IMMUNIZATION OF POLIO CAMPAIGN IN SINDH AN ANALYSIS

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Abstract

Immunization is the process of rendering a subject immune, or of becoming immune also called Inoculation and Vaccination. The word Vaccine originally referred to the substance used to immunize against Small Pox, the first immunization developed. Now, however, the term is used for any preparation used in active immunization. It is the process or procedure that protects the body against an infectious disease. Present study is consist on a project of Expanded Program on Immunization (EPI) was done. Evaluate the immunization coverage in the 23 districts of Sindh province. A total of 1234 repots were evaluated regarding coverage/Knowledge, cold chain, Behaviors, Attitudes, barriers and strategies. The results showed that among the 12-24 month old children 42% fully, 71.3% partially and 18.7% not at all immunized. Low levels of OPV 0 (65%) and high of BCG vaccination (96%) rates shown. Increased number defaulters and low levels of OPV3/penta (83%) and measles 2 (45%) vaccines indicate that completing vaccination schedule needs social and behavior change. Almost all the children in the study were reported from government health facilities. The polio virus circulation and environmental samples shown specific upsurge of virus during months of June to October. Bottlenecks were identified though many strategies were developed and implemented to combat polio circulation. Obstacles, misconceptions/beliefs among the mothers of partially immunized children and lack of information among not at all immunized group were the main reasons of non-immunization. The implications of the study are: it is utmost need to change the attitudes and behaviors to enhance routine immunization coverage.

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Introduction

All around the world every year some 12 million children die before they reach their fifth birthday, many of them during the first year of life. Seven in every 10 of these of deaths are due to diarrhea, pneumonia, measles, malaria and malnutrition-often a combination of these conditions.[1] Two third deaths of these take place in developing countries. A large share of this morbidity and mortality can be prevented by vaccination of children. Vaccination is administration of any vaccine for prevention of diseases. A vaccine is an antigenic preparation used to produce active immunity against a specific disease.[2] Immunization is the process of introducing immunity artificially by either vaccine or administration of antibody. Active immunization involves stimulating the immune system to produce antibodies and cellular immune response that protect against the infectious agent. The current approaches to active immunization are the use of live attenuated infectious agents and inactivated or detoxified agents, their extracts or recombinant products. Vaccines which protect against disease by inducing immunity are widely and routinely administered around the world, based on common sense principal that it is better to keep people from falling ill than to treat them, once they are ill. Vaccination is considered to be one of the most cost effective health intervention.[3]

Immunization is the process by which an individual's immune system becomes fortified against an agent (known as the Immunogen. **Active Immunization** is stimulation with a specific antigen to induce an immune response. **Passive Immunization** is the conferrals of specific immune reactivity on previously non immunize individuals by administration of sensitized lymphoid cells or serum from immune individuals.[4] Immunization is the process or procedure that protects the body against an infectious disease. A vaccination is a type of immunization. When this system is exposed to molecule that are foreign to the body, called *non-self*, it will orchestrate an immune response, and it will also develop the ability to quickly respond to a subsequent encounter because of Immunological memory, Therefore, by exposing an animal to an immunogen in a controlled way, its body can learn to protect itself: this is called active immunization. Passive immunization is when these elements are introduced directly into the body, instead of when the body itself has to make these elements.[5] Immunization is done through various techniques, most commonly Vaccination. Vaccines against microorganism that cause Disease can prepare the body's immune system, thus helping to fight or prevent an Infection.[6]

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[1] Imtiaz M, Izhar TS. Feeding practices of infants in Lahore. Pak J Pathol 1997; 8(3): 115-20.

[2] "History of Vaccine Schedule | The Children's Hospital of Philadelphia". Retrieved 2010-05-04. www /Wikipedia/vaccination schedule

[3] World Health Organization. Immunization services delivery and accelerated diseases control. Expanded program of immunization WHO-March, 2009.

[4] Principals and practice of infectious diseses, 1990 3rd edition.Mandbell, Douglas.Bennett

[5] Park K. Park's Textbook of Preventive and Social Medicine. M/S Banarsidas Bhanot Publishers. 20th edition: 112

[6] Government of Pakistan. National Population Policy Government of Pakistan. Immunization Handbook for Medical Officers. Dept. Family Welfare.

Strategic Approach of Immunization in Pakistan

Interrupting the remaining poliovirus transmission in Pakistan requires the following activities.

- Building on the lessons of 2009 and implementing district-specific plans to interrupt poliovirus transmission in the 11 districts, agencies or towns with persistent transmission.
- Supplementing district plans with regular national and subnational polio immunization days to maintain population immunity against importations in the polio-free areas.
- Refining social mobilization activities based on the issues which are particular to each district/agency/town.
- Improving coordination with neighboring Afghanistan, in particular for tracking/mapping of population movements. Where necessary, additional temporary or permanent vaccination posts will be set up at key gathering sites and border crossings.

Background of the Study

WHO initiated EPI in May 1974 less than 5% of the world children were immunized during the 1st. year of life against six killer diseases, DPT, T.B, Measles, Polio. However a quarter of world's children, about 25 million infants are not immunized against these killer diseases.[7] Studies from other parts of the world have identified reasons for delay or non-immunization of children. The influence of elderly in the house, side effects of the vaccines, misconceptions regarding vaccination, missed opportunities, lack of information, socio-demographic characteristics, socioeconomic factors, sickness of the child and the vaccine not available were found to be the major reasons[8]. In Pakistan expanded program on immunization was launched in 1978 with the support from WHO and UNICEF. Pakistan is one of the developing countries with the ultimate objectives of reduction in morbidity and mortality caused by six diseases known to be killer diseases for children as to be Diphtheria, Pertussis, Tuberculosis, Whooping Cough, Tetanus, and Polio.9 where infant mortality rate is quite high i.e. 65/1000 live births[11]. Nearly 1 in 10 children does not survive his or her fifth birthday. Despite the government's efforts and the EPI functioning for nearly 32 years in Pakistan, the vaccination status of children under 5 is still unsatisfactory. Utilization is higher when vaccination centers are easily accessible, have minimal administrative barriers and provide good quality care[9] Studies have shown that fixed immunization clinics often fail

[7] Prislin R, Dyer JA, Blakely CH, et al. Immunization status and socio Demographic characteristics: the mediating role of beliefs, attitudes and perceived control.

[8] Shah B, Sharma M, Vani SN. 1991. Knowledge, attitude and practice of immunization in an urban educated population. Indian J Pediatr. Henderson RH. Vaccinations in the health strategies of developing countries. Scand J Infect Dis.

[9] Zachariah PS, Cowan B, Dhillion H. 1980 Limitations of the under-fives' clinics in a comprehensive health care programme. J Trop Pediatr;

to reach those children who are at highest risk, i.e. those who fail to attend the health centers.[10] There are still many obstacles and hurdles especially in reaching out children living in remote areas. Illiteracy is another factor which keeps many children of uneducated parents from getting vaccination.

In addition to this, the program also works to immunize pregnant ladies with Tetanus Toxic vaccine to gradually eliminate Tetanus Neonatorum. Following activities are also carried out under EPI program: Celebration of National and Sub-National Immunization (SNIDs and NIDs) Days since 1994 at (Fixed centers) and since 1999 (Door to Door).Vitamin A Supplementation to 6-59 Months children started from 1999 (Twice a year)Supplementary Immunization Activities on Maternal Neonatal Tetanus (MNT) from July 2001. inclusion of Hepatitis B Vaccine in routine EPI Vaccination in 2006 with support of Global Alliance on vaccine and Immunization (GAVI) in routine immunization as tetravalent (DPT-hepatitis B) vaccine. Inclusion of Hemophilia influenza type-b in 2008 with support of GAVI in routine immunization as Combo Hip-hepatitis B-DPT. Strengthening of Surveillance System for Polio or Acute Flaccid Polio (AFP) and Measles.

The EPI Services delivery is provided through a network of 1244 Fixed EPI including 26 units at entry and exit points, 1283 Outreach Teams 89 Mobile Teams and 34 Sentinel Sites. The Provincial program were running mainly with the support of Federal EPI/CDD Cell, National Institute of Health, WHO. Routine Immunization schedule of EPI is as: BCG and OPV 0 doses are given at birth, a combination Hip-hepatitis B-DPT, which replaced the existing tetravalent (DPT-hepatitis B) vaccine and OPV at 6, 10 and 14 weeks.[11] Measles vaccine with vitamin A at the age of 9 months and 12 months. The pregnant ladies and child bearing age ladies are provided immunization against Tetanus Toxoid (TT) TT: TT 1 at first contact, TT 2 at least 4 weeks after 1st dose, TT 3 at least 6 months after 2nd dose, TT 4 at least 1 year after 3rd dose, TT 5 at least 1 year after 4th dose. Left over and defaulters are covered through second line plan from 12 months to 24 months to boost the fully immunization.[12]
UNICEF and GAVI provide the Technical Assistance, Vaccine Cold Chain Equipment, Syringes and needles and Transport, but after devolution of Plan, the funds could be transferred to Sindh province for support of vaccines, syringes and other related material.
The district is the basic functional unit to implement the program. The focal point for the EPI is the District Officer Health Preventative (DOH) or District EPI Coordinator (DEC). The DOH/DEC undeniably will ensure immunization service delivery through fixed site (includes all health facilities in the district) and outreach strategies in their districts.[13] The frequent Polio Immunization Campaigns are also less supported by the

[10] Pakistan demographic and health survey 2006-2007. Islamabad, National Institute of Population Studies; 2008.
[11] PC 1 document 2009-10 Govt Sindh Health Department
[12] Pegurri E, Fox-Rushby JA, Walker D: 2005, Effects, costs and cost-effectiveness of interventions to expand coverage of immunization services in developing countries: A systematic review of the published literature.
[13] Pegurri E, Fox-Rushby JA, Walker D: 2005, Effects, costs and cost-effectiveness of interventions to expand coverage of immunization services in developing countries: A systematic review of the published literature.

carry home money for those who are key players. Inadequate budget and delay in releases of approved funds to transfer the same to the districts. Program priorities are: Increase Routine Immunization Coverage 100% by 2015 in every district. Reach Zero Polio by December 2012-13.[14]

Reduce substantially Neonatal Tetanus by the end of year 2012-13.Reduce Measles cases by 95% and deaths by 100% by the year 2013.Reduce Diphtheria, Pertussis, Hip, Hepatitis and Childhood TB. Control of other preventable diseases (like Typhoid, Influenza, etc) by introduction of new vaccines as and when they are available in routine immunization for children < 1 year, Addition of Vitamin- a Supplementation during NIDs, SNIDs and routine program with UNICEF and other donor assistance. Increase the safety of injections used for all EPI vaccines through the use of auto-disposable/ auto-lock syringes.[15] Have efficient surveillance system in place; in particular, for detection and control of Polio or Acute Flaccid Paralysis (AFP) and Measles in the province. EPI is therefore a Diseases reduction, elimination and eradication program and not merely vaccine administration program.[16]

Identified Socio-Economic Barriers of Current Program: -

Despite significant efforts by the Government and partners, immunization indicators have not met the expected benchmarks reasons may be:

1. Ineffective and weak supervision at all levels particularly at District and Union Council level leading to incorrect practices and low staff morals.
2. Inadequate availability of, Aging and out lived Transport, Irregular and insufficient supply of vaccine and syringes,
3. Inadequate attention for demand creation, lack of parent awareness.
4. Limited access to immunization services and underutilization public health facilities at sub-urban and rural areas.
5. The EPI centers are far away from the citizens and they cannot afford the cost to reach the center,
6. Low coverage is the Lack of recipient awareness about the immunization service and its benefits for their children.[17]
7. The health facility doctors neither refer the children for vaccination to the EPI center nor welcome any EPI activity at their health centers.[18]

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[14] Bulletin of the World Health Organization 1992, Hughart N, Silimperi DR, Khatun J, Stanton B: A new EPI strategy to reach high risk urban children in Bangladesh: urban volunteers.

[15] Batt K, Fox-Rushby J, Castillo-Riquelme M: The costs, 2004, effects and cost-effectiveness of strategies to increase coverage of routine immunizations in low- and middle- income countries: India, systematic review of the grey literature. Bulletin of the World Health organization,

[16] Hong R, Banta JE: 2005, Effects of extra immunization efforts on routine immunization at district level in Pakistan. East Mediterranean Health.

[17] World Health Organization: State of the World's Vaccines and Immunization World Health Organization: State of the World's Vaccines and Immunization Geneva, 2011.

[18] National Institute of Population Studies (NIPS) [Pakistan], Macro International Inc: Pakistan Demographic and Health Survey 2008-10. Islamabad, Pakistan: National Institute of Population Studies and Macro International Inc;

Research Question

- What are the social factors that are associated with low uptake of immunization?
- What are the factors associated persistence polio circulation in Sindh?
- What are the social barriers and strategies to improve vaccination of children under five?

Objectives

The key objectives of the study were

- To determine the barriers for immunization uptake
- To determine the factors those are associated with vaccination demand.
- To determine the factors for persistence polio virus circulation.

Research Methodology

Study Design

Analytical cross sectional study was done. Office of the Expanded Program on Immunization receives monthly reports on Routine immunization coverage, surveillance of VPD from 23 districts of Sindh Province. The data of polio cases since five years was also evaluated to see the trends and polio virus circulation. Identify the social and behavioral factors associated with low uptake and strategies to improve vaccination. Duration: 2008-2012.Setting: Site analysis of data at provincial EPI office of 5 years from 23 districts of Sindh. ***Sample size:*** Compilation of monthly routine immunization data from 23 districts of Sindh and data of polio cases from five years, while sample size for vaccination has been calculated by using the EXCEL sheets. Data from all Govt. health facilities. Complete filled EPI checklist.
Monthly reports from functional EPI centers and Census technique has been used for getting catchment population.

Data Collection

Data from 23 districts and of 1244 health facilities of Sindh province Karachi has been collected. EPI focal persons of all health facilities were trained in data collection tool. EPI Focal persons collected the data on specified tool. This data has been computerized. During the study following information has been retrieved from the already collected data; the socio-demographic data including name, age, address, education status, occupation, fathers education and occupation, number of children, vaccination card, Number of Social mobilization activities and information about counseling.

Data Analysis

The data collected was transformed and analyzed, using EXEL. The analyzed variables were demographics, socioeconomics, number of BCG received, Penta 1-3, number of measles immunization between ages of 0-11 and 12 -23 months of ages and number polio cases in last 5 years documenting the Results

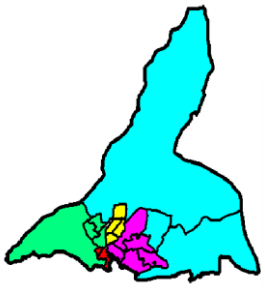
Results /Overall Immunization Profile

The following section provides a quick look at the information that emerged pertaining to the data were received their immunization coverage. BCG coverage from 2008-2012 was 85%, 87%, 81, 95%96%. OPV 0 was ,56%,51%,59%,65%.Penta 1 81%,81%,79%,90%,91%.Penta 3 72%,69%,69%78%,80%.Measels 1 72%,66%,65%,75%,71%.Measels 2 42% and45% in 2011 and 2012.in pregnant ladies and Child Bearing Age women (CBA) TT1 44%,44%,45%,60%60%.TT2 36%,34%,34%,46%,45%.TT3 5%, 8% 7%, 8%, 7%. TT4, 2%, 3%, 3%, 3%, 2%. TT5, 1%, 2%, 2%, 2%, 2%.

According to Global Polio update up to 2011 total polio cases are 650 and Pakistan had 198 cases in 2011, 23 are in 2012. By environmental sample wild polio viruses is positive in Gulshan, Gadap & Sukkur in Sindh province. Confirm polio cases are in Sindh is 3. Mean average of House hold knowledge about campaign before and after campaign is 68%. Heard of polio – **97%,** Actually know that it is a disease – **84.5%.9%** refer to polio as a vaccine, **6%** heard of polio but don't exactly know what it is, Only **55%** named polio vaccination as a way to protect from polio disease, **30%** mentioned disposal of waste water **20%** still don't know how to prevent polio

Districts of Karachi Division

	Division	No. of Districts
1	South	2 Towns
2	West	4 Towns
3	Central	4 Towns
4	East	5 Towns
5	Malir	3 Towns



Divisions of Sindh Province

	Division	No. of Districts
1	Karachi	5 Districts/18 Towns
2	Hyderabad	9 Districts
3	Mirpurkhas	4 Districts
4	Sukkur	4 Districts
5	Larkana	5 Districts

Targets 2012

Population	39.231 M
0-11 Months	1.373
12-23 Months	0.358
Pregnant Women	1.400
CBA	7.020

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EPI-SINDH

District Wise Polio Confirmed Cases 2005-2012

Year	2005	2006	2007	2008	2009	2010	2011	2012
Karachi	0	4	2	5	5	3	9	0
Hyderabad	0	0	0	2	0	1	1	0
T.Muhammad Khan	0	0	0	0	0	0	2	0
Tando Allahyar	0	0	0	0	2	0	1	0
Matiari	0	0	0	0	0	0	0	0
Thatta	0	0	1	0	0	0	8	0
Badin	0	0	0	0	0	0	4	0
Dadu	0	0	0	1	0	0	0	0
Jamshoro	0	0	0	0	0	0	1	0
Mirpurkhas	0	0	0	1	0	0	0	1
Umerkot	0	1	0	0	0	0	1	0
Sanghar	1	1	0	1	1	2	2	0
Tharparkar	0	0	0	0	0	0	0	0
Sukkur	0	2	0	0	0	1	0	0
Ghotki	1	1	1	0	0	12	0	0
Khairpur	0	0	1	2	0	2	0	0
Sh: Benazirabad	0	0	0	1	0	0	0	0
Nausheroferoz	0	1	0	1	1	0	0	0
Larkana	0	0	0	0	0	0	0	0
Kambar	2	0	5	0	1	3	2	0
Shikarpur	0	1	0	1	1	1	0	0
Jacobabad	1	1	2	3	1	1	1	0
Kashmore	0	0	0	0	0	1	1	0
Total	5	12	12	18	12	27	33	1

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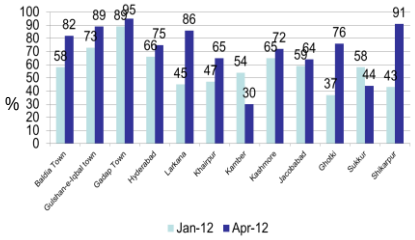
House hold knowledge about campaign dates before team arrival in High Risk districts of Sindh- IM data.



Vaccine Supply Issue 2012

Provincial Share (1st Quarter 2012)		Vaccine Received (1st Quarter 2012)
BCG	616972	617000
Polio	1542491	1520000
Penta	974167	973200
Measles	1028287	1017000
TT	894985	600000

Note: National NIH has made the vaccine targets on the basis of 90% Coverage of all antigens. But the supplied Late vaccine(mid January 2012).

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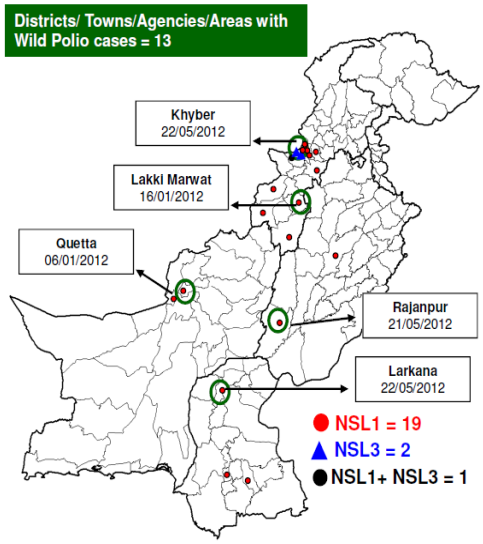
Polio Global Update*

Total cases	Year to date in 2012	Year to date in 2011	Total cases in 2011
Globally	**73**	**205**	**650**
In Endemic countries	**70**	**66**	**341**
In Non Endemic countries	**3**	**139**	**309**
Pakistan	**22**	**49**	**198**
Afghanistan	**8**	**4**	**80**
Nigeria	**40**	**12**	**62**
India	**0**	**1**	**1**
Chad	**3**	**65**	**68**

* Data in WHO as of 14 Jun 2011 for 2011 data and 12 Jun 2012 for 2012 data.

Map1: Distribution of Wild Polio cases Pakistan 2012*



Province/ Country	Date of Last Case			Number of cases 2012		
	P1	P3	P1+P3	P1	P3	P1+P3
PUNJAB	May, 2012	Jun, 2010	-	2	-	-
SINDH	May, 2012	Jan, 2010	-	3	-	-
KHYBER-PAKHTOON KHAW	Jan, 2012	Oct, 2010	-	4	-	-
FATA	May, 2012	Apr, 2012	Jan, 2012	8	2	1
BALOCHISTAN	Jan, 2012	Apr, 2010		2	-	-
AJK	-	Jun, 2000		-	-	-
GILGIT-BALTISTAN	May, 2011	-			-	-
ISLAMABAD	Sep, 2008	Sep, 2008		-	-	-
PAKISTAN	May, 2012	Apr, 2012	Jan, 2012	19	2	1

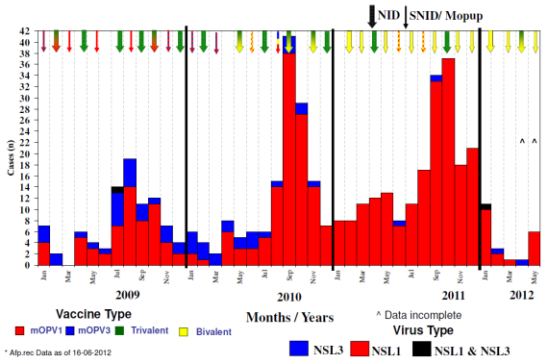
District with last polio case in province

Cases randomly placed in districts

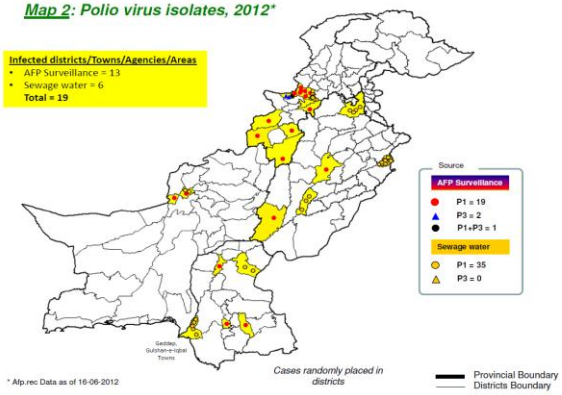
Provincial Boundary
Districts Boundary

* Afp.rec Data as of 16-06-2012

*Graph 2: Confirmed Polio Cases By Poliovirus Type, 2009-2012**



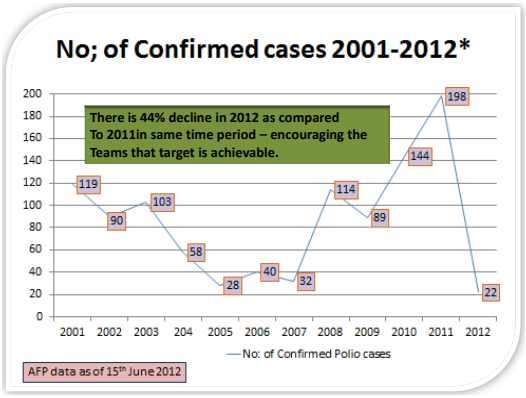
*Map 2: Polio virus isolates, 2012**



Comparison Environmental sampling results 2011-2012

District/ Town	2011^			2012*		
	Total	Wild		Total	Wild	
Lahore	14	3	21%	18	10	56%
Multan	14	8	57%	23	3	13%
Rawalpindi	4	3	75%	5	3	60%
G IQbal	9	1	11%	17	1	6%
Gadap	9	7	78%	14	4	29%
Baldia	9	5	56%	18	0	0%
Sukkur				2	2	100%
Peshawar	9	8	89%	9	9	100%
Quetta	9	8	89%	16	2	13%
Total	77	43	56%	122	34	28%

*Samples for which results are available ^Results till epidemiological week 19 Data source Polio RRL



EPI-SINDH

0-11 Months Children Antigen Wise Routine Immunization Coverage %

Sindh Province 2008 - 2012 (upto May)

Antigen	2008	2009	2010	2011	2012
BCG	85	87	81	95	96
OPV-0	56	55	51	59	65
Penta-1	81	81	79	90	91
Penta-3	72	69	69	78	80
Measles-1	72	66	65	75	71
Measles-2	-	-	-	42	45

EPI-SINDH

Preg: Ladies Routine Immunization Coverage %

Sindh Province 2008 - 2012 (upto May)

Antigen	2008	2009	2010	2011	2012
TT-1	44	44	45	60	60
TT-2	36	34	34	46	45
TT-3	5	8	7	8	7
TT-4	2	3	3	3	2
TT-5	1	2	2	2	2

Discussion

Due to transitional period (18th amendment) Interrupted supply of routine vaccine from National Institute of Health (NIH) Islamabad, The district in charge Medical Officers BHUs are not properly motivated to supervise EPI due to dual administration by Health Department as well as peoples primary health Initiative (PPHI) for basic Health Units.

The reasons for Lack of commitment of District / Town Health management team and vaccinators, Lack of practical implementation of authority of District/Town Health Management Team (DHMT/THMT) to take disciplinary action against defaulter vaccinators, Lack of accountability and reward system for health workers, Inadequate utilization of available resources for strengthening routine immunization, Lack of demand for routine immunization from the community, Also the insufficient budget for POL for outreach activities for vaccinators / monitoring by DHMT and THMT. The system of screening may be established in health facilities to reduce missed opportunities. LHWs may be utilized properly in their jurisdiction. Covering un-immunized children, zero dose data obtained from polio teams during campaign, keep routine vaccination as priority issue with local media. Presently working staff of WHO and UNICEF can be supportive to monitor and supervise routine immunization. Existence of DPEC/TPEC/UPEC committees may be utilized to promote routine immunization for community demand creation and strengthening of routine immunization. Establishment of one EPI Center in all and each union council will be beneficial. There are 205 UCs in Sindh without EPI centers; we planned to establish new 100 EPI Centers in uncovered Union Councils in 2012. To arrange the cold chain logistics. (ILRs, Stabilizers, Cold Boxes, Vaccine Carriers, Ice packets, Thermometers, Freeze watch).Training for new recruited vaccinators and refresher training for old vaccinators/LHWs, to increase BCG Coverage >95% in < 1 year children. To increase Penta-3 Coverage >90% in < 1 year children. We need to increase Measles-1 Coverage >90% in < 1 year children, increase Measles-2 Coverage >50% in 12-23months children, to increase the TT -2 coverage above 50% in Preg: Ladies and to involve all LHWs in TT & other Routine Immunization antigens in their catchments areas. To prepare and update the defaulter lists every month and these defaulters will be covered by outreach vaccinators and LHWs. Further trickling down and maintaining the level of high level government ownership to lower levels of the program. There is need to control the rising trend of pool of susceptible children in chronically bad performing areas on sub UC level. Resolve the issues of late arrival of vaccine. Large strides in improving the routine vaccination system in short time. Refusal families in Karachi though showed a degree of decreasing trend yet it will continue posing a challenge deteriorating law and order status in some areas is the latest rising challenge. Again maintaining the mobilized DCs and EDOs/THOs and their pushing role in the field will continue to be the major challenge to ensure the improvement of the implementation activities

Arrange mobile teams for hard to reach and un-reachable areas for covering the Grey Areas which includes security compromised areas. Further, we need to strengthen the disease surveillance system (Polio, Measles, AFP, MNT and NNT) by placement of epidemiologist either through regular budgetary provision or with donor support. Maintaining surveillance at certification standards is dire need of hour to Millennium Development Goal. This would require continuing to encourage actual reporting of AFP cases through efficient surveillance mechanism. Full integration of EPI in PHC system with particular emphasis on improving upon immunization services to the disadvantage population residing in urban, deserts, slums, riverine and hilly terrains as well as nomads (Afghans and Baghri). Procure buffer stock and other essentialities for efficient and

effective routine immunization and not let any gap at any moment to affect immunization. Strengthening of Supervisory Mechanism at all levels and organizing training workshops to provide training to EPI staff, Lady Health Workers, Community Midwives and other paramedics. The Functional linkage will further be cemented within Public sector i.e. National Program for Family Planning and Primary Health Care, National Maternal Neonatal and Child Health Program, Hepatitis Prevention and Control Program and Sindh Rural Support Program within Health Sector and District Governments, Population welfare Department, Social Welfare Department and Education and Literacy Department, Government of Sindh with other social sector. Under the district level executes terms of partnership/ MOU, the PPHI too will be continuously provided with vaccines and training of vaccinators. Outside Public sector and with the assistance of UNICEF and WHO, reputable NGOs like Rotary Club Pakistan, Aga Khan Foundation, and Community Based Organizations etc. are being taken properly on board and coordinated for distant and thick area vaccinations. For furtherance of the objectives Gynecologists, private general practitioners and pediatricians who are registered with General Practitioner Forum, Pakistan Pediatric Association and Child Health Foundation respectively will continuously be provided with vaccines and their vaccinators and dispensers would be trained in immunization skill and tracking the left over/defaulters and addressing the missed mother and child coming visiting their facilities after drawing requisite memorandum of understanding at district level.

Operational research should be conducted in line with epidemiological trends, to assess input, output ant outcome of let out activities as per plan and thereby research activities will be promoted through regular presentation to stakeholders. Maintaining and improving the ownership and commitment of the Provincial and district political administration. Ensuring regular special attention to nomadic and moving populations minorities (Afghans and Baghris) Intensifying and focusing the communication and advocacy activities. Do aggressive campaign schedule in future with targeted interventions for High Risk Areas / Population. Implementation of National Emergency Action Plan for Polio Eradication (NEAP), Ownership, Accountability, Preparation, Implementation, Monitoring & Supervision-Sindh specific Communication strategy developed and implementation spearheaded. Using polio eradication program as foundation for strengthening/building new partnerships at all levels Integration and convergence with other projects/programs (e.g. Nutrition, Education)Piggy back on all local events/ campaigns, Quality Supplementary Immunization Activities (NIDs/ SNIDs)Strengthening of Routine Immunization Services, and to Improved AFP (Acute Flaccid Paralysis) Surveillance system. The OPV vaccine used in Pakistan is procured by UNICEF and is of the same high quality worldwide. The OPV vaccine procured by UN agencies, meet the specifications set by the International Expert Committee on Biological Standardization (ECBS) with respect to purity and content. These specifications make it impossible for OPV to contain any other undeclared biologically active substances such as viruses, hormones or other materials.). Procure buffer stock and other essentialities for efficient and effective routine immunization and not let any gap at any moment to affect immunization. Strengthening of Supervisory Mechanism at all levels and organizing training workshops to provide training to EPI staff, Lady

Health Workers, Community Midwives and other paramedics. The Functional linkage will further be cemented within Public sector i.e. National Program for Family Planning and Primary Health Care, National Maternal Neonatal and Child Health Program, Hepatitis Prevention and Control Program and Sindh Rural Support Program within Health Sector and District Governments, Population welfare Department, Social Welfare Department and Education and Literacy Department, Government of Sindh with other social sector. Under the district level executes terms of partnership/ MOU, the PPHI too will be continuously provided with vaccines and training of vaccinators. Outside Public sector and with the assistance of UNICEF and WHO, reputable NGOs like Rotary Club Pakistan, Aga Khan Foundation, and Community Based Organizations etc are being taken properly on board and coordinated for distant and thick area vaccinations. For furtherance of the objectives Gynecologists, private general practitioners and pediatricians who are registered with General Practitioner Forum, Pakistan Pediatric Association and Child Health Foundation respectively will continuously be provided with vaccines and their vaccinators and dispensers would be trained in immunization skill and tracking the left over/defaulters and addressing the missed mother and child coming visiting their facilities after drawing requisite memorandum of understanding at district level.

Recommendation/ Strategies

Increase priorities for immunization of < 1 year child population through strengthening routine immunization by propagating the message through print, electronic media, awareness walks and with donor support through school sessions and Molalla meetings. Acceleration for TT Coverage child bearing age ladies (15-49 years) likewise the demand creation would also be pursued and pressed. Reducing dropout rate between first and last dose by sending the vaccinator on due dates for succeeding doses. Also left over and defaulters if not covered timely would be pursued and covered through second line plan from 12 to 24 months to boost the fully immunization target of reaching 95%. The District Officer Health (preventives and public health) being main co-coordinator along with District Superintendent Vaccination and Town/ Taluka Superintendent Vaccinator are being made to check the drop out/ defaulter list and pursue for covering them for which they are being supported with travelling allowances and POL. Social Mobilization/ Health Education and Information of community and mothers by sustaining public awareness, public walks, publicity and community participation. For effective community mobilization prevention specialists will be consulted for devising alternative strategies for motivating to action to maximum numbers to maximum good. Reduce missed opportunities by screening every mother and child visiting for care and treatment to health facility for their immunization status and provide them the required doses. Mothers accompanying child or children would be motivated by conditional free medication provided that their sibling would get at first immunization dose and also in low denominator areas with incentive of cooking oil and milk with support of World Food Program initiative of Promoting Safe Motherhood. Arrange mobile teams for hard to reach and un-reachable areas for covering the grey areas which includes security compromised areas. It is need to further strengthening the Disease Surveillance System (Polio, Measles, AFP, MNT and NNT) by placement of Epidemiologist either through

regular budgetary provision or with donor support. Maintaining Surveillance at certification standards is dire need of hour to Millennium Development Goal. This would require continuing to encourage actual reporting of AFP cases through efficient Surveillance mechanism. Full integration of EPI in PHC system with particular emphasis on improving upon immunization services to the disadvantage population residing in urban, deserts, slums, riverine and hilly terrains as well as nomads (Afghans and Baghri). Procure buffer stock and other essentialities for efficient and effective routine immunization and not let any gap at any moment to affect immunization. Strengthening of Supervisory Mechanism at all levels and organizing training workshops to provide training to EPI staff, Lady Health Workers, Community Midwives and other paramedics. The functional linkage will further be cemented within Public sector i.e. National Program for Family Planning and Primary Health Care, National Maternal Neonatal and Child Health Program, Hepatitis Prevention and Control Program and Sindh Rural Support Program within Health Sector and District Governments, Population welfare Department, Social Welfare Department and Education and Literacy Department, Government of Sindh with other social sector. Under the district level executes terms of partnership/ MOU, the PPHI too will be continuously provided with vaccines and training of vaccinators. Outside Public sector and with the assistance of UNICEF and WHO, reputable NGOs like Rotary Club Pakistan, Aga Khan Foundation, and Community Based Organizations etc are being taken properly on board and coordinated for distant and thick area vaccinations. For furtherance of the objectives Gynecologists, private general practitioners and pediatricians who are registered with General Practitioner Forum, Pakistan Pediatric Association and Child Health Foundation respectively will continuously be provided with vaccines and their vaccinators and dispensers would be trained in immunization skill and tracking the left over/defaulters and addressing the missed mother and child coming visiting their facilities after drawing requisite memorandum of understanding at district level.