road, Naurus Chowrangi City : Karachi PABX : +92-21-32577930, 32577931, 32577932, 32577933

5.3.3.4 AMSON Laboratories and Pharmaceuticals

AMSON Vaccine and Pharma Private Limited were established in 1995. It is an ISO certified (QMS 9001, EMS 14001, OHSAS 18001) organization, which has the distinction of being the only private sector vaccine manufacturer in the Eastern Mediterranean Region (EMRO). It has a liaison with world leading vaccine manufacturer, Chiron (now Novartis) and is also a pioneer industry for manufacturing Auto-disposable Syringes in Pakistan. The company strongly believes in, ***“Establishing standards of integrity & quality in business & products that benefit customers.”*** Amson has employee strength of over 600 plus and mainly export its products to Philippines and Uganda. It has the manufacturing capacity for both Zinc syrup and Zinc DT and has applied for the registration of Low Osmolarity ORS. Company's product & sale volume and production status of Pneumonia and Diarrhea commodities is given below.

Table 7: Profile of AMSON Laboratories and Pharmaceuticals

Product Volume	150
Sale Volume (annual)	2.5 Billion
Pneumonia & Diarrhea Commodities	Orazinc (Zinc Sulphate); Syrup, DT
Contact detail	Amson Vaccine & Pharma Pvt Ltd 154, Industrial Triangle, Kahuta Road, Islamabad, Pakistan Phone: (92-51) 5581067, 5584551 Fax: (92-51) 5586291-2

5.3.3.5 WELL n WELL Laboratories and Pharmaceuticals

Well n Well Pharma private Limited, a subsidiary of Well & Well Pharma UK Ltd, is an ISO certified (QMS 9001, EMS 14001, OHSAS 18001) organization, founded in 2007. It has twice been awarded the 'Best Possible Grade' by the Ministry of Health during its inspection. At present company's production pipeline comprises of Tablets, Capsules, Dry Suspension, Sachet and Cephalosporin section. The company has the vision to, ***"Create a special niche at national & international level."***

Well n Well Pharma has employee strength of around 500 and has an ever expanding export market, which presently include Afghanistan, Cambodia, Myanmar, Iraq, Yemen, Vietnam, Sri Lanka, Laos, Mauritius, Maldives, Nigeria, Tanzania, and Madagascar. It is manufacturing Zinc DT (but not syrup) and Low Osmolarity ORS. Company's product & sale volume and production status of Pneumonia and Diarrhea commodities is given below.

Table 8: Profile of WELL n WELL Laboratories and Pharmaceuticals

Product Volume	65 (30 in the pipe line)
Sale Volume (annual)	About 40 Million
Pneumonia & Diarrhea Commodities	Zink (Zinc Sulphate); DT Orsal (Low Osmolarity ORS)
Contact detail	Well n Well Pharma Private Limited Plot 7, Street S-8, RCCI, National Industrial Zone, Rawat, Islamabad, Pakistan Phone: +92 51 4499056, +92 51 4499057 +92 51 4499058 Fax: +92 51 4499059 Email: info@wellnwell.com

5.3.4 Production of Pneumonia & Diarrhea Commodities

M/S ZAFA Pharmaceuticals Private Limited has been so far identified as a sole producer and supplier of Amoxicillin DT in Pakistan. The drug, registered in 2016 with the brand name of Tablet Dispermox is available in the market in two strengths; 250mg and 500 mg. The company manufactures its Active Pharmaceutical Ingredient (API) itself at its plant located in Lahore. Though it has maximum production capacity of 1,400,000 tablets per day, but due to low demand, it set target of only 2,880,000 for the year 2016 and produced 1,560,000; thus achieving 54 percent of the target. Thus ZAFA produced only 0.371 percent Amoxicillin DT of its maximum production capacity during 2016.

5.3.4.1 Production of Zinc DT

For registration of dispersible tablet, as per DRAP rules, an independent process supported by bio-equivalence studies needs to be adopted, since manufacturing technology for syrup and DT greatly differ. So far nearly two dozen brands have reportedly applied for registration with DRAP, reflecting lack of interest by most pharmaceuticals. The computerized data available with DRAP however, could only identify fifteen products, including five companies, which showed willingness to support production of Zinc DT. The maximum production capacity of all these is 5.5 million dispersible tablets per day. Seventy-five percent of it (3.75 Million per day) can be jointly produced by only three companies ZAFA, ATCO and Ferozsos.

Whereas the three products have been registered, two are still undergoing clinical trials and the process is expected to get completed by June 2018. Out of the three registered products, tablets Zindigi (by ZAFA) and Zink (by Well n Well) are being manufactured at the moment, while Orazinc (by Amson) whose manufacturing started in 2015, is currently on the hold. The APIs of all these products are imported; three from India and one each from China and Germany from the accredited sources meeting cGMP standards.

A comparison of these five different brands of Zinc Sulphate is provided below:

Table 9: Production Potential for Tablet Zinc DT

COMPANY	ZAFA	FEROZSONS	ATCO	AMSON	Well n Well
Brand	Zindigi	Zinxus	Zincat	Orazinc	Zink
Strength available	10 mg & 20 mg	10 mg & 20 mg	20 mg	20 mg	20 mg
Registration Status	Registered (2013)	Registration under process	Registration under process	Registered (2015)	Registered (2016)
Production Status	In Production	Clinical Trial in process	Clinical Trial in process	Production on hold	In Production
Production Capacity DT/Day	1,400,000 /d	1,350,000/d	1,000,000/d	1,000,000/d	350,000/d
Source of API Company Country	Germany Dr. Paul Lohmann Company, Emmerthal	India Supreme pharmaceutical Mysore	India Canton Laboratories Pvt. Ltd.	India Canton Lab (pvt) Ltd.	China Bohigh Enterprise
Product Stability	Up to 25 degrees	25-30 degrees	Up to 30 degrees	Up to 40 degrees	Up to 30 degrees
Trade Price (Rs); 10 mg 20mg	2.5/T 4.25/Tab	2.4 – 2.5/T 4.25/Tab	42.50/Pack; 4.25/Tab	42.50/Pack; 4.25/Tab	42.50 /Pack 10); 4.25/Tab
Retail Price (Rs); 10 mg 20 mg	42/Pack; 3/Tab 70/ pack ; 5/Tab	2.8 – 3/Tab 5/Tab	50/Pack; 5/ Tab	50/Pack; 5/ Tab	50/10 tab; 5/ tab

The production capacity of Zinc Sulphate of M/S ZAFA Pharmaceuticals is 1,400,000 per day for dispersible tablets and 40,000 to 50,000 per day for suspension. The company, however set target of 720,000 for DT and 600,000 for syrup for the year 2016 and produced 506,340 DTs and 416,000 syrups; successfully meeting 70 and 69 percent of targets, respectively. ZAFA thus produced Zinc DT equivalent to 0.210 percent of its maximum capacity during 2016. Most brands were safe to use if kept temperature not exceeding 30 degree Celsius but one company (Amson) claimed product stability up to 40 degree Celsius. The retail prices of products, whether in suspension or DT form, were in the affordable range or a little bit cheaper for DT. Moreover, no remarkable

difference was reported between production cost of suspension and DT formulation by the key manufacturers, however, one considered DT formulation more cost effective.

5.3.4.2 Production of Low Osmolarity ORS

There are reportedly two dozen companies currently manufacturing Low Osmolarity ORS in Pakistan. However, only fifteen of them could be identified. Out of five companies which expressed willingness to support the cause, three are already producing Low osmolarity ORS, while one has applied for. By June, their collective production capacity would reach around 180,000 sachet per day or 54 million per annum/300 production days. All products are safe to use when kept at temperature less than 30 degree Celsius and offered a reasonable profit to the manufacturers.

5.3.4.3 Co-packaging of ORS with Zinc DT

Co-packaging of ORS and Zinc is not permitted under current rules and regulations of DRAP. It was argued, ***“Marketing of two products in a single pack cannot be allowed because the two products may have different expiry dates, dosages of varied durations and the fact the two products got registered independently. Moreover, if allowed this may risk over use or under use or wastage of either item.”***

However, DRAP had no objection to packaging after purchase of items separately. In 2016, Micronutrient piloted distribution of co-packaged ORS with Zinc Syrup in Gujrat District. The following table compares low osmolarity ORS production potential of the companies taken on board.

Table 10: Production Potential for Low Osmolarity ORS

COMPANY	ZAFA	FEROZSONS	ATCO	AMSON	Well n Well
Brand	-	Ferolyte	Osmolar	Applied for	Orsal
Registration Status	Not Registered	Registered in 2010	Registered in 2007	-	Registered in 2011
Maximum Production Capacity (estimated)	-	60,000/d 20,000/d (per shift)	30,000/d (60,000/d by June 2018)	-	60,000 Sachet/d
Production Status	-	Not yet	In production	-	In production
Stability	-	Up to 25-30 Celsius	Up to 30 Celsius	-	Up to 30 Celsius
Trade price of sachet	-	4.25/sachet 85/20 sachet	6.8/sachet, 136/20 sachet	-	7.65/sachet 153.00/ 20 Sachet
Retail price of sachet (Rs)	-	5/sachet 100/20 sachet	8/sachet, 160/20 sachet	-	9/sachet 180/20 Sachet

5.4 FACTORS INFLUENCING SUPPLY

5.4.1 Capability & Capacity to Use Technology

Technical strength of pharmaceutical companies varies and depends partly on the product lines under focus of the management of particular industry and the availability of resources, whether technical or financial. Some are more apt in manufacturing injectables, while others focus on tablets and syrups. Generally companies, which do not manufacture particular generic, form of microbial in tablets or syrup forms are less likely to prepare dispersible form (four above pharmaceuticals which do not manufacture Amoxicillin DT do not produce it in any form). However exceptions are there, such as WellnWell never produced Zinc syrup but opted for DT. Moreover, very few had any experience of manufacturing DT formulations or even got any feasibility plan developed and is thus reluctant to begin. Some may have issues in accessing the technology.

5.4.2 Profitability

Profitability always remains top priority of any businessman according to a Marketing Advisor who explained, ***“It is the universal truth, even if someone pretends to believe otherwise.”*** Majority of those interviewed considered pricing of the products a little on the lower side, however found it reasonable enough to attract investors, provided quantity demanded is handsome and benefit accrued through economy of scale. Others suggested if government could provide incentive by lowering the tariff on import of raw material. Due to relatively cheaper options available for APIs in China and India, suppliers in Europe are losing their bargaining power over time.

However, Marketing Manager of Amson Pharma Islamabad viewed profitability in a different way, ***“Even if profit margin remains meager and rates unchanged, it will still be profitable to produce Pneumonia and Diarrhea commodities, if our lab gets due recognition by the WHO and UNICEF, in lieu of this investment.”***

5.4.3 Presence of substitute

Amoxicillin and Zinc have been introduced in the market in syrup form since long. In the presence of these substitutes in the market, demand for dispersible formulations may take considerable time to pick up.

5.4.4 Site of a Manufacturing Plant

“Site of a manufacturing plant also influences production decision”, said a market analyst interviewed for the landscape analysis. If the plant is located in Karachi, for instance, it will focus market all over Pakistan but if located at Peshawar, the manufacturer is likely to focus more on market demand emerging out of Afghanistan than the local market for greater profitability.

5.4.5 Sustenance of Demand

In general, sustained demand for commodity is considered a potent factor influencing production decision and sustainability. Low demand decreases profitability and adversely affects production decision. Amson started production of Zinc DT two years ago but later decided to put it on hold due to lack of demand. Similarly, as mentioned above, ZAFA is producing less than 0.5 percent of its maximum production capacity and finding it difficult to sustain production in the absence of expected increase in demand. According to a Pharmaceutical Distributor, except for a few selected institutions across the country, there was barely any demand in the market for Zinc syrup or DT and low osmolarity ORS. He emphasized, ***“Unless there was a sustained and significant demand for these commodities, even companies having the capability and capacity would be reluctant to take a production decision.”***

5.4.6 Potential Buyers

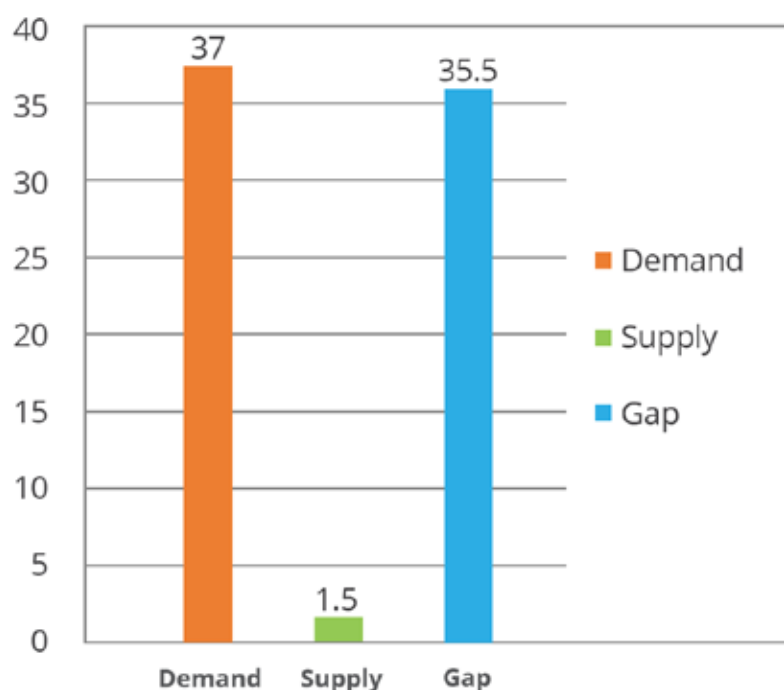
Tendering for public procurement creates a considerable demand, enough to incentivize pharma-industry in initiating or enhancing production. Similarly, a demand created by a development or donor agency such as UNICEF, which is tangible in terms of business growth and profit making, may also influence production decision, said a Marketing Analyst and Advisor. It can be safely concluded that buying by the private sector would largely depend on the success of demand creation strategy applied by the stakeholders and availability of commodities.

5.5 FACTORS INFLUENCING DEMAND

5.5.1 Affordability

Affordability is an important factor for creating and sustaining demand. Though, pricing of all the three products is presently in the affordable range for most clients, it is important to prevent undue hike. Government however supplies these commodities free to the consumers through public sector health facilities.

Figure 7: Amoxicillin DT Demand Supply Gap Analysis (In Millions)



5.5.2 Availability & Access

As products are mostly needed in the rural areas and urban slums; it is important that effective distribution channels are utilized to ensure availability of products to all areas, including those far-flung and remote. For fear of mixing of the lot with spurious drugs, involvement of whole sellers in the distribution network was considered undesirable by ZAFA. Others however, believed that without the involvement of whole sellers, products would find it hard to reach rural and remote areas.

5.5.3 Promotional and Marketing Strategies

Company that adopts and invests in vibrant promotional and marketing strategies and matches production capacity with the demand eventually wins better market share. These may include seminars/symposia for

doctors, samples donations, effective supply chain management and regular chemist audit etc. According to one of the interviewed marketing analyst, ***“Product selling is the real science and has a significant influence over the prescribing behavior of the care providers, whether of public or private sector.”***

For successful market penetration, it is essential to ensure that company has the capability and capacity to meet demand timely; the product is affordable and the company is able to sustain increasing demand while maintaining competitive edge. As Pneumonia and Diarrhea are more prevalent in urban slums and rural areas, marketing efforts would need to focus healthcare providers working in such areas. M/S ZAFA has expressed willingness to contribute financially in implementing promotional strategy developed jointly with joint consultation of all stakeholders.

5.6 DEMAND AND SUPPLY GAP ANALYSIS

5.6.1 Amoxicillin Dispersible Tablets

Based on assumption that about 16 percent children of under five age suffer from Acute Respiratory Infections (ARIs) including Pneumonia, approximately 74 million Amoxicillin DTs will be required to treat RTIs, provided Amoxicillin DT is considered the drug of choice for all cases. In reality, however, in the presence of other substitutes including syrup formulation of Amoxicillin and broader spectrum antimicrobials, the actual demand for Amoxicillin formulations remain considerably low. Moreover, a little over 69 percent seek care for suspected Pneumonia and around 50 percent receive antimicrobial therapy. At present, ZAFA is the only known local manufacturer of Amoxicillin DT in Pakistan with a production capacity of 1.4 million tablets per day. Thus ZAFA, which also manufactures API of Amoxicillin itself, can alone meet the total perceived requirement in only 53 workdays.

In view of prevalent care seeking behavior and available substitutes in the market, the actual demand is presumed to be around 50 percent (37 million DTs). There is thus an estimated gap of 35.5 million tablets. During 2016, ZAFA produced 1,560,000 tablets, about 4.2 percent against this perceived need chiefly for lack of demand generation. While determining the need, it is assumed that each patient of ARI would require receiving course of 15 tablets (3 tablets per day for 5 days). At present, the selling price of one DT is PKR 4 per dispersible tablet of 250 mg strength. If ZAFA meets this requirement, it will generate total revenue of PKR 162 Million, excluding amount generated out of exports. The company claims to already have total market share of over PKR 4-5 billion.

5.6.2 Zinc Dispersible Tablets

An estimated 100 million dosages of Zinc sulphate are required for 14 days treatment of under-five Diarrhea patients, based on assumption that 23 percent under five children (7,072,644) suffer from Diarrhea each year in Pakistan. As the survey indicated, Zinc sulphate in syrup form was found at majority of visited health facilities and pharmacies, but dispersible formulation, which is now a preferred choice as per WHO recommendations, was not available at any surveyed health facility and pharmacy.

The production capacity of five pharmaceuticals mentioned above is 5.5 million tablets of Zinc Sulphate per day. With the existing capacity, the requirement can be collectively met by five producers in just 18 work days, provided production continues in full capacity (in three shifts). If only three pharmaceuticals are engaged (ZAFA, ATCO and FEROSONS) having joint capacity to produce 3.75 million tablets per day, this requirement can be met in 26-27 days; while only two companies (ZAFA and FEROSONS), geographically located in Northern and Southern regions of the country, can jointly meet this requirement in 36 days. At present however, only ZAFA and Well n Well are manufacturing dispersible tablets but the quantity produced is far short of requirement due to want of demand. In the year 2016, ZAFA produced only 0.5

percent of total national Zinc DT requirement, equivalent to 0.12 percent of its maximum production capacity.

5.6.3 Low Osmolarity ORS

The estimated need for Low Osmolarity ORS is calculated on assumption that each child on average requires 3 sachets of 20.5 gm/l or 6 sachets of 10.2 g/l. Considering prevalence of Diarrhea in under five children to be 23 percent, 21.2 million sachets of 20.5 g/l or 42.4 million sachets of 10.2g/l of low osmolarity ORS will be needed to meet the requirement according to the burden of disease.

The existing production capacity of five manufacturers is 180,000 sachets of 20.5 g/l per day, which can be manufactured collectively in 118 days (<16 weeks). Since the joint production capacity of two companies (ATCO and FEROSONS) is 120,000 sachets per day, together they can meet this requirement in 177 days (<27 weeks).

5.7 PEST ANALYSIS

PEST Analysis refers to Politico-legal, Economic, Socio-cultural and Technological factors, which may cause beneficial or adverse effects on the local pharma industry. These are external factors that may create potential opportunities for and threats to the production of up-dated Pneumonia and Diarrhea commodities, and are discussed as under:

5.7.1 Politico-legal

- Political will to reduce neonatal and child morbidity and mortality
- Commitment by the respective provincial governments to increase share of health in the annual budgets
- Allocation of required amount for the purchase of essential commodities
- Planning and budgeting to ensure availability and use of up-dated Pneumonia and Diarrhea commodities in the public sector health facilities
- Inclusion of updated commodities in the Essential Medical and Procurement Lists
- Reduction in tariff on the import of Active Pharmaceutical Ingredients
- Strategy developed with joint consultation with all stakeholders for the withdrawal of substitute (e.g. Zinc Syrup)

5.7.2 Economic

- Longer term commitment by the government with key pharmaceuticals manufacturers who are both willing and have the capacity to meet country requirement
- Active engagement with key local pharmaceutical manufacturers which meet international cGMP criteria
- Bulk purchase of updated Pneumonia and Diarrhea commodities from key manufacturers for public sector requirement
- Strong liaison between all stakeholders to ensure commodity availability through efficient supply chain management
- Accreditation and recognition of brands by UN agencies

5.7.3 Social/Cultural

- Effective communication strategy, prepared with joint consultation with all key stakeholders including

professional medical and pharmaceutical bodies

- Behavior change communication with healthcare providers to modify prescription behavior
- Robust advocacy campaign for mass awareness and demand generation at all levels, particularly in the rural community

5.7.4 Technological

- Increased use of information technology and social media for raising awareness through promotional activities
- Removal of barriers for acquisition of updated technologies to upgrade pharma industry

5.8 CONCLUSION

It is feasible to produce updated Pneumonia and Diarrhea commodities locally, such as Zinc and Amoxicillin dispersible tablets (DTs) and Low Osmolarity ORS, within Pakistan. Figure 9 summarizes the PEST Analysis. Over two dozens of local manufacturers possess the required technology to produce each of these commodities and have already had them registered with DRAP. However, five ISO-9001 certified large and medium sized pharmaceutical manufacturers are willing and apparently have the capacity to meet the existing and future country's demand.

Figure 9: PEST Analysis



Summary of Findings of Pharmaceutical Feasibility

- Pharmaceutical Industry provides high-quality essential drugs at affordable prices to millions and is growing technologically stronger and capturing more and more international markets by each passing day. It is now meeting 70 % of country's demand of finished products.
- The DRAP regulates production of drugs and ensures safety of people by issuing license to only legitimate manufacturers who fulfil international standard of cGMPs and puts various checks on unregistered and spurious drugs. The registration process can be expedited for any new molecule or a formulation, such as dispersible formulation (DT) of Zinc, if needed on urgent basis in the public interest. Under its current policy, manufacturers are not allowed to market co-packed Zinc and ORS, however there is no bar if co-packaging is done after purchase. Registration process takes about a year for technical approval and at least 3-4 months for pricing.
- Findings of the field survey revealed absence of dispersible tablets of Amoxicillin and Zinc at assessed health facilities and Pharmacies across in the Punjab and Sindh. Anecdotal evidence collected from distributors and retailers in the large cities revealed that demand for Zinc in dispersible form is restricted to selected institutions on demand. Most consumers trust their clinicians with regards to choice of treatment. Some believe that there is more TASEER which speeds up recovery.
- Fifteen large to medium sized local Pharmaceutical Companies were identified which were known to produce Zinc DT and Low Osmolarity ORS. Five key companies; ZAFA, ATCO, FEROZSONS, AMSON and Well n Well have expressed willingness to enhance production after agreeing on promotion strategy jointly prepared with UNICEF.
- Factors that may influence supply include capability & capacity to use technology, profitability, presence of substitute, site of manufacturing plant and sustenance of demand. Factors which may influence demand include; Affordability, Availability/Access, Operational and Marketing strategies.
- At present, ZAFA is the only known local manufacturer of Amoxicillin DT in Pakistan with a production capacity of 1.4 million tablets per day. Considering prevalence of ARI and availability of substitutes and other competing factors, it is presumed that ZAFA alone can meet the requirement of Amoxicillin DT in just 53 work days if manufacture in full capacity.
- Based on assumption that 23 percent under five children (7,072,644) suffer from Diarrhea each year in Pakistan, it is estimated that 100 million dosages of Zinc sulphate are required for 14 days treatment of under-five Diarrhea patients. Two companies (ZAFA and FEROZSONS), geographically located in Northern and Southern regions of the country, can jointly meet this requirement in 36 days.
- Approximately 42.4 million sachets of 20.5 g/l or 21.2 Million sachets of 10.2 g/l of low osmolarity ORS will be needed to meet the requirement according to the burden of disease. Two companies, ATCO and FEROZSONS, having production capacity to manufacture 120,000 sachets per day, can meet this requirement in less than 27 weeks.
- To fulfil the need of Diarrhea commodities at a tertiary care facility, there may be something to learn from a unique supply model practiced at The Children Hospital and The Institute of Child health Lahore.



THEORY OF CHANGE & ACCOUNTABILITY FRAMEWORK

6.1 Pathway of Change and Strategic Areas

The goal of the project is to ensure that the relevant national policies are in place, understood and adhered to in order to ensure availability of the essential commodities for improving management of childhood Diarrhea and Pneumonia and increasing child survival by the end of 2019. Our findings have helped us to map out a pathway for the change required to make sure that the children suffering from Pneumonia and Diarrhea are being treated according to the updated global recommendations. Our analysis has identified the following key strategic areas and outcomes that are needed to actualize the dream. These areas cover the overall aspects of policy change, translation and implementation. The pathway is shown for all the five key strategic areas, which are required for the change to happen. The scope of this analysis encompasses the first three strategic areas of policy change, clinical management of Pneumonia and Diarrhea and the local manufacturing of the proposed commodities. The outcome pathways for these strategic areas have been mapped based on the extensive insights from the analysis of our findings for this study. However, the outcome pathways for the strengthened logistics system and the budgeting for the commodities is based on the insights of the secondary data.

- Policy Change
- Clinical Management of Pneumonia and Diarrhea
- Local Manufacturing of the Proposed Commodities
- Strengthened Logistics and Procurement System
- Budgeting for the Updated Commodities

There are multiple stakeholders at the different level of health system, which in synergistic manner will make sure that the commodities are available for the treatment of children suffering from Pneumonia and Diarrhea. However, the interplay of different actors within the health system of Pakistan requires a deep understanding of the role played by different actors, role of the different departments within those actors and finally how these actors can contribute to our overall outcomes. Once we have all the stakeholders listed out an accountability assessment matrix will help us to track the relative patterns of accountability among the different stakeholders. This matrix examines the accountability relationships as assessed through the lens of the data available. Finally, these accountability patterns and relationships are seen individually on the outcome basis. Based on the findings of assessment matrix, it becomes easier to assess the strengths and weaknesses of an accountability relationship where the stakeholders are irreplaceable.

The following diagram maps a tentative pathway for the desired impact. There are interventions, which lead to desired outputs. These outputs contribute to our short term and long-term outcomes. These long term outcomes confluence to achieve our collective desired change. This diagram is followed by a brief description of these strategic areas and a corresponding accountability framework.

6.2 DESIRED POLICY CHANGE

Change in the policy and strategy level is the first step that would lay the foundations of a strong change required to make sure that the new commodities are not only available in the market but they are being prescribed by the healthcare providers.

Policy change in our context means these necessary achievements:

- Policy makers and decision makers are made aware of global recommendations and they are committed to bring the necessary policy changes

- CSGs are committed, capable and empowered for required changes
- National Vision and Provincial Strategies emphasize the importance of Child Survival
- Essential Medicine Lists and Procurement Lists contain required commodities
- DHIS and MIS of the LHW program reflect the new commodities
- IMNCI guidelines are updated according to the global recommendations
- Pneumonia and Diarrhea have robust monitoring mechanisms in place

The following table presents the correct situational analysis of the progress on the policy change thus far based on our findings.

Table 11: Progress on Policy Change

Outcomes	Federal	Punjab	Sindh
Policy makers and decision makers are made aware of the global recommendations and they are committed to bring the necessary changes	Some progress	Some progress	Some progress
Child Survival Groups are committed, capable and empowered and for the required changes	<ul style="list-style-type: none"> • CSG need to be established • Coordination mechanism needs to be developed • Need to be assessed on a scoring criteria 	<ul style="list-style-type: none"> • Six Quarterly meetings conducted • Need to be assessed on a scoring criteria 	<ul style="list-style-type: none"> • Four quarterly meetings conducted • Needs to be assessed on a scoring criteria
National Vision and Provincial Strategies emphasize the importance of Child Survival	Need more focus on Child Survival	Need for a Child Survival strategy	Sindh has developed a draft of Child Survival Strategy
Essential Medicine Lists and Procurement Lists contain the required commodities	National Essential Medicine List needs to be updated	Provincial Essential Medicine List is already updated	Provincial Essential Medicine List is already updated
DHIS and MIS of the LHW program reflect the new commodities	Need to be updated	DGHS has accorded approval for the required changes in the DHIS and LHW MIS	<ul style="list-style-type: none"> • DHIS updated Need to work on the LHW MIS
IMNCI guidelines are updated according to the global recommendations	Needs to be done		
A strong monitoring mechanism for the Pneumonia and Diarrhea Indicators is in place	Needs to be done		

Policy change encompasses changes required at the policy and strategy level. Our findings suggest us that a great number of the stakeholders and the decision makers at the policy level are either not aware of the updated global recommendations or they need to be convinced about the efforts required to install the required change. The role of the Child Survival Groups needs to be more assertive as a coordination forum, which provides the necessary impetus required for the necessary policy change. It is very important that the Child Survival groups take the ownership of the process and the government is on board to install the required changes at the policy, strategy and planning level. Furthermore, it is important that a coordination mechanism creates linkages between the different child survival groups of Pakistan. It is therefore critically important to establish a Child Survival group at the Federal level. Child Survival Groups are headed by the Director Generals of Health in both the provinces, which so far has served as a great facilitator. However, it is important that the Child survival groups should have some representation from the health secretariat as well. Child Survival group in Punjab has made considerable progress when it comes to taking the ownership of the progress. Resultantly, Punjab has already included the updated commodities in the essential medicine list and the changes required in the Information system at primary and secondarily level have been accorded approvals through the forum of the Child Survival group.

Similarly, in the absence of updated IMNCI guidelines, Punjab government has finalized a makeshift training manual for LHWs to include the updated commodities. Sindh has also made significant progress updating the commodities in the essential medicine lists and in the health information systems at the primary and secondary level. Sindh has made some significant progress regarding the child survival. One particularly glaring example is the draft of the Child Survival strategy. This strategy puts the required emphasis on the child survival. Furthermore, Sindh has been able to include the updated commodities in the essential medicine list.

However, at the Federal level the national essential medicine list needs to be updated. Similarly, IMNCI Guidelines need to be updated with the GAPPD recommendations for the management of Pneumonia and Diarrhea. Once the guidelines for the IMNCI put emphasis on the recommended commodities, it will help to change the prescribing behaviour in both the public and private sector.

Furthermore, it is important that existing structures of monitoring are employed for an effective accountability mechanism. In this regard it is important to understand that the Policy and Strategic Planning Unit and the Chief Minister of Punjab's Special Monitoring Unit are taken on board. In this regard, it would be of great value that indicators related to Pneumonia and Diarrhea are included in the stock take of the Chief Minister of Punjab. In Sindh, it would be helpful to notify a dedicated focal person for the monitoring of Pneumonia and Diarrhea commodities.

6.3 ACCOUNTABILITY FRAMEWORK

6.3.1 Final Outcome 1: Putting in Place Updated Policies and Strategies

Outcomes (Strategic Objectives)	Activities	Primarily Responsible	Supporting Partner	Indicators
Federal Level				
Decision makers are on board for the new recommendations on the treatment of Pneumonia and Diarrhea	Establish and operationalize the CSG at the federal level	MNHSRC	UNICEF	CSG Notified at the Federal Level Number of CSG meetings conducted CSG meetings performance scoring criteria developed
	Develop a coordination mechanism for the CSGs	CSG	MNHSRC	Coordination mechanism developed for CSGs
	Recommendations of the CSG are made binding upon the government	MNHSRC	UNICEF, CSG	Notification Issued
	Conduct advocacy for policy change	CSG	UNICEF	Number of seminars, meetings and advocacy sessions conducted
	Include the updated commodities in the national essential medicine lists	DRAP	UNICEF	New Essential Medicine list containing the updated commodities notified
Federal level procurement lists include the updated commodities	Include the updated commodities in the federal procurement lists	DRAP	UNICEF	New procurement list containing the updated commodities notified
IMNCI Guidelines are updated	Update the IMNCI guidelines to include the updated commodities	WHO	UNICEF	Updated IMNCI guidelines approved and notified
Health Information Systems are updated	Change the recording and reporting tools, update the DHIS and MIS	MNHSRC	UNICEF	• Updated DHIS and MIS notified
	Train the master trainers on HIS	MNHSRC	UNICEF	Number of Master trainers trained on updated DHIS
	Train the Healthcare providers on new HIS	MNHSRC	UNICEF	Number of healthcare providers trained on updated DHIS

Punjab

Decision makers and policy makers are on board regarding the changes required for the management of pneumonia and diarrhea according to the new global recommendations

Revitalize the CSG

Primary and Secondary Healthcare department (P&SHD)

UNICEF

Scoring criteria developed for assessing performance of CSGs

Representatives from the CM-SMU and Specialized healthcare and Medical education department are made part of the CSG

DGHS

UNICEF

Notification issued

Make the recommendations of the CSG binding upon the government

Primary and Secondary Healthcare department

UNICEF

Notification issued

Conduct Advocacy for Policy change

CSG

UNICEF

Number of seminars, meetings and advocacy sessions conducted

Draft a Child Survival Strategy for Punjab

Primary & Secondary Health department, Specialized healthcare and Medical Education department

IRMINCH

Newborn and Child Survival Strategy Prepared and Approved

Essential Medicine List include the updated commodities on Pneumonia and Diarrhea

Include the updated commodities in the essential medicine list

Primary & Secondary Health department,

UNICEF

New Essential Medicine list containing the updated commodities notified

Public Procurement List include the updated commodities on pneumonia and diarrhea	Include the essential commodities in the public procurement lists	Primary & Secondary Health department, Specialized healthcare and Medical Education department	UNICEF	New procurement list containing the updated commodities notified
Health Information Systems are updated	Change the recording and reporting tools, update the DHIS and MISs	Primary and Secondary healthcare department Specialized Healthcare and Medical Education department	UNICEF	Updated DHIS notified with updated commodities
	Train the Master Trainers on the new HIS	Primary and Secondary healthcare department Specialized Healthcare and Medical Education department	UNICEF	Number of Master trainers trained on updated DHIS
	Train the healthcare providers on the new HIS	Primary and Secondary, Specialized Healthcare and Medical Education department	UNICEF	Number of healthcare providers trained on updated DHIS

Sindh					
Decision makers and policy makers are on board regarding the changes required for the management of pneumonia and diarrhea according to the new global recommendations	Revitalize CSGs	Provincial Health Department	UNICEF	Scoring criteria developed for performance of CSGs	
	Recommendations of the CSG are made binding on the government	Provincial Health Department	UNICEF	Notification issued	
	Conduct Advocacy for Policy change	CSG	UNICEF	Number of seminars, meetings and advocacy sessions conducted	
	Essential Medicine List include the updated commodities on pneumonia and diarrhea	Provincial Health Department	UNICEF	New Essential Medicine list containing the updated commodities notified	
	Public Procurement List include the updated commodities on pneumonia and diarrhea	Provincial Health Department	UNICEF	New procurement list containing the updated commodities notified	
Health Information Systems are updated	Change the recording and reporting tools, update the DHIS and MISs	Provincial Health Department	CSG	Updated DHIS implemented having information about the updated commodities	
	Train the Master Trainers on the new HIS	Provincial Health Department	CSG	Number of Master trainers trained on updated DHIS	
	Train the healthcare providers on HIS	Provincial Health Department	UNICEF	Number of facility in-charges trained on updated DHIS	
Robust Monitoring Mechanism is in place	Dedicated focal person notified in the Office of DGHS for pneumonia and Diarrhea	Provincial Health Department	CSG	Notification Issued	

6.3.1.1 Description of Operational Modalities & Stakeholders

Ministry of National Health Services, Regulation and Coordination has a pivotal role in steering the national direction towards highlighting the role of Pneumonia and Diarrhea in the child mortality. The MNHSRC is responsible for notifying the Child Survival Group at the Federal level. Furthermore, MNHSRC and DRAP have a central role in updating the national essential medicine list and Federal drug procurement list. WHO is responsible for updating the IMNCI guidelines. These guidelines serve as a standard training material for the management of childhood illnesses. These efforts will require a supportive role from the UNICEF. It is envisaged that all these efforts will take place through the platform of Child Survival groups at the Federal level. The Federal level CSG will have an additional task of creating a coordination mechanism for all the CSGs in Pakistan. It is therefore critically important that this CSG is chaired by a person that can create smooth communication channels between the provinces.

Policy change in the Punjab province essentially entails putting the required strategic focus on the child mortality due to Pneumonia and Diarrhea. It therefore requires a Child Survival Strategy like Sindh. This strategy will help to steer the administrative and financial efforts required to address the child mortality and morbidity. Our findings suggest that Punjab has made progress on updating the essential medicine lists and Health Information Systems. However, implementation of these changes requires strong commitments from key stakeholders. It is important to know that health department in Punjab has been bifurcated into two departments i.e., Primary and Secondary healthcare department and the Specialized & Medical Education department. Child survival strategy will require inputs from the Specialized Healthcare and Medical Education department. It is therefore imperative to include a representative from that department as well. Furthermore, it is important to note that Punjab Government has put in a lot of efforts to strengthen and revitalize the MNCH program in the form of IRMNCH. DGHS chairs the CGS and therefore CSG becomes an important platform for the accountability patterns required for the desired outcomes. Our findings reveal that the CSG has started taking roots in the Punjab province. The CSG comprises of almost all the stakeholders and so far its decisions have not faced any hindrance from the decision makers in the province. Accountability in the context of public health is an interesting topic when it comes to Pakistan. Unlike United Kingdom or other western nations where public health comes as a strong election agenda and point of debate, public health, historically has not been certainly one of the yardsticks for the masses to choose the representatives. This lack of demand from the masses has been fuelled by lack of education, unemployment, poor accountability mechanisms and the complete absence of capital market intermediaries. Furthermore, the watchdogs like the mass media were not immune to an attitude of indifference to the issues like public health. However recently, political developments and the robust growth of mass media have brought the issues of public health to the national debate. Furthermore, increased development assistance from the development partners in the last decade has tremendously increased the focus on public health. Resultantly, there has been an enhanced focus on the accountability of the health services. One important example is the stock-take by the Chief Minister of Punjab (largest province of Pakistan by population). Stock take requires every district officer health of the Punjab province to be answerable for the progress on the prioritized areas on the monthly basis to the office of the secretary. Chief Minister himself takes the stock take on quarterly basis. This one exercise has dramatically improved the health system on certain indicators. It therefore becomes important that a representative from the SMU is made part of the CSG and subsequently the indicators related to the Pneumonia and Diarrhea are included in the Chief Minister's Health road map and stocktake.

Sindh has made significant progress as far as necessary policy change is concerned. The draft of New Born Survival strategy is already pending approval. The essential medicine list already contains new medicines in the term "preferable". Health information systems are being updated. However it is worth mentioning that there

is no structure like CM-SMU in Sindh, it therefore becomes important that the DGHS puts in place a strong monitoring system. A dedicated focal person for monitoring progress on Pneumonia and Diarrhea will help to keep track of the progress. Furthermore following factors are necessary for successful implementation of accountability for the desired outcomes (WHO, 2015).

1. Availability of these commodities entails a lot of commitment and funnelling of efforts at the top level of all stakeholders involved. It is important that secretaries, program directors, CEOs and other top managers are committed to advancing the culture of accountability by routinely setting the tone, leading by example, setting clear goals, roles and responsibilities and articulating expectations. It is highly important that accountability is enforced and encouraged from offices of the Secretaries of all national and provincial health departments. Furthermore, role of Director Generals of Health services at both Federal and provincial levels is very crucial in a number of ways. The country and provincial level leadership of development partners like WHO and UNICEF must use their influence to generate necessary efforts required from stakeholders. Furthermore, their role becomes highly important in keeping the project on track and aligned with the objectives.
2. A culture of accountability and transparency is actively promoted as a shared value and is demonstrated through clear articulation and consistent application of rules and regulations, policies and procedures including ethical values and standards of conduct. Main role has to be played by the government and development partners like UNICEF and WHO through platform of Child Survival Groups. It is very important that CSGs meet on regular basis for assessment of progress. CSGs must make sure that progress data is being shared frequently and there is an environment for problem solving and collaborative participation. Further, meetings are assessed on strong scoring criteria.
3. The most critical part of this process is level of communication between different stakeholders. It is of high importance that CSGs serve as a potent platform, where stakeholders can discuss matters related to implementation in a conducive environment. Outcomes heavily rely on synergistic efforts of the different stakeholders. Therefore, a two-way communication mechanism is critically important for achieving the milestones. CSG must develop an efficient complaints and response system.
4. Priorities are communicated clearly, and work plans and activities are aligned to achieve agreed-upon results. It is highly important that the work plan is shared with all the key stakeholders with clear responsibilities, timelines and clearly defined indicators of change. Performance objectives are cascaded down through different levels and are reflected in the context of overall objectives.
5. Risks to achieving results and objectives are identified, assessed and used to inform decision-making, to allow for development of mitigation plans and actions, and to ensure that policies, procedures and internal controls are relevant and effective.

6.3.2 Final Outcome 2: Clinical Management Practices Reflect Global Recommendations

Outcomes (Strategic Objectives)	Activities	Primarily Responsible	Supporting Partner	Indicators
Federal Level				
Training programs are in place for the healthcare providers at the Federal level	Conduct IMNCI Trainings at the hospitals under federal ambit	MNHSRC	CSG	Number of healthcare providers trained on IMNCI
Punjab Level				
Training programs are in place at different levels for the treatment of pneumonia and diarrhea	Include Emphasis on pneumonia and diarrhea in Medical School Training	Specialized Healthcare and Medical Education Department	UNICEF, WHO	Notification Issued
	Conduct continuous IMNCI training (shorter version of one week)	Primary and Secondary Healthcare Secretariat	IRMNCH	Number of healthcare providers trained on IMNCI
	Impart training on induction	Primary and Secondary Healthcare Secretariat	IRMNCH	Number of healthcare providers trained on induction into service
	Conduct continuous refresher Trainings	Primary and Secondary Healthcare Secretariat	IRMNCH	Number of total healthcare providers provided refresher trainings in the last two years
Prescribing behavior of the healthcare providers in the private sector is according to the global recommendations	Engaging the private sector practitioners through Healthcare commissions	Punjab healthcare commission	UNICEF	Number of private providers engaged through regulatory authorities
	Engaging private sector practitioners through regulatory and professional bodies like FPAP, PMA, PMDC, PPA	CSG	UNICEF	<ul style="list-style-type: none"> Number of private practitioners included in the training for IMNCI

	Engaging the private sector through the medical representatives of the pharmaceutical firms	CSG	UNICEF	Number of introductory visits by the medical representatives of the pharma firms
Best performing healthcare providers are rewarded both in the public and private sector	Instituting a mechanism for the nominations of Child Survival Awards	Primary and Secondary Healthcare Department, Specialized Healthcare and Medical Education Department	UNICEF, WHO	Criteria notified for the Child survival awards
	Sindh Level			
	Training programs are in place at different levels for the treatment of pneumonia and diarrhea	Provincial Health Department	UNICEF, WHO	Updated Curriculum
	Conduct Continuous IMNCI training (shorter version of one week)	Provincial Health Department	MNCH	Number of healthcare providers trained on IMNCI
Prescribing behavior of the healthcare providers in the private sector is according to the global recommendations	Conduct Training on Induction	Provincial Health Department	MNCH	Percentage of healthcare providers trained on induction into service
	Conduct continuous refresher Trainings	Provincial Health Department (Secretariat)	MNCH	Percentage of total healthcare providers provided refresher trainings in the last two years
	Engage the private sector practitioners through Healthcare commissions	CSG	Sindh Healthcare Commission	Number of private providers accessed through SHCC
	Engage private sector practitioners through regulatory and professional bodies like FPAP, PMA, PMDC, PPA	CSG	PPA	Number of private practitioners included in the training for IMNCI
Institute a mechanism for the nominations of Child Survival Awards	Engaging the private sector through the medical representatives of the pharmaceutical firms	CSG	UNICEF	Number of introductory visits by the medical representatives of the pharmaceutical firms
	Institute a mechanism for the nominations of Child Survival Awards	Provincial Health department	UNICEF, WHO	Criteria notified for the Child survival awards

6.3.2.1 Description of Operational Modalities & Stakeholders

The current management practices for the Pneumonia and Diarrhea need to be updated with the global recommendations. Findings suggest that the majority of the healthcare providers are not even aware of the new global recommendations. Lack of trainings on the management of Pneumonia and Diarrhea and no emphasis on Pneumonia and Diarrhea in the medical school curriculum has contributed to an overall lack of focus on Pneumonia and Diarrhea. It is of utmost importance that the medical school training addresses the need of treating Pneumonia and Diarrhea in an efficient and updated manner. On the other hand; unregulated private sector presents another significant challenge for changing the prescribing behaviour of the healthcare providers in the private sector. This requires a multi-pronged strategy involving healthcare commission, professional bodies of the healthcare providers and pharmaceutical corporations.

It is critically important that the healthcare providers in the public and private sector treat Pneumonia and Diarrhea according to the global recommendations. This change can be brought through a combination of different strategies. Comprehensive training programs, regular refresher courses and an emphasis on the Pneumonia and Diarrhea in the medical school training can bring the necessary focus required for the change in prescribing behaviour. The findings suggest that in addition to the above mentioned activities it would be essential to take on board organizations like FPAP and PPA for changing the prescribing behaviour in the private sector. Furthermore, the role of nascent healthcare commissions needs to be discussed for the required change in the prescribing behaviour. Finally, pharmaceutical firms can play a very important role in changing prescribing behaviour of healthcare providers in the private sector. They have the ability to generate necessary pressure required to bring change in prescribing behaviours.

Changing prescribing behaviour of physicians will require a synergy from different players. Change in the prescribing behaviour in government sector will require a strong training mechanism. At provincial level, health departments strongly rely on inputs from the provincial MNCH programs (IRMNCH in Punjab) for training and other related matters. Though the provincial program don't have strong sanctions mechanism to implement technical inputs but still relationship is strong enough to implement the desired interventions. Change in prescribing behaviour in private sector requires a multi-pronged strategy and different stakeholders. It requires involving healthcare commission, professional bodies of healthcare providers, pharmaceutical corporations and some other relevant factors. This interaction and relationship patterns represent a certain challenge. Private sector represents a huge share of the health system. However, there are no concrete accountability patterns for interventions in private sector. For example Punjab healthcare Commission has managed to register more than 50% of private healthcare establishments. Now it's the time for PHC to take actions for ensuring compliance of standards. Following recommendations are proposed to fast-track achievement of the outcome

1. It is imperative that the health department takes a strong joint ownership with the MNCH program for the implementation of this project. A strong advocacy must be conducted simultaneously with the both MNCH program and the health department. The inputs from the MNCH program regarding the IMNCI training, change of curriculum must be implemented by the Health Departments. It is therefore imperative that the health department must take a joint ownership to make sure that trainings are in place.
2. It is recommended to take on board the academic institutions to impart training related to Pneumonia and Diarrhea to every medical student in a mandatory way.
3. Changing prescribing behaviour of the medical officers working in the public sector will require strong coordinated efforts. Health department will impart trainings at two levels. Before the induction of every

medical officer, there should be a training program which comprehensively addresses the training needs of Pneumonia and Diarrhea and then a refresher is conducted after every two years.

4. On the other hand, changing the prescribing behaviour of the private practitioners will need a lot of efforts. The private practitioners play a main role in the treatment of Pneumonia and Diarrhea. Punjab healthcare commission has been established with the mandate of regulating the healthcare establishments in the Punjab province. Sindh on the other hand is in the process of establishing the healthcare commission. According to the Punjab healthcare commission, currently there are around 13000 private practitioners in the province and they have been able to register 50 % of these practitioners. Therefore with this lack of regulation the role of the independent bodies like FPAP (Family Physicians association of Pakistan), PMA (Pakistan Medical Association) and PPA (Pakistan Pediatric Association) becomes critically important. Furthermore, the role of the pharmaceutical firms through their medical representatives becomes more important in changing the prescribing behavior of the private practitioners. It is therefore of critical importance that the pharmaceutical manufacturers be taken on board for this purpose.

6.3.3 Final Outcome 3: Local Production of Proposed Commodities

Outcomes (Strategic Objectives)	Activities	Primarily Responsible	Supporting Partner	Indicators
Federal Level				
The updated commodities are being produced at the domestic level by the local manufacturers	Establish and operate the production promotion working group	MNHSR&C, DRAP	UNICEF, Provincial Health Departments, Pharmaceutical manufacturers	Production Promotion working group notified
	Inclusion of up-dated commodities in the departmental procurement lists	Provincial Health Departments		Revised procurement list notified

6.3.3.1 Description of Operational Modalities & Stakeholders

Currently, there is almost limited demand for most of the proposed commodities. However, it is encouraging to find that there have been a substantial number of firms that have registered for the production of some of these commodities. Additionally, the price offering on the basis of projection models presents a sustainable revenue model especially when some products will serve as an alternative to already existing and established products. However, the registration process and the investment scenario need to be facilitated and incentivized. Without a robust private sector manufacturing these commodities, it is impossible to sustainably supply the masses. Interest of the manufacturers cannot be generated unless there is a strong market case supported by adequate projected demands over the next few years. Furthermore, the process has to be incentivized and facilitated on the different levels for promoting investment in these commodities. Making a business case for the firms and protecting the rights of the patients will require multileveled efforts. As a first step, it is important that a Production Promotion Working Group is notified. Simultaneously, it is important that efforts on the demand creation through the change in the prescribing behaviour of the healthcare providers are carried out on war footings. A strong and continuous engagement of all stakeholders is a need of the hour. Our findings suggest that the Ministry of National Health Services Regulation and Coordination and the Drug Regulatory Authority of Pakistan need to establish and operate a Production Promotion Working Group to incentivize the local manufacturing of these commodities.

6.4 ASSUMPTIONS INFORMING THEORY OF CHANGE

Each strategic area and the associated outcome are based on a certain set of assumptions that guide our theory of change. It is very important to understand and outline the assumptions associated with each outcome. In the following lines, the assumptions associated with the strategic areas are discussed.

6.4.1 Policy Change

Existing national and provincial policies and guidelines are updated in line with the global recommendations (WHO/GAPPD) for management of Diarrhea and Pneumonia among under five children in Pakistan by 2019. The following are assumptions and preconditions for the necessary policy change:

- Evidence based advocacy efforts are conducted with the relevant decision makers and these efforts bring about the necessary changes in the attitude of the decision makers.
- Child Survival groups are empowered, committed and capable of implementing the interventions
- A joint accountability framework and annual work plan is formed under the stewardship of child survival groups
- Policy makers and professionals have improved knowledge about the effectiveness of the new global recommendations and are fully on board for the changes required
- The essential medicine lists and procurement lists have been updated to incorporate the new recommendations
- The Health Information Systems are updated to reflect the new commodities
- Governments make the Pneumonia and Diarrhea a priority by including the indicators in their Prioritized Monitoring systems

6.4.2 Clinical Management Practices

Revised and updated Pneumonia and Diarrhea treatment guidelines are translated into relevant action plans by all provincial/areas health departments in Pakistan by the end of 2019. The following are assumptions and preconditions for the outcome:

- Medical schools are ready to put additional focus on the Pneumonia and Diarrhea
- Government provides enough funding and administrative attention for the training programs required to change the prescribing behaviour
- Professional bodies like PPA and organizations like healthcare commissions are fully on-board for playing a role in changing the prescribing behaviour of the private sector
- Updated training programs are in place and these programs change the prescribing behaviours of the healthcare providers
- Health care providers and all the relevant stakeholders have the improved knowledge, skills and capacities to effectively treat the children in line with the global recommendations
- Relevant decision makers are sensitized about the steps involved and for the effective resource allocation according to the new guidelines

- Community has the acceptability for these updated commodities
- Pharmaceutical companies acknowledge the business case of these commodities and play an active role in changing the prescribing behaviour of the healthcare providers in the private sector

6.4.3 Local Production of Proposed Commodities

Following are preconditions and assumptions are proposed for local production.

- Feasibility analysis points out to a strong business case for these commodities
- Government supports and encourages the local manufacturing of these commodities through Production Promotion Working Group
- Demand is generated by changing the prescribing behaviours of the healthcare providers
- Pharmaceutical companies acknowledge the business case of these commodities and play an active role in changing the prescribing behaviour of the healthcare providers in the private sector

Our findings have pointed out to us the key stakeholders that will play a crucial role for our desired impact. Following is a brief description of the stakeholders when seen especially in the context of acceleration of the availability of the commodities. The stakeholders can be categorized according to the sector and the level within the health system. Once the stakeholders have been identified it is critically important that the relative relationship of these stakeholders is analysed keeping in view the outcomes required from these relationships. The relative patterns of these relationships are discussed in detail in the accountability section.

Table 12: Stakeholders

Sector	Micro Level	Micro Level	Micro Level
Public/ Government	MNHSRC, DRAP, Provincial Health Department, Vertical programs	District Health Officer, District Coordinator of Vertical Programs	Medical officers, Health facility In-charges, Community Health Workers Patients
Private	FPAP, PPA, Pharmaceutical manufacturers	Regional Management of Pharmaceutical manufacturers,	Private practitioners, Representatives of the Pharmaceutical manufacturers, Community
Development Partners	WHO, UNICEF (Federal Level)	WHO, UNICEF (Provincial and District Level)	

Summary of Theory of Change and Accountability Framework

Pathway of Change and Strategic Areas

- Policy Change
- Updated Clinical Management Practices
- Local manufacturing of the proposed commodities
- Strengthened Logistics and Procurement System
- Budgeting for the Updated Commodities

Policy Change

- Policy makers and decision makers are made aware of the global recommendations and they are committed to bring the necessary changes.
- Child Survival Groups are committed, capable and empowered and for the required changes.
- National Vision and Provincial Strategies emphasize the importance of Child Survival.
- Essential Medicine Lists and Procurement Lists contain the required commodities.
- DHIS and MIS of the LHW program reflect the new commodities
- IMNCI guidelines are updated according to the global recommendations.
- A strong monitoring mechanism for the Pneumonia and Diarrhea Indicators is in place.

Local Manufacturing

- Establish and operate the production promotion working group (MNHSR&C, DRAP, Pharmaceuticals, PPA, UNICEF)

Updated Clinical Management

- Training programs are in place for the health care providers
- Prescribing behaviour of the health care providers in the private sector is according to the global recommendations

POLICY ANALYSIS

The goal of the project is to ensure that the relevant national policies are in place, understood and adhered to in order to ensure availability of the essential commodities for improving management of childhood Diarrhea and Pneumonia and increasing Child Survival by the end of 2019.

THE PROBLEM AND THE POLICY (IES)

Pakistan's National Vision for coordinated priority actions to address challenges of reproductive, maternal, newborn and child health and nutrition, reflects an augmenting political commitment to maternal, newborn, and child health. The vision focuses around main challenges impeding further reduction of maternal and child mortality, including insecurity and the countrywide mal-distribution of limited human resources in the health sector; inequitable access to care, drinking water and sanitation; low quality of interventions and limited capacity in planning, management and evaluation. Health vision with a holistic focus on system strengthening, included key policy directions i.e. vigilant use of existing funds, investing for social protection, public performance accountability, coordinated and joint target achievement with private sector, regulation, producing quality human resources and standardized health services.

It has been studied that although formation of drug policy is an integral component of national health policy, it has not been updated since the year 2000.

In context of GAPPD recommendation of improved sanitation facility to prevent Diarrhea and Pneumonia, this landscape study revealed that Pakistan published its National Sanitation Policy in 2006 and has not updated the same since then. However, few pertinent and effective projects including Pakistan Approach to Total Sanitation (PATS) and UNICEF's Water, Sanitation and Hygiene (WASH) programs are taking the agenda forward through emphasizing the need for achieving and sustaining an open defecation free environment both in rural and urban areas.

Regarding the policy on community case management for Pneumonia and Diarrhea, Pakistan has made a commitment to adopt WHO and UNICEF recommended IMNCI and iCCM guidelines at facility and community level. Although Pakistan has been implementing this strategy since the late nineties, but it has failed to scale up at the required level, resulting in implementation in 10 districts across Pakistan only. Another key intervention in this regard, has been the initiation of Child Survival and Health Grants Program (CSHGP) introduced with an implementation framework for community case management to improve the community care-seeking behavior, however its encouraging impact is yet to be achieved.

After the 2010 devolution, provincial health sector strategies of both Sindh and Punjab had emphasis on improving child health under the RMNCH and Nutrition initiatives. Moreover, overall system actions required for enhanced child health care and to reduce mortality and morbidity formed part of strategies. However, in spite of being aware that Diarrhea and Pneumonia are major killers of children, it has been seen that no defined

child health policy existed at any governance level, although Government of Sindh has taken the lead and drafted 'New Born Survival Strategy', which is in process of being implemented.

The baseline landscape analysis found that both Sindh and Punjab's Essential Medicine Lists aligned with the WHO and UNICEF recommended Pneumonia and Diarrhea commodities, however, the replacement of suspension with the dispersible tablets still needs to be supported with robust arguments for implementation purposes. It was pointed out that once the local pharmaceutical manufacturers start producing the dispersible tablets, it would create a positive pressure on the public and private sector.

The policy analysis reflects that recently the focus on the health has increased at the political level. Specifically, Punjab has improved the health budget and the health department has been bifurcated into two departments for an efficient service delivery. Conversely, both Punjab and Sindh have created District Action Plans and District Operational Plans, addressing the child health services, which also included management of Pneumonia and Diarrhea.

Considering connectivity of the provincial management with the district health offices, plays a key role in operationalizing efforts and interventions aimed at policy translation, recent IT based communication platforms supported by UNICEF and PITB were found out to be major pushing force in increasing the communication between the stakeholders.

The analysis revealed that there is no evidence-based drug quantification and forecasting system found in Punjab, resulting in lack of supply on the basis of actual demand. However, Sindh has recently developed and implemented an evidence-based system that generates the demand on need.

Previously the lack of focus on both Pneumonia and Diarrhea could be gauged from the fact that Pneumonia was not listed as a separate disease in DHIS, while Diarrhea was listed with dysentery. However, in continuation of the recent amendment in emphasis on both these silent killers, Punjab has developed a new PC-1 for upgrading DHIS, which will have mechanism to collect and disseminate data of disease prevalence on daily basis and generate alert for any suspected disease out-break/epidemic to ensure timely response. Similarly, Sindh is also in the process of upgrading and revising DHIS tools and procedure manual including indicators about availability of Zinc DT, Amoxicillin DT and Low osmolarity ORS in the stock available at the facility. It also has a provision of entering OPD data for Diarrhea and dysentery separately for under 5 children. All the GAPPD recommendations shall be included in the updated version of DHIS.

Although both provinces face serious reservations regarding the validity and reliability of data in the DHIS and MIS of LHWs, Punjab is preparing a 'Data Validation Manual' for improving the quality of data.

One of the main barrier in policy translation has been the lack of adequate human resources especially dearth of epidemiologists at the district and provincial level. Training, especially on IMNCI has remained a challenge, however support of UNICEF and programs like IRMNCH is playing a proactive role in capacity building of relevant staff.

Though districts have autonomy to plan their own supervisory and monitoring visits, which are notified to primary level facilities and for community based workers, barriers like lack of funds for repair, maintenance and POL severely affect the ability to conduct monitoring. The policy analysis demonstrated the need for an integrated monitoring system that involved the vertical programs. Sindh with the support of USAID has built a system for monitoring, whereas Punjab has made significant progress in the accountability of health related interventions. Chief Ministers Special Monitoring Unit (CM-SMU) has been tasked with the accountability related to the prioritized areas of intervention in the Punjab. This monitoring system has arguably created a huge sense of accountability within the health sector management of the province, in which diseases like Pneumonia and Diarrhea needs to be highlighted to bring the much needed priority and focus.

THE POLITICS

In order to facilitate the policy translation and change process, there is a felt need for generating sustained political will and commitment within the current and future governments to ensure availability of essential commodities for improving management of childhood Diarrhea and Pneumonia and increasing child survival in Pakistan.

On the basis of identified barriers and facilitators to policy translation, following are the proposed outcomes to reduce the number of child deaths due to the Pneumonia and diarrhoea:

1. Existing national and provincial policies and guidelines are updated in line with the global recommendations (WHO/GAPPD) for management of diarrhoea and Pneumonia among under five children in Pakistan by 2019.
2. Revised and updated Pneumonia and diarrhoea treatment guidelines are translated into relevant action plans by all provincial/areas health departments in Pakistan by the end of 2019
3. Essential commodities (Amoxicillin DT, Zinc DT, Co-packaged ORS and Zinc, oxygen, ARI timers, and pulse oximeters) are available for treatment of childhood Pneumonia and Diarrhoea in Pakistan by the end of 2019.

The successful acceptance of conclusions drawn from policy analysis and recommendations made under theory of change and accountability framework, requires that the role of each influencer and stakeholder is recognized, and intervention/strategy to mitigate the barriers at each level should be identified. Translation of this knowledge into sustained result-oriented political commitment, increased allocation of resources, and continuous monitoring of progress is crucial.

Four key stakeholder audiences that need to be tapped are listed below:

- 1) **Politicians & Policy Makers:** At this level, linkages need to be drawn between lives lost due to silent killing diseases like Pneumonia and Diarrhea and their effect on infant mortality and morbidity. Without the highest government involvement, dissemination of knowledge, prioritization and increased focus on these diseases may not be possible. The government's active participation is also needed to coordinate child survival policy with health, and education policies, easing the rollout of effective management of Pneumonia and Diarrhea.
- 2) **Local Managers & Service Providers:** Advocacy at this tier ensures renewed emphasis on the importance of adopting revised and updated Pneumonia and diarrhoea treatment guidelines and the efficient use of essential commodities. Convincing regarding coordination with other maternal and child health messaging and local manufacturing can ensure greater acceptability of proposed essential Pneumonia and Diarrhea commodities.
- 3) **Community:** A large share of the population still needs to be convinced about the ease of use and convenience of dispersable tablets, however this can be achieved through involvement of local GPs and medical stores/pharmacies in prescribing recommended commodities.
- 4) **Influencers:** This set of stakeholders can act as ambassadors for advocating the benefits of effective management of diarrhoea and Pneumonia to the three audiences above. In Pakistan's context influencers can be classified under the four pillars below:
 - **Media and Intelligentsia:** A powerful agent that exercises influence on policy makers through demands of accountability, and, shapes norms and influences informal discourse at the community level through its entertainment interface. Currently, there are more than 10 million cable subscribers, with a high percent of households owning radio/TV sets and reading newspapers in Pakistan. Thus, media can exert significant

influence that can be used to nurture positive perceptions and demand for essential commodities through popular anchors and writers. Further, publications in various journals may be promoted to encourage related research in Pakistan.

- **Donors, NGOs and development partners:** This group may be advocated to allocate more funds focussed towards the two diseases.

Policy making in Pakistan is not a highly coherent and rational process that each part leads logically and inexorably to each succeeding part. Stages of policy formulation do not necessarily follow each other through time in any regular or consistent pattern. Advocates should keep on pushing for implementation even after initial support for project planning appears to have been won (Grindle & Thomas, 1991). Therefore, an advocacy campaign shall follow an interactive and process-oriented strategy by addressing all distinct phases of policy cycle through identified influencers and processes – starting from problem identification and policy formulation to its implementation and evaluation of the potential outcomes.

Problem identification is the most critical in the policy process. In proposed advocacy campaign, agenda setting shall involve processes and activities through which researchers and analysts can exert the greatest influence on decision-making ('the intelligence functions'). Empirical data and scientific analyses shall set the stage and provide context by defining problems and translating them into simplified images, which shall tend to sidle into policy deliberations. A key component of the strategy shall be translating these problems and solutions into simplified images and understandings that speak to the interests and concerns of non-expert publics, including politicians and decision makers.

The adoption and implementation of policy entails more than analysis. Research has identified that a policy reform initiative may be altered or reversed at any stage by the pressures and reactions of those who oppose it, as intent to implement a policy is not the same thing as a real policy (Anderson, 1997). Policy advocacy is mainly about systemic mobilization of attention, which can be best achieved through broad-based advocacy coalitions. In the proposed advocacy campaign, such coalitions may be the network of individuals and organization sensitized on issue of Pneumonia and Diarrhea and its impact on child survival.

SUGGESTED ACTIVITIES AND STRATEGY MATRIX

Target Audience	Influencers	Strategies	Tools and techniques
Politicians, Policy makers and planners	Academia / intelligentsia and Policy entrepreneur	Collaborate with champions to reach out to and convince relevant politicians and assembly members working on health and finance to convince policymakers and planners about the positive link between lives lost due to silent killing diseases like Pneumonia and Diarrhea and their effect on infant mortality and morbidity, making Pneumonia and Diarrhea a top agenda item. Advocacy must be aimed at the government to increase evidence-based budget allocation and long-term monitoring mechanisms in place to monitor and strategize effective management of both diseases.	Directly with politicians, policy makers and implementers: National and Provincial Forums, advocacy coalition, seminars, round tables, face-to-face meetings, policy briefs.

	The politicians should be reached out during this upcoming electoral process to put the emphatic focus on Pneumonia and Diarrhea in their manifestos.	
Media (electronic / print)	The government and implementers in line departments should be encouraged to continue implementation to improve access to quality child survival services and essential commodities for communities. Ministers should be focused to encourage communicating this spirit to the line departments. The government should be promoted to play a strong monitoring and guiding role.	Through media and intelligentsia: Advocacy seminars, round tables, face-to-face meetings, advocacy coalition, newspaper columns, editorials, talk shows.
Donors and development partners	<p>Role of media:</p> <p>Collaborate with champions to highlight the child survival issues and the health challenges intertwined with them. Play a critical initial role in sensitizing politicians and government on these issues through their 'privileged access'.</p> <p>Partner with major national media groups to highlight the issue among political actors and masses. Work with the news channels to frame the perspective. Facilitate the media personnel and intelligentsia in crafting messages.</p>	<p>Through donors and development partners:</p> <p>Advocacy seminars Round tables Face-to-face meetings</p>
	<p>Use local media to highlight the issue among communities and families e.g. report stories about the positive effects of effective Pneumonia and Diarrhea management.</p> <p>Role of donors and development partners:</p> <p>Use their influence to keep sustained focus on services provision and commodity access to reinforce this message in their interactions with policy makers and politicians.</p> <p>Make Pneumonia and Diarrhea part of their development programs including those with the government.</p>	

Local managers and healthcare providers	<p>At district level, advocate with local managers and service providers (GPs, medical stores/ Pharmacies). The critical role that managers can play in ensuring availability of recommended essential commodities and the providers' role in raising need through counselling.</p> <p>Advocate with PMDC and medical universities to encourage the required prescribing behavior as well as making treatment guidelines, a part of education and training of the curriculum. CME activities to be arranged for providers to enhance their capacities to manage Pneumonia and Diarrhea.</p>	<p>Round tables Face-to-face meetings workshops Seminars CME activities</p>
Community	<p>Gatekeepers Pharmaceutical companies</p> <p>Raise positive awareness about the use of essential commodities, and transmit messages that highlight the benefit. This will lead to effective demand creation for Pneumonia and Diarrhea commodities.</p> <p>Additionally, advocacy with gate-keepers of the community will create a circle of influence that will further boost the demand for such commodities. Collaborate with local pharmaceuticals to produce and manufacture recommended Pneumonia and Diarrhea commodities and to ensure availability and widespread access through effective marketing to rural and other communities using their own network.</p>	<p>Media campaign, Advocacy by local health providers</p> <p>Pharmaceutical companies: Face to face meetings Seminars</p>



LESSONS LEARNED & CONCLUSIONS DRAWN

This chapter encapsulates all the major takeaways from the findings of this research for improving the treatment of Pneumonia and Diarrhea and to inform the policy decision making. The chapter is organized as policy environment, clinical management practices and pharmaceutical feasibility sections.

8.1 POLICY ENVIRONMENT

Studying the policy environment in treating fatal diseases like Pneumonia and Diarrhea led to many revelations. In the post devolution scenario, the provincial health sector strategies have a main guiding role for the areas related to service delivery. Most of the provincial health sector strategies are on the verge of completing the terms for which they were drafted and will be reviewed in the next year. This provides an opportunity to incorporate the necessary changes required to enhance the focus on morbidity and mortality in children due to Pneumonia and Diarrhea. Data is not analyzed at the district level and the same time, validity and reliability of data gathered from districts, received at the highest point is questionable. Provincial Health Sector Strategy of Punjab lacks an emphatic focus on child survival whereas Government of Sindh has drafted first Child Health Strategy which focuses on necessary interventions at the strategic level. No child survival groups were found to be in existence at the Federal level. Sindh has evidence based medicine cost estimation while Punjab does not have any such procedure. Sindh has already included the Amoxicillin and Zinc in the EML with the word “preferred.” On the contrary EML at the Federal level and in the province of Punjab contain Amoxicillin and Zinc in the “Solid Oral Dosage Form.” Sindh and Punjab have already incorporated the dispersible tablets (DTs) in the provincial essential medicine lists and the process of updating the IMNCI guidelines has also been initiated. USAID USP-PQM is assisting in promoting the quality of medicines in Pakistan. Sindh and Punjab have already made progress in updating the health information systems which reflect the global recommendations and also LHW MIS. However, some issues like mention of Pneumonia in health information systems, still needs to be added.

Conclusion & recommendations:

- There is a critical need for advocacy at policy level to raise priority of Pneumonia and Diarrhea as diseases causing high mortality and morbidity at national level.
- The office of DGHS should have a dedicated focal person for Pneumonia and Diarrhea for monitoring purposes.
- Forums like Chief Minister Special Monitoring Unit can be utilized to provide a great opportunity for enhancing priority of Pneumonia and Diarrhea and for monitoring of its implementation.
- Recommendation of establishing Child Survival Groups should be made mandatory upon the government.
- The crucial role of community health workers should be recognized and harnesses in reducing mortality and morbidity caused by Pneumonia and Diarrhea, hence programs like LHWs program should be further strengthened.

8.2 CLINICAL MANAGEMENT PRACTICES

A general understanding was prevalent among almost all stakeholders that lack of hygiene, poor sanitation and unclean drinking water were the root causes of Pneumonia and Diarrhea. Concept of dispersible tablet was not popular amid stakeholders, especially among facility and pharmacy in-charges. “Tablet” was instantly perceived as a substance hard for children to swallow, hence unsuitable for their consumption.

Facility in-charges underscored the importance of the LHWs in managing Diarrhea and Pneumonia and highlighted the need for motivating and incentivizing them. Issues including lack of funds and logistic support for training, inadequate budget for medicines and their undersupply, poor ambulance service etc. were also emphasized. There was certain level of awareness, acceptability and availability of Low Osmolarity ORS but there wasn't much awareness or acceptability of Zinc nor were they informed about its availability and practical usage. General practitioners expressed concern over lack of access to clean drinking and that being a major cause of childhood illnesses. They were extremely enthusiastic about training sessions on Pneumonia and Diarrhea in near future. Pharmacy in-charges believed that placing orders for medicines was dependent upon demand, price, quality, side effects it had and the season of diseases. They assumed specialists to be more professionally competent than the GPs. They wanted government to play its role in quality control and logistics of the medicines. Parents and caretakers were aware that poor hygiene, contaminated drinking water, under nourishment and unhealthy diet, along with extreme temperature change was responsible for causing Pneumonia and Diarrhea. They urged the government to show more commitment towards their wellbeing and voiced their demand for clean drinking water, hygienic environment, free medication, better transport facilities to the hospitals, availability of doctors and lesser waiting time, better infrastructures and support facilities at the hospitals etc. They mentioned that they were not adequately equipped with the required medical supplies, tools or guidelines. They were also concerned about their safety and security while going out in the field.

Conclusion & recommendations:

- There is a need for consistent training regimen and an IT based case documentation system at community level.
- Free sampling can be an effective tool for penetrating the market, especially for new forms of medicines like DT.
- Field and community level testing prior to scale up is required to enhance acceptability of DT.
- Dispersible tablets need to be named and branded differently to deal with the preconceived notion of tablets as hard to swallow substance.

8.3 PHARMACEUTICAL FEASIBILITY

Role of the pharmaceutical manufacturers was deemed to be crucial in changing the prescribing behaviour of the private sector. Hence a feasibility analysis was conducted to explore the opportunities for local production of desired commodities in Pakistan and to assess the market potential of pharmaceutical industry in meeting the need of updated Pneumonia and Diarrhea commodities. It was found that, presently the local industry is meeting 70% demand of all the finished products and the sector is expanding in the international market. The quality of locally manufactured drugs is regulated by the Drug Regulatory Authority of Pakistan (DRAP), which on average takes 15-18 months to process registration of a new product. This process however can be expedited if the public interest demands so. Although DRAP's rules currently do not allow marketing of co-packaged Zinc and ORS but has no restriction on Co-packaging of the same after purchase. While one local company was found to be licensed to manufacture Amoxicillin DT, over 15 large to medium sized local pharmaceutical companies were identified which were known to produce Zinc DT and Low Osmolarity ORS. Five key companies; ZAFSA, ATCO, FEROSONS, AMSON and Well n Well have expressed willingness to enhance production after agreeing

on promotion strategy jointly prepared with UNICEF. Factors that may influence supply include capability and capacity to use technology, profitability, presence of substitute, site of manufacturing plant and sustenance of demand. Factors which may influence demand include; affordability, availability/accessibility, operational and marketing strategies. Furthermore, they also demonstrated a readiness to cooperate with UN agencies in launching advocacy campaigns to enhance demand.

At present, ZAFA is the only known local manufacturer of Amoxicillin DT in Pakistan with a production capacity of 1.4 million tablets per day. Considering prevalence of ARI and availability of substitutes and other competing factors, it is presumed that ZAFA alone can meet the requirement of Amoxicillin DT in just 53 work days if manufacture in full capacity. Based on assumption that 23% of under five children (7,072,644) suffer from Diarrhea each year in Pakistan, it is estimated that 100 million dosages of Zinc sulphate are required for 14 days treatment of under-five Diarrhea patients. ZAFA and FEROSONS, geographically located in Northern and Southern regions of the country, can jointly meet this requirement in 36 days. Approximately 42.4 million sachets of 20.5 g/l or 21.2 million sachets of 10.2 g/l of low osmolarity ORS will be needed to meet the requirement according to the burden of disease. Two companies, ATCO and FEROSONS, having production capacity to manufacture 120,000 sachets per day, can meet this requirement in less than 27 weeks. To fulfil the need of Diarrhea commodities at a tertiary care facility, there may be something to learn from a unique supply model practiced at The Children Hospital and The Institute of Child health Lahore.

Conclusion & recommendation:

- Advocacy campaigns should be planned to enhance demand for commodities in collaboration with UN agencies and pharmaceuticals companies, seeking support through their Corporate Social Responsibility mechanism.



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ANNEX

ANNEX 1

1. INTERVIEW GUIDE FOR FACILITY IN-CHARGE (BHU & RHC)

Name of Health Facility:

Name of the Respondent:

Designation:

Qualification:

Experience:

Contact Number:

Email:

Interviewer 1:

Interviewer 2:

Date:

Time of Interview: Start Time _____ End Time _____

CONSENT STATEMENT

Read to Respondent:

Assalam-o-Alaikum.

I am _____ representing a health research organization 'Contech International'. We are conducting a research for the Government to improve the services of this and other facilities and would like to ask some questions regarding availability of commodities and prescribing behavior. It is up to you to allow us to conduct this interview and if you allow, you may refuse to answer any question or stop the interview at any time. We assure you that information that you will provide and your identity will remain completely confidential. Do you have any question/s for me? May I proceed with the interview?

_____ Date _____

Interviewer's signature

(Indicates respondent's willingness to participate)

CHECKLIST FOR AVAILABILITY OF COMMODITIES FOR MANAGEMENT OF < 5 PNEUMONIA & DIARRHEA CASES

A) Trainings/Refreshers for Management of Pneumonia & Diarrhea (Write the number of staff who received these trainings)

Staff trained during past 24 months	No of Staff	IMCI	ARI	CDD	Breast Feeding/ Micronutrient Deficiency	EPI/ Cold Chain Management
-------------------------------------	-------------	------	-----	-----	--	----------------------------

A1 Consultant

A2 SMO/MO

A3 WMO

A4 Staff Nurse

A5 Health Technician

IMNCI(Integrated Management of Childhood Diseases)

ARI (Acute Respiratory Infection)

CDD (Control of Diarrhoeal Diseases)

EPI (Extended Program On Immunization)

B) Standard Guidelines for Diagnosis & Management of Pneumonia & Diarrhea (Mark ✓ for available and not available)

Guidelines	Available	Not Available
------------	-----------	---------------

B1 Guidelines for Pneumonia/ARI case management

B2 Guidelines for Diarrhea/Dysentery Case Management

B3 Guidelines on Storage of Drugs

B4 Guidelines for Cold Chain Management

B5 EPI Guidelines

C) Essentials for Pneumonia & Diarrhea Case Management: (Mark ✓ for yes or No)

Commodities	Available		Functional	
	Yes	No	Yes	No

C1 Oxygen cylinder

C2 Oxygen flow meter

C3 Pulse oximeter

C4 Ambo bag (For Child)

C5 Nebulizer

C6 ILR to maintain cold chain

C7 Supplies to mix and dispense ORS (e.g. cup)

C8 Source of clean drinking water

C9 Ambulance

• ILR (Ice Lined Refrigerator)

• ORS (Oral Rehydration Solution)

D) Drugs for Pneumonia and Diarrhea Treatment: (Mark ✓ for available and not available status of drugs but for stock outs write the number of months for which medicine was not available)					
Drugs for Pneumonia and Diarrhea Treatment	Current status		Stock Outs *		
	Available	Not Available/Expired	(July 2016 - June 2017)		
D1 Syrup Amoxicillin					
D2 Amoxicillin Dispersible Tablets (DT)					
D3 Injection Amoxicillin					
D4 Pneumococcal Vaccine					
D5 Syrup Zinc					
D6 Zinc Dispersible Tablet (DT*)					
D7 ORS packets					
D8 ORS-Zinc Co-packaging					
D9 Ringer lactate Solution					
D10 0.45% Normal Saline/ Dextrose Saline					
<ul style="list-style-type: none"> • DT (Dispersible tablet) • Note: Please check the Stock register (medicines/supplies) for stock outs and write number of months for mentioned period 					
E) Record keeping and Reporting (DHIS): (Mark ✓ for yes or No)					
Commodities	Material	Available		Updated	
		Yes	No	Yes	No
E1 OPD Register					
E2 In-patients Register (RHC)					
E3 Stock Register (Medicine/Supplies)					
E4 Stock Register (Equipment/Furniture)					
E5 PHC Facility Monthly Report Form					
E6 Procedures Manual for DHIS/MIS					
<ul style="list-style-type: none"> • OPD (Out-patient Department) • RHC (Rural Health Centre) • PHC (Primary Health Care) • DHIS (District Health Information System) 					

1. I'd like to know about main childhood related illnesses in the catchment area of your facility. Can you please comment on the caseload of Pneumonia and Diarrhea?

Probes:

- i. About what proportion of children (less than 5 years) is brought to this facility that suffers from Pneumonia and Diarrhea?
- ii. What is your view about the major causes of spread of these diseases in your community and how can this be prevented?
- iii. What type of treatment approach or professional help is commonly preferred in the community for these diseases (e.g. self-treatment, traditional healer, homeopathic, allopathic)?

2. I would like to know about the skill/competence of the staff at your facility for managing childhood illnesses? Can you please tell us about any training(s) received during the service for dealing such diseases?

Probes:

- i. What in your view is the importance and benefits of in-service trainings for enhancing skill/competence to manage childhood illness, particularly Pneumonia and Diarrhea?
- ii. When was the last time you or any of your staff member received such training? If no, what could be the reason for not arranging such trainings?
- iii. Who usually arrange such trainings (like Health Department, development partners or pharmaceutical companies)?
- iiii. Are these trainings conducted at the facility or some outside venue? What is your preference for the venue of such trainings and why?
- v. What deficiencies did you notice in these trainings? In your view, how can these be improved?
- vi. If you have received training, did any refresher follow it? If no, what could be the reason for not providing refresher training?

3. Now, I would like to know about the use of protocols and guidelines (like IMNCI guidelines) for managing Pneumonia and Diarrhea in children at your facility. What are these protocols and guidelines, kindly explain?

Probes:

- i. Can you please explain their usefulness in diagnosing and treating childhood illness?
- ii. If no such specific protocols/guidelines are available, can you please comment on the reasons?

4. Now, we will like to know about the diagnosis and management of Pneumonia at your facility? Please tell us how do you diagnose children suffering from Pneumonia?

Probes:

- i. How do you diagnose and classify Pneumonia on the basis of its severity and does its treatment also varies accordingly? Kindly explain.
- ii. Do you think any particular equipment is essential for the diagnosis of Pneumonia? If there is any deficiency, please explain reasons for shortage of equipment.
- iii. How commonly antibiotics are used for treatment of Pneumonia?
- iiii. Have you ever heard of any dispersible (soluble in water) antibiotic tablet? If so, do you perceive any advantage of dispersible tablets over syrups?
- v. In your opinion, what is the perception of the community regarding use of dispersible tablets?
- vi. Do you think there is any role and advantage of using oxygen in treating Pneumonia? Is it being used at your facility? If not, can you explain the reasons?
- vii. In your opinion, how deficiencies in equipment and medicines can be addressed?
- viii. In case of complicated Pneumonia cases, what referral mechanisms exist for transferring these children to higher-level health facilities?

5. Can you please tell us how do you manage children suffering from Diarrhea at your facility?

Probes:

- i. How do you diagnose childhood Diarrhea and do you differentiate it from dysentery?
- ii. Now focusing on Diarrhea, do you classify patients on the basis of severity of dehydration? If so, how?
- iii. What options do you have to treat childhood Diarrhea with oral medications?
- iiii. Is there any role of oral Zinc in its treatment? If so, what type of Zinc formulation is usually provided at your facility?
- v. Have you ever heard of any dispersible (soluble in water) tablets of Zinc? If so, do you perceive any advantage of dispersible tablets over syrups?
- vi. In your opinion, how would community take the idea of using dispersible tablets?
- vii. Do you think there is any advantage of using Low Osmolarity ORS compared to regular ORS in treating Diarrhea?
- viii. Is your facility provided with Low Osmolarity ORS? If no, please state reasons?
- ix. In case of complications, what referral mechanisms exist for transferring these children to higher-level health facilities?

6. Please tell us about any stock-out of aforementioned medicines that are used for treating Pneumonia and Diarrhea?

Probes:

- i. How common are these stock-outs? Kindly comment on the medicines that suffer from stock-out more frequently.
- ii. How do you treat these children, when there is stock-out of medicines at the facility?
- iii. In your opinion, what are the reasons for these stock-outs?
- iiii. Do you have suggestions for ensuring un-interrupted supply of these medicines and commodities?

7. Now, we would like to know about the process of forecasting and quantification of medicines and supplies at your facility?

Probes:

- i. Is it based on burden of disease in your catchment area or based on data from DHIS?
- ii. Are the supplies provided according to the demands submitted? If no, kindly explain reasons for under-supply.
- iii. Have you or other staff member received any formal training on forecasting and quantification of medicines and supplies?
- iiii. What do you suggest for improving the process of forecasting and quantification to overcome stock-outs?

8. In your opinion, what is the use of DHIS in context of management of children suffering from Pneumonia and Diarrhea?

Probe:

- i. Are you satisfied with the quality (accuracy of information, completeness and timeliness) of DHIS recording and reporting? If not, how can we improve it?
- ii. Do you find any duplication of reporting (like Disease Surveillance System and DHIS) that may affect the decision-making?
- iii. Does DHIS help keeping the record of referrals made in complicated cases?
- iv. Do you think that current DHIS indicators sufficiently cover the data requirements for managing Pneumonia and Diarrhea? Do you suggest to include some indicators?
- v. Can you comment on the capacities of your staff on using DHIS tools? If there are any gaps, how can these be addressed?

9. Now, coming to the role of community health workers in management of Pneumonia and Diarrhea, particularly Lady Health Workers (LHWs) and Community Midwives (CMWs), what is their importance in reducing morbidity and mortality associated with these diseases?

Probes:

- i. Is there any network of these workers associated with your facility?
- ii. Are these workers fully equipped and have been provided with sufficient supplies to perform their role in management of these illness?
- iii. How their role can be further strengthened?
- iv. Do you find any gap in linkages between these workers and public/private health facilities? What are your suggestions to improve this situation?

10. Now, I would like you to comment on the cost of treating Pneumonia and Diarrhea?

Probes:

- i. In your opinion, does cost play a significant influence over the choice of medicines prescribed and service provider?
- ii. How commonly do you prescribe a medicine to be bought from market in case of its stock-out?
- iii. What do you do in case of a non-affording patient? Do you prescribe inexpensive medicines?

2. INTERVIEW GUIDE FOR GENERAL PRACTITIONER SICK

Name of Health Facility:
 Name of the Respondent:
 Designation:
 Qualification:
 Experience:
 Contact Number:
 Email:
 Interviewer 1:
 Interviewer 2:
 Date:
 Time of Interview: Start Time _____ End Time _____

CONSENT STATEMENT

Read to Respondent:

Assalam-o-Alaikum.

I am _____ representing a health research organization 'Contech International'. We are conducting a research for the Government to improve the services of this and other facilities and would like to ask some questions regarding availability of commodities and prescribing behavior. It is up to you to allow us to conduct this interview and if you allow, you may refuse to answer any question or stop the interview at any time. We assure you that information that you will provide and your identity will remain completely confidential. Do you have any question/s for me? May I proceed with the interview?

_____ Date _____

Interviewer's signature

(Indicates respondent's willingness to participate)

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-------------------------------------	-------------	------	-----	-----	--	-------------------------------

A1 Consultant

A2 SMO/MO

A3 WMO

A4 Staff Nurse

A5 Health Technician

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CDD (Control of Diarrhoeal Diseases)

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B3 Guidelines on Storage of Drugs

B4 Guidelines for Cold Chain Management

B5 EPI Guidelines

C) Essentials for Pneumonia & Diarrhea Case Management: (Mark ✓ for yes or No)

Commodities	Available		Functional	
	Yes	No	Yes	No

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C2 Oxygen flow meter

C3 Pulse oximeter

C4 Ambo bag (For Child)

C5 Nebulizer

C6 ILR to maintain cold chain

C7 Supplies to mix and dispense ORS (e.g. cup)

C8 Source of clean drinking water

C9 Ambulance

• ILR (Ice Lined Refrigerator)

• ORS (Oral Rehydration Solution)

D) Drugs for Pneumonia and Diarrhea Treatment: (Mark ✓ for available and not available status of drugs but for stock outs write the number of months for which medicine was not available)					
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	Available	Not Available/Expired	(July 2016 - June 2017)		
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D2 Amoxicillin Dispersible Tablets (DT)					
D3 Injection Amoxicillin					
D4 Pneumococcal Vaccine					
D5 Syrup Zinc					
D6 Zinc Dispersible Tablet (DT*)					
D7 ORS packets					
D8 ORS-Zinc Co-packaging					
D9 Ringer lactate Solution					
D10 0.45% Normal Saline/ Dextrose Saline					
<ul style="list-style-type: none"> • DT (Dispersible tablet) • Note: Please check the Stock register (medicines/supplies) for stock outs and write number of months for mentioned period 					
E) Record keeping and Reporting (DHIS): (Mark ✓ for yes or No)					
Commodities	Material	Available		Updated	
		Yes	No	Yes	No
E1 OPD Register					
E2 In-patients Register (RHC)					
E3 Stock Register (Medicine/Supplies)					
E4 Stock Register (Equipment/Furniture)					
E5 PHC Facility Monthly Report Form					
E6 Procedures Manual for DHIS/MIS					
<ul style="list-style-type: none"> • OPD (Out-patient Department) • RHC (Rural Health Centre) • PHC (Primary Health Care) • DHIS (District Health Information System) 					

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Probes:

- i. About what proportion of children (less than 5 years) is brought to this facility that suffers from Pneumonia and Diarrhea?
- ii. What is your view about the major causes of spread of these diseases in your community and how can this be prevented?
- iii. What type of treatment approach or professional help is commonly preferred in the community for these diseases (e.g. self-treatment, traditional healer, homeopathic, allopathic)?

2. I would like to know about the skill/competence of the staff at your facility for managing childhood illnesses? Can you please tell us about any training(s) received during the service for dealing such diseases?

Probes:

- i. What in your view is the importance and benefits of in-service trainings for enhancing skill/competence to manage childhood illness, particularly Pneumonia and Diarrhea?
- ii. When was the last time you or any of your staff member received such training? If no, what could be the reason for not arranging such trainings?
- iii. Who usually arrange such trainings (like Health Department, development partners or pharmaceutical companies)?
- iiii. Are these trainings conducted at the facility or some outside venue? What is your preference for the venue of such trainings and why?
- v. What deficiencies did you notice in these trainings? In your view, how can these be improved?
- vi. If you have received training, did any refresher follow it? If no, what could be the reason for not providing refresher training?

3. Now, I would like to know about the use of protocols and guidelines (like IMNCI guidelines) for managing Pneumonia and Diarrhea in children at your facility. What are these protocols and guidelines, kindly explain?

Probes:

- i. Can you please explain their usefulness in diagnosing and treating childhood illness?
- ii. If no such specific protocols/guidelines are available, can you please comment on the reasons?

4. Now, we will like to know about the diagnosis and management of Pneumonia at your facility? Please tell us how do you diagnose children suffering from Pneumonia?

Probes:

- i. How do you diagnose and classify Pneumonia on the basis of its severity and does its treatment also varies accordingly? Kindly explain.
- ii. Do you think any particular equipment is essential for the diagnosis of Pneumonia? If there is any deficiency, please explain reasons for shortage of equipment.
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- iiii. Have you ever heard of any dispersible (soluble in water) antibiotic tablet? If so, do you perceive any advantage of dispersible tablets over syrups?
- v. In your opinion, what is the perception of the community regarding use of dispersible tablets?
- vi. Do you think there is any role and advantage of using oxygen in treating Pneumonia? Is it being used at your facility? If not, can you explain the reasons?
- vii. In case of complicated Pneumonia cases, what referral mechanisms exist for transferring these children to higher-level health facilities?

5. Can you please tell us how do you manage children suffering from Diarrhea at your facility?

Probes:

- i. How do you diagnose childhood Diarrhea and do you differentiate it from dysentery?
- ii. Now focusing on Diarrhea, do you classify patients on the basis of severity of dehydration? If so, how?
- iii. What options do you have to treat childhood Diarrhea with oral medications?
- iiii. Is there any role of oral Zinc in its treatment? If so, what type of Zinc formulation is usually provided at your facility?
- v. Have you ever heard of any dispersible (soluble in water) tablets of Zinc? If so, do you perceive any advantage of dispersible tablets over syrups?
- vi. In your opinion, how would community take the idea of using dispersible tablets?
- vii. Do you think there is any advantage of using Low Osmolarity ORS compared to regular ORS in treating Diarrhea?
- viii. In case of complications, what referral mechanisms exist for transferring these children to higher-level health facilities?

6. Now, I would like you to comment on the cost of treating Pneumonia and Diarrhea?

Probes:

- i. In your opinion, does cost plays a significant influence over the choice of medicines prescribed and service provider?
- ii. How commonly do you prescribe a medicine to be bought from market in case of its stock-out?
- iii. What do you do in case of a non-affording patient? Do you prescribe inexpensive medicines?

3. INTERVIEW GUIDE FOR CHILD CARETAKER

FACILITY IDENTIFICATION

Name of the facility

Address

Facility Code (HID No)

PATIENT IDENTIFICATION

(Inclusion Criteria: Child under age 5 suffering from respiratory symptoms or loose motions)

Age of Child

Gender

Provisional Diagnosis

Caretaker's name

Relationship with Child

Mobile number

CONSENT STATEMENT

READ TO CARETAKER:

Assalam-o-Alaikum.

I am _____ representing a health research organization 'Contech International'. We are conducting a research for the Government to improve the services of this and other facilities and would like to ask some questions about your experiences here today. It is up to you to allow us to conduct this interview and if you allow, you may refuse to answer any question or stop the interview at any time. We assure you that information that you will provide and your identity will remain completely confidential. Do you have any question/s for me? May I proceed with the interview?

_____ Date _____

Interviewer's signature

(Indicates respondent's willingness to participate)

Code	Question	Response/Observation (Encircle the appropriate option)
01.	What source of drinking water is routinely used at your home? [Multiple options possible]	a. Mineral water b. Filtered water (home/community) c. Water direct from Tube well d. Tap water after boiling e. Piped water f. Tap water from overhead tank g. Boring h. Other
02.	Does the child use the same source? [If use different source for child mention in space provided]	a. Yes- use same source b. No- use other source:
03.	How frequently you (caretakers) wash hands with soap or any other detergent? [Multiple options possible]	a. Every time before taking meal b. Every time after using toilet c. Sometimes before taking meal d. Sometimes after using toilet e. Occasionally before taking meal f. Occasionally after using toilet g. Every time before preparing meal h. Sometime before preparing meal
04.	How frequently child's hands are washed with soap or any other detergent? [Multiple options possible]	a. Every time before taking meal b. Every time after using toilet c. Sometimes before taking meal d. Sometimes after using toilet e. Occasionally before taking meal
05.	Has the child been vaccinated?	a. Yes b. No (Skip to Q. 7)
06.	If yes- has child received complete course of vaccination due for his/her age? (up to 12 months) [Ask if vaccination card is available. Note & take snap of name & date of vaccine last received]	a. Complete b. Partial c. Don't know b. Name of vaccine last received: c. Date_____
07.	How much time did you wait for your turn to meet the care provider, after reaching the facility?	a. Less than 30 minutes b. 31-60 minutes c. 61- 120 minutes b. More than 120 minutes

08.	Approximately how much time did care provider spend with you during consultation?	a. 1 – 5 minutes b. 6 -10 minutes c. 11- 15 minutes d. 16- 20 minutes b. More than 20 minutes
09.	Did care provider spend sufficient time listening to you about child's complaints?	a. Yes b. No
10.	Did care provider respond to all your queries about illness and care at home?	a. Responded to all b. Responded to some b. Responded to none
11.	Did care provider examine the child properly? [Select appropriate section; A or B and slash irrelevant section] (multiple options possible)	Section-A: For child with respiratory ailment: a. Took temperature b. Examined throat c. Auscultated chest b. None of the above Section-B: For child suffering from Diarrhoea a. Palpated abdomen b. Measured body weight c. Measured upper arm circumference d. None of the above
12.	Did care provider prescribe any medicine?	a. Yes b. No (Skip to Q. 22)
13.	Did you receive medicines from the facility?	a. Received all medicines b. Received some medicines c. Received no medicine
14.	What types of medicines did care provider prescribed? [multiple options possible- please take snap shot of prescription]	a. Syrup b. Tablets c. Dispersible tablets d. Sachet (e.g. ORS) e. Injection/Infusion f. All of the above g. None of the above
15.	What types of medicines did care taker receive from the facility? [multiple options possible -please take snap shot of medicines]	a. Syrup b. Tablets c. Dispersible tablets d. Sachet (e.g. ORS) e. Injection/Infusion f. All of the above g. None of the above

16.	Did prescribed medicines include any of the medicines listed? [Please check the prescription and mark the appropriate option - multiple options possible]	a. Syrup Amoxicillin b. Amoxicillin DT c. Zinc Sulphate Syrup d. Zinc DT e. ORS f. Low-Osmolality ORS g. None of the above
17.	Did care provider demonstrate method of preparation of prescribed medicines?	a. Yes b. No (Skip to Q. 19)
18.	If Yes, will you please recount the steps of preparation of these medicines? [Observe & encircle appropriate option- multiple options possible]	a. Described steps correctly for syrup b. Described steps correctly for dispersible tablets (DT) c. Described steps correctly for ORS d. Described steps correctly for all the above e. Could not describe steps for any
19.	Does care taker have correct knowledge of dosage, frequency & duration of all prescribed drugs? [Ask about individual drug and write 'Y' if yes; 'N' if No]	Drug Dose Frequency Duration Syrup DT Sachet (e.g. ORS)
20.	Do available medicines comply with national labeling standard? (Assess each medicine on 6 labeling criteria* and select option]	a. All drugs b. Some drugs c. None *Criteria: i. Manufacturing date ii. Expire date iii. Trade name iiii. Generic name
21.	Do available medicines comply with national packaging standard? [Assess each medicine on 2 packaging criteria*and select one option]	a. All drugs b. Some drugs b. None *Criteria: i. Blistered packed ii. Properly sealed
22.	Did care provider give advice about feeding/breast feeding of child, during & after illness	a. Yes b. No
23.	Did the care provider refer your child to other facility?	a. Yes b. Name of facility c. No (Skip to Q. 28)
24.	Did care provider give the child any treatment before referral?	a. Yes b. No

25.	Did care provider give you any referral slip?	a. Yes b. No
26.	Did care provider inform any one at referral facility through telephone?	a. Yes b. No
27.	How will you take the child to referral facility?	a. On facility ambulance b. Ambulance arranged by facility c. Transport/ambulance arranged by self
28.	Did you pay anything for services received, including investigations?	a. Yes b. No (end the interview)
29.	Please provide break-up of the expenses you incurred for the services.	Consultation fee Investigation Expense on Total
30.	Do you find the cost of treatment affordable?	a. Yes b. No

1. What has happened to your child and since how long has he/she been ill?**Probe:**

- i. What are the present complaints?
- ii. In your opinion, how the child has developed this disease? Explain.

2. Why did you select this facility for treatment for the child? Did you face any challenge or delay in accessing the treatment? If yes - why? Please elaborate reasons.**Probe:**

- i. Was the delay due to delayed decision making at home; or time spent during the journey or waiting time at the facility or combination of any of these factors?

3. What are the Common childhood problems in your community? Have you heard of any disease in recent times that affected large number of children and caused many deaths, especially in children less than 5 years of age? Please explain.

Probe:

- i. What is your perception about reasons behind spread of Pneumonia or diarrhoeal diseases?
- ii. In your opinion, could deaths associated with these be prevented? If yes- how?

Name of Medical Store

Name of Facility In-charge

Address

Contact Number

Interviewer 1

Interviewer 2

4. Where do most people prefer to go to seek treatment of children? What degree of influence do you think the cultural and family norms and beliefs have over the choice of treatment?

Probe:

- i. Which treatment choice is commonly preferred? (home remedies, traditional medicines, spiritual treatment or qualified professional care)
- ii. What are the reasons for your stated preference?
- iii. Where will you go if your child doesn't get well?

5. In your opinion, which preventive measures and/or habits can prevent spread of Pneumonia or diarrhoeal diseases to contacts? Please describe.

Probe:

- i. From which source have you received this information?

6. Now I would like to enquire about follow-up plan (routine/emergency) as discussed by care provider. Please elaborate

Probe

- i. When will you revisit the facility for routine follow-up?
- ii. What signs and symptoms should prompt you to revisit the facility immediately?

7. What do you say about the overall quality of services? Would you like to visit this facility again for child care?

Probe:

- i. Do you have any suggestion to improve the services?

4. INTERVIEW WITH PHARMACY INCHARGE

CONSENT STATEMENT

Read to Respondent:

Assalam-o-Alaikum.

I am _____ representing a health research organization 'Contech International'. We are conducting a research for the government for management of Pneumonia and Diarrhea in children and the availability status of medicines for these ailments. We would like to ask some questions in this regards about your experiences. It is up to you to allow us to conduct this interview and if you allow, you may refuse to answer any question or stop the interview at any time. We assure you that information that you will provide and your identity will remain completely confidential. Do you have any question/s for me? May I proceed with the interview?

_____ Date _____

Interviewer's signature

(Indicates respondent's willingness to participate)

LANDSCAPE ANALYSIS FOR POLICY TRANSLATION AND COMMODITY ACCESS IN PAKISTAN

I) Availability of medicine in stock (Mark ✓ for yes or No)

Name of Medicine	Availability	
	Yes	No
1.1 Amoxicillin Syrup (125 mg)		
1.2 Amoxicillin Syrup (250 mg)		
1.3 Amoxicillin Dispersible Tablets (DT)		
1.4 Syrup Zinc Sulphate		
1.5 Zinc Dispersible Tablets (DT)		
1.6 Low Osmolality ORS		
1.7 Zinc ORS Co-packaged		
1.8 0.45% Normal Saline/Dextrose Saline		
1.9 Ringers Lactate Solution		

II) Strategy for non-availability of prescribed medicine

02 Strategy applied (Encircle the preferred approach)	a. Provide substitute b. Arrange from elsewhere c. Refer client to other source d. Simply regret
--	---

III) Over the counter sale of medicines without prescription

3.1 Demand (Encircle most appropriate response)	a. Often b. Sometimes c. Rare d. Never
3.2 Response (Multiple responses possible)	a. Provide consultation & medicine both b. Provide medicine only c. Refer to clinician d. Refuse medicine without prescription

1. Which antibiotic is most commonly prescribed by clinicians (specialists/ General Practitioners) for the treatment of respiratory tract infections in children in your catchment area?

Probe:

- i. Do you find any difference in prescribing pattern of Specialists and GPs? If yes, please elaborate.
- ii. In your opinion, what are the prime considerations of clinician to prescribe any drug?

2. Which medicine is most commonly prescribed by clinicians (specialists/ General Practitioners) for the treatment of Diarrhea in children in your catchment area?

Probe:

- i. Do you receive prescription of Zinc for children suffering from Diarrhea? If yes how frequently and by whom? GP or specialist?
- ii. If not, probe if it was ever prescribed in the past. If so, what is probable reason for non-continuation?
- iii. Do you find any difference in prescribing pattern of Specialists and GPs? If yes, please elaborate.
- vi. In your opinion, what are the prime considerations of clinician to prescribe any drug?

3. What factor/s do you routinely consider while placing order for any new drug not acquired and sold before?

4. If any medicine is available in syrup as well as dispersible tablet form, which one, in your experience, client/patient would prefer and why so?

5. Do you have amoxicillin and Zinc in dispersible tablets (DT) formulation in stock for sale? If not, why not?

Probe:

- i. Will you like to keep Amoxicillin and Zinc (DT) in your pharmacy?
- ii. In your opinion, which marketing strategy is more likely to promote demand and sale of these drugs?

6. Do you receive prescriptions from the public sector health facilities as well (e.g. BHUs, RHC, THQ, DHQ, and MCH)? If so, about what percentage do you get such prescriptions? If not, why not?

Probe:

- i. Is the client/patient specifically referred to your pharmacy from public sector facility or is the client given free choice to select any?

GUIDELINES FOR FOCUS GROUP DISCUSSION (FGD) WITH LADY HEALTH WORKERS (LHWS)

Name of District	
Name of Health Facility	
Number of Participants	
Name of Moderator	
Name of Facilitator	
Date of Discussion	
Time of Discussion	Start time: _____ End time: _____

FACE SHEET OF PARTICIPANTS

Sr. #	Name	Age	Cadre	Education Status	Contact Number
1					
2					
3					
4					
5					
6					
7					

During the initial discussion to explain the study, the interviewer and participant should have had the opportunity to introduce themselves and to make small talk to break the ice. You can begin by saying these words to the group of participants:

‘As you know Pneumonia and Diarrhea are common causes of deaths among children under age 5. We are conducting a study to learn about quality and converge of services by LHWS to prevent and control these diseases among children and would like to know your honest views in this regards. We will start when you are ready, will listen to your view points and ask few questions to clarify some of the things you would talk about.’ May we begin? The guideline contains 14 questions and each question is followed by a set of probes. Please let participants initiate the discussion and use probes only when certain concerns are not addressed by the group.

ACCESSIBILITY AND CATCHMENT AREA

1. First I'd like to know about your catchment area. What is the estimated range of houses you register and serve and how you manage to reach to each client?

Probes:

- i. How many of you reside in this catchment area?
- ii. Those of you who don't live here, how do you manage to access/travel to allotted catchment area; especially to houses located at far away distance?
- iii. Has any additional catchment area been allotted to increase coverage?

DISEASE BURDEN OR CASES OF PNEUMONIA AND DIARRHEA

2. I'd like to ask you a little bit about your own perceptions about estimated number of cases of Pneumonia and Diarrhea.

Probes:

- i. Average cases of Pneumonia and Diarrhea LHWs dealt daily/weekly/monthly.
- ii. If get sufficient time to deal with Pneumonia & Diarrhea cases, in addition to their other responsibilities

TRAININGS AND SKILLS TO HANDLE PNEUMONIA AND DIARRHEA

3. Do you have sufficient knowledge & skill to handle cases of Pneumonia and Diarrhea?

Probes:

- i. Have you received induction & on job trainings regarding Pneumonia and Diarrhea?
- ii. How much time that has passed since received last training/refreshers?
- iii. Did you find trainings and refreshers useful? If not- why not? Any suggestion?

AVAILABILITY OF TREATMENT PROTOCOLS/GUIDELINES

4. Do you have WHO treatment and referral guideline for Pneumonia and Diarrhea in the form charts, posters or booklets?

Probe:

- i. Did you receive any audiovisual material related to Pneumonia and Diarrhea?

AVAILABILITY OF SUFFICIENT SUPPLIES FOR MANAGEMENT OF PNEUMONIA AND DIARRHEA

5. Do you have sufficient medicines and supplies for management of Pneumonia and Diarrhea?

Probe:

- i. E.g. amoxicillin, antipyretic, Zinc, ORS, ARI timer, thermometer

CASE MANAGEMENT OF PNEUMONIA AND DIARRHEA

6. How comfortable do you feel in handling a case of Pneumonia or Diarrhea at your health house or at your home?

Probe:

- i. How many of you can detect danger signs for referral?
- ii. Do you know how to classify Pneumonia and Diarrhea by using WHO guidelines? How frequently do you use these guidelines
- iii. Can you describe home remedies commonly used?

CHALLENGES IN CASE HANDLING

7. What are the issues you encounter while managing cases of Pneumonia & Diarrhea in the community?

Probe:

- i. Do you face any issue with respect to your skill and feel the need for more training?
- ii. Do you suffer lack of self- motivation? If yes- why?

HEALTH FACILITY LIAISON AND REFERRAL SUPPORT

8. I want to know, if you have established any liaison with any or more public health facilities for referral? How does health facility staff generally behave with your referred cases of severe Pneumonia and Diarrhea?

Probe:

- i. Do you have linkages with higher level facilities? (e.g. RHC, THQH, DHQH & tertiary care hospital)
- ii. What is reported experience of patients referred to these facilities? Do they generally receive supportive and considerate treatment? Give some examples.
- iii. How are patients transported to referral facilities and who pays for transport charges? Do they avail facility or community ambulance services?
- iiii. Do you keep record of referrals and feedbacks?

LIAISON WITH OTHER COMMUNITY HEALTH WORKERS

9. Have you any formal or informal liaison with other community health workers (CHWs) in your catchment area?

Probe:

- i. Do they belong to NGO or public sector organization?
- ii. Do you consider their role supportive/productive in the management of Pneumonia and Diarrhea?

MONITORING AND FEEDBACK

10. What is the usual monitoring mechanism of outreach services?

Probe:

- i. Describe working relationship between LHWs and LHS
- ii. Do officials (e.g. DDOH, DOH or EDOH) usually make informed or surprised monitoring visits?
- iii. Do they provide supportive or traditional supervision? Do you get appreciation for good work?

CASE REPORTING AND DOCUMENTATION

11. How Pneumonia and Diarrhea cases are routinely recorded and reported?

Probe:

- i. What is the frequency of reporting?
- ii. Where these reports are sent?
- iii. Do you receive feedback from health authorities?
- iiii. Do health authorities use your data for managing supplies and improving quality of services?

COMMUNITY BEHAVIOR AND RESPONSE**12. What are the issues that you encounter while managing cases of Pneumonia & Diarrhea in the community?****Probe:**

- i. Do majority of clients like receiving drugs or prefer home remedies?
- ii. Do you face any resistance or displeasure during your home visits?
- iii. Do you feel any security threat while working?

SOCIAL BELIEFS AND TABOOS**13. What is the general level of awareness about health issues among the local community?****Probe:**

- i. Do you feel cultural beliefs and practices could be one reason for not seeking proper treatment for Pneumonia and Diarrhea? If yes, please explain.
- ii. Are there taboos regarding diet for children suffering from Diarrhea and Pneumonia? If yes, give examples.
- iii. Do you think, raising awareness level of the community can improve utilization of services for Pneumonia and Diarrhea at community and facility level

SUGGESTIONS FOR IMPROVEMENT OF SERVICES

14. I'd now like to ask you to summarize your role in the provision of Pneumonia and Diarrhea services? What else do you think you need to improve the quality of Pneumonia and Diarrhea services at community level?

Probe:

- i. To what extent are you satisfied with your services? If not much satisfied, why not?
- ii. What must be done to improve the quality of Pneumonia and Diarrhea services at community level?

REVISIT OF YOUR SESSION

If the following issues do not arise spontaneously during the answers to the above questions, you may want to raise them yourself. Note: Avoid asking direct questions as much as possible; rather, prompts should be in the form of 'give us an example of ...', 'what do you think of ...', 'tell us more about ...'

- 1 Accessibility and catchment area
- 2 Disease Load
- 3 Knowledge and skill
- 4 Availability of treatment protocol/guidelines
- 5 Availability of medicine and supplies
- 6 Case management
- 7 Challenges in case handling
- 8 Health facility liaison and referral support
- 9 Liaison with the other Community Health Workers
- 10 Monitoring and feedback
- 11 Case reporting and documentation
- 12 Community behavior and response
- 13 Social beliefs and taboos
- 14 Suggestions for improvement of services

6. INTERVIEW GUIDE FOR DISTRICT MANAGERS

CEO-DHA/EDOH/DHO	
Before starting interview, remember to :	
<ul style="list-style-type: none"> • Introduce yourself and explain purpose of visit • Get formal consent for the interview and provide brief of study objectives • Ask for permission for audio recording of the interview 	
01.	<p>First I'd like to ask you about the provincial guidelines/policies to address the challenges related to child health services.</p> <ul style="list-style-type: none"> • What autonomy district health department/authority has got to make its own policies?
02.	<p>Do you have your district strategic or operational health plans? Do these plans include district targets for child health services, particularly management of Pneumonia and Diarrhea?</p> <ul style="list-style-type: none"> • What is the situation of services for Pneumonia and Diarrhea in your district? • What initiatives district has taken for improvement of these services?
03.	<p>What is the status of human resource related to Pneumonia and Diarrhea, in primary level health facilities in your district?</p> <ul style="list-style-type: none"> • What are care providers related issues for delivery of these services? • What initiatives government has taken to retain the staff on health facilities? • How do you address the absenteeism? • If not, what are the reasons for unavailability of staff? • In your opinion, how can situation of HR improve at public sector health facilities?
04.	<p>We are interested to learn about community-based healthcare providers (LHW/CMW).</p> <ul style="list-style-type: none"> • What is their role in provision of Pneumonia and Diarrhea management services, regarding diagnosis, treatment and referral? • What is the quality of Pneumonia and Diarrhea management services provided by them? • What are your suggestions to further improve their services?
05.	<p>What do you think about the competence level of staff at primary level facilities and community based staff to manage Diarrhea and Pneumonia in children?</p> <ul style="list-style-type: none"> • What is your routine mechanism for in-service training and capacity building of these staff in your district? • Do you have any in-service training program for staff at primary level health facilities and community? • Any specific training for Pneumonia and Diarrhea care provider, like IMNCI or any other training? • If you don't have in built mechanism of in-service training in your district what else you do for this purpose?

06.	<p>What is the current status of facility resources (building, equipment and supplies) for child health services, particularly Pneumonia and Diarrhea?</p> <ul style="list-style-type: none"> • Are sufficient amount of antibiotics (particularly Amoxicillin, ORS and Zinc) are provided to the primary health facilities and community-based service providers? <p>What are the common reasons for stock-outs of these medicines and supplies?</p> <ul style="list-style-type: none"> • Are any specific equipment, like ARI timers and pulse oximeters, provided to the service providers for better managing cases of Pneumonia and Diarrhea? • Does your all primary level health facilities are provided with oxygen supply for managing childhood Pneumonia? • In your opinion, how can the availability of medicines, supplies and equipment be ensured at the primary health facilities and the community-based workers?
07.	<p>Can you throw some light on your routine MIS? What is the current status of DHIS?</p> <ul style="list-style-type: none"> • What do you think about the sufficiency of DHIS tools for recording and reporting regarding management of Pneumonia and Diarrhea? • Do these reports provide adequate cover and indicate the shortage of commodities? <p>Have you made any decisions regarding management of Pneumonia and Diarrhea on the basis of the reports generated at district level? Kindly give some examples.</p> <ul style="list-style-type: none"> • How can the recording and reporting of services regarding management of Pneumonia and Diarrhea be improved?
08.	<p>What are your inbuilt mechanisms for monitoring and supervision of facility and community based staff?</p> <ul style="list-style-type: none"> • What is the current supervision policy? At which level, is responsibility of supervision fixed? • Is the supervision integrated or service specific e.g. for EPI, CMWs, LHWs, etc.? • Is there any notified district schedule for supervisory visits to the primary level facilities and community based workers? • What are your suggestions to improve the monitoring and supervision of child health services in your district?
09.	<p>How frequently do you conduct evaluation to monitor the achievement of your facilities?</p> <ul style="list-style-type: none"> • Have you generated or published any report/s of your evaluations. Kindly give some examples.
10.	<p>Do you have liaison with the local community, key persons, Community Based Organizations (CBOs) or elected representatives of the district?</p> <ul style="list-style-type: none"> • What role do they play for acceptance of health services provided by you? Kindly give some examples about the support they support. • What is usefulness of local community liaison?
11.	<p>What is your user-charges/fee policy for services, particularly services of Pneumonia and Diarrhea?</p> <ul style="list-style-type: none"> • What are your suggestions to minimize the cost as a barrier for underutilization of these services?

12.	<p>What is your impression of current utilization of Pneumonia and Diarrhea management services at primary level health facilities and in the community? How do you rate it as under, normal or over utilization?</p> <ul style="list-style-type: none"> If you are asked to take measures at various levels for improvement of Pneumonia and Diarrhea management services, what measures will you suggest at managerial, facility and community level?
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REVISIT YOUR INTERVIEW

If the following issues do not arise spontaneously during the answers to the above, you may want to raise them yourself. Note: Avoid asking direct questions as much as possible; rather, prompts should be in the form of 'give us an example of ...', 'what do you think of ...', 'tell us more about ...'

Availability of Pneumonia and Diarrhea management services

Human resource for management of Pneumonia and Diarrhea

Facility Resources for Pneumonia and Diarrhea

Community-based resources for Pneumonia and Diarrhea

Recording and reporting of Pneumonia and Diarrhea management services (DHIS)

Monitoring, supervision & evaluation of health facilities and community based workers

Community liaison and awareness

Facility and community level utilization

Suggestions for improvement

7. INTERVIEW GUIDES OF DISTRICT MANAGERS

DISTRICT LHW COORDINATOR

Before starting interview, remember to :

- Introduce yourself and explain purpose of visit
- Get formal consent for the interview and provide brief of study objectives
- Ask for permission for audio recording of the interview

01.	<p>First I'd like to ask you about the role of LHWs in reducing morbidity and mortality associated with Pneumonia and Diarrhea in children.</p> <ul style="list-style-type: none"> What are the policies and guidelines for LHW Program to deliver child health services? In your opinion, how adequate are these policies/guidelines to ensure the availability of services, particularly for the management of Pneumonia and Diarrhea?
02.	<p>To what extent are you satisfy with the program performance during the transition period after 18th amendment</p> <ul style="list-style-type: none"> In your opinion continuation of current implementation structure and policies feasible to achieve the desire targets or goals of childhood communicable diseases including Pneumonia and Diarrhea Will you suggest partial modifications or radical revamping of program governance and implementation

03.	<p>To what extent the program is sustainable after regularization of LHWs and provincialization of the program</p> <ul style="list-style-type: none"> • Probe about financial sustainability of the program in relation to further expansion and improvement of existing quality of services
04.	<p>What is the status/coverage of LHWs in your district?</p> <ul style="list-style-type: none"> • Is required number of LHWs present to cover your entire district? If not, what are the reasons for unavailability of LHWs? • In your opinion, how availability of LHWs can be improved in your district?
05.	<p>What do you think about the competence of LHWs to manage Diarrhea and Pneumonia in children at household level and for referral of complicated cases?</p> <ul style="list-style-type: none"> • What is routine mechanism for in-service training and capacity building of LHWs in your district? • Is there any specific training for prevention and treatment of Pneumonia and Diarrhea, like IMNCI or any other training? • If you don't have in built mechanism of in-service training in your district, what else you do for this purpose?
06.	<p>What is the current status of availability of commodities and equipment for child health services, particularly diagnosis and treatment of Pneumonia and Diarrhea?</p> <ul style="list-style-type: none"> • Are sufficient amount of antipyretics, antibiotics (particularly Amoxicillin), ORS and Zinc are provided to the LHWs? • In what formulation are these commodities usually provided? Probe for DT? • What are the common reasons for stock-outs of these commodities? • Are any specific equipment, like ARI timers, provided to the LHWs for better managing the cases of Pneumonia and Diarrhea? • In your opinion, how can the uninterrupted supply of these commodities be ensured for LHWs?
07.	<p>Can you throw some light on LHW-MIS?</p> <ul style="list-style-type: none"> • What do you think about the sufficiency of LHW-MIS tools for recording and reporting regarding management of Pneumonia and Diarrhea? • Do these reports provide adequate cover and indicate the shortage of commodities? • Have you made any decisions regarding management of Pneumonia and Diarrhea on the basis of the reports generated at district level? Kindly give some examples. • How can the recording and reporting of LHWs' services be improved?

08.	<p>What are your in built mechanisms for monitoring and supervision of LHWs?</p> <ul style="list-style-type: none"> • What is the current supervision policy? At which level responsibility of supervision is fixed? • Is the supervision integrated or service specific e.g. for EPI, CMWs, LHWs, etc.? • What is the role of Lady Health Supervisor regarding supervision and ensuring uninterrupted supply of commodities for LHWs? • Is there any notified district schedule for supervisory visits to the community-based workers? • What are your suggestions to improve the monitoring and supervision of child health services in your district?
09.	<p>What do you think about the integration of the LHWs with other health programs, local community, key persons, Community Based Organizations (CBOs) or elected representatives?</p> <ul style="list-style-type: none"> • What is the level integration of LHWs, LHS and CMWs in management of Pneumonia and Diarrhea in children? • What role do they play for acceptance of health services provided by LHWs? Kindly give some examples about the support they support. • What is usefulness of local community liaison?
10.	<p>What is your overall impression about the scope and scale of Pneumonia and Diarrhea case management by the LHWs (diagnosis, treatment and referral services) in your district?</p> <ul style="list-style-type: none"> • If you are asked to take measures for improvement of Pneumonia and Diarrhea case management services by LHWs, what measures will you suggest at managerial, facility and community level?

REVISITING INTERVIEW

If the following issues do not arise spontaneously during the answers to the above, you may want to raise them yourself. Note: Avoid asking direct questions as much as possible; rather, prompts should be in the form of 'give us an example of ...', 'what do you think of ...', 'tell us more about ...'

Availability of LHWs for Pneumonia and Diarrhea management services

Scope and competence of LHWs

In-service trainings of LHWs

Commodities for Pneumonia and Diarrhea

LHW-MIS status (recording and reporting of Pneumonia and Diarrhea management services)

Monitoring and supervision of health facilities

Integration and liaison

Suggestions for addressing gaps

ANNEX 2

TRAINING AGENDA

Landscape Analysis to Provide Insight on Barriers and Facilitator to Policy Translation and Commodity Access in the Public and Private Sector

Day 1: Orientation of data collection teams and presentation/mock exercises on Tools

Day 2: Field Simulation (Mock), Debriefing and finalization of Micro Plans

Day 1: 29th August, 2017

Time	Description
09:30 – 10:00	Registration of training participants
10:00 – 10:05	Recitation of verses of Holy Quran
10:05 – 10:15	Welcome note & introduction of participants
10:15 – 10:30	Orientation to assignment
10:30 – 11:00	Facility in-charge Interview
11:00 – 12:00	Mock exercises
12:00 – 12:30	Client exit interview
12:30 – 01:30	Mock exercises
01:30 – 02:30	Lunch & Prayer
02:30 – 02:45	Medical store in-charge tool
02:45 – 03:15	Mock Exercises
03:15 – 03:30	Tea Break
03:30 – 04:00	FGD with Lady Health Workers
04:00 – 04:40	Mock Exercises
04:40 – 04:50	Briefing on field simulation and teaming up
04:50 – 05:00	04:50 – 05:00

Day 2: 30th August, 2017

ANNEX 3

DISSEMINATION PLAN

S. No	Activity	Rationale/objective of the activity	Target audience	Numbers
1.	Develop customized 'project advocacy leaflets'/ policy briefs containing infographics	To advocate results of baseline landscape analysis To disseminate research	1) Decision makers: Federal, provincial and district health departments, officials from DRAP, Pharmaceutical manufacturers, PPA, Healthcare Commissions/Health Regulatory Authority and elected representatives. 2) Influencers: Donors and Development Partners, Media representatives, health service providers, intelligentsia, academia and health sector experts /professionals	200
2.	Project completion report	To present findings and conclusions drawn from the analysis and to highlight joint accountability framework for presenting theory of change.	1) UNICEF National and Provincial project Teams 2) UNICEF PMER Unit	1
3.	Summarized research report	Development of Summary Research report for wider dissemination	Stakeholders from public/private sector, Development partners	200
4.	Engage presentation	Based on findings for graphical representation	Stakeholders from public/private sector, Development partners	1
5.	Research Paper/ Conference Abstract	Publication in international journal or abstract for relevant conferences	International conferences/ forums and peer review Journals	1

6.	Press Release for Media	To present findings and conclusions drawn from the analysis and to highlight joint accountability framework for presenting theory of change.	General public, print and electronic media audience	Relevant audience
		Recognize and highlight government role, community support and positive deviants in implementation of BMGF funded child survival project		
7.	Contech Website	To enhance general interest in research study Bytes of research findings Far reaching, easily accessible dissemination of research findings	Website viewers	
8.	Contech monthly update	Disseminate information on the project and its objectives amongst Contech internal officers and staff Regular update on project progress/ findings	Contech's internal officers and staff	online

9.	Dissemination seminars at national and provincial levels	<p>hare findings of the research and 'Lessons Learnt'</p> <p>Inform policy and government strategy for enhanced commodity access with regards to Pneumonia and Diarrhea.</p> <p>Repositioning child survival policies and strategies</p>	<p>1) Decision makers: Federal, provincial and district health departments, officials from DRAP, Pharmaceutical manufacturers, PPA, Healthcare Commissions/Health Regulatory Authority and elected representatives.</p> <p>2) Influencers: Donors and Development Partners, Media representatives, health service providers, intelligentsia, academia and health sector experts /professionals</p>	3
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