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Social audit of governance and delivery of public services Lasbela District 2005: Preventive child health

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Summary

Commissioned by the National Reconstruction Bureau (NRB), the CIET social audit tracks the public views, use and experience of public services under devolved local government and provides a mechanism for including citizens' views and suggestions in planning and policy making, particularly at local level.

The first and second national social audits took place in 2001/2 and 2004/5. During the first half of 2006 findings from the second national social audit will be discussed widely with the public, civil society, service providers, planners and policy makers. The social audit programme continues until 2009, with alternating years of data collection and dissemination and use of findings.

To help involve citizens in local planning and to support evidence-based planning, CIET is implementing a district social audit in five focus districts. Work in Lasbela began in 2003, and Khairpur, Haripur, Sialkot, and Khanewal joined in late 2004. In these districts the social audit aims to help governments to plan and implement services tailored to the needs of their people. A national core group supports the social audit in the focus districts.

Methods

After discussions in all the focus districts, the National Core Group from all the five districts (NCG) agreed the topic of 'public and preventive health' as the main area for the district social audit. In Lasbela, the focus was more specifically on childhood immunisations. Working with sub technical groups in each district, we designed the instruments for the cycle, including a household questionnaire, a community profile record, an institutional review of government health facilities, an interview with lady health workers (LHWs), and a feedback focus group guide.

In each district we drew a stratified random cluster sample of communities to represent the tehsils (talukas) of the district. In Lasbela the sample comprised 23 rural and 9 urban communities across the tehsils.

Trained field teams (mainly women) collected household information in March and April 2005 and conducted the feedback focus groups in July 2005.

Double data entry with validation ensured a clean dataset. We categorized household vulnerability on the basis of roof construction, room occupancy, and occupation of the main breadwinner. Analysis produced data on key indicators across the district, weighted to reflect any uneven sample distribution, and examined the potential effects of interventions to improve outcomes.

Findings

Information base

The survey covered 3366 households (representing 24433 people). The household sample in each tehsil is shown in Table s1. Some 62% of the households were 'vulnerable' and 20% were 'very vulnerable'. Table s2 shows household features by tehsil.

Table s1. The household sample by tehsil

Tehsil	No. households	Total people
Bela	998	7766
Uthal	762	5719
Hub	1306	9146
Dureji	300	1802

Table s2. Household features by tehsil

	Vulnerable households	Very vulnerable households	Educated head
Bela	65	23	42
Uthal	64	20	25
Hub	54	16	33
Dureji	79	33	15
Lasbela	*62*	*20*	*30*
Balochistan	60	15	37
Pakistan	47	13	53

In the 3366 households we interviewed 3476 mothers or caregivers. Only 7% had any formal education. The 3476 mothers provided information about 3586 children less than 60 months old. We interviewed 3339 self-identified household decision-makers (90% the mothers of the children).

We also interviewed 44 LHWs covering the sample communities.

Childhood respiratory infections

Among children aged up to 60 months, only 3% had suffered an acute respiratory infection (ARI) during the last two weeks and 8% during the past year. It seems that mothers in Lasbela only reported more serious forms of ARI in response to this question.

Some household features and practices are potentially related to the risk of ARI in children.

Cooking and heating
Some 90% of households had their cooking area separate from the main living area, and 94% had their cooking area separate from the sleeping area. Most cooking was on wood stoves and only 6% used non-smoky cooking fuels. Less than a third of households (29%) had some type of heating system, mostly wood stoves.

Smoking and ventilation
A third (36%) of the households had at least one member who smoked inside the household. Most (89%) households had some form of ventilation arrangement.

Analysis of risk of ARI
Because ARI was reportedly so rare in Lasbela, we could not analyse the risk of ARI in relation to household conditions.

Treatment of ARI
Of mothers visited by an LHW, very few recalled being told how to recognize (2%) or treat (2%) ARI.

Of children with ARI in the last 12 months, 34% were not taken anywhere for treatment, 41% were taken to a qualified private facility/practitioner, 15% were taken to a government health facility, and the remaining 11% were taken to an unqualified practitioner.

Mothers reported that unqualified practitioners provided a full explanation for 78% of children, private practitioners for 58%, and government practitioners for 45%. All the medicines were provided in the facility for 46% of visits to unqualified practitioners, 32% to government facilities, and 20% to private facilities.

Most mothers were satisfied with the overall treatment their child received from all types of facility: 94% for private facilities, 90% for unqualified practitioners, and 83% for government facilities.

Childhood measles

The description of measles frequency is among children 10-59 months old and excludes cases in children less than 10 months old. In these children, 18% were reported to have had measles (Figure s1).

Analysis of risk of measles
Younger children were less likely to have had measles than older children, and rural children were less likely than urban children to have had measles. Children who had not been immunised against measles had twice the risk of having measles compared with children who had been immunized. The analysis indicated that if all children were immunized, this could potentially protect 51 per thousand children from having measles.

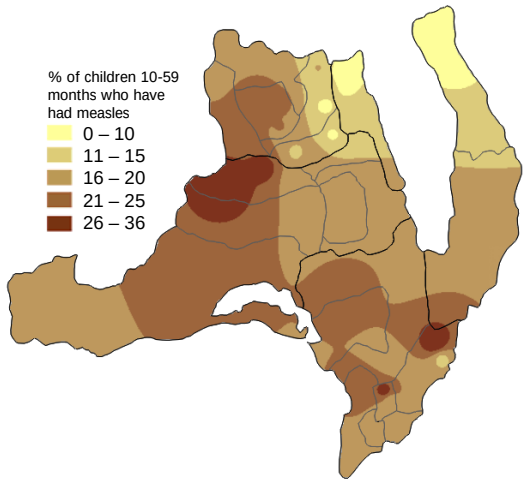

Figure s1. Map of % children 10-59 months who have had measles (excluding “measles” at under 10 months old)

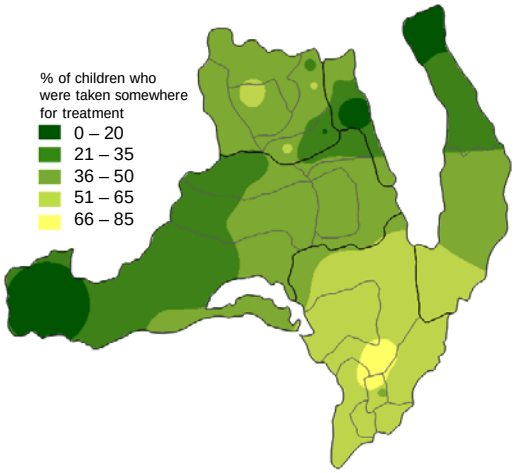

Figure s2. Map of % children 10-59 months with measles in last 24 months taken somewhere for treatment

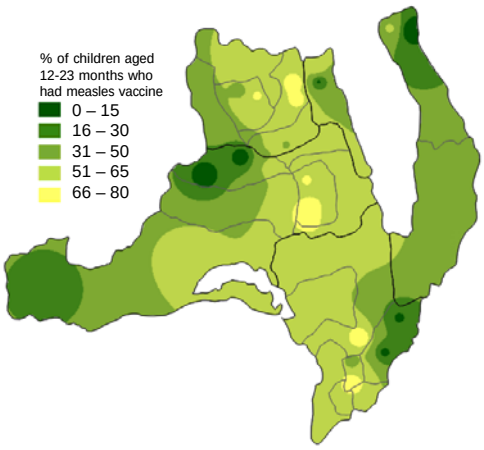

Figure s3. Map of children 12-23 months who had measles vaccine

Knowledge about measles
Only 11% of decision-makers about childhood immunisation could say correctly how a child catches measles. Most of them (90%) thought measles was rare in their area, mostly because it was not the season or because of the local climate. Focus groups made clear people understood the seasonal and epidemic nature of measles.

Treatment of measles
More than half (53%) of the children who had measles in the last 24 months were not taken anywhere for treatment. Some 38% were taken to a private facility, 8% to a government facility, and 2% to an unqualified practitioner. In Dureji, 81% were not taken anywhere for treatment (Figure s2).

Costs of measles
We recorded costs of treating measles for those children taken somewhere for treatment. For children taken for treatment: 65% of parents paid travel costs, on average Rs 231, 97% paid for medicines and treatment, on average Rs 1154; and 94% of families needed someone to take time off work (mostly from housework).

Childhood immunisations

Among children aged 12-23 months, 67% had received BCG vaccine, 52% had received a full course of DPT injections, and 51% had received measles vaccine (Figure s3). Almost all children under 60 months had received polio drops at least once during the last year, and most of them had received drops many times.

Why children are not immunised
Parents of children not immunised most commonly gave reasons related to access: the vaccination facility being too far away or the visiting team not coming. A third of decision makers said they faced no difficulty in getting children immunised, and more than half described access problems. Many of the LHWs interviewed cited fear of vaccine side effects as the barrier to childhood immunisation, but few mothers mentioned this. Focus groups discussed the minimum access they thought would ensure high immunisation rates.

Knowledge and perceptions about immunisation
Nearly all mothers (85%) had heard something about immunisations, mostly from health services or family and friends. Some 78% of decision makers were able to

mention correctly at least one illness preventable by immunisation. Most (90%) thought it was worthwhile to immunise children. Only 4% had heard of any adverse effect of immunisation. Among the 20% of mothers visited by an LHW, 35% recalled being told something about immunisations. Most (84%) of decision makers had discussed immunisation in the family. For 53% of the children mothers alone had made the decision about immunisation, for 33% the mother and father decided together, and for 14% mothers were not involved in the decision.

Measles immunisation

Analysis of receiving measles vaccine
The rate of measles immunisation was the same in boys and girls. Children were more likely to be immunised if: they were from less vulnerable households, they were older, their decision maker (DM) had some education, their DM had heard about immunisations, their DM knew of some vaccine preventable diseases, their DM had been told by the LHW about immunisations, their family had discussed immunisations, their DM thought immunisation was worthwhile, and if their community was within 5Km of a government immunisation facility. Potentially, another 63 per thousand children could be immunised if vaccination facilities were available within 5Km of all communities, and useful gains in immunisation could also result from informing and educating families about immunisation benefits.

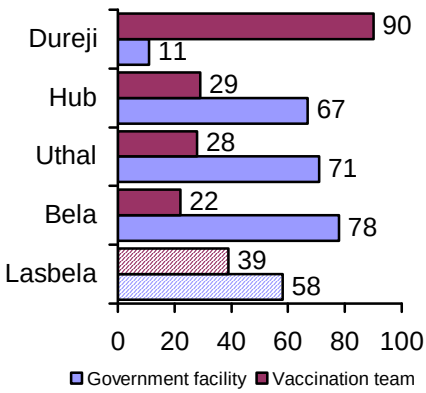

Figure s4 % children receiving measles vaccine in a government facility or a from vaccination team

Source and costs of measles immunisation
Across the district, among children under 60 months who had received measles vaccine in the last 24 months, more than half (70%) got it from a government clinic, and over a third from a visiting team. However, in Dureji, 90% of the few immunised children got the vaccine from a visiting team (Figure s4).

Among families who took their children to a health facility for immunisation, 43% paid something for travel, on average Rs 20. Only 4% of mothers reported paying for the vaccine (7% among those who went to a health facility), with a median cost of Rs 10. For nearly all children taken outside the house for immunisation, a household member took time off work, usually housework.

Household respondents' estimates of the costs of getting immunisation were close to the reported actual costs.

Table s3. Costs of measles vaccination and measles treatment

Item	Measles vaccination	Measles treatment
Vaccine or medicines	Rs 2.4	Rs 483
Travel	Rs 14	Rs 57
Time off work	1.5 hrs	2.1 hrs

Notes:
For measles vaccination, the mean costs to those who paid anything are spread across all vaccinated children.
For measles treatment, the mean costs to those for paid for treatment outside the home are spread across all children with measles

Decision makers said they would be prepared to take two hours off work for taking a child for immunisation. More then half (60%) said they would not be ready to travel more than 5Km to get a child immunised.

Some tentative cost comparisons are possible (within the limitations of the data available). The costs of treating a child with measles are much higher than the costs of immunising a child (Table s3).

Understanding parents views about immunisation
Although most parents said they thought it worthwhile to immunize children, focus group discussions showed people nevertheless had concerns and doubts about immunisation and felt in need of more information. Some said they got measles vaccine for their children without knowing what the vaccine was for. Some were clear that the vaccine reduced the risk of measles but others were sceptical. The discussion showed that the decision about immunisation is complicated and parents may not be able to afford the immediate cost even if they believe it reduces the future risk of measles.

Focus groups suggested that sometimes parents would only be convinced to immunize against measles when there was an epidemic (when, unfortunately, it is often too late for immunisation to give effective protection). They offered suggestions for messages to help convince parents to immunise their children, and for the best ways to convey these messages.

Public satisfaction with basic services

Isolated satisfaction ratings must be interpreted with caution as they may be influenced by many factors, but they nevertheless offer feedback to district governments about a range of services provided by district and tehsil governments.

Roads
Some 36% of households were satisfied with the roads and 73% said they had access to roads.

Public transport
Some 35% of households were satisfied with public transport and 77% said they had access to it.

Government garbage disposal
Only 4% of households were satisfied with garbage disposal and 22% said they had access to a service.

Government sewerage system
Only 7% of households were satisfied with garbage disposal and 22% said they had access to a service.

Government water supply
Some 21% of households were satisfied with government water supply and 43% said they had access to a supply.

Agriculture services
Only 10% of households were satisfied with agriculture services and 30% said they had access to a service.

Government education services
Some 58% of households were satisfied with education services and 81% said they had access to a service.

Government health services
Some 26% of households were satisfied with health services and 58% said they had access to a service.

Gas supply
Only 5% of households were satisfied with gas supply and only 7% said they had access to a supply.

Electricity supply
Some 33% of households were satisfied with the electricity supply and 52% said they had access to a supply.

Commentary

This report presents the main findings of the second social audit in Lasbela. It will hopefully be a useful reference. But the main work of disseminating the findings and making use of them to support evidence-based planning is only just beginning. Over the coming months the social audit findings will be presented and discussed in many settings within the district, both within and outside government.

Some findings worth highlighting for further discussion include:

- the low rate of ARI in Lasbela, not necessarily fully explained by a reporting difference
- the relatively high number of children with ARI not taken for medical attention
- the low use of government health services for treatment of ARI and measles

- the local evidence of the protective effect of measles vaccine on the risk of measles
- the low rate of childhood immunisations and the evidence for possible interventions to increase the immunisation rate; a project to test an intervention for this purpose is already planned
- the low rate of coverage by LHWs and the contrast between LHW reports of giving information to mothers and mothers' recall of being given information
- the information about public satisfaction with services, and services where Lasbela is above or below the overall figures for Balochistan

Introduction

Commissioned by the National Reconstruction Bureau (NRB), the CIET social audit tracks the public views, use and experience of public services under devolved local government and provides a mechanism for including citizens' views and suggestions in planning and policy making, particularly at local level.

The aims of the five year social audit programme are:

- To provide citizen's views and experience of devolution
- To examine delivery of public services to citizens and track changes over time
- To provide a means of input for citizens into district level planning
- To support evidence-based planning, especially at district level

CIET conducted the baseline national social audit in 2001/2 and the second cycle in 2004/5. The second cycle allowed an assessment of changes since the baseline at the beginning of devolution, and identified factors related to positive outcomes. During the coming months the findings of the second national social audit will be shared and discussed widely with the public, civil society, service providers, planners and policy makers. The third national social audit will begin in the second half of 2006. The social audit programme is set to continue until 2009, with alternating years of data collection and dissemination and use of the findings.

The national social audit collects information from a representative sample of some 54,000 households in communities in all districts. The social audit goes beyond information gathering, analysis, and reporting. It goes on to facilitate discussion with communities, formulation of solutions and strategies, validation with other institutions such as health and education facilities, and discussion with local government authorities.

The social audit in focus districts

In order to achieve the second two aims of the social audit (above) it is necessary to work in more detail within districts, and CIET is implementing a district social audit in five focus districts. Experience in these districts will facilitate the roll-out of district level social

audit to additional districts over time. Work in the first focus district, Lasbela, began in 2003, and four further districts – Khairpur, Haripur, Sialkot, and Khanewal – joined towards the end of 2004.

In the focus districts the social audit aims to help governments to plan and implement services tailored to the needs of their local populations. It is a means of giving form to the intention of the Local Government Order 2001 to empower citizens to participate in an informed way in decisions that affect their lives, and encourage them to engage in local democratic processes. A key element of the district social audit is the close involvement of government officers, elected representatives and civil society groups, building their skills over time institutionalising the process so that it can be sustained beyond the time of the project. In summary, the aims of the district social audit are:

- To assist evidence-based planning at district, tehsil and union levels
- To provide a means of input for citizens into district level planning
- To build capacities of district officers and elected representatives for evidence-based planning
- To produce a sustainable process (over a five year programme)

The five focus districts all joined the scheme based primarily on the interest and enthusiasm of the nazims and other members of their district governments, beginning at the time of disseminating the findings of the baseline (2001/2) social audit in regional meetings. Provincial governments, especially through the provincial departments of local government and rural development, endorsed the choice of focus districts in their respective provinces.

Operationalising the social audit in focus districts

In each of the five districts, CIET and the district government have made similar arrangements for the social audit.

An initial *district orientation meeting(s),* attended by key stakeholders inside and outside government (at district and tehsil levels), introduced the concepts of the social audit and the objectives of the district social audit

scheme, and provided an opportunity for questions and discussion about the proposed processes in the district. Participants identified the issues they considered to be the first priorities to be covered by the district social audit, bearing in mind that the priority issue should be one where it could be possible for the district to act to change the situation. Participants also agreed to form a district social audit steering group, identified a suitable person to be the social audit focal point on behalf of the district government, agreed arrangements for providing office space for the CIET social audit district coordinator, and agreed arrangements for tehsil level orientation meetings.

In Lasbela the district orientation meeting took place in 2003. This report covers the second social audit in Lasbela.

A series of *tehsil orientation meetings* across the district introduced participants to the social audit and heard their priority topics for the district social audit. The office of the EDO community development facilitated these tehsil meetings. Participants included tehsil level government officers and elected representatives, as well as representatives from union councils, from civil society, and from the media.

The *district steering group* discusses policy issues and makes decisions about the social audit at district level. It coordinates support to the CIET team for social audit activities. It also gives inputs into the design of the social audit cycles. It is the forum for discussing recommended actions emerging from the social audit evidence and helping to incorporate these into district planning.

With some variation between focus districts, the steering group comprises:

- District Nazim & Naib Nazim
- From district administration:
    - DCO
    - Finance and planning department
    - Community development department
    - Key line departments such as health, education, public health engineering, agriculture, livestock
- Representatives from the district council
- Representatives from tehsil councils and administrations

- Civil society representatives such as NGOs/CBOs/CCBs, academic institutions, media, or other professional bodies

Annex 1 gives the list of members of the social audit district steering group in Lasbela district.

Each district government nominated a *sub-technical group* to work in detail with the CIET team on selection of the household sample and design of the instruments for the social audit. The groups generally included representation from relevant line departments including finance and planning, community development, health, public health engineering, members from the district council, selected TMOs, and civil society representatives with relevant experience. Annex 2 lists the members of the sub-technical group for the second social audit in Lasbela district.

The CIET district coordinator collected *basic information about the district* to facilitate sampling, mapping and communication. This included:

- A list of all important contacts within the district and all tehsils with full contact details
- Population data about district tehsil and union councils with urban and rural distribution.
- A list of union councils in each tehsil, marked as urban or rural
- A recent map of the district with tehsil and union boundaries

Focus district national core group

A national core group supports the social audit in the focus districts. The group includes representation from all the focus districts, from provincial local government departments, and from NRB, with CIET providing the logistic and secretarial support. The terms of reference for the national core group are shown in Annex 3.

The national core group shares experiences of the district social audit between the focus districts, identifying what has worked especially well, so that a tool-box for district social audit in other districts can be developed.

The inaugural meeting of the national core group took place on 3 December 2004 in Islamabad, with a follow-up meeting on 11 June 2005 in Lasbela. Through these

first meetings the group agreed upon their terms of reference, approved a memorandum of understanding between CIET and focus districts (subsequently sent to provincial governments for endorsement), agreed a common topic for the social audit in all the focus districts, received preliminary findings from the social audit and discussed plans for their dissemination.

Methods

A social audit cycle

- Clarify the strategic focus
- Design instruments, pilot test
- Collect information from households on use, perceptions and their experience of public services
- Link this with information from key informants and relevant services
- Analyse the findings in a way that points to action
- Take findings back to the communities for their views about how to improve the situation
- Bring evidence and community voice into discussions between service providers, planners and community representatives to plan and implement changes

Annex 4 gives a general description of the CIET social audit methods. The concept of the social audit is simple: collect information about a key problem from the people concerned and from service providers. Then use this information as a basis for involving the public and service providers in making changes to improve the services. The key steps include: collect information from women and men in households in representative communities about their knowledge, use, perceptions and experience of the problem and their use of relevant services; link this with information from the services and service providers; analyse the findings in a way that points to what actions might improve matters; take the findings back to the communities for their views about what could improve the situation; bring the findings and suggestions to discussions between service providers, planners and community representatives to plan and implement changes. The loop is closed when a repeat fact-finding exercise assesses the changes and their effects.

The topic for the social audit cycle

In each district, a short list of topics emerged from the consultative process in district and tehsil level meetings including government and civil society (see Introduction). Four topics came up in all the focus districts, in slightly differing orders of priority.

1. Health (including public and preventive health issues such as hygiene, sanitation and drinking water)
2. Education (with emphasis on girls' education, special and technical education)
3. Irrigation (*islahe aabpashi*)
4. Roads and communication

These district priorities were discussed in the first national core group meeting. The group agreed on "Public and preventive health" as the topic for the first cycle, noting that others on the shortlist could be topics of subsequent social audit cycles. In the case of Lasbela, some aspects of public health, water supply and sanitation had already been covered in their first social audit cycles, so they extended the focus more onto aspects of childhood immunisation.

Data collection instruments

CIET worked with district sub-technical groups to design the instruments for social audit, with an emphasis on collecting information that could be useful for planning service improvements. This exercise was also an opportunity for skills transfer to the district teams. Sharing of expertise and suggestions between districts ensured that a common set of instruments emerged with inputs from all districts, suitable for collecting information in the diverse circumstances of the five focus districts.

The social audit instruments are standards-based, drawing on CIET experience as well as other relevant sources. In this case, we used in particular the experience of the first social audit in Lasbela as a guide for relevant sections of the instruments.

The instruments for the social audit cycle included: a household questionnaire, a community profile, an institutional review of health facilities, a key informant interview for lady health workers, and a feedback focus group guide.

The Lasbela household questionnaire comprised three sections:

- general household information from a household respondent, including demographics of the household, and satisfaction and perceived access to a range of public services
- information from mothers of under five years old children, concerning their education, knowledge, attitudes and practices, as well as illnesses in the children and their management, and immunisation of the children
- information from the household decision-maker about childhood immunisations (in many cases this was also the mother of the child)

The community profile was completed by means of discussion with a knowledgeable person in the community and observations by the field workers. It covered type and location of health facilities, information bout vaccination services, and information about any community organizations.

The institutional review of government health facilities serving communities collected information about

records and supplies, and, by observation, the presence and functioning of facilities and equipment. It included an interview with the vaccinator or other person responsible for the facility vaccination services.

A *key informant interview* collected information from lady health workers in those sites where they worked, including their education and training, visits to the households, any problems they faced, and their relevant knowledge and practice.

Feedback focus group guides were developed once the basic findings from the households were available. They presented tehsil level key findings and invited discussion and suggestions for solutions. The guide covered respiratory infection in children, views about how parents decide about childhood immunisations, and how to encourage and support parents to vaccinate children.

Sample and sampling

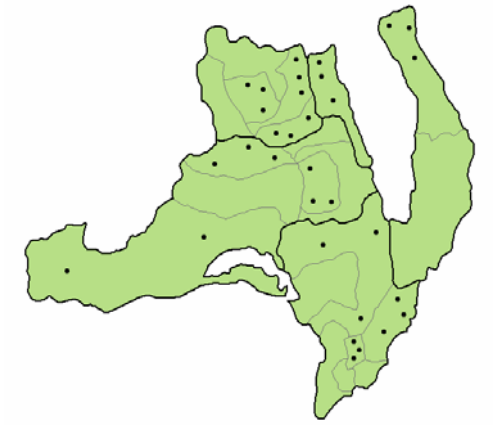

Figure 1. Sample sites for Lasbela social audit 2005

The CIET team and the sub-technical group in each district selected a stratified random cluster sample of communities to give representation of the situation in the different tehsils or talukas. First union councils were randomly selected from each tehsil, reflecting urban/rural spread and with the number according to the population in each tehsil. We included a minimum of four union councils per tehsil. The official list of union councils provided by the district government was used as the sampling frame for the selection of union councils. From each union council we randomly selected one community (village or mohalla) from the list of communities in the union.

In Lasbela we used the same sample as in the first district social audit, with the addition of two sites in the south west region of the district (Figure 1).

Lasbela district consists of five tehsils (Gaddani tehsil was created recently) and has 22 union councils – 5 urban and 17 rural. As the sampling and data collection took place before the creation of Gaddani tehsil, they do not reflect the presence of the new tehsil and the results from this area are included in Hub tehsil. The sample for the second Lasbela social audit comprised the following urban and rural sites from each tehsil:

		Urban	Rural
Bela		3	6
Uthal		3	5
Hub		3	9
Dureji		-	3
	Total	9	23

In each selected community, the sample included a group of 100 contiguous households with children under five years, spreading out from a random starting point. There was no sampling within the site, all the households were included.

Training of field teams

Field teams

The field teams comprised district residents, with a majority of women since the main household interviews were with women. In the different focus districts, team members included members of NGOs, senior university students, recent graduates, and councillors.

Teams for the household survey and key informant interviews attended a three-day training, including classroom sessions and field practice. Each field team comprised one male and seven female interviewers, one female quality control associate and one male logistic control associate.

Field data collection

The field teams trained to conduct the community focus group discussions each comprised two men and two women. More than half of them had participated in the household data collection. Their training lasted three days, including classroom and field practice.

Data collection

Field data collection

The field teams undertook data collection for the 32 sites in the sample of Lasbela district in March and April 2005.

Generally, each team completed the household survey in one community in one day. In some cases a site could not be completed in a single day due to difficult terrain or weather conditions. The field teams took with them a letter from DCO, giving official status to the work. On entering each community, the team logistic control associate made contact with community leaders to

explain the purpose of the survey and to seek their support for the field work in the community.

After preliminary analysis of the household findings, the teams returned to the same communities and conducted male and female focus group discussions. The focus group discussions in Lasbela took place in July 2005.

Data entry and analysis

The field supervisers checked the registers and sent them to the CIET data management unit (DMU) in Karachi. Data entry by trained operators used the public domain software package Epi Info. Double data entry with validation reduced key stroke errors.

After validation further cleaning of the dataset looked for logical errors, out of range responses and duplications. The cleaning was completed by checking back to the original data registers as necessary.

Analysis used CIETmap software. For questions that had multiple responses, we used SPSS software to generate frequencies. Analysis followed and elaborated the analysis plan outlined during the design phase, which identified key outcomes of interest in relation to preventive child health, and factors potentially related to these outcomes. Initial analysis generated frequencies of all main indicators. The values for all main indicators at district and tehsil level are shown in the tables in Annex 5.

Although the sample size in each tehsil reflected the relative population in that tehsil, this was not exact. Therefore, to take into account under- and over-sampling between tehsils, we calculated *weights* and applied these when making district level estimates. All the figures shown in this report are weighted, unless stated otherwise.

Further analysis examined the associations between outcomes and related risk and resilience factors, first in a univariate analysis and then in a multivariate model to examine the effects of relevant variables simultaneously. In this analysis, we included factors measured in instruments other than the household questionnaire, linked to the household and child data by means of linking code numbers. For example, this *meso-analysis* allowed us to examine the relationship

between the distance of the nearest government health facility from the community and vaccination in children, taking into account the effects of other variables related to vaccination.

To investigate the relationship between household economic status and important outcomes, we defined a composite variable for household vulnerability, based on household roof construction, degree of overcrowding, and occupation of the main breadwinner. If all three factors were adverse, we defined the household as very vulnerable, while if two out of three were adverse, we defined the household as vulnerable.

In analysing the reports of the focus group discussions, we identified certain themes mentioned by groups and coded the reports according to whether the theme was present or not. We entered this into the computer to allow us to compare it with household findings. We also used the reports to provide a qualitative understanding of some of the quantitative findings, including extracting quotes of people describing the situation in their own words.

Findings

The information base

Households

Household information base

- 3366 households
- 24433 people
- 2461 boys aged less than 60 months
- 2381 girls aged less than 60 months

The survey covered 3366 households (representing 24433 people) in 32 representative communities (Box).

The number of households in the sample in each tehsil and the total population covered in the households are shown in Table 1.

Table 1. The household sample by tehsil

Tehsil	No. households	Total people
Bela	998	7766
Uthal	762	5719
Hub	1306	9146
Dureji	300	1802

The general respondent answering on behalf of the household was a woman in 98% (3285/3363) of households. Almost all (99%; 3336/3339) household heads were male. Some 31% (1084/3359) of household heads had some formal education.

Across the district, 62% (1270/3317) of the households were in the 'vulnerable' category and 20% (676/3317) were in the 'very vulnerable' category. Table 2 shows household features by tehsil and for the whole district, as well as comparison national and provincial figures. Lasbela has a higher proportion of vulnerable and very vulnerable households than elsewhere and a lower proportion of household heads with any education. Households in Dureji tehsil are particularly badly off. More details about household features can be found in Annex 5.

Table 2. Household features by tehsil (weighted %)

	Vulnerable households	Very vulnerable households	Educated head
Bela	65	23	42
Uthal	64	20	25
Hub	54	16	33
Dureji	79	33	15
Lasbela	*62*	*20*	*30*
Balochistan	60	15	37
Pakistan	47	13	53

Mothers/caregivers

In these 3366 households we interviewed 3476 mothers or caregivers of children less than six years old (in some households more than one mother or caregiver were interviewed). Virtually all the caregivers were female (99%; 3459/3476) and most of them were in fact the mother of the children being inquired after (97%; 3376/3470). The mean age of the mother/ caregiver was 31 years but ranged from 14 to 80 years. Only 6% (235/3473) of them had any formal education.

Children

The 3476 mothers/ caregivers provided information about 4899 children under the age of 60 months (Table 3). Half of these children were male (51%; 2461/4842).

Table 3. Number of children in survey by tehsil

	Total children	Children <60 months	Children 12-23 months
Bela	1549	1512	310
Uthal	1152	1102	210
Hub	2002	1909	334
Dureji	403	376	57
Lasbela	*5106*	*4899*	*911*

Decision makers

In some households, the mother or caregiver may not be the person who makes the decisions around child health. We interviewed 3339 self-identified household decision makers. Some 90% (3024/3339) of these decision makers were also the mother or caregiver of the children. Only 9% of them had any kind of formal education and 8% were male.

Lady health workers (LHW)

We interviewed 44 LHWs from Bela, Uthal and Hub tehsils. No LHWs were interviewed in Dureji (Table 4). Most (31/44) of these LHWs were young women between the ages of 18 and 30, 18/44 had less than a 10th grade education, while 26/44 had at least a 10th grade education.

Table 4 LHWs in the survey by tehsil

	No of LHWs interviewed
Bela	28
Uthal	9
Hub	7
Dureji	0
Lasbela	44

Childhood respiratory infections

Frequency of childhood respiratory infections

Among children aged up to 60 months, only 3% (140/4837) were reported to have suffered an acute respiratory infection (ARI) during the last two weeks. The information about episodes of ARI came from the mother or main carer of the child. They were asked about episodes when the child had a cough, fever and rapid breathing.

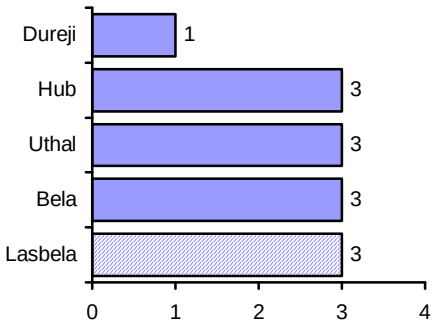

Figure 2 % children (under 60 months) with ARI during the last two weeks

Figure 2 shows the proportions of children who had an ARI in the last two weeks for each tehsil. The rate is even lower in Dureji than in other tehsils.

This rate of ARI in Lasbela is very low by comparison with rates reported from elsewhere, including from the other four focus districts in Pakistan. The reason for this low rate is not clear, but it may be that, despite using the same questions about ARI in all the focus districts and making efforts to translate accurately into the local language, mothers in Lasbela only reported more serious cases of ARI in response to the question – essentially cases of pneumonia.

Household factors related to childhood respiratory infections

We collected information about factors at household level that might have an impact on the risk of respiratory infections in children. Because episodes of ARI were reportedly so rare we were not able to examine the relationships between these factors and the risk of ARI.

Kitchen and cooking arrangements

Some 90% (3030/3363) of households had their kitchen or cooking area separate from the main living area. And 94% (3140/3363) had their kitchen or cooking area separate from the sleeping area.

The types of cooking stove used are shown in Table 5. We categorized stoves into those producing smoke and those not producing smoke on the basis of the type of

Table 5 % households with different stove types for cooking

Stove type	Lasbela	Bela	Uthal	Hub	Dureji
Sui gas stove	6	<1	2	13	-
Wood stove	94	100	98	86	100
Coal stove	<1	-	<1	-	-
Kerosene stove	<1	-	<1	<1	-
Electric stove	<1	-	-	1	
Cow dung	-	-	-	-	-
lpg cylinder	<1	-	<1	<1	-
n	3353	995	757	1301	300

fuel. Across the district just 6% (192/3353) of households used a cooking stove that did not produce smoke.

Table 6 % households with different heating systems

Stove type	Lasbela	Bela	Uthal	Hub	Dureji
None	71	75	72	71	63
Sui gas heater	1	<1	-	2	-
Wood heater	27	25	26	26	37
Coal heater	<1	-	1	<1	-
Kerosene stove	- -	-	<1	-	-
Electric heater	1	<1	1	1	-
n	3353	997	758	1298	300

Heating arrangements

Table 6 shows the heating methods used in households. Some 29% (949/3353) of households used some type of heating system. We categorised heating systems into those producing smoke and those not producing smoke. Some 73% (2447/3353) of households used a heating system not producing smoke (or no heating system at all) and 29% (906/3353) used a heating system likely to produce smoke.

Smoking in the household

The field teams asked about smoking by members of the household, and in particular about smoking within the household. Some 36% (1181/3342) of households had at least one member who smoked inside the household.

Ventilation

The field teams observed ventilation arrangements in the households. They recorded some sort of ventilation system in 89% (2991/3351) of households across the district.

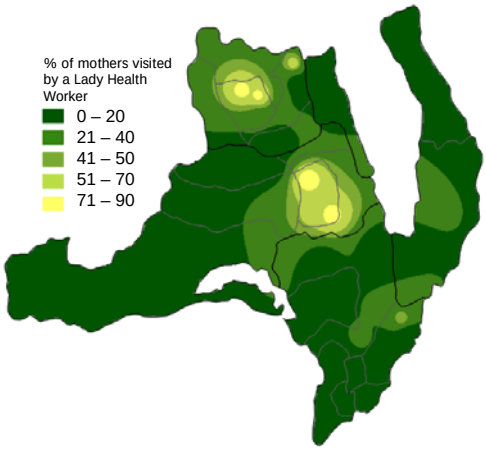

Figure 3. Map of % mothers visited by a Lady Health Worker

Information about ARI from the lady health worker (LHW)

Some 20% (761/3473) of mothers said an LHW visited their household. In some households more than one mother was interviewed. Among households, 19% (683/3282) were visited by an LHW, even if the last visit was long ago. Almost all households (among those visited) reported being visited within the last year and about three quarters (74% (487/658) within the last month (Table 7).

Table 7 Frequency of LHW visits to visited households

	% households
Within the last month	74
More than a month ago, within last 3 months	16
More than 3 months ago, within last 6 months	5
More than 6 months ago but within a year	4
More than a year	1
N	658

Very few mothers visited by an LHW could recall the LHW telling them anything about recognising (2%; 13/745) or treating (2%; 12/736) respiratory infections in children. This contrasts with the interviews with LHWs (see below), most of whom reported they advised mothers on the recognition and treatment of ARI.

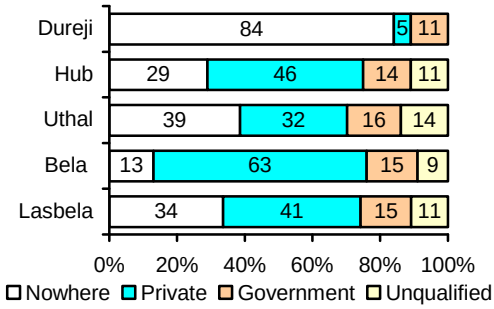

Figure 4 Source of health care for children with ARI

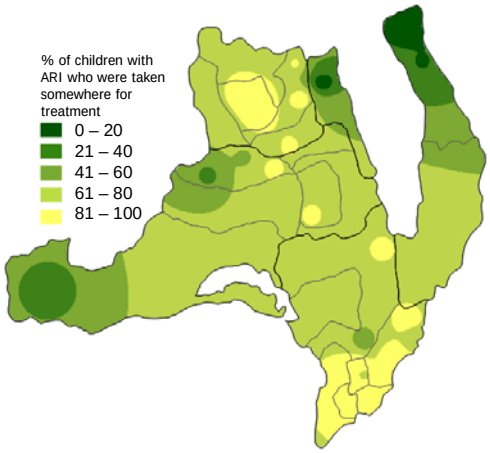

Figure 5. Map of % children with ARI in last 12 months taken somewhere for treatment

"We don't have transport. Children who are ill cannot walk far. So we are forced to keep them in our houses."
Female focus group, Dureji tehsil

"If hospitals were accessible and if we had money then we could take our children for medical help. How else can poor people seek medical help?"
Female focus group, Dureji tehsil

"At government hospitals we are made to stand in queues, even when a child is dying. At private hospitals, we are shown respect."
Female focus group, Hub tehsil

"It takes 1-2 months for a patient to get better at a government hospital. In a private hospital, he gets cured in 1-2 days."
Female focus group, Uthal

"The government hospital is only open for a few hours. That's why we are forced to go to private hospitals."
Male focus group, Bela tehsil

Treatment of ARI

The following descriptions of experiences with treating ARI are based on the 8% (367/4854) of children aged less than 60 months who had suffered an ARI episode in the last 12 months. Recall of episodes longer than 12 months ago is less likely to be clear.

Among those children less than 60 months old and who had suffered an ARI episode in the last 12 months, about a third (34%; 114/362) were not taken anywhere for treatment. Some 41% (156/362) were taken to a qualified private facility/practitioner, 15% (53/362) were taken to a government health facility, and the remaining 11% (39/362) were taken to an unqualified practitioner. Figure 4 shows the proportions of children taken to different types of facilities for treatment for ARI in each tehsil. In Bela, two thirds of children with ARI were taken to a private practitioner or clinic, while in Dureji, four out of five were not taken anywhere.

Overall, nearly two thirds (66%; 248/362) of the children with ARI were taken somewhere for treatment. The map in Figure 5 shows the variation in this across the district.

Focus groups

Community focus groups discussed the reasons why some children with ARI were not taken anywhere for treatment and why parents mostly took children to private qualified practitioners and facilities rather than government services.

Especially in Dureji, focus group participants explained that lack of access to facilities and poverty forced them to keep their children sick with ARI at home.

Group participants said they chose private rather than government facilities because they felt their children got better treatment there and the staff behaved better towards them. Some groups also noted better access to private facilities.

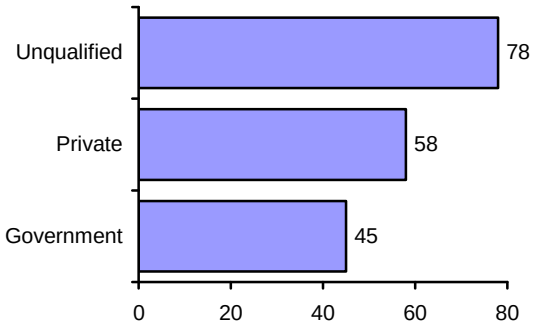

Figure 6 % of mothers/ caregivers of children with ARI reporting a full explanation of the child's condition

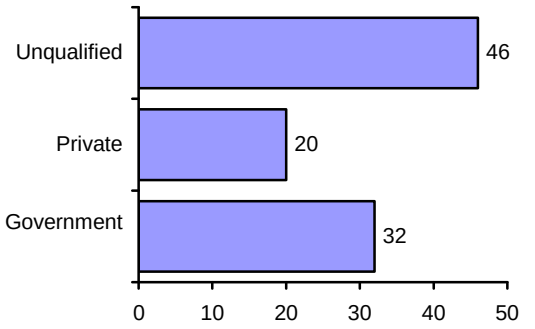

Figure 7 % of children with ARI provided with all medicines prescribed

"The poor do not get anything except disprin from government health facilities."
Male focus group, Hub tehsil

"Health staff are involved in the sale of government medicines. We are just given medicines costing 4-5 rupees."
Male focus group, Uthal tehsil

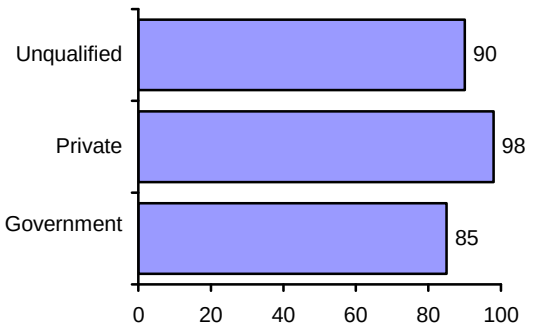

Figure 8 % mothers of children with ARI satisfied with doctor or health worker behaviour

Experience of ARI treatment

Virtually all (97%; 231/238) children who went for treatment were seen by a doctor/ practitioner or health worker regardless of the type of facility they went to.

More parents who visited unqualified practitioners reported that they provided a full explanation of the child's illness, than those who visited either private or government practitioners. Unqualified practitioners provided a full explanation for 78% (26/33) of children, private practitioners for 58% (88/152) of children and government practitioners for 45% (23/52) of children (Figure 6).

Only a minority of mothers who took children for treatment of ARI reported they got all the medicines from the facility or practitioner (Figure 7). Mothers who took children to an unqualified practitioner more frequently (46%; 14/30) reported getting all medicines than those who sought treatment at a government or private facility. Just over a quarter of those who attended a government facility (32%; 17/53) got all the required medicines from the facility.

Community focus groups frequently complained about lack of medicines in government health facilities. Some of them voiced suspicions that the staff of government health facilities sold their medicines outside and therefore these medicines were not available to patients seeking treatment in the facilities.

Satisfaction with treatment of ARI

Generally, most mothers were satisfied with the behaviour of the doctor or health worker. Users of private practitioners or facilities were more satisfied (98%; 149/152) than users of government facilities (85%; 45/53) or unqualified practitioners (90%; 30/33) (Figure 8).

Nearly all mothers of children with ARI were satisfied with the overall treatment received from the facility or practitioner for all types of health service. Some 85% (44/53) were satisfied with treatment at a government facility, 90% (30/33) were satisfied with treatment at an

unqualified practitioner and 94% (144/153) were satisfied with treatment at a private facility.

For all three types of health service the most common reason for being satisfied was the good treatment received (95%; 205/217) with good doctors and staff also mentioned (5%; 12/217).

Those few who were dissatisfied with the facility or practitioner most commonly simply cited “poor treatment” (18/19) as their reason.

Childhood measles

Frequency of childhood measles

The following analysis and description of the frequency of measles and experiences of seeking treatment excludes those children who were less than 10 months old at the time of the survey as well as those children who were reported to have had measles at less than 10 months of age, because diagnosis of measles in children under 10 months of age can be uncertain.

Overall, among children 10-59 months old, 18% (677/3817) had had measles, excluding cases occurring at less than 10 months old. There was variation in the frequency of measles across the district (Figures 9 and 10). Measles was noticeably less common in Dureji than in other parts of the district.

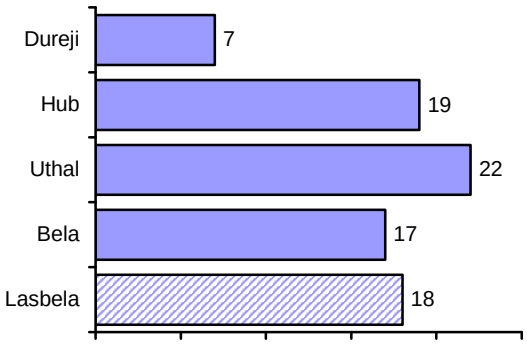

Figure 9 % children 10-59 months who have had measles (excluding "measles" at under 10 months old)

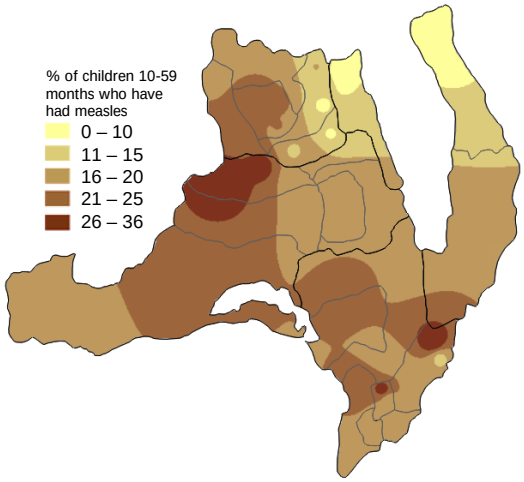

Figure 10. Map of % children 10-59 months who have had measles (excluding "measles" at under 10 months old)

Variables related to risk of measles

We collected information about several variables that might be associated (positively or negatively) with the risk of getting measles. These are listed in Table 8. Several of these variables, examined separately, were associated with the risk of measles. The risk of measles was lower in children vaccinated against measles, and higher in older children and children living in urban settings. We then undertook a multivariate analysis to examine the effects of each of these variables, taking into account the effects of the others. The final model from the multivariate analysis is shown in Table 9.

Table 8 Variables potentially associated with the risk of getting measles

- Having measles vaccination *
- Sex of the child
- Age of the child *
- Household vulnerability
- Nutritional status of the child
- Urban/rural location*

* variable associated with risk of getting measles in univariate analysis

Vaccination against measles

Children who had not been vaccinated were twice as likely to have had measles compared with children who had been vaccinated[1]. This analysis excludes children under the age of 10 months, children who had measles before the age of 10 months and children who were vaccinated only after having measles or within one month before having measles. (It takes about one month for children to develop protection after vaccination.)

The analysis of variables related to children receiving measles vaccination is presented later in this report.

Table 9 Multivariate model of variables associated with NOT having had measles

Factor	Crude OR	Weighted OR	95%CI for weighted OR
Child vaccinated	1.91	2.17	1.81-2.61
Urban household	0.77	0.66	0.55-0.80
Age < 36 months	2.66	2.85	2.39-3.40

[1] Weighted OR 2.17 95%CI 1.81-2.61; 87.2% (1733/1988) of vaccinated children did not contract measles compared with 78.1% (1373/1759) of non-vaccinated children.

Gender
Boys and girls were equally likely to have had measles.

Urban or rural location
Children from urban households were more likely to have had measles than rural children[2]. The scattered and relatively isolated nature of communities in many rural areas of Lasbela limits the possibilities of spread of measles between children.

Age
Older children were more likely to have had measles than younger children [3] perhaps simply because older children have had a longer period in which to come into contact with measles.

Potential gains from vaccination

If all children in Lasbela were vaccinated against measles, this could reduce the number of measles cases in the district by 51 per 1000 (from 180 per 1000)

Table 9 shows the benefit for individual children in Lasbela of being vaccinated against measles; their risk of having measles is reduced two-fold. We have also calculated the potential population gain from ensuring that all children in Lasbela were vaccinated against measles. Table 10 shows the results of an analysis of how many children could be prevented from having measles. Taking other variables into account, the analysis indicates that ensuring all children are vaccinated against measles could reduce the number of measles cases among children aged 10-59 months by 51 per 1000 children. This would be a very useful reduction, bearing in mind that the present proportion of children in Lasbela who have had measles is 180 per 1000.

Table 10. Model of potential population gains of vaccination against measles

	PRI	Crude RD	Adjusted RD	Adjusted gain	Adjusted gain /1000 children
Vaccination against measles	0.4694	0.0912	0.1086	0.0510	51
Rural resident	0.3117	0.0487	0.728	0.0227	22.7
Younger children	0.4513	0.1366	0.1433	0.0647	64.7

PRI= proportion requiring intervention (eg the number not presently vaccinated against measles)
RD= risk difference – the risk in one group minus the risk in the other (eg unvaccinated minus vaccinated risk)
Gain= the potential gain in the whole population, taking into account the PRI

[2] Weighted OR 1.64 95%CI 1.36-1.97; 83.8% (2204/2631) of rural children did not contract measles compared with 78.9% (936/1186) urban children
[3] Weighted OR 2.76 95%CI 2.32-3.29; 88.5% (1849/2090) younger children did not contract measles compared with 74.8% (1291/1727) older children

Table 11 Main reasons why decision makers think measles is rare in their area

Reasons	% decision makers
Don't know	32
Due to the local climate	26
It is not the season	25
All or most children vaccinated	4
Disease follows a natural cycle	4
Occurs only once - all have had it	4
God's will	4
Clean environment/better practices	2
N	2997

Table 12 Main reasons why decision makers think measles is common in their area

Reasons	% decision makers
Don't know	60
Unhygienic environment/practices	18
Children not vaccinated	10
God's will	5
Disease follows a natural cycle	2
N	295

Table 13 Known complications of measles

Complication	% decision makers
Child can die	34
Other real complication of measles	45
Not real complication of measles	21
N	1874

"Measles is very uncommon. Sometimes a child or two may get it, but it is rare around here."
Female focus group, Hub tehsil

"Measles attacks in the winter season"
Male focus group, Bela tehsil

"Two years ago measles attacked our community. Every child got it and many children died here."
Female focus group, Bela tehsil

"Two months ago, measles spread like a plague. It still has a hold on children."
Female focus group, Dureji tehsil

"The chances for the spread of measles are very high in our area."
Female focus group, Uthal tehsil

"Measles is a very dangerous disease. It hides in the lungs of children. A child can die as a result."
Female focus group, Uthal tehsil

"What else can be so dangerous than that children can even die from measles?"
Male focus group, Dureji tehsil

Decision makers' knowledge about measles

Only 11% (369/3315) of decision makers could say correctly how a child catches measles.

When asked how common they thought measles was in their area most decision makers (91%; 3010/3314) said they thought measles was rare in their area.

A third (32%) of decision makers could not say why they thought measles was rare in their area. They most commonly said it was because it was due to local climate (26%; 739/2997) or because its not the season (25%; 843/2997). Other reasons cited are presented in Table 11. Of the few decision makers who thought measles was common in their area, 60% could not explain their reason for thinking this. Many cited unhygienic environment or practices (18%; 55/295) and children not being vaccinated (10%; 28/295) as the main reasons (Table 12).

Some 58% (1913/3299) of decision makers reported they knew about some dangerous or severe complications if measles were to get worse. Of those who said they knew about complications some 21% (399/1874) actually reported misconceptions about complications (Table 13).

Focus groups

The participants of separate male and female focus groups in each of the sample communities also discussed the question of how common measles was in their communities. In many communities the groups agreed that measles was uncommon or rare, but made it clear that this was because measles is seasonal or that measles epidemics occur from time to time. Some people mentioned the devastating effects that a measles epidemic could have. In some groups, participants mentioned recent or current problems with measles in their communities.

Participants in many groups made it clear they knew how serious an illness measles could be and they mentioned some of the potential consequences of measles, including death.

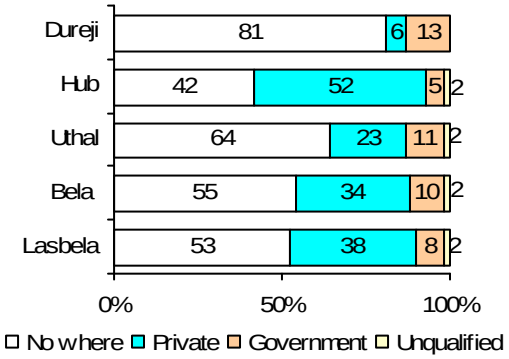

Figure 11 Source of treatment for children aged 10-59 months with measles in the last 24 months

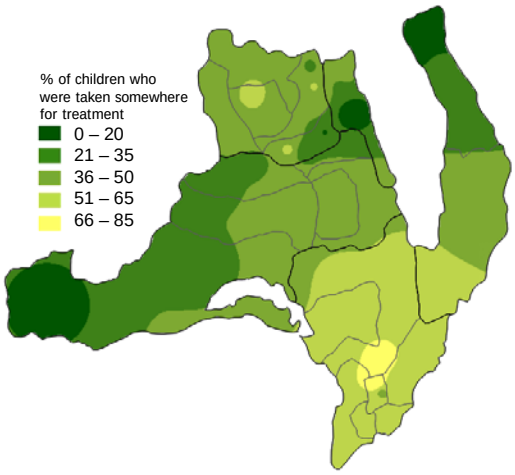

Figure 12. Map of % children 10-59 months with measles in last 24 months taken somewhere for treatment

"A child with measles cannot be exposed to the air outside, otherwise he dies."
Female focus group, Hub tehsil

"Why should we take a child who has measles to a doctor? Even a doctor does not have a cure for this disease."
Male focus group, Dureji tehsil

"Our forefathers taught us that measles is a Hindu goddess. That's why we keep the child covered and unexposed to impurities."
Male focus group, Bela tehsil

Treatment of measles

For our examination of the experience of treatment for measles, we considered only measles cases in the last 24 months to ensure that parents would still have a reasonable recall of events.

More than half (53%; 244/465) the children who had measles in the past 24 months were not taken for treatment to any health facility or practitioner. Some 38% (176/465) were taken to a private facility while only 8% (37/465) were taken to a government facility and 2% (8/465) to an unqualified practitioner. There was considerable variation in this across the district (Figures 11 and 12). In Dureji, 81% of children with measles were not taken anywhere for treatment.

Focus groups

Community focus groups discussed why few children with measles were taken anywhere for treatment outside the household. While two-thirds of children with ARI were taken somewhere for treatment, less than half of those with measles were taken for treatment, so there seem to be factors for measles beyond the problems of access and cost mentioned for ARI.

Focus group participants explained their belief that children with measles should not be exposed to outside air or impurities, since this would worsen their condition. Some expressed their view that doctors had nothing to offer in the treatment of measles. Some also had certain beliefs about the origin and nature of measles and believed that children with measles should be treated with herbal medicines or Hindu remedies.

Costs of treating measles

We recorded the costs of treating measles only for those children taken somewhere for treatment. We do not know the costs for those 53% of children with measles kept at home, although their families may still have spent money to buy medicines for them.

Cost of travel
For 65% (137/218) of children with measles that were taken for treatment in the past 24 months families had to pay some cost for travel to the facility or practitioner. The families that took the child for treatment on foot did not incur travel costs. The average payment for

transport across the district was Rs 218 (range Rs 10-5000, median Rs 50). Among those who paid anything for transport, the average cost was Rs 231 (n=137).

Cost of medicines and treatment

In almost all cases (97%; 208/215) of children with measles taken for treatment families had to pay something for medicines and treatment. Across the district the average payment (among those who paid anything) was Rs 1193 (range Rs 6-60000, median Rs 500). Families who took their children to private qualified practitioners paid more (mean Rs 1225) than those few who took them to government health facilities (mean Rs 1036).

Opportunity cost

Part of the cost of seeking treatment includes the income lost if someone takes time off from money-earning work or takes time off from unpaid work but will have to make up for the time lost later. For nearly all (94%; 198/210) of the children taken somewhere for treatment of measles, a household member had to take time off work to take the child for treatment. Majority of those family members who took time off had to take off three hours or more. (Table 14).

Table 14 Time to take child for measles treatment, among those who took time off

Time taken off work	% cases
Less than 3 hours	44
3-7 hours	41
8 hours (one day) or more	15

Table 15 Type of work that had to be left to take child for measles treatment

Type of work	% cases
Housewife	88
Unskilled, farmer, student, retired	9
Skilled, clerical, professional	3

In most cases where it was reported that someone took time off work to take a child for treatment of measles, the work concerned was as a housewife (88%: 168/182) (Table 15). Although this work is not wage-earning it is essential to the family economy and the time can ill-afford to be lost.

Household cost estimates

We asked decision makers how much they thought it would cost for medicines and other treatment for a child with measles in a government health facility. Estimates varied widely. More than half thought it would cost nothing while 39 respondents gave estimates of Rs 5000 or higher. Estimates of what it would cost in a private health facility also varied greatly, from nothing to Rs 100,000, with a median estimate of Rs 500 and mean of Rs 1,700.

Table 16 % children 12-23 months immunised

	Bela	Uthal	Hub	Dureji	Lasbela
BCG	77	67	66	42	62
DPT (full course)	68	53	46	25	46
Measles	63	51	49	26	51
Polio drops (within the last 12 months)	99	99	99	100	99

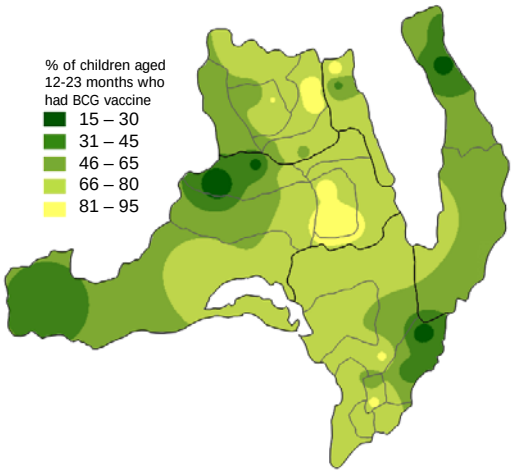

Figure 13. Map of % children 12-23 months who had BCG

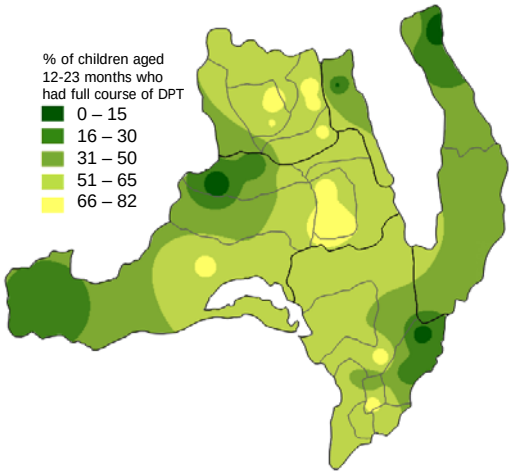

Figure 14. Map of % children 12-23 months who had a full course of DPT

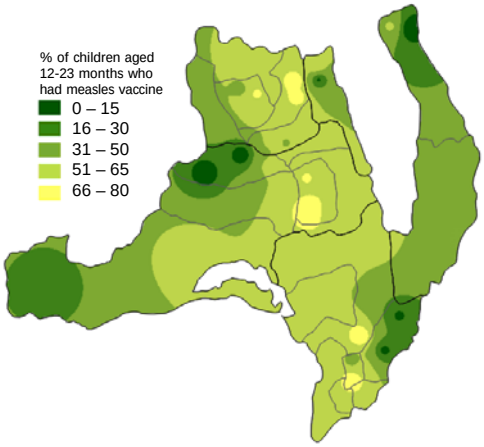

Figure 15. Map of % children 12-23 months who had measles vaccine

Childhood immunisations

Immunisation status of the children

In this section, the immunisation status of the children is described for children aged 12-23 months old, who should by then have completed all their immunisations. Table 16 summaries the immunisation status of children across the district, for the basic childhood vaccines.

BCG

Some 67% (621/903) of the children aged 12-23 months had received BCG vaccine, normally given at birth or soon after. The lowest rate of BCG immunisation was in Dureji tehsil and the highest in Bela tehsil (Table 16). The map in Figure 13 shows the variation in BCG immunisation rate across the district.

DPT

Among the children aged 12-23 months, 63% (585/902) had received at least one injection of DPT vaccine, and 52% (488/902) had received at least three injections (or a 'full course') during their first year of life. We may have over-estimated the number of children who received three injections of DPT vaccine because we included children whose mothers were only able to say they had "completed the course" without saying how many injections this comprised. The proportion of children who had received three injections, or a full course, of DPT vaccine, was markedly lower in Dureji than in other tehsils, and once again highest in Bela tehsil (Table 16). The map in Figure 14 shows the variation in rate of completion of a full course of DPT vaccine across the district.

Measles

Some 51% (477/904) of children aged 12-23 months had received the measles vaccine, usually given at around nine months old. The measles vaccine is the last in the series of childhood vaccines, and many children have apparently "dropped out" of the immunisation schedule before the age of nine months. Once again, Dureji tehsil had the lowest rate of measles immunisation and Bela tehsil had the highest rate (Table 16). The variation in measles immunisation rate across the district is shown in the map in Figure 15.

Table 17 Reasons why children (12-59 months) are not vaccinated

	BCG	DPT	Polio	Measles
Too far away, no facility	32	32	15	31
Visiting team did not come, missed the team	25	25	34	26
Don't know about it	9	8	0	8
Side effects feared	5	4	0	3
Poverty, demand money	5	6	0	5
Lack of time, people to take child	5	6	5	8
Parental lack of care	4	4	0	4
No tradition to vaccinate, family problem	4	4	7	3
Don't know / no reason	4	5	7	4
Don't believe it works	2	2	7	2
Child/mother sick	2	2	8	2
Family don't allow	1	2	5	1
No vaccine, no doctor, doctor refused	1	1	0	1
Child under age for the vaccine, will have it later	0	1	12	1
n	1260	1342	17	1754

Table 18 Household difficulties in getting children immunised

Difficulties	% decision makers (No. responses)
No difficulty	33 (1056)
No facility nearby/ teams don't come	35 (1133)
Transportation/roads problem	24 (774)
Don't have time/no one to take	4 (128)
Poor/don't have money	6 (190)
Poor quality of vaccination facility	2 (68)
Lack of awareness/information	2 (69)
Afraid of side effects of vaccination	<1 (3)
N	3210 (3421)

Table 19 Improvements to ensure all children are immunised

Improvements	% decision makers
Nothing	8
Teams should come to homes	58
Immunisation facility nearby	28
Better transport and roads	6
Provide information	<1
N	2985

"Many children have died after getting vaccinated. That's why people are afraid of immunising their children."
Female focus group, Dureji tehsil

"These injections are useless. Whether they are immunised or not, children get ill anyway."
Female focus group, Hub tehsil

"Some people say that in earlier times children were never vaccinated, but they still managed to survive."
Female focus group, Uthal tehsil

Polio
Among children aged 12-23 months, virtually all (99%; 897/904) had received polio drops at least once in the last 12 months. This was also the case when all children aged 0-59 months were included (97%; 4739/4860). In this case there was no variation by tehsil.

Why children are not immunised

For each child (12-59 months) that had not received one or other of the immunisations mothers and main care givers were asked why not. For all four types of immunisations, the most common reasons cited were related to access, either that the health facility offering vaccination was too far away or because the visiting team had not come to give vaccines. Table 17 shows the reasons given for children not being immunised.

Decision makers were asked about the difficulties, in general, the household may face in getting their children immunised. One third (32%) stated they had no difficulties, while more than half reported that access was a problem either because there were no nearby offering immunisation or immunisation teams did not visit (35%), or because of transport problems or poor roads (24%). The difficulties mentioned by household decision makers are shown in Table 18.

When asked what would ensure that every child in the household was immunised nearly all responses were related to improving access (92%) (Table 19).

Views of LHWs

The LHWs we interviewed, when asked about barriers to children being immunised, also cited access as a major problem (see section about LHW interviews below). They said either that the facility was too far away or that the mothers or caregivers had difficulty in leaving the house to get to the facility. However, there was an important difference in emphasis between the LHWs and mothers. The most common barrier to immunisation cited by the LHWs was fear of side effects; but very few mothers reported this as their reason for not immunising their child (Table 17).

Focus groups

Community focus groups discussed what parents took into account when deciding about immunising their

"We must have a hospital and a doctor must be assigned to it as well."
Male focus group, Dureji tehsil

"Vaccinations must be available at all basic health units so that more children may be vaccinated."
Male focus group, Hub tehsil

"Immunisation teams must come here the way the polio teams do."
Female focus group, Uthal tehsil

"Teams must come here once every month and immunise our children."
Female focus group, Bela tehsil

"The best strategy is to train LHWs to immunise children so that they may look after immunisation coverage in their own areas."
Male focus group, Hub tehsil

"We must be provided with a lot of camels so that we can take our children for immunisations."
Male focus group, Hub tehsil

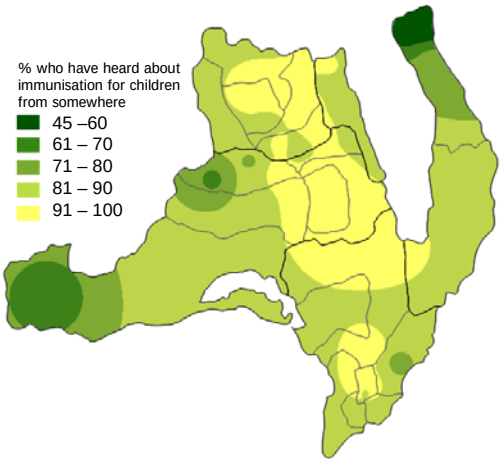

Figure 16. Map of % decision makers who have heard about immunisation for children

Table 20 Sources of information about immunisation (out of all decision makers)

	% decision makers
No where	13
Doctor, hospital	34
Family, neighbours, friends	25
Vaccination team	14
Electronic media	8
LHW, LHV, Dai	5
Announcement	4
Written material	1
School	<1
Don't know/ I knew myself	<1
N	3258

children. They mentioned problems of access and transport, and also voiced concerns about the effectiveness of immunisation and potential adverse effects of vaccines.

Community focus groups discussed what would be the minimum arrangement that would allow people to get their children immunised, given the limitations of budget and the difficult terrain in parts of Lasbela. They were asked if a permanent facility could not be provided nearby, how often would a visiting facility need to be functional.

The group participants offered a number of suggestions and requirements, some more feasible than others. Some insisted that a health facility offering immunisations must be provided in or near their community, while others said that house to house immunisation teams (as for polio vaccine) were needed. Others gave suggestions about frequency of visits to the community of a mobile vaccination unit ranging from more than once a month to every six months. Others suggested that LHWs or *dais* should be trained to give vaccines. Some people explained they needed transport arrangements to help them reach facilities offering immunisation.

Decision makers' knowledge and perceptions about immunisations

Awareness about immunisation

Some 85% (2830/3258) of decision makers had heard about immunisation for children from some source (Figure 16). They sometimes gave more than one source for their information. Their sources of information about immunisation for children are shown in Table 20.

Among decision makers, 78% (2584/3266) were able to mention at least one illness preventable by immunisation. In some cases, their perceptions about which diseases could be prevented by immunisation were incorrect. For example, some thought diabetes, cancer, or chronic malnutrition could be prevented by immunisation. Including only correct perceptions about diseases preventable by immunisation, 75% (2494/3267) of decision makers were able to mention at least one illness preventable by immunisation.

Eight out of every ten household decision makers believed their neighbours thought it was worthwhile to immunise children.

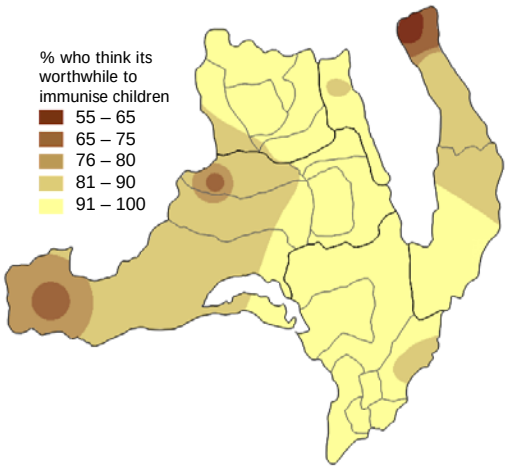

Figure 17. Map of % decision makers who think it is worthwhile to immunise children

Views about benefits of immunisation

The interviewers first asked the decision makers what they believed their neighbours thought about immunising children. Not all knew what their neighbours' views on this matter were. Some 80% (2685/3271) of decision makers said their neighbours thought it was worthwhile to immunise children, 5% (153/3271) said their neighbours did not think it worthwhile, and 15% (433/3271) said they did not know what their neighbours thought about it.

Coming to their own views on the question, 90% (2972/3272) of decision makers thought it was worthwhile to immunise children, 2% (67/3272) thought it was not worthwhile, and 8% (233/3272) did not know if it was worthwhile or not. There was variation across the district (Figure 17).

The most common reason given by decision makers who thought it *was* worthwhile to immunise children was for protection against illness (99%; 2909/2950).

Those few decision makers who thought it was *not* worthwhile to immunise children most frequently felt that the child would get sick (21/42), the injections caused pain (7/42), the vaccinations were not effective (5/42) or it was unnecessary (3/42).

Views about adverse effects of immunisation

Parents might avoid immunising their children because of fear of adverse effects, justified or not. In fact, very few decision makers could mention any adverse effects of immunisation that they knew of.

Only 4% (118/3251) of decision makers had heard of any adverse effect of immunisation. Most of the effects they mentioned were recognised adverse effects of immunisation, including fever and swelling or pain at the injection site. A few (less than 1%) mentioned things that are not recognised adverse effects of immunisation, such as polio and family planning. This last perception is a belief that vaccinations will make children sterile or cause them to have only female children in the future.

The interviewers asked decision makers who mentioned they had heard of adverse effects of immunisation

Table 21 Sources of information about bad effects of immunisation

Source	% decision makers
Family, neighbours	35
Doctor/hospital	34
Don't know/myself	24
No where	3
Vaccination team	1
Electronic media	1
Written material (newspapers, books)	<1
N	108

Table 22 Bad effects of immunisation reported to have been seen

	% decision makers
Nothing	95
Actual side effect	3
Incorrect misconceptions	<1
Not specified	1
N	3158

where they heard this. Table 21 shows the main sources of information. In many cases, the mothers could not give a specific source for their information. Some 35% (38/108) said they had heard of the side effects from their family members or neighbours. Among those with misconceptions about adverse effects of immunisation, none claimed to have heard this from a doctor or health facility.

Only 5% (161/3158) of decision makers said they had seen some adverse effect of immunisation. Again, some of the bad effects they attributed to immunisation were misconceptions. Table 22 shows the proportions of decision makers who had seen actual side effects or effects they incorrectly attributed to immunisation.

Information from the LHW

Among the 20% (761/3473) of mothers who reported being visited by an LHW, 35% (258/743) said the LHW had told them something about childhood immunisations. Among *all* the mothers, only 7% (258/3455) had been given any advice about immunisations from an LHW. This contrasts with the interviews with LHWs (see below), when nearly all of them said they told mothers they visited about the benefits of childhood immunisation

Decisions about immunisation for children

Some 84% (2759/3234) of decision makers said they had discussions within the family about immunisation of children.

For each child under 60 months old mothers were asked who had been involved in deciding about immunisation for that child. For 53% (2573/4876) of the children mothers alone had made the decisions, for 33% (1603/4876) of children the mother and father decided together, while for 14% (700/4876) of children mothers were not involved in deciding about immunisations. Table 23 shows who was involved in decision making in each tehsil.

Table 23 Mothers' involvement in decisions about immunisation for the child (% children)

Who decides	Bela	Uthal	Hub	Dureji	Lasbela
Mothers alone	52	41	62	44	53
Mothers and fathers	36	37	26	48	33
Mothers not involved	13	23	12	7	14
n	1505	1097	1898	376	4876

Measles immunisation

We collected additional information about measles immunisation specifically, including costs of getting the child immunised, and analysed the variables related to the chances of children being immunised against measles. This supplements the analysis of the variables related to the risk of contracting measles (see above), which showed the beneficial effects of measles immunisation on the risk of suffering measles.

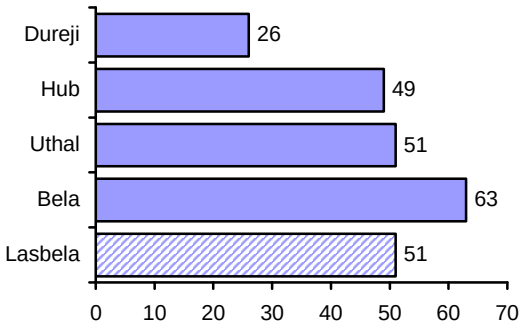

Figure 18 % children (12-23 months) who have received measles vaccine

Frequency of immunisation

As described above, overall in the district, 51% (477/904) of children aged 12-23 months had received the measles vaccine, usually given at around nine months old. Figure 18 shows the variation in rates of measles immunisation between the four tehsils.

Among children 10-59 months slightly more than half (51%: 2103/3964) had received the measles vaccine and a quarter (25%: 1002/3891) had received the vaccine in the past 24 months.

Variables related to children receiving measles vaccine

We collected information about a number of variables that might be associated (positively or negatively) with the chances of a child being immunised against measles. These are listed in Table 24. A number of these variables, examined separately, were associated with the chances of a child being immunised against measles. These are marked (*) in Table 24. We then undertook a multivariate analysis to examine the effects of each of these variables, taking into account the effects of the others. The final model from the multivariate analysis is shown in Table 25.

Poverty and education
Children in less vulnerable households[4] and in households where decision makers had some formal education[5] were more likely to have been vaccinated.

[4] Weighted OR 1.32 95%CI 1.13-1.55; 60.4% (901/1491) children in less vulnerable households were vaccinated compared with 47.9% (1147/2395) children in vulnerable households

Table 24 Variables potentially related to measles vaccine

- Sex of child
- Age of child
- Urban/rural location*
- Tehsil of household
- Household vulnerability*
- Education of the household head*
- Sex of the household head
- Education of the decision maker*
- Sex of the decision maker
- Mother involved in child health decisions*
- LHW visits the household*
- LHW spoke to mother about vaccinations*
- LHW spoke to decision maker about vaccinations*
- Decision maker has heard about immunisation*
- Decision maker correctly mentioned a disease prevented by immunisation*
- Decision maker mentioned measles prevented by immunisation*
- Decision maker has heard about bad effects of immunisation
- Decision maker has seen bad effects of immunisation
- Decision maker knows some of the dangerous/server complications of measles
- Decision maker feels that neighbours think it is worthwhile to vaccinate*
- Decision maker thinks it is worthwhile to vaccinate*
- Discussions about immunisation in the household*
- Decision maker correctly knows how a child catches measles*
- Decision maker knows a child who has had measles
- Households would have to pay something for travel to get a child vaccinated*
- Someone in household would have to take time off from work to take a child for vaccination*
- There is a government immunisation facility within 5km of the household*
- Vaccination team visits the community*
- Vaccination team visits the community at least once a month*
- NGO/CBO/voluntary organisation operates in the community*

Gender

There was no association between the sex of the child and getting measles vaccination. Boys and girls were equally as likely to have been vaccinated.

Knowledge of decision makers

Children in households where the decision maker had heard something about immunisation[6] and could correctly identify a disease prevented by immunisation[7] were more likely to have been vaccinated.

Favourable attitudes

Children from households that had discussions around immunisation were more likely to have been vaccinated[8], and not surprisingly if the decision maker felt vaccination was worthwhile children were also more likely to get vaccinated[9]. Also, children from households where the decision maker felt the neighbours think immunisation is worthwhile were more likely to have been vaccinated[10]

Information from LHW

Children with mothers who had been informed about immunisations by the LHW were more likely to be vaccinated[11].

Access

Children in households with a government immunisation facility within 5 km were more likely to be vaccinated[12].

[5] Weighted OR 1.97 95%CI 1.49-2.61; 76.4% (311/407) children in households with an educated decision maker were vaccinated compared with 49.8% (1691/3395) children in households with an uneducated decision maker

[6] Weighted OR 2.19 95%CI 1.55-2.34; 57.2% (1906/3331) children from households where decision maker had heard about immunisation were vaccinated compared with 20.5% (89/435) of children from households where the decision maker had not heard about immunisation

[7] Weighted OR 1.90 95%CI 1.55-2.34; 60.2% (1782/2962) of children from households where the decision maker could identify a preventable disease were vaccination compared with 26.8% (220/822) of children from households where the decision maker could not

[8] Weighted OR 2.91 95%CI 2.17-3.88; 58.8% (1898/3228) children from households that have discussed immunisation were vaccinated compared with 18.1% (93/421) children from households that did not

[9] Weighted OR 4.93 95%CI 2.75-8.85; 56.9% (1987/3491) children from a household with a decision maker who feels immunisation is worthwhile were vaccinated compared with 7.6% (23/301) children from households with a decision maker who does not hold this view

[10] Weighted OR 2.90 95%CI 2.20-3.83; 59.7% (1901/3183) children from households where the decision maker thinks the neigbhours feel immunisation is worthwhile were vaccinated compared with 17.7% (108/609) of children from households where the decision maker does not think this

[11] Weighted OR 1.50 95%CI 1.10-2.04; 75.3% (241/320) children with a mother told something about vaccination by an LHW were vaccinated compared with 51.0% (1845/3618) children with a mother not told anything about vaccination

Table 25 Factors from multivariate analysis associated with having measles vaccination

Factor	Crude OR	Weighted OR	95%CI for weighted OR
Less vulnerable households	1.62	1.28	1.09-1.50
Decision maker has some formal education	2.18	2.00	1.51-2.66
LHW has spoken to mother about vaccination	1.65	1.53	1.12-2.09
There is a government immunisation facility within 5km	2.26	1.63	1.37-1.95
Decision maker has heard something about immunisation	4.35	2.04	1.43-2.90
Decision maker knows of a disease prevented by immunisation	3.19	1.88	1.53-2.31
Household has discussed immunisation	5.78	2.83	2.12-3.79
Decision maker thinks neighbours think immunisation in worthwhile	5.86	2.90	2.20-3.83
Decision maker thinks immunisation is worthwhile	12.28	4.93	2.75-8.85

The variables related to the chances of a child being immunised against measles are summarised in Table 25. The weighted Odds Ratio (OR) in the table is a measure of the chances of a child in one situation being vaccinated compared with a child in another situation. For example, a child whose mother reports that an LHW spoke to her about vaccination is 1.5 times more likely to be vaccinated against measles, compared with a child whose mother has not had such an interaction with an LHW, taking into account the effects of all the other variables also associated to vaccination.

Potential population gains in measles immunisation

We can estimate the number of additional children who could be vaccinated against measles as a result of different interventions, based on the model in Table 25 showing the increased chances of individual children being immunised if different variables could be changed.

The model of the potential population gains in measles immunisation is shown in Table 26. From this table, we can see that ensuring all communities had a government facility offering immunisation within 5 Km could have the biggest impact and could increase the number of children who receive measles vaccine by 63 per thousand. However, it would be expensive to achieve this.

Useful gains could also be made by informing decision makers (mainly mothers) about the benefits of immunisation (19 per thousand additional children immunised), encouraging household discussion about immunisation (15 per thousand additional children immunised), and convincing decision makers about the

[12] Weighted OR 1.77 95%CI 1.48-2.11; 1.48-2.11; 67.8% (1247/1840) of children in households within 5 km of a government immunisation facility were vaccinated compared with 40.3% (814/2019) of children further from a facility

Table 26. Model of potential population gains of different interventions to increase immunisation against measles

	Proportion requiring intervention (PRI) %	Adjusted Risk Difference	95% CI of adjusted Risk Difference	Adjusted gain per 1000 children
Focus on vulnerable households	63.0	0.0224	0.0137-0.0312	14
Ensure vaccination facilities within 5Km	49.5	0.1279	0.0997-0.1561	63
Inform decision makers about immunisation	10.1	0.1869	0.1252-0.2485	19
Encourage discussion about immunisation	11.6	0.1271	0.0951-0.1592	15
Convince decision makers about immunisation benefits	8.7	0.1767	0.1248-0.2286	15

Proportion requiring intervention is the proportion without the favourable factor (eg the number living in vulnerable households)
Risk difference is the risk in one group minus the risk in the other (eg vulnerable minus non vulnerable risk)
Gain is the potential gain in the whole population, taking into account the PRI

benefits of immunisation (15 per thousand additional children immunised). An education and advocacy campaign could help to achieve this and this could be a relatively cost effective option, depending on how it was undertaken. Focusing efforts on more vulnerable households would be useful as well.

Source and costs of measles immunisation

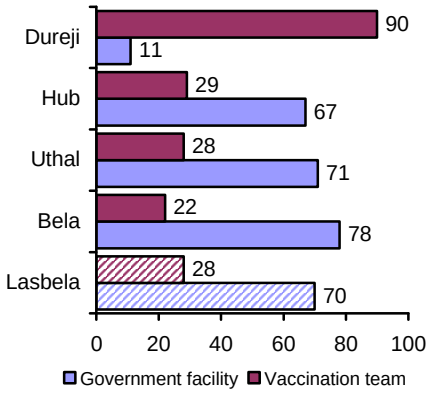

Figure 19 % children receiving measles vaccine in a government facility or from a vaccination team

Among children (<60 months) that received measles vaccination in the past 24 months majority (70%; 704/982) went to a government clinic and just over a quarter (28%: 257/982) were visited by a vaccination team (Figure 19). The remaining 2% reported going to a private facility or practitioner, an unqualified practitioner or an NGO. In most of the tehsils, the majority of vaccinated children received the vaccine in a government health facility. But in Dureji almost all the (relatively few) children vaccinated against measles were vaccinated by a visiting team.

Costs of measles immunisation

Cost of travel

Among families who took their children to a health facility to be immunised, 43% (337/632) had to pay something for travel. As expected, there was no travel cost for families whose children received their measles vaccination from a vaccination team. The median cost of transport among those who paid anything was Rs 20 (mean Rs 50, SE 4.7). People in urban communities were more likely to walk to the health facility (60%) than those in rural communities (40%) but transport costs were higher in urban (mean Rs 69) than in rural (mean Rs 41) communities.

The cost of travel was higher in communities without a health facility providing immunisations within 5 Km. More people reported paying for travel when there was no immunisation facility within 5 Km (38% vs 22%)

and the median amount they paid was higher (Rs 30 vs Rs 20).

Cost of vaccine

Overall, 4% of mothers (36/1019) reported they paid for the measles vaccine. None of those whose children were immunised by a visiting team paid for the vaccine. Among those families who visited a facility to have their children immunised, 7% (36/741) reported paying for the measles vaccine. Among those who paid anything the median amount paid was Rs 10.

Opportunity costs

Table 27 Time off work for measles vaccination, among those families who took any time off

Time taken off work	% cases
Less than 3 hours	67
3-7 hours	29
8 hours (one day) or more	4
N	636

For almost all children (92%; 652/713) taken outside the house to be immunised against measles, a household member had to take some time off their work to take the child for the vaccination. Among children where a household member had to take some time off work, for 67% (435/636) a household member (usually the mother) took less than 3 hours off work, and for 29% (178/636) a household member took 3-7 hours off work (Table 27).

Table 28 Type of work that had to be left to take child for measles vaccination

Type of work	% cases
Housewife	97
Unskilled, farmer, student, retired	2
Skilled, clerical, professional	1
N	634

Nearly all those who took time off work took it from housework (97%; 618/634) (Table 28).

In communities without any health facility offering immunisations within 5 Km, families needed to take longer off work to get their children immunised. Among those who walked, the median time spent was 1 hour if there was an immunising facility within 5 Km and 2.5 hours if there was not. Among those who paid for transport the median times were 2 hours and 3 hours.

Household cost estimates

We asked household respondents how much they thought it would cost to get a child immunized, in terms of travel costs, travel time and total time that would be taken away from money-earning work. Their estimates closely mirror the actual costs reported by mothers who did get their children vaccinated in the previous two years: median estimate of travel cost Rs 20 (mean 55, standard error 5.5) and median estimate of time taken from money-earning work 2 hours (mean 2.7, standard error 0.05).

We asked decision makers how much time they would be prepared to spend to take a child to be immunised (including travel time). Including the 5% who would not be prepared to spend any time for this, the median amount of time was 2 hours (mean 5.8 hours, standard error 0.17). Among only those prepared to spend some time on this activity the median amount of time was 3 hours (mean 6.1 hours, standard error 0.17). More than 60% of decision-makers said they were not prepared to travel more than 5km to take their child to be immunised.

Costs of vaccination and costs of measles

When deciding whether to take their children to be immunised against measles, households take many factors into account. It could be useful to inform people about the real costs of treating a child with measles and to compare this with the costs of getting a child immunised against measles. This is difficult because we do not have any information about the costs of treating a child with measles at home (not taking them anywhere for treatment).

Table 29 Costs of measles vaccination and measles treatment

Item	Measles vaccination	Measles treatment
Vaccine or medicines	Rs 2.4	Rs 483
Travel	Rs 14	Rs 57
Time off work	1.5 hrs	2.1 hrs

Notes:
For measles vaccination, the mean costs to those who paid anything are spread across all vaccinated children.
For measles treatment, the mean costs to those for paid for treatment outside the home are spread across all children with measles

Table 29 offers some cost comparisons. This comparison probably underestimates the cost of treating a child with measles because it assumes that there were no costs of medicines or other treatment for children with measles treated at home, which is probably not quite the case. It also probably underestimates the time required for a mother to look after a child with measles treated at home. Also, the mean costs in Table 28 are sometimes taken from quite a skewed distribution of costs, with a few very high costs distorting the figures. Despite these limitations, it is clear that the monetary cost of treating a child with measles is much higher than the cost of immunising a child against measles. This is quite apart from the suffering of a child with measles and the risk of serious complications, including death.

Understanding parents' views about measles immunisation

In an attempt to understand better people's views about measles immunisation and their decision making process when having their children immunised or not, we discussed these issues in community focus groups of men and women separately.

Effectiveness of measles immunisation

In the household questionnaire, nearly all (89%) of the decision makers said they thought it was worthwhile to immunise children. In the focus groups the facilitators asked the group participants "What difference do you think that measles vaccination makes to the chance of a child catching measles?" The responses showed that while people did think there are benefits to measles immunisation, they also had a number of concerns and doubts and, in many cases, felt in need of more information about the matter.

"Health workers come here and vaccinate our children. But we don't know what it is for."
Female focus group, Bela tehsil

"We take our children for vaccination. But the doctor is not our father who will tell us about these vaccinations."
Female focus group, Hub tehsil

"The danger of getting measles is averted if children are vaccinated against it. Just like smallpox has been eradicated now."
Male focus group, Uthal tehsil'

"The chances of getting measles are reduced by 80% in children who have been vaccinated against it."
Male focus group, Hub tehsil

"The severity of disease is reduced if the child is vaccinated against measles."
Female focus group, Bela tehsil

"It is all a lie that children are kept safe from measles after being vaccinated against it."
Male focus group, Hub tehsil

"We only know about the polio vaccine. We have neither heard about nor seen measles vaccine."
Male focus group, Dureji tehsil

Some participants were not sure what the vaccine was for, but they had immunised their children anyway, because they had been advised to or offered the vaccine.

Many people were clear that measles vaccination reduces a child's chances of contracting measles, some even mentioning the degree of risk reduction they believe the vaccine confers. Others were more cautious, but still felt there was a benefit of vaccination at least in reducing the disease severity even if it could not prevent it happening.

Some people were frankly sceptical and said they did not believe that vaccination made any difference to the risk of catching measles.

In many groups people expressed their need for more information about measles vaccination.

How people decide about measles immunisation

The focus group participants discussed what they thought parents took into account when deciding whether to immunise their children.

"People love their children. They avoid immunising them because they get ill as a result of it"
Female focus group, Bela tehsil

"People don't believe that measles is a dangerous disease. They believe the child will get better by himself within some days."
Female focus group, Bela tehsil

"Poor parents cannot even spend money on their own medicine. How can they have their children vaccinated?"
Female focus group, Hub tehsil

"People are lazy. They keep putting it off to the next day."
Female focus group, Uthal tehsil

Participants suggested people could be discouraged from getting their children immunised because they did not believe it worked, or because it could have bad effects. Some said people were not convinced measles was a dangerous disease worth preventing by immunisation.

On the other side of the equation, focus group participants pointed out that, even if they thought it important to immunise their children, parents could not

do it because they were poor or they had no access to immunisation services. Some mentioned that people put off immunisation as being not immediately urgent.

Convincing parents to immunise children

"If measles spreads like plague and attacks many children, people will have their own children immunised against it."
Female focus group, Dureji tehsil

"People will learn only when children start dying and they are forced to spend a lot of money on their treatment."
Female focus group, Hub tehsil

"Don't become an enemy to your own child. Have him vaccinated at once, otherwise you will have to spend a lot on his treatment."
Male focus group, Hub tehsil

"Measles is a dangerous disease, and measles vaccine protects a child from catching this disease."
Male focus group, Bela tehsil

"If you don't have your children immunised, they will fall ill more frequently."
Male focus group, Uthal tehsil

"You yourself will become troubled if your children fall ill."
Female focus group, Hub tehsil

"I had my children immunised yesterday. You must also do the same."
Male focus group, Hub tehsil

"LHWs must inform women in villages."
Male focus group, Bela tehsil

"People believe what the master sahib tells them. He should be asked to talk about it."
Male focus group, Hub tehsil

"I will listen to my husband if he himself comes and tells me about it."
Female focus group, Uthal tehsil

"People will listen to the *nazim* in our area."
Female focus group, Uthal tehsil

"Group meetings in all villages must be organised for this purpose."
Male focus group, Hub tehsil

The focus groups discussed the circumstances in which they thought most parents would immunise their children against measles. Participants suggested it would take a serious measles epidemic, with children dying of the disease, to convince some parents to immunise. These are rather bleak views, since immunisation of children in the middle of an epidemic is often ineffective (the child is infected before the body can form antibodies).

On a more pro-active note, the focus groups also discussed how they would explain to a parent the benefits and importance of measles and other immunisations, and gave their suggestions about who should convey these messages and by what means people could best be reached with these messages.

The group participants came up with a number of suggested messages and slogans that could be used in efforts to inform parents about the importance and benefits of immunising their children. Some of these pointed out the benefits of immunisation in terms of avoiding the costs of measles. Some gave personal recommendations.

The groups suggested doctors and other health workers, religious leaders and other respected people in the community as suitable people to inform the public about the importance of immunising children. Some mentioned that outside people coming to tell them about immunisations would be effective. Some women's groups said they would want to hear about immunisations from their husbands and other family members.

As for the modality of putting across the messages, people mentioned posters, community meetings, announcements from mosques, and radio and television.

Lady health workers

The data collection teams interviewed 44 LHWs identified as visiting the sample communities, to collect information about their work, knowledge and views about childhood diarrhoea, ARI, measles, and immunisation.

Training

All the LHWs interviewed had received some initial training to work as an LHW and about half (25/44) had received additional training after this. For 18/23 LHWs this additional training was within the last year.

Work load

Most of the LHWs (39/44) covered 150 or fewer households in their catchment area. About half (20/43) said they visited each household at least once a month and the rest (23/43) said they visited each household more frequently, at least once every 15 days.

Some 18/44 LHWs reported having difficulty visiting the households in their catchment area and 21/42 LHWs reported that providing transport would help them visit the households (Table 30).

Table 30. Suggestions from LHWs to reach households better

Suggestion	No of LHWs
Nothing needed	19/42
Community support	1/42
Provide transport	21/42
More LHWs	1/42

Supervision

Most LHWs (31/44) reported they were visited by a supervisor more than once a month but 5/44 reported they were never visited by a supervisor.

Knowledge and attitudes about immunisation

Virtually all the LHWs interviewed (43/44) could correctly identify at least one illness prevented by immunization and all (43/43) said they thought it was worthwhile to immunize children.

Few LHWs said they had heard anything about bad effects of immunisation (3/44) and equally few said they had actually seen any bad effects themselves (3/44).

All the LHWs interviewed said they told mothers about the importance and benefits of immunisation, but only 23% of mothers visited by an LHW recalled being told anything about immunisations.

All the LHWs interviewed said they provided their clients with information about the importance and benefits of immunisation (43/43). This report contrasts with the reports from mothers (see earlier section); of the 19% of mothers visited by an LHW, only 23%

recalled that the LHW told them anything about childhood immunisations.

Table 31 Why children are not immunised: views of LHWs

Reason	No of responses
Fear of side effects	15
Facility too far away	10
Not allowed	10
Carelessness	6
Lack of awareness	4
Don't believe in it	3
No reason	1
Family problem/migration	1

When asked what they thought was the main reason why some children in their community were not immunised the LHWs most commonly cited fear of side effects (15/43), distance of the immunising facility (10/43), and immunisation not being allowed within the household (10/43). Other reasons cited are presented in Table 31.

The pattern of reasons for non-vaccination cited by the LHWs is not the same as the pattern of reasons given by mothers and care givers. According to mothers, access is the biggest barrier to immunisation (either the facility is too far away or the vaccination team does not visit). Mothers only rarely mentioned fear of side-effects but it was the most common reason mentioned by the LHWs.

Knowledge and attitudes about measles

Table 32. Why measles is rare: views of LHWs

Reason	No of LHWs
Disease follows a natural cycle	1/42
It is not the season	5/42
Because of local climate	33/42
All or most children are vaccinated	1/42
Don't know	2/42

Just over half of the LHWs (23/42) could correctly state how a child contracts measles. Almost all of them (42/43) said that measles were rare in their communities. They most commonly said this was because of the local climate (33/42) (Table 32).

Most (37/44) LHWs felt that a child not vaccinated against measles would have a high chance of getting measles and that a vaccinated child would have a low chance (41/44).

Three quarters of the LHWs (33/44) knew something about dangerous and severe complications of measles. Most (18/32) reported child death as the severe complication and 11/32 could identify other real complications of measles.

Some 29/43 of the LHWs had actually known a child that had suffered measles.

LHW advice to households about ARI

Most LHWs (36/39) could provide some correct advice about recognizing ARI in children and when advising families about treatment most advise to give the child medication (27/44), take the child to the doctor (24/44) or to keep the child warm (11/44).

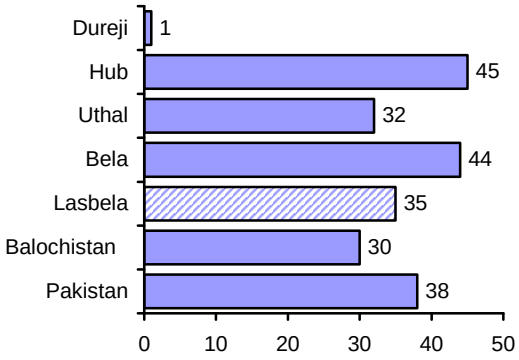

Figure 20 % households satisfied with roads

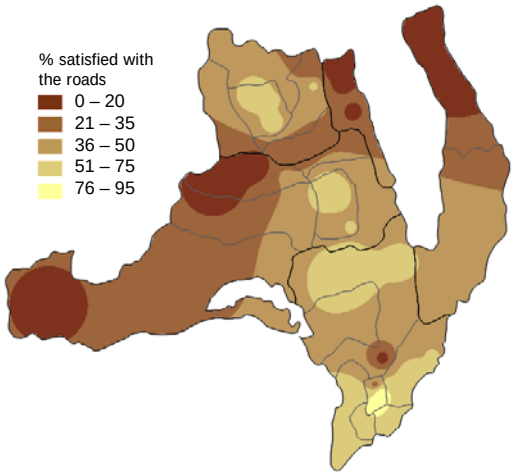

Figure 21. Map of % households satisfied with roads

Table 33. % households reporting access to roads and public transport

	Roads	Public transport
Bela	84	88
Uthal	66	71
Hub	85	90
Dureji	28	25
Lasbela	73	76
Balochistan	72	86
Pakistan	92	92

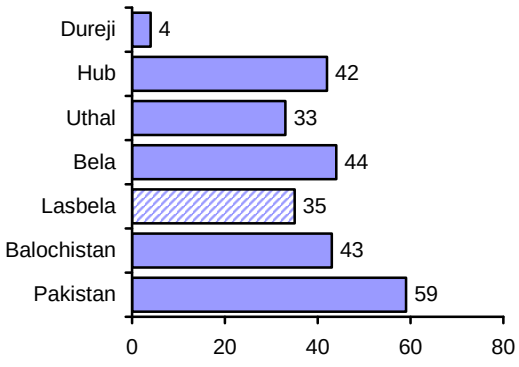

Figure 22 % households satisfied with public transport

Public satisfaction with basic services

In a general section of the household interview we asked households about their satisfaction with a range of basic public services provided by the government. In some cases, household respondents said that they had no such service available to them. This same information was also collected as part of the 2004/05 national social audit, so comparison with national and provincial figures is possible.

As mentioned in the report of the national social audit, isolated satisfaction ratings of public services must be interpreted with caution, as they may be influenced by many factors other than the quality of a service. However, they do provide some guide to how citizens view the public services supposed to be available to them. It can be useful to track satisfaction ratings over time, but again care must be taken not to over-interpret changes, especially small changes, which may even be due to chance. In the focus districts, we have the opportunity to compare satisfaction with a range of public services in different parts of the district.

Roads

Across the district, just over a third of the households (36%; 1258/3335) were satisfied with the roads in their area. Figure 20 shows the satisfaction with roads in the different tehsils and includes the figures for satisfaction with roads at national and provincial levels, for comparison. The variation in satisfaction with roads across the district is shown in the map in Figure 21.

About three quarters (73%; 2509/3335) of households across the district considered they had access to roads in their area but this varied from 28% (85/300) in Dureji tehsil to 85% (1092/1288) in Hub tehsil (Table 33).

Public transport

Across the district, about one third of households (35%; 1226/3315) were satisfied with the public transport in their area. Figure 22 includes comparison with the findings about satisfaction with public transport at national and provincial levels.

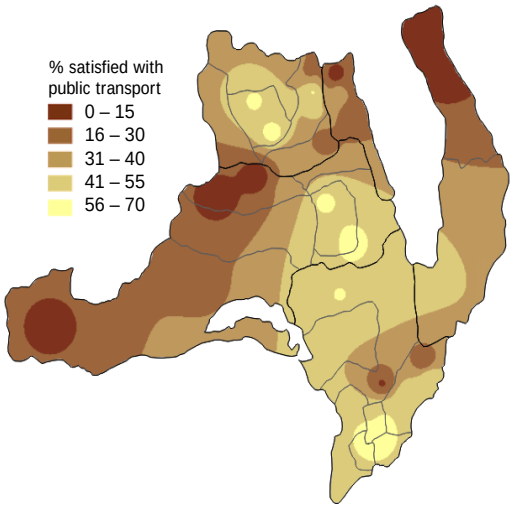

Figure 23. Map of % households satisfied with public transport

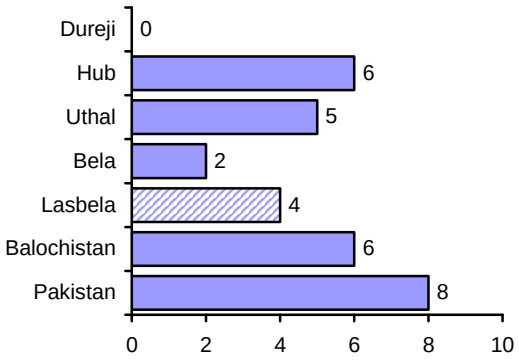

Figure 24 % households satisfied with government garbage services

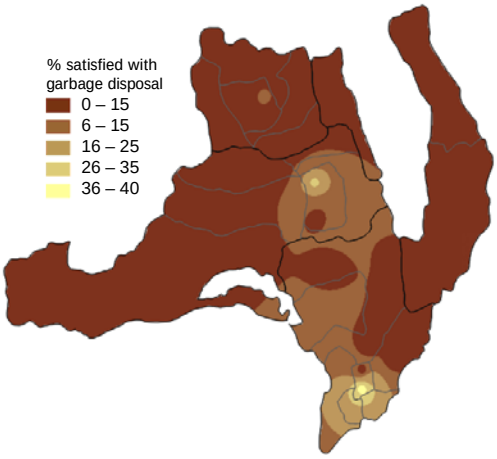

Figure 25. Map of % households satisfied with government garbage services

Table 34. % households reporting access to government garbage, sewerage, and water services

	Garbage	Sewerage	Water
Bela	21	21	52
Uthal	24	25	39
Hub	27	27	44
Dureji	<1	1	29
Lasbela	22	22	43
Balochistan	27	32	63
Pakistan	36	66	44

There was considerable variation in satisfaction with public transport across the district, and this is also shown in the map in Figure 23.

As with roads, about three quarters (77%; 2631/3315) of households across the district considered they had access to public transport in their area varying from 25% (76/299) in Dureji to 90% (1158/1291) in Hub Table 33).

Garbage disposal

Across the district, only 4% (143/3326) of households were satisfied with the garbage disposal in their community. Figure 24 includes a comparison with the findings about satisfaction with garbage disposal at national and provincial levels.

The variation in satisfaction with garbage disposal services across the district is also illustrated in the map in Figure 25.

Only 22% (737/3326) of households across the district considered they had access to garbage disposal in their community. See Table 34 for the variation in perceived access to garbage disposal services between tehsils.

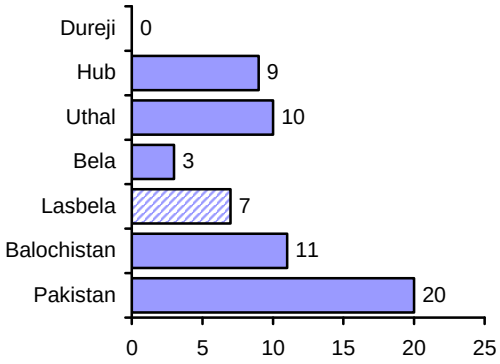

Figure 26 % households satisfied with government sewerage services

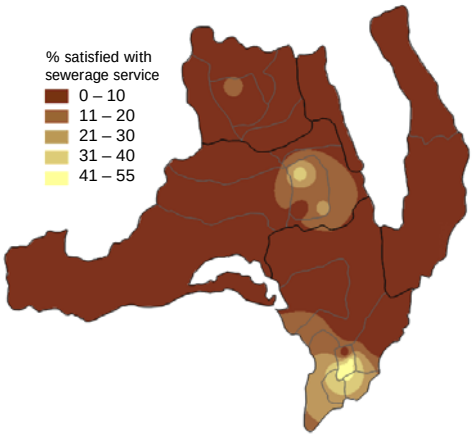

Figure 27. Map of % households satisfied with government sewerage services

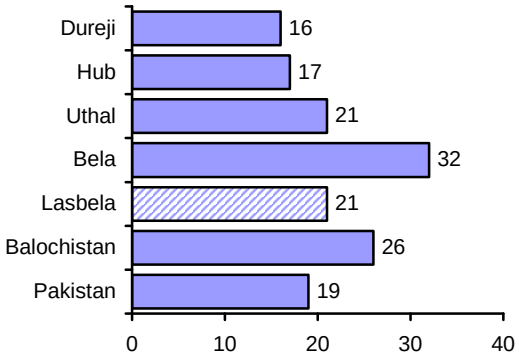

Figure 28 % households satisfied with govt water supply

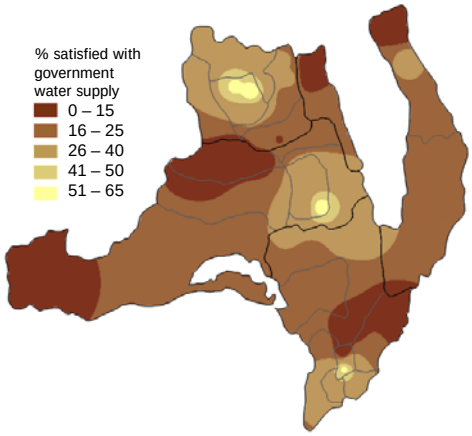

Figure 29. Map of % households satisfied with government water supply

Sewerage services

Across the district, some 7% (224/3350) of households were satisfied with the sewerage services in their community. Figure 26 includes a comparison with the findings about satisfaction with sewerage services at national and provincial levels.

The map in Figure 27 shows the variation in household satisfaction with government sewerage services across the district.

As with government garbage services, some 22% (755/3350) of households across the district considered they had access to sewerage services in their community but with variation between tehsils. Virtually no one in Dureji considered they had access to such a service while around a quarter of households in the other three tehsils reported having access (Table 34).

Government water supply

Across the district, some 21% (752/3355) of households were satisfied with the government water supply in their area. Figure 28 includes comparison with the findings about satisfaction with government water supply at national and provincial levels.

The map in Figure 29 shows the variation in household satisfaction with government water supply across the district.

Less than half (43%; 1474/3355)of households across the district considered they had access to government water supply in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 34.

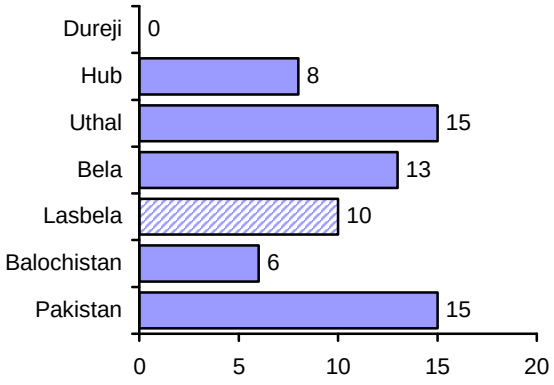

Figure 30 % households satisfied with government agriculture services

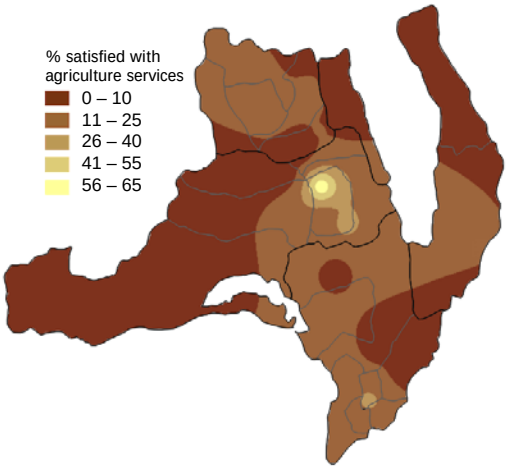

Figure 31. Map of % households satisfied with government agriculture services

Table 35. % households reporting access to government agricultural, education and health services

	Agriculture	Education	Health
Bela	43	95	72
Uthal	38	73	60
Hub	26	89	59
Durreji	3	42	26
Lasbela	30	81	58
Balochistan	25	95	78
Pakistan	49	96	77

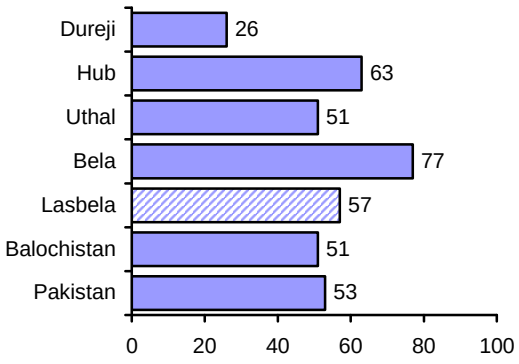

Figure 32 % households satisfied with government education services

Agriculture services

Many of the population of Lasbela rely on agriculture or livestock for their livelihood. Yet, across the district, only 10% (338/3346) of households were satisfied with the agriculture services in their area. Figure 30 includes a comparison with the findings about satisfaction with agriculture services at national and provincial levels.

The variation in satisfaction with agriculture services across the district is also illustrated in the map in Figure 31.

Just over a quarter of households (30%; 1057/3346) across the district considered they had access to agriculture services in their area. This is shown by tehsil and in comparison with national and provincial figures in Table 35.

Education

Across the district, one half of households (58%; 2052/3358) were satisfied with the government education service in their area. Figure 32 gives the comparison with the findings about satisfaction with the government education service at national and provincial levels.

The variation across the district in household satisfaction with government education services is shown in the map in Figure 33.

Around three quarters (81%; 2786/3358) of households across the district considered they had access to a government education service in their area but with variation between tehsils (Table 34), from 95% (947/996) in Bela to 42% (127/300) in Dureji.

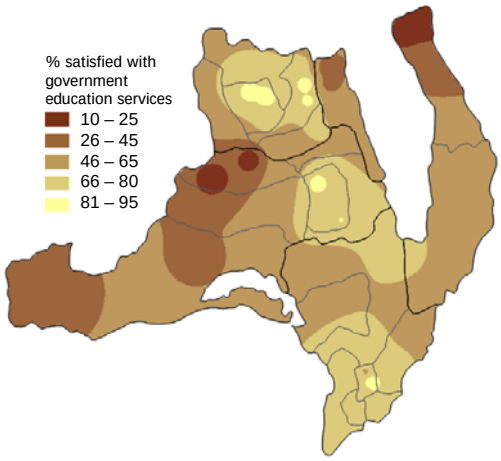

Figure 33. Map of % households satisfied with government education services

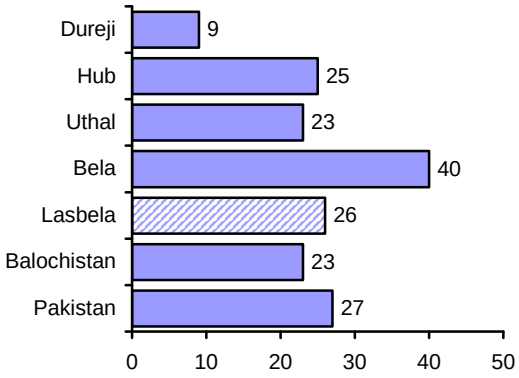

Figure 34 % households satisfied with government health services

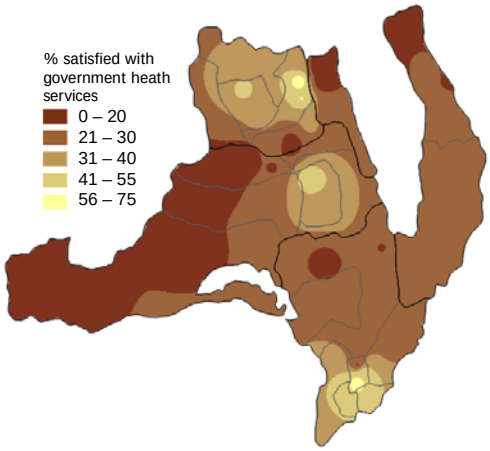

Figure 35. Map of % households satisfied with government health services

Health

Across the district, only about a quarter of households (26%; 926/3349) were satisfied with the government health services in their area. Figure 34 gives the comparison with the findings about satisfaction with the government health services at national and provincial levels.

The map in Figure 35 illustrates the variation across the district in household satisfaction with government health services.

Some 58% (2011/3349) of households across the district considered they had access to government health services in their area and this varied from 26% (79/300) in Dureji to 72% (716/995)in Bela (Table 35).

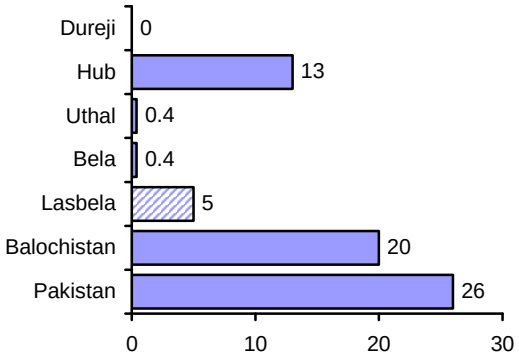

Figure 36 % households satisfied with government gas supply

Table 36. % households reporting access to gas and electricity services (weighted %)

	Gas	Electricity
Bela	1	78
Uthal	1	41
Hub	16	62
Dureji	0	0
Lasbela	7	52
Balochistan	24	77
Pakistan	30	92

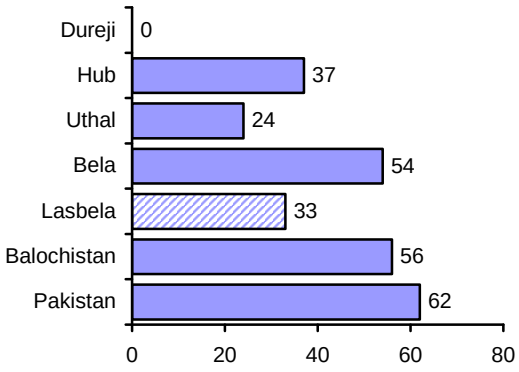

Figure 37 % households satisfied with government electricity supply

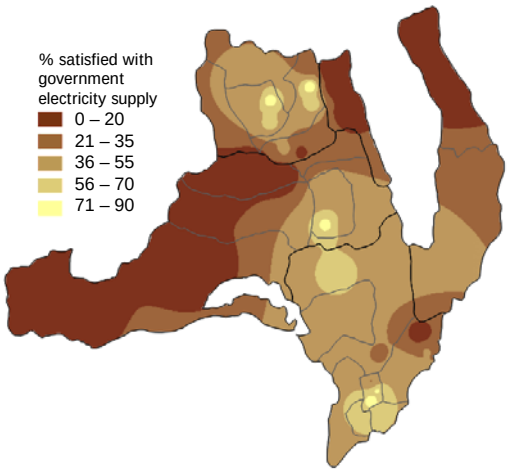

Figure 38. Map of % households satisfied with government electricity supply

Gas supply

Gas supply is confined to the urban area of Hub. Across the district, only 5% (170/3362) of households were satisfied with the gas supply in their area and these were almost all in Hub tehsil, where 13% (163/1303) of households were satisfied. Figure 36 includes a comparison with the findings about satisfaction with gas supply at national and provincial levels.

Just 7% (216/3362) of households across the district reported they had a gas supply at all and these were mainly in Hub tehsil, where 16% (204/1303) of households reported having access (Table 36).

Electricity supply

The situation was a bit better for electricity supply. Across the district, 33% (1195/3356) of households were satisfied with the electricity supply in their area. Figure 37 includes a comparison with the findings about satisfaction with electricity supply at national and provincial levels. No households in Dureji were satisfied with electricity supply.

The variation in satisfaction with electricity supply across the district is illustrated in the map in Figure 38.

About half of the households (52%; 1888/3356) across the district reported they had an electricity supply but this was limited to Bela, Uthal, and Hub (Table 36). No households in Dureji had access to electricity.

Commentary

This report presents the main findings of the second social audit in Lasbela. It is by no means the end of the process. It will hopefully be a useful reference. But the main work of disseminating the findings and making use of them to support evidence-based planning is only just beginning. Over the coming months the social audit findings will be presented and discussed in many settings within the district, both within and outside government.

During this process many people will no doubt examine the findings closely and look beyond what is included in this report, relating the findings to what they know about the district and tehsil settings and looking for feasible ways to improve outcomes. Some findings bear highlighting even at this stage.

Childhood acute respiratory infections (ARI)

The low rate of reported ARI in Lasbela is interesting and the reasons for this could be examined further. The rate is notably lower than in the other four focus districts, although the question about ARI was asked in the same way in all the five districts. There could be a real difference in the rate of ARI between Lasbela and the other focus districts, but the extremely low rate in Lasbela suggests that parents responding here for some reason only reported more serious forms of the condition, when the child had a frank pneumonia.

Children with ARI do need medical attention, especially severe cases, so it is of some concern to see that over a third were not taken anywhere for treatment. The most common choice of parents was qualified private practitioners, and only 15% of children with ARI were taken to a government facility for treatment. The problems of access to government facilities in some areas and concerns about lack of medicines in government facilities seem to be factors in the decision of where to take children for treatment.

Childhood measles

Measles is quite common in Lasbela: 18% of children aged 10-59 months old have had measles, even excluding those cases under 10 months old (which may not be measles). Taking other factors into account, we were able to show that children who were not

immunised had twice the risk of measles compared with immunised children. This recent information specifically from Lasbela district is useful to give to parents deciding whether to immunise their children. We were also able to show that 51 per thousand children in Lasbela could be protected from measles if all children were immunised. Actually, this could be an underestimate because once nearly all children are immunised there is a "herd immunity" effect further reducing the risk of measles, even in non-immunised children.

Childhood immunisations

Lasbela is far from achieving universal immunisation. Nearly two thirds (67%) of children aged 12-23 months received BCG at birth, but the rates of immunisation fall off afterwards, so only half (52%) of children received the full course of DPT injections, and only half (51%) of them received measles vaccine.

Some of the discussions held with parents individually and in focus groups help to explain reasons why children are not immunised, and parents' decision making considerations, and could be useful inputs into an advocacy campaign, together with the evidence about the beneficial effects of measles immunisation. The analysis of variables related to the chances of a child being immunised against measles also offers a number of options for interventions that could help to increase the number of immunised children.

An intervention is already planned in Lasbela to make use of the findings from this social audit in support of increased childhood immunisation rates. Taking the form of a randomised controlled cluster trial, the intervention will involve developing dialogues with communities in an effort to help parents understand more about the benefits of immunisation and help communities to take action themselves to increase immunisation rates.

The role of lady health workers (LHWs)

The coverage of mothers by LHWs in Lasbela is low: only 20% of mothers reported they were visited by an LHW, and in Dureji there were was no LHW coverage. It is also striking that most mothers visited by an LHW did not recall being told anything about prevention or treatment of diarrhoea in children, recognition and

treatment of ARIs in children, or immunisations. On the other hand, nearly all the LHWs we interviewed said they did tell mothers about these things. The reasons for this contrast need to be explored and perhaps LHWs need to be equipped with different methods of getting over information to mothers. Information from LHWs can clearly have an impact; recall of information about immunisations from an LHW was a variable that increased the chances of a child being immunised against measles.

Satisfaction with a range of government services

We asked households a general question about their satisfaction (and access) to a range of basic services, provided from different levels of government. While we caution against over-interpretation of these isolated satisfaction ratings, they do provide a general guide. Lasbela has problems with public satisfaction and access for most services, in comparison with the national average and even in comparison with Balochistan as a whole. Although Lasbela fares better than the Balochistan average for public satisfaction with government agriculture, education and health services, the satisfaction with these services is still low. These public satisfaction ratings can provide an ongoing feedback from citizens, but bearing in mind their limitations.

Annexes

1. Members of Lasbela district social audit steering group
2. Members of Lasbela district social audit sub-technical group
3. Terms of reference of social audit national core group
4. CIET methods
5. Main indicators from household interviews, by tehsil
6. Main indicators from community profiles and LHW interviews
7. Main themes from focus group discussions

Annex 1

Members of Lasbela social audit district steering group

1. Jam Kamal Khan, Zila Nazim
2. S. Agha Abul Hassan, District Coordination Officer (Present)
   Zafar Ullah Baloch, District Coordination Officer (Ex)
3. Muhammad Ibrahim Doda, Naib Zila Nazim
4. S. Zahoor ul Hassan, EDO Planning & Finance
5. Dr. Naseer Baloch, EDO Health (Present)
   Dr. Abdul Haleem, EDO Health (Ex)
6. Dr. Ghulam Hussain Jaffar, EDO Livestock
7. Imran Aliyani, EDO Public Health Engineering
8. Aman Ullah Lasi, EDO Community Development
9. Jameel Gichki, Tehsil Nazim Hub
10. Anwar Roonjho, Tehsil Nazim Bela
11. Siddique Chhutta, Tehsil Nazim Dureji
12. Ghulam Muhammad Lasi, Tehsil Nazim Uthal (Present)
    Farooq Sheikh, Tehsil Nazim Uthal (Ex)
13. Abdul Hameed Baloch, Tehsil Nazim Gaddani
14. Abdul Shakoor Lasi, TO Planning & Coordination Hub
15. Muhammad Azeem, TMO Uthal
16. Akram Nasir, TMO Dureji (Present)
    Shaukat Hayat, TMO Dureji (Ex)
17. Wali Muhammad Roonjho, TO Planning & Coordination Uthal
18. Zafar Iqba, TMO Hub (Present)
    Akram Nasir, TMO Hub (Ex)
19. Dr. Muhammad Hayat, District Coordinator NPFP&PHC
20. Ehtasham ul Haq, TMO Gaddani

Annex 2

Members of Lasbela social audit sub-technical group

1. Dr. Ghulam Hussain, Ditrict Livestock Officer, Lasbela
2. Mr. Anwaar Malik Assistant Executive Officer, Planning &Finance department, Lasbela
3. Dr. Mohammad Hayat, District Coordinator LHW programme, Health department, Lasbela
4. Mr. Anwer Ali, Social Welfare Officer, Uthal
5. Mr. Imran Aliani EDO Public Health Engineering department, Lasbela
6. Mr. Amanullah Laasi EDO Community development
7. Mr. Abdul Shakoor Laasi TO Planning Hub
8. Shaukat Hayat Khan TMO Dureji
9. Dr Abdul Haleem EDO Health
10. Mr. Abdul Samad Khan DSV
11. Dr Qadir Jattak Medical Superintendent DHQ Uthal
12. Mr. Wali Mohammad TO Planning TMA Uthal

Annex 3: Terms of reference of social audit national core group

Membership

The membership will include:

- From each focus district: the zila nazim or representative and the DCO or district focal person for the social audit
- The social audit focal point from each provincial department of Local Government and Rural Development
- The CIET district coordinator from each focus district, CIET provincial coordinators and national coordinator, and representation from the CIET liaison office in Islamabad
- A representative from NRB
- Other members as may be co-opted for specific purposes from time to time

The group will be chaired by one of the members from the focus districts, to be elected by the core group members. The group members will elect a chair every six months. CIET will provide the secretariat for the group.

Purposes of the group

The intention of the national core group is to share experiences of the district social audit scheme between the districts, identifying what has worked especially well, so that a tool-box for district social audit schemes in other districts can be developed.

The group will:

- develop means of *horizontal connectivity*: methods of sharing learning between the participating districts, both in terms of how best to apply the social audit effectively and in terms of findings and action plans developed as a result. These might include email listserves, a newsletter, shared reports, and meetings.
- explore means of increasing *vertical connectivity*: identifying common issues arising from the social audit to bring to the attention of the NRB; developing the role of the provincial LGRD departments in supporting the district social audit schemes; and findings ways to involve sub-district governments and civil society in social audit.
- provide a forum for discussing and agreeing matters of common interest, such as the focus of each social audit cycle and methods of publicizing the findings
- act as a point of reference for other districts that wish to develop district social audit schemes

Meetings

Meetings will be held six monthly. The venue for each meeting will be one of the participating districts, to be agreed in the preceding meeting.

The Minutes of the meetings will be circulated to the members and to the Chief Secretary, the head of the Planning and Development, and the head of the Local Government department in each province.

In between physical meetings, matters of interest or importance to the Group will be circulated for comment and discussion, mostly electronically.

Annex 4: CIET methods

Rooted in modern epidemiology and participatory research techniques, CIET methods have been applied in health[13], education[14], water and sanitation[15], land mines[16], economic sanctions[17], prevention of sexual violence[18] and the impact of structural adjustment measures on the vulnerable. The method has been used to measure impact, coverage and cost in the fields of environment[19], urban transport[20], agricultural extension[21] and judiciary[22]. It has proved useful for community-designed strategies to combat corruption in the public services in several countries[23][24]. CIET processes have been established in over 40 countries during the last decade.

A representative sample of communities is selected to represent conditions across the entire country. In these sentinel communities, *all* public services to be included in the audit are reviewed. This allows for conclusions not just on the performance of each department, but on the performance of the services taken together. In each sentinel community, several types of interaction are developed with the community, including a service delivery household survey. The fact that the public services are reviewed in the same sentinel communities as the household survey and focus groups means that these different types of information – community and service, quantitative and qualitative – can be combined economically and rapidly.

There are several specific steps in the social audit that examine and strengthen community participation:
- the sample is carefully chosen to cover all types of community; information they provide includes their experience with services, their satisfaction and willingness to pay;
- community members and service providers participate in the fact finding;
- community members and service providers participate in analysis of the evidence, adding their experience and ideas to formulate local solutions;
- the workshopping process allows both one-to-one interaction and group discussion of the evidence and the ways forward; and
- the reiterative nature of the process helps to build community capacities and confidence.

[13] Cockcroft A. Performance and Perceptions of Health and Agriculture Services in Uganda. CIETinternational/World Bank/UNICEF/CIDA: Washington, D.C., December 1996.
[14] CIETinternational. Gender gap in primary education. Secretary Planning & Development Department, Government of Sindh, Pakistan/UNICEF Karachi 1996.
[15] Andersson N, Villegas A, Paredes S. Micro-regional Planning. in Four Essays on Evidence-based Planning . EDI/World Bank, 1995.
[16] Andersson N, da Sousa C, Paredes C. Social costs of land mines in four countries: Afghanistan, Bosnia, Cambodia and Mozambique. *British Medical Journal.* 1995;311:718-721.
[17] Andersson N. The social conditions for health in Serbia. CIETinternational: New York. 1994
[18] Andersson, N., Mhatre S, Mqotsi N., Penderis, M. Prevention of sexual violence - a social audit of the role of the police in the jurisdiction of Johannesburg's Southern Metropolitan Local Council. Johannesburg, October 1998.
[19] Arostegui J and Andersson N. Nicaragua: Impact of the National Environmental Program. EDI/World Bank, December 1995.
[20] Arostegui J and Andersson N. Results-oriented management of Managua urban public transport. EDI/World Bank December 1995.
[21] Cockcroft A. Performance and Perceptions of Health and Agriculture Services in Uganda. CIETinternational/World Bank/UNICEF/CIDA: Washington, D.C., December 1996.
[22] Massoud N. Measuring client satisfaction and expectations: The Case of the Mali Public Service. EDI/World Bank. September 1995.
[23] Cockcroft A. Tanzania Service Delivery Survey: Corruption in the Police, Judiciary, Revenue & Lands Service. EDI/World Bank July 1996.
[24] Cockcroft A, Legorreta J. National Integrity Survey, Uganda. Inspectorate of Government, Uganda & CIETinternational, August 1998.

Taken together with hard evidence of what needs to change and how it should be changed, this participation can produce a radical change in public services, increasing accountability and providing the public with value for money.

In addition to a detailed review of public services, and interviews with service providers, community-based social audits collect information on users and non-users of a service from the standpoint of the community. A community-based audit compares users and non users in the same community, and it can compare entire communities that benefit form a service with entire communities that do not benefit. This is a strong analytical position for understanding programme performance. Since it places community dynamics at the centre of the audit, it is very easy to answer questions about who the programme leaves out and why they are left out, something that service-based approaches cannot do easily. It also allows for evaluation of 'knock-on' or secondary effects, for example, when some women in a community are exposed to programme content and they relay the benefits to others in some way or another.

Analysis

The most basic level of analysis is simply a description of the levels of the different indicators of service performance. However, this does not in itself contribute to changing the situation. Formal epidemiological analysis probes behind the indicators to reach a deeper understanding of what is happening and how it be changed to improve outcomes for the well-being of the population in question.

The CIET community-based cross-design methods focus principally on what is working (the proof that something is not working requires considerably bigger sample sizes). Even when a relationship is found between a particular intervention or service and a positive outcome, in order to be sure it is the intervention that produces the positive outcome, it is necessary to exclude other possible factors as explanations of the outcome. This leads to the development of several higher-level indicators, each with a purpose in planning.

Modern epidemiological methods, for example the Mantel-Haenszel[25] procedure and the Mantel-Extension[26] test for trend, widely used for studying causes in the medical sphere, have been adapted to look behind the indicators in management in other sectors, including justice, transport, environment, customs services, water, sanitation, agriculture, food security and education. These techniques allow detailed analysis of factors that contribute to impact at national and sub-national levels. They can be used in analysis of data from social audits.

GIS component: maps for planning

CIET mapping techniques are an important means of displaying findings for planners and policy makers. The CIETmap geographic information process is designed for communication and modelling of epidemiological data for planning.[27] It represents the spatial variations of indicators but it can also model the effects of interventions, programme changes, and time-series data.

[25]Mantel N, Haenszel W. Statistical aspects of the analysis of data from retrospective studies of disease. *J Natl Cancer Inst* 1959;22:719_748.
[26]Mantel N. Chi_square tests with one degree of freedom: extensions of the Mantel Haenszel procedure. *J Amer Stat Assoc* 1963;58:690_700.
[27] Andersson N., Mitchell S. CIETmap: free GIS and epidemiology software from the CIET group, helping to build the community voice into planning. World Congress of Epidemiology, Montreal, Canada, 19 August, 2002.

Sample data collected in the field are linked to a set of sentinel sites on the map and interpolated to create a raster surface of the study area. An adjustment is made to the interpolation in order to account for the population weighting of the sites. This transforms the map into one which represents proportion of the population rather than simply geographic area. A colour palette is then applied to show the gradient changes between classes of data, with darker colours representing high values and lighter colours representing low values.

CIET raster maps are interpreted much like a standard weather map where regional trends are more accurate than the exact location of any contour gradient. However, since they are population weighted, if 30% of the map falls within a certain class range then 30% of the population is in that range.

CIETmaps can be used to measure community participation and coverage of services in different sectors including social welfare, health, education, sports, art and culture. Each level of CIET indicators can be displayed on the maps in order to show access to services, the current effect of services on the community, and the possible effects of any programme change or reallocation.

For example, a level 0 ‘coverage’ map can show which households have access to, say, government health services and which do not. This can be helpful in determining where the gaps of services occur based upon community reported needs.

This map can then be compared with the coverage with roads of different types in different areas. Satisfaction is partly a function of expectations. The level 0 maps can demonstrate regional variations of satisfaction or access to services which may be important to consider for any reallocation or reform of services.

CIETmaps can then be used to determine how any projected road construction might change overall satisfaction with this service. These ‘gains’ can be clearly modelled on the maps through a ‘morph’ series. The morph series is so named due to the visible change that occurs in the indicator on the map, much like a series of steps in an animation. For example, the morph series may show a significant increase in user satisfaction if ‘Reform A’ was implemented. The Morph series not only shows how much of an effect there may be, but also where the effect takes place. Morph series maps can also be used to compare interventions, such as the effect of Reform A vs. Reform B, or the effect of A and B together.

Annex 5: Main indicators from household interviews

Table 1. General household indicators by tehsil

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Household demographic and socio-economic characteristics										
Total households interviewed		3366		998		762		1306		300
Total population covered (number of people)		24435		7766		5719		9146		1802
Mean household size	7.156(7.259) 7.04-7.26	3366	7.7 7.5-7.0	998	7.5 7.2-7.7	762	7.0 8.8-7.1	1306	6.0 5.7-6.2	300
Households with a male head	99.16(99.2) 98.84 - 99.49	3366	99.6 99.16 - 100.04	998	98.03 96.98 - 99.08	762	99.39 98.93 -99.85	1306	100 99.83 - 100.1	300
Household head with any education	30.75(32.27) 29.18-32.33	3359	42.01 38.89-44.63	995	25.20 22.05-28.35	762	32.85 30.26-35.44	1303	15.38 11.13-19.64	299
Houses with poor roof construction	66.42(66.61) 64.81 - 68.03	3366	74.45 71.69 - 77.20	998	75.07 71.93 - 78.20	762	49.54 46.79 - 52.29	1306	93.33 90.34 - 96.32	300
Houses with >4 people/room	56.26(56.61) 54.56 - 57.96	3342	60.77 57.67 - 63.86	989	59.87 56.32 - 63.42	760	50.69 47.93 - 53.45	1296	60.27 54.54 - 66.00	297
Main breadwinner unemployed or unskilled	49.39(48.89) 47.67 - 51.10	3338	45.46 42.31 - 48.61	992	40.37 36.81 - 43.93	758	54.83 52.08 - 57.59	1293	56.27 50.44 - 62.10	295
Vulnerable households	61.77(61.71) 60.10 - 63.44	3317	64.9 61.87 - 67.94	983	64.15 60.67 - 67.64	756	53.97 51.20 - 56.73	1286	78.77 73.91 - 83.63	292
Very vulnerable households	20.36(20.38) 18.97 - 21.74	3317	23.09 20.41 - 25.78	983	19.71 16.81 - 22.61	756	15.94 13.90 - 17.98	1286	32.53 26.99 - 38.08	292
General opinion about services										
Roads		*n=3335*		*n=987*		*n=760*		*n=1288*		*n=300*
Satisfied	36.1(37.72) 34.46 - 37.75	1258	44.17 41.03 - 47.32	436	31.58 28.21 - 34.95	240	44.95 42.20 - 47.71	579	1 -0.29 - 2.29	3
Not satisfied	36.99(37.51) 35.33 - 38.64	1251	39.92 36.81 - 43.02	394	34.47 31.03 - 37.92	262	39.83 37.12 - 42.54	513	27.33 22.12 - 32.54	82
No service	26.91(24.77) 25.39 - 28.43	826	15.91(15.91) 13.57 - 18.24	157	33.95 30.51 - 37.38	258	15.22 13.22 - 17.22	196	71.67 66.40 - 76.93	215
Public transport		*n=3315*		*n=983*		*n=742*		*n=1291*		*n=299*
Satisfied	35.42(36.98) 33.77 - 37.06	1226	43.85 40.69 - 47.00	431	32.88 29.44 - 36.33	244	41.75 39.02 - 44.48	539	4.01 1.62 - 6.41	12
Not satisfied	41.62(42.38) 39.93 - 43.31	1405	44.56 41.40 - 47.72	438	38.27 34.71 - 41.84	284	47.95 45.18 - 50.71	619	21.4 16.59 - 26.22	64
No service	22.96(20.63) 21.52 - 24.41	684	11.6 9.54 - 13.65	114	28.84 25.51 - 32.17	214	10.3(10.3) 8.61 - 12.00	133	74.58 69.48 - 79.68	223

Indicator		DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Sewerage service			*n=3350*		*n=990*		*n=760*		*n=1301*		*n=299*
	Satisfied	6.92(6.69) 6.04 - 7.79	224	3.33 2.16 - 4.50	33	9.47 7.33 - 11.62	72	9.15 7.54 - 10.75	119	0	0
	Not satisfied	15.26(15.85) 14.03 - 16.49	531	17.98 15.54 - 20.42	178	15.53 12.89 - 18.17	118	17.91 15.79 - 20.03	233	0.67 -0.42 - 1.76	2
	No service	77.82(77.46) 76.40 - 79.24	2595	78.69 76.09 - 81.29	779	75 71.86 - 78.14	570	72.94 70.49 - 75.40	949	99.33 98.24 - 100.42	297
Garbage service			*n=3326*		*n=978*		*n=756*		*n=1292*		*n=300*
	Satisfied	4.46(4.3) 3.75 - 5.18	143	1.94 1.03 - 2.86	19	5.42 3.74 - 7.10	41	6.42 5.05 - 7.80	83	0	0
	Not satisfied	17.33(17.86) 16.03 - 18.63	594	18.92 16.41 - 21.42	185	18.12 15.31 - 20.93	137	20.98 18.72 - 23.23	271	0.33 -0.49 - 1.15	1
	No service	78.21(77.84) 76.79 - 79.62	2589	79.14 76.54 - 81.74	774	76.46 73.36 - 79.55	578	72.6 70.13 - 75.07	938	99.67 98.85 - 100.49	299
Government water supply			*n=3355*		*n=993*		*n=761*		*n=1302*		*n=299*
	Satisfied	21.18(22.41) 19.78 - 22.58	752	32.23 29.27 - 35.18	320	20.89 17.94 - 23.85	159	17.2 15.12 - 19.29	224	16.39 12.02 - 20.75	49
	Not satisfied	21.51(21.52) 20.11 - 22.92	722	19.54 17.02 - 22.05	194	18.13 15.33 - 20.94	138	27.04 24.58 - 29.49	352	12.71 8.77 - 16.65	38
	No service	57.31(56.07) 55.62 - 59.00	1881	48.24 45.08 - 51.40	479	60.97 57.44 - 64.50	464	55.76 53.02 - 58.50	726	70.9 65.59 - 76.22	212
Gas supply			*n=3362*		*n=998*		*n=761*		*n=1303*		*n=300*
	Satisfied	5.42(5.06) 4.64 - 6.20	170	0.4 -0.04 - 0.84	4	0.39 -0.12 - 0.91	3	12.51 10.67 - 14.34	163	0	0
	Not satisfied	1.44(1.37) 1.02 - 1.85	46	0.4 -0.04 - 0.84	4	0.13 -0.19 - 0.45	1	3.15 2.16 - 4.13	41	0	0
	No service	93.14(93.58) 92.27 - 94.01	3146	99.2 98.60 - 99.80	990	99.47 98.89 - 100.05	757	84.34 82.33 - 86.36	1099	100 99.83 - 100.17	300
Electricity supply			*n=3356*		*n=994*		*n=762*		*n=1301*		*n=299*
	Satisfied	32.67(35.61) 31.07 - 34.27	1195	53.92 50.77 - 57.07	536	23.49 20.42 - 26.57	179	36.89 34.23 - 39.56	480	0	0
	Not satisfied	19.8(20.65) 18.44 - 21.17	693	23.74 21.05 - 26.44	236	17.32 14.57 - 20.08	132	24.98 22.59 - 27.37	325	0	0
	No service	47.53(43.74) 45.82 - 49.23	1468	22.33 19.69 - 24.97	222	59.19 55.63 - 62.74	451	38.12 35.45 - 40.80	496	100 99.83 - 100.17	299
Government health service			*n=3349*		*n=995*		*n=760*		*n=1294*		*n=300*
	Satisfied	25.78(27.65) 24.28 - 27.27	926	40.4 37.30 - 43.50	402	23.42 20.34 - 26.50	178	24.57 22.19 - 26.96	318	9.33 5.87 - 12.79	28
	Not satisfied	32.16(32.4) 30.56 - 33.76	1085	31.56 28.62 - 34.50	314	36.71 33.22 - 40.20	279	34.08 31.46 - 36.70	441	17 12.58 - 21.42	51
	No service	42.06(39.95) 40.38 - 43.75	1338	28.04 25.20 - 30.88	279	39.87 36.32 - 43.42	303	41.34 38.62 - 44.07	535	73.67 68.52 - 78.82	221

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Government education service		*n=3358*		*n=996*		*n=759*		*n=1303*		*n=300*
Satisfied	58.45(61.11) 56.77 - 60.13	2052	77.11 74.45 - 79.77	768	51.12 47.50 - 54.74	388	62.78 60.12 - 65.44	818	26 20.87 - 31.13	78
Not satisfied	22.16(21.86) 20.74 - 23.58	734	17.97 15.54 - 20.41	179	22 18.99 - 25.02	167	26.02 23.60 - 28.44	339	16.33 11.98 - 20.68	49
No service	19.39(17.03) 18.04 - 20.74	572	4.92 3.53 - 6.31	49	26.88 23.66 - 30.10	204	11.2 9.45 - 12.96	146	57.67 51.91 - 63.42	173
Government Agriculture service		*n=3346*		*n=993*		*n=756*		*n=1299*		*n=298*
Satisfied	9.63(10.1) 8.62 - 10.65	338	12.49 10.38 - 14.59	124	14.68 12.09 - 17.27	111	7.93 6.42 - 9.44	103	0	0
Not satisfied	20.04(21.49) 18.67 - 21.41	719	30.82 27.89 - 33.74	306	22.88 19.82 - 25.94	173	17.71 15.59 - 19.82	230	3.36 1.14 - 5.57	10
No service	70.33(68.41) 68.76 - 71.89	2289	56.7 53.56 - 59.83	563	62.43 58.92 - 65.95	472	74.36 71.95 - 76.78	966	96.64 94.43 - 98.86	288
Household environment and ventilation										
Houses with arrangement for ventilation	88.69(89.26) 87.60 - 89.77	3351	90.92 89.08 - 92.76	991	83.88 81.20 - 86.57	757	94.55 93.28 - 95.82	1303	74.33 69.22 - 79.44	300
Kitchen/cooking area separate from main living area	90.15(90.1) 89.13 - 91.18	3363	89.38 87.42 - 91.34	998	91.45 89.39 - 93.50	760	90.19 88.54 - 91.84	1305	88.67 84.91 - 92.42	300
Kitchen/cooking area separate from sleeping area	93.6(93.37) 92.76 - 94.45	3363	91.38 89.59 - 93.17	998	94.47 92.78 - 96.16	760	94.18 92.87 - 95.49	1305	93.67 90.74 - 96.59	300
Types of cooking stove used by households		*n=3353*		*n=995*		*n=757*		*n=1301*		*n=300*
Sui gas stove	5.86(5.43) 5.05 - 6.67	182	0.1 -0.15 - 0.35	1	1.59 0.63 - 2.54	12	12.99 11.12 - 14.86	169	0	0
Wood stove	93.65(94.12) 92.81 - 94.49	3156	99.9 99.65 - 100.1	994	97.89 96.80 - 98.98	741	86.16 84.25 - 88.08	1121	100 99.83 - 100.17	300
Coal stove	0.07(0.06) -0.04 - 0.17	2	0	0	0.26 -0.17 - 0.70	2	0	0	0	0
Kerosene stove	0.1(0.09) -0.02 - 0.22	3	0	0	0.13 -0.19 - 0.46	1	0.15 -0.10 - 0.41	2	0	0
Electric	0.19(0.18) 0.03 - 0.36	6	0	0	0	0	0.46 0.05 - 0.87	6	0	0
LPG cylinder	0.13(0.12) -0.01 - 0.27	4	0	0	0.13 -0.19 - 0.46	1	0.23 -0.07 - 0.53	3	0	0
Households using cooking stove that doesn't produce smoke	6.19(5.73) 5.36 - 7.02	3353	0.1 -0.15 - 0.35	995	1.72 0.73 - 2.71	757	13.68 11.78 - 15.59	1301	0	0
Households using some heating system	28.82(28.3) 27.28 - 30.37	3353	25.48 22.72 - 28.23	997	27.57 24.33 - 30.82	758	28.81 26.31 - 31.32	1298	37.33 31.69 - 42.97	300
Types of heating system used by households		*n=3353*		*n=997*		*n=758*		*n=1298*		*n=300*
No system	71.18 (71.70) 69.63 - 72.72	2404	74.52 72.77-77.38	743	72.43 69.18-75.67	549	71.19 68.68-73.69	24	62.67 57.03-68.31	188
Sui gas stove	0.63 (0.60) 0.35 - 0.92	20	0.10 -0.15-0.35	1	0	0	1.46 0.77-2.16	19	0	0

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Wood stove	27.20 (26.78) 25.68 – 28.72	898	25.18 22.43-27.92	251	25.59 22.42-28.77	194	26.27 23.84-28.70	341	37.33 31.69-42.97	112
Coal stove	0.23 (0.21) 0.05 – 0.41	7	0	0	0.79 0.09-1.49	6	0.08 -0.11-0.27	1	0	0
Kerosene stove	0.03 (0.03) -0.04 – 0.11	1	0	0	0.13 -0.19-0.46	1	0	0	0	0
Electric	0.73 (0.69) 0.42 – 1.03	23	0.20 -0.13-0.53	2	1.06 0.26-1.85	8	1.00 0.42-1.58	13	0	0
Households using heating system that doesn't produce smoke	72.54 (72.98) 71.01 – 74.06	3353	74.82 72.08 – 77.57	997	73.48 70.27 – 76.69	758	73.65 71.22 – 76.09	1298	62.67 57.03 – 68.31	300
Households with someone smoking inside the household	35.56 (35.34) 33.92 – 37.20	3342	32.09 29.12 – 35.05	988	40.61 37.04 – 44.18	756	36.43 33.78 – 39.09	1301	27.95 22.67 – 33.22	297
Access to and use of Immunization services										
Where do/would get a child immunized?		*n=3330*		*n=991*		*n=752*		*n=1292*		*n=295*
Nowhere	21.46(19.25) 20.05 - 22.87	641	6.96 5.33 - 8.60	69	25.27 22.09 - 28.44	190	17.26 15.16 - 19.36	223	53.9 48.04 - 59.76	159
Govt health facility	53.74(57.06) 52.03 - 55.45	1900	76.59 73.90 - 79.28	759	56.25 52.64 - 59.86	423	53.79 51.04 - 56.55	695	7.8 4.57 - 11.03	23
Private qualified health provider	24.64(23.54) 23.16 - 26.12	784	16.45 14.09 - 18.81	163	18.48 15.64 - 21.32	139	28.56 26.06 - 31.06	369	38.31 32.59 - 44.02	113
Private un-qualified health provider	0.16(0.15) 0.01 - 0.31	5	0	0	0	0	0.39 0.01 - 0.76	5	0	0
Households take/would take their child somewhere for immunization	55(58.23) 53.30 - 56.70	3330	76.69 74.01 - 79.37	991	56.25 52.64 - 59.86	752	56.66 53.92 - 59.40	1292	8.14 4.85 - 11.42	295
Mode of transport for taking the child to immunization facility										
Walk	48.77(51.27) 46.53 - 51.01	1962	68.28 64.92 - 71.64	766	69.77 65.31 - 74.22	430	22.93 19.83 - 26.03	737	48.28 28.36 - 68.19	29
Have to use some transport	51.23(48.73) 48.99 - 53.47	1962	31.72 28.36-35.08	766	30.23 25.78-34.69	430	77.07 73.97-80.17	737	51.72 31.81-71.64	29
Costs for immunization										
Time to reach the immunization facility		*n=1949*		*n=760*		*n=426*		*n=735*		*n=28*
Less than 3 hours to reach the facility	79.98(92.82) 78.18-81.79	1809	96.97 95.69-98.26	727	89.44 86.40-92.47	381	91.97 89.94-94.01	676	53.57 33.31-73.83	15
3-7 hours to reach the facility	15.19(6.52) 13.57-16.81	127	2.63 1.43-3.84	20	10.33 7.32-13.34	44	7.35 5.39-9.30	54	32.14 13.06-51.23	9
8 hours (1 day) or more	4.82(0.67) 3.85-5.80	13	0.39 -0.12-0.91	3	0.23 -0.34-0.81	1	0.68 0.02-1.34	5	14.29 -0.46-29.03	4
Mean time to reach immunization facility	1.189 0.99 – 1.39	1949	0.2 0.7-0.9	760	1.16 1.0-1.2	426	1.2 1.1-1.4	735	4.1 1.8-6.4	28
Proportion of households paying for travel to immunization facility	49.77(47.3) 47.52 - 52.01	1947	30.6 27.82-33.44	764	29.27 24.8-33.7	427	75.31 72.11-78.51	729	48.15 27.45-68.85	27
Mean cost to reach immunization facility	129.37(64.22) 109.3-149.3	921	32.8 28.2-37.4	234	51.7 41.7-61.8	125	52.0 39.7-64.3	549	1262.8 80.8-2443.8	13

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Households that have to take time off from money-earning work for child immunization	65.51(67.4) 63.68 - 67.35	2635	75.68 72.85 - 78.51	917	69.49 65.57 - 73.42	554	66.41 63.47 - 69.34	1027	10.95 5.36 - 16.54	137
Mean time to be taken off from money earning work	3.36(2.69) 3.26-3.45	1761	2.1 1.9-2.2	691	3.08 2.8-3.3	380	3.03 2.8-3.1	676	4.5 2.9-6.0	1761
Type of work the time would be taken off:		*n=1761*		*n=689*		*n=380*		*n=677*		*n=15*
Housewife	95.91(96.14) 94.95 - 96.86	1693	97.53 96.30 - 98.76	672	92.63 89.87 - 95.39	352	96.6 95.16 - 98.04	654	100 96.67 - 103.3	15
Unskilled/farmer/student/retired	3(2.78) 2.18 - 3.83	49	1.45 0.49 - 2.42	10	5.53 3.10 - 7.96	21	2.66 1.37 - 3.94	18	0	0
Skilled/clerical/professional	1.09(1.08) 0.58 - 1.60	19	1.02 0.19 - 1.84	7	1.84 0.36 - 3.33	7	0.74 0.02 – 1.46	5	0	0
LHW VISIT TO THE HOUSEHOLD										
Proportion of households ever visited by a LHW	18.78(20.81) 17.43 - 20.13	3282	35.10 32.06 - 38.13	983	29.72 26.31 - 33.13	720	9.67 8.02 - 11.33	1282	0	297
Period since last visit by a LHW		*n=3257*		*n=968*		*n=713*		*n=1279*		0
Never visited	81.76(79.80) 80.42-93.10	2599	65.91 62.87-68.95	638	70.97 67.7-74.37	506	90.54 88.90-92.18	1158		
Last visit within a month	13.56 (14.95) 12.37-14.75	487	24.90 22.12-27.67	241	25.39 22.12-28.65	181	5.08 3.84-6.32	65	0	0
More than one month but within last three months	2.93(3.35) 2.33-3.52	109	6.40 4.81-9.0	62	3.09 1.75-4.43	22	1.95 1.16-2.75	25	0	0
More than three months but within last six months	0.91(1.01) 0.57-1.25	33	1.65 0.80-2.51	16	0.14 -0.20-0.49	1	1.25 0.60-1.90	16	0	0
More than six months but within the last year	0.64(0.64) 0.35-0.93	21	0.52 0.01-1.02	5	0.42 -0.12-0.97	3	1.02 0.43-1.61	13	0	0
More than a year ago	0.20 (0.25) 0.03-0.36	8	0.62 0.07-1.07	6	0	0	0.16 -0.10-0.41	2	0	0

Table 2. Mother and child indicators by tehsil

(Note that the individual mothers' data is a sub-set of the decision makers' data in Table 3)

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
INFORMATION BASE										
Total mothers/care takers interviewed		3476		1030		784		1360		302
Respondents in each age group		*n=3443*		*n=1016*		*n=780*		*n=1346*		*n=301*
18-30 years	59.8(59.98) 58.41 – 61.19	2065	61.52 58.47 - 64.56	625	54.36 50.80 - 57.92	424	61.81 59.18 - 64.45	832	61.13 55.46 - 66.80	184
31-50 years	34.1(33.92) 32.75 – 35.44	1168	32.97 30.03 - 35.91	335	38.72 35.24 - 42.20	302	31.5 28.98 - 34.02	424	35.55 29.97 - 41.12	107
51 years and above	6.11(6.1) 5.42 - 6.79	210	5.51 4.06 - 6.96	56	6.92 5.08 - 8.77	54	6.69 5.31 - 8.06	90	3.32 1.13 - 5.51	10
Respondents with some formal education	6.56(6.81) 5.85 - 7.26	236/3464	7.98 6.27 - 9.68	82/1028	6.51 4.72 - 8.31	51/783	7.32 5.90 - 8.75	99/1352	1.33 -0.13 - 2.79	4/301
Total children aged <60 months	95.7(95.95) 95.22 - 96.18	4899/5106	97.61 96.82 - 98.40	1512/1549	95.66 94.44 - 96.88	1102/1152	95.35 94.41 - 96.30	1909/2002	93.3 90.74 - 95.87	376/403
Among children less than 60 months of age										
Proportion of boys	50.51(50.83) 49.32 - 51.70	2459/4838	52.7 50.13 - 55.28	780/1480	48.85 45.83 - 51.87	531/1087	51.35 49.07 - 53.62	973/1895	46.54 41.37 - 51.72	175/376
Proportion of girls	49.49(49.17) 48.30 - 50.68	2379/4838	47.3 44.72 - 49.87	700/1480	51.15 48.13 - 54.17	556/1087	48.65 46.38 - 50.93	922/1895	53.46 48.28 - 58.63	201/376
Proportion of children for whom the information was provided by their mothers	97.31(97.34) 96.92 - 97.70	4761/4891	97.94 97.19 - 98.69	1476/1507	95.45 94.18 - 96.73	1050/1100	97.48 96.76 - 98.21	1860/1908	99.73 99.08 - 100.39	375/376
MOTHERS'/CARETAKERS' KNOWLEDGE, ATTITUDE AND PRACTICES ABOUT CHILD HEALTH AND CARE										
Awareness about Immunization										
Mothers having heard about immunization	85.42(86.76) 84.42 - 86.42	3008/3467	93.2 91.61 - 94.78	959/1029	85.13 82.57 - 87.69	664/780	88.8 87.08 - 90.51	1205/1357	59.8 54.10 - 65.51	180/301
Sources to hear about immunization from:		*n=3467*		*n=1029*		*n=780*		*n=1357*		*n=301*
Nowhere	12.4	430	6.7	69	13.8	108	10.0	136	38.9	117
Electronic media	7.8	269	7.4	76	4.7	37	11.1	150	2.0	6
Written material (newspaper, pamphlet)	.5	18	.4	4	.4	3	.7	10	.3	1
Family, neighbours, friends	25.6	889	23.1	238	22.2	173	29.2	396	27.2	82
School	.3	10	.3	3	.0	0	.5	7	.0	0
Doctor, hospital	34.2	1185	42.3	435	35.0	273	31.8	432	15.0	45
LHW, LHV, Dai	4.8	165	7.1	73	10.5	82	.7	10	.0	0
Vaccination team	13.6	470	9.1	94	11.9	93	17.3	235	15.9	48
NGO	.0	29	0	0	.1	1	0	0	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Announcement	3.5	120	7.1	73	4.4	34	1.0	13	0	0
Don't know (incl. I knew myself)	.8	1	.1	1	1.0	8	1.2	16	1.3	4
Mothers knowing at least one illness prevented by immunization (even if incorrect)	78.75 (80.12) 77.59 - 79.92	2740/3420	87.7 85.63 - 89.76	898/1024	74.55 71.43 - 77.68	580/778	82.18 80.09 - 84.26	1102/1341	57.76 51.76 - 63.76	160/277
Mothers mentioning at least one correct illness that can be prevented by immunization	75.79 (77.14) 74.57 - 77.01	2639/3421	84.86 82.62 - 87.11	869/1024	70.95 67.70 - 74.21	552/778	79.14 76.92 - 81.35	1062/1342	56.32 50.30 - 62.34	156/277
Views about benefits of immunisation										
Neighbours' perception about immunizing the child, reported by mothers/caretakers		*n=3432*		*n=1028*		*n=776*		*n=1353*		*n=275*
Thinks it's worthwhile	81.2(82.98) 80.09 - 82.31	2848	93.48 92.17 - 94.80	961	74.74 72.11 - 77.37	580	85.07 83.44 - 86.70	1151	56.73 51.63 - 61.82	156
Don't think it's worthwhile	4.78(4.43) 4.16 - 5.39	152	2.14 1.35 - 2.93	22	7.73 6.09 - 9.37	60	3.62 2.75 - 4.49	49	7.64 4.82 - 10.45	21
Don't know if it's worthwhile or not	14.03(12.59) 13.04 - 15.02	432	4.38 3.28 - 5.48	45	17.53 15.22 - 19.84	136	11.31 9.85 - 12.76	153	35.64 30.70 - 40.57	98
Mothers perception about immunizing the child		*n=3433*		*n=1028*		*n=774*		*n=1355*		*n=276*
Thinks it's worthwhile	90.42 (91.52) 89.58 - 91.26	3142	97.37 96.35 - 98.40	1001	87.73 85.35 - 90.10	679	93.36 92.00 - 94.72	1265	71.38 65.86 - 76.89	197
Don't think it's worthwhile	2.13 (2.07) 1.71 - 2.55	71	1.56 0.75 - 2.36	16	2.45 1.30 - 3.61	19	2.21 1.39 - 3.03	30	2.17 0.27 - 4.08	6
Don't know if it's worthwhile or not	7.45 (6.41) 6.70 - 8.21	220	1.07 0.39 - 1.75	11	9.82 7.66 - 11.98	76	4.43 3.30 - 5.56	60	26.45 21.06 - 31.83	73
Reasons for being worthwhile		*n*=3136		*n*=1000		*n*=677		*n*=1262		*n*=197
Protection against illness	98.08 (98.21) 97.66 - 98.50	3080	99.4 98.87 - 99.93	994	98.52 97.54 - 99.51	667	97.07 96.10 - 98.04	1225	98.48 96.51 - 100.44	194
Important to immunize	1.23 (1.12) 0.89 - 1.57	35	0.2 -0.13 - 0.53	2	0.74 0.02 - 1.46	5	1.98 1.17 - 2.79	25	1.52 -0.44 - 3.49	3
Create immunities against	0.03 (0.03) -0.04 - 0.11	1	0	0	0	0	0.08 -0.12 - 0.27	1	0	0
Govt order	0.22 (0.22) 0.07 - 0.38	7	0.2 -0.13 - 0.53	2	0.15 -0.22 - 0.51	1	0.32 -0.03 - 0.67	4	0	0
Don't know	0.43 (0.41) 0.23 - 0.64	13	0.2 -0.13 - 0.53	2	0.59 -0.06 - 1.24	4	0.55 0.11 - 1.00	7	0	0
Reasons for not being worthwhile		*n*=53		*n*=14		*n*=11		*n*=23		*n*=5
Didn't feel it's necessary	6.72(7.55) 0.12 - 13.32	4	14.29 -7.62 - 36.19	2	9.09 -12.44 - 30.63	1	4.35 -6.16 - 14.86	1	0	0
Child gets sick after vaccine	41.53 (39.62) 29.46 - 53.61	21	14.29 -7.62 - 36.19	2	27.27 -3.59 - 58.14	3	65.22 43.58 - 86.86	15	20 -25.06 - 65.06	1
No effect of injection	15.12 (13.21) 6.08 - 24.16	7	0	0	9.09 -12.44 - 30.63	1	17.39 -0.27 - 35.06	4	40 -12.94 - 92.94	2

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Hospital too far away	4.57(3.77) -1.09 - 10.23	2	0	0	9.09 -12.44 - 30.63	1	0	0	20 -25.06 - 65.06	1
Pain due to vaccination	8.66(11.32) 1.36 - 15.96	6	35.71 7.04 - 64.39	5	9.09 -12.44 - 30.63	1	0	0	0	0
Boils at the site of injection	5.4(5.66) -0.65 - 11.45	3	7.14 -9.92 - 24.21	1	9.09 -12.44 - 30.63	1	4.35 -6.16 - 14.86	1	0	0
Don't know	18(18.87) 8.38 - 27.63	10	28.57 1.34 - 55.81	4	27.27 -3.59 - 58.14	3	8.7 -4.99 - 22.39	2	20 -25.06 - 65.06	1
Mothers who have discussed immunization in their family	84.25 (85.66) 83.21 - 85.30	2910/3397	93.63 92.09 - 95.18	956/1021	79.22 76.27 - 82.16	606/765	87.81 86.02 - 89.60	1174/1337	63.5 57.62 - 69.39	174/274
Views about adverse affects of immunization										
Mothers who have heard about any bad effects of immunization	3.41(3.46) 2.88 - 3.93	118/3409	3.61 2.42 - 4.81	37/1024	4.47 2.94 - 6.01	34/760	3.19 2.21 - 4.16	43/1349	1.45 -0.14 - 3.04	4/276
Types of bad effects of immunization that mothers had heard of		*n*=3409		*n*=1024		*n*=760		*n*=1349		*n*=276
Nothing	96.59 (96.54) 96.07 - 97.12	3291	96.39 95.19 - 97.58	987	95.53 93.99 - 97.06	726	96.81 95.84 - 97.79	1306	98.55 96.96 - 100.14	272
Actual side-effects	2.35 (2.41) 1.91 - 2.79	82	2.64 1.61 - 3.67	27	2.89 1.64 - 4.15	22	2.3 1.46 - 3.13	31	0.72 -0.46 - 1.91	2
Incorrect perceptions	0.37(0.38) 0.19 - 0.56	13	0.39 -0.04 - 0.82	4	0.79 0.09 - 1.48	6	0.22 -0.07 - 0.51	3	0	0
Not specified	0.69 (0.67) 0.44 - 0.93	23	0.59 0.07 - 1.10	6	0.79 0.09 - 1.48	6	0.67 0.20 - 1.14	9	0.72 -0.46 - 1.91	2
Source of information about bad effects of immunization		*n*=107	1	*n*=37		*n*=34		*n*=33		*n*=3
Nowhere	5.58 (4.67) 1.46 - 9.70	5	0	0	11.76 -0.54 - 24.07	4	0	0	33.33 -36.68 - 103.34	1
Written material	0.68(0.93) -1.09 - 2.46	1	2.7 -3.87 - 9.28	1	0	0	0	0	0	0
Family, neighbours, friends	39.63 (39.25) 31.39 - 47.88	42	35.14 18.40 - 51.87	13	26.47 10.17 - 42.77	9	57.58 39.20 - 75.95	19	33.33 -36.68 - 103.34	1
Doctor/ Hospital	29.17(29.91) 21.48 - 36.87	32	35.14 18.40 - 51.87	13	23.53 7.80 - 39.26	8	30.3 13.11 - 47.50	10	33.33 -36.68 - 103.34	1
Don't know where (incl " I knew it from myself")	24.93(25.23) 17.58 - 32.28	27	27.03 11.37 - 42.69	10	38.24 20.43 - 56.04	13	12.12 -0.53 - 24.77	4	0	0
Heard from somewhere specific	69.49 (70.09) 61.70 - 77.28	75/107	72.97 57.31 - 88.63	27/37	50 31.72 - 68.28	17/34	87.88 75.23 - 100.53	29/33	66.67 -3.34 - 136.68	2/3
Mothers who have actually seen any bad effect of immunization	4.47 (4.55) 3.86 - 5.07	151/3322	4.72 3.34 - 6.11	46/974	5.53 3.82 - 7.25	41/741	4.5 3.35 - 5.65	60/1334	1.47 -0.14 - 3.07	4/273
Types of bad effects of immunization that mothers had actually seen		*n*=3322		*n*=974		*n*=741		*n*=1334		*n*=273
Nothing	95.53 (95.45) 94.93 - 96.14	3171	95.28 93.89 - 96.66	928	94.47 92.75 - 96.18	700	95.5 94.35 - 96.65	1274	98.53 96.93 - 100.14	269
Actual side-effects	2.96(3.1) 2.46 - 3.46	103	4 2.72 - 5.29	39	2.7 1.46 - 3.93	20	3 2.05 - 3.95	40	1.47 -0.14 - 3.07	4

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Incorrect perceptions	0.47 (0.45) 0.26 - 0.68	15	0.21 -0.13 - 0.54	2	0.54 -0.06 - 1.13	4	0.67 0.20 - 1.15	9	0	0
Not specified	1.03 (0.99) 0.73 - 1.34	33	0.51 0.01 - 1.01	5	2.29 1.15 - 3.44	17	0.82 0.30 - 1.35	11	0	0
Knowledge about complications of measles										
Mothers able to report any dangerous or severe complications of measles	59.19 (59.39) 57.80 - 60.57	2061/3470	59.57 56.53 - 62.62	613/1029	59.34 55.83 - 62.84	464/782	61.12 58.49 - 63.75	830/1358	51.16 45.35 - 56.98	154/301
Complications mothers knew about:		*n*=2027		*n*=603		*n*=453		*n*=820		*n*=151
Don't know	0.23(0.2) 0.03 - 0.43	4	32.34 28.52 - 36.15	195	0.44 -0.28 - 1.16	2	0.12 -0.18 - 0.42	1	0.66 -0.96 - 2.29	1
Child can die	33.99 (33.84) 32.23 - 35.74	686	44.44 40.40 - 48.49	268	34.22 29.74 - 38.70	155	35 31.67 - 38.33	287	32.45 24.65 - 40.25	49
Other real complication of measles	43.72 (43.76) 41.88 - 45.56	887	23.22 19.76 - 26.67	140	41.72 37.07 - 46.37	189	43.9 40.44 - 47.36	360	46.36 38.07 - 54.64	70
Not real complication of measles	22.06 (22.2) 20.52 - 23.60	450	0	0	23.62 19.60 - 27.64	107	20.98 18.13 - 23.82	172	20.53 13.76 - 27.30	31
Mothers' interaction with LHW										
Proportion of mothers ever visited by an LHW	19.9 (21.91) 18.77 - 21.03	761/3473	36.21 33.23 - 39.20	373/1030	33.04 29.68 - 36.39	259/784	9.51 7.91 - 11.10	129/1357	0	0/302
Period since last LHW visit(include never visited)		*n=3438*		*n=1008*		*n=774*		*n=1354*		*n=302*
Never visited	80.79(78.88) 79.67 - 81.91	2712	65.18 62.66 - 67.70	657	67.83 65.00 - 70.66	525	90.69 89.36 - 92.03	1228	0.15 -0.06 - 0.36	2
Within the last one month	14.46(15.79) 13.46 - 15.47	543	25.4 23.09 - 27.70	256	28.29 25.57 - 31.02	219	5.02 4.01 - 6.04	68	0	0
More than a month but within 6 months	3.8(4.3) 3.25 - 4.35	148	7.94 6.49 - 9.39	80	3.23 2.12 - 4.34	25	3.18 2.35 - 4.00	43	0	0
More than 6 months but within 1 year	0.66(0.67) 0.42 - 0.90	23	0.6 0.15 - 1.04	6	0.52 0.03 - 1.01	4	0.96 0.49 - 1.43	13	0	0
More than a year ago	0.28(0.35) 0.12 - 0.44	12	0.89 0.36 - 1.43	9	0.13 -0.15 - 0.41	1	0.15 -0.06 - 0.36	2	0	0
Among mothers ever visited by LHW										
LHW told something about recognizing ARI	1.96(1.74) 1.05 – 2.86	13/745	0.81 -0.09 - 1.72	3/369	3.54 1.44 - 5.65	9/254	0.82 -0.93 - 2.57	1/122	0	0/302
LHW told something about treatment for ARI	1.91(1.63) 1.01 – 2.81	12/736	0.28 -0.32 - 0.88	1/358	2.76 0.87 - 4.64	7/254	3.23 0.21 – 6.24	4/124	0	0/302
LHW told something about vaccination	35.23(34.72) 32.28 – 8.19	258/743	32.79 28.61 -36.96	120/366	45.42 40.05 - 50.79	114/251	19.05 12.90 – 25.20	24/126	0	0/302
CHILD HEALTH AND CARE										
Total children aged <60 months	95.7(95.95) 95.22 - 96.18	4899/5106	97.61 96.82 - 98.40	1512/1549	95.66 94.44 - 96.88	1102/1152	95.35 94.41 - 96.30	1909/2002	93.3 90.74 - 95.87	376/403
Children attending a school, incl. pre-primary schooling	3.38(3.4) 2.95 – 3.82	164/4830	3.06 2.16 - 3.97	46/1502	4.36 3.09 - 5.63	47/1078	3.66 2.78 - 4.53	69/1887	0.55 -0.35 - 1.45	2/363

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Childhood Acute Respiratory Infections (ARI)										
Prevalence of ARI										
Children with ARI within last 15 days	2.88(2.89) 2.47 - 3.28	140/4837	97.19 96.32 - 98.06	1454/1496	96.8 95.71 - 97.89	1059/1094	96.91 96.10 - 97.72	1817/1875	98.66 97.35 - 99.96	367/372
Children with ARI in the last 12 months	7.77(7.56) 7.13 - 8.42	367/4854	5.47 4.28 - 6.65	82/1500	10.56 8.70 - 12.43	116/1098	7.96 6.71 - 9.21	150/1884	5.11 2.74 - 7.48	19/372
Taking children with ARI for treatment at the health facility (Among children who suffered from ARI during the last 12 months)										
Type of health facility where the child was taken for treatment		*n=362*		*n=82*		*n=114*		*n=147*		*n=19*
Nowhere	33.77(31.49) 29.54 - 37.99	114	13.41 6.61 - 20.22	11	38.6 30.66 - 46.54	44	29.25 22.74 - 35.76	43	84.21 67.82 - 100.60	16
Government health facilities	14.6(14.64) 11.41 - 17.79	53	14.63 7.60 - 21.66	12	15.79 9.73 - 21.85	18	14.29 9.20 - 19.37	21	10.53 -3.69 - 24.74	2
Private qualified facility/practitioners	40.79(43.09) 36.41 - 45.18	156	63.41 54.05 - 72.77	52	31.58 23.98 - 39.18	36	45.58 38.48 - 52.68	67	5.26 -5.80 - 16.32	1
Private unqualified practitioners incl. spiritual or religious healer	10.84(10.77) 8.02 - 13.67	39	8.54 2.85 - 14.22	7	14.04 8.24 - 19.83	16	10.88 6.32 - 15.45	16	0	0
Proportion of children taken somewhere or consulted for treatment of ARI	66.23(68.51) 62.01 - 70.46	248/362	86.59 78.60 - 94.57	71/82	61.4 52.03 - 70.78	70/114	70.75 63.05 - 78.44	104/147	15.79 -3.24 - 34.82	3/19
Experience at the health facility										
Doctor or a health worker present at the time of visit										
Government health facility	97.89(98.08) 93.66 - 102.13	51/52	100 95.8 - 104.1	12/12	94.12 79.99 - 108.24	16/17	100 97.62 - 102.38	21/21	100 75.00 - 125.00	2/2
Private qualified health provider	96.33(96.08) 93.50 - 99.15	147/153	94.12 86.68 - 101.5	48/51	94.29 85.17 - 103.40	33/35	98.48 94.78 - 102.19	65/66	100 50.00 - 150.00	1/1
Private un-qualified health provider	100(100) 98.48 - 101.52	33/33	100 92.86 - 107.14	7/7	100 96.15 - 103.8	13/13	100 96.15 - 103.85	13/13	0	0
Proportion of children who had all prescribed medicines from the health facility										
Government health facility	31.84(32.08) 20.37 - 43.31	17/53	33.33 2.49 - 64.17	4/12	50 24.12 - 75.88	9/18	19.05 -0.13 - 38.22	4/21	100 75.00 - 125.00	2/2
Private qualified health provider	20.15(20.67) 14.43 - 25.87	31/150	24.49 11.43 - 37.55	12/49	21.21 5.75 - 36.68	7/33	17.91 7.98 - 27.84	12/67	0	0/1
Private un-qualified health provider	45.59(46.67) 28.97 - 62.22	14/30	57.14 13.34 - 100.95	4/7	30 -3.40 - 63.40	3/10	53.85 22.90 - 84.79	7/13	0	0
Proportion of children for whom the health worker gave full explanation about illness										
Government health facility	44.79(44.23) 32.48 - 57.09	23/52	41.67 14.09 - 69.24	5/12	72.22 52.08 - 92.37	131/8	20 2.79 - 37.21	4/20	50 -33.16 - 133.16	½
Private qualified health provider	57.96(57.89) 51.04 - 64.87	88152	58.82 46.51 - 71.14	30/51	73.53 59.61 - 87.45	25/34	48.48 37.61 - 59.36	32/66	100 50.00 - 150.00	1/1
Private un-qualified health provider	78.14(78.79) 64.79 - 91.49	26/33	85.71 56.81 - 114.61	6/7	69.23 44.33 - 94.13	9/13	84.62 64.31 - 104.92	11/13	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Satisfaction with the service provider										
Government health facility										
Children whose parents were satisfied with behaviour of doctor/health worker	85.22(84.91) 76.26 - 94.18	45/53	83.33 58.08 - 108.59	10/12	88.89 71.59 - 106.19	16/18	80.95 61.78 - 100.13	17/21	100 75.00 - 125.00	2/2
Children whose parents were satisfied with the treatment	83.11(83.02) 73.70 - 92.52	44/53	83.33 58.08 - 108.5	10/12	77.78 55.79 - 99.76	14/18	85.71 68.37 - 103.06	18/21	100 75.00 - 125.00	2/2
Reason for being satisfied		n=44		n=10		n=14		n=18		n=2
Good doctor/staff available	5.58(6.82) -1.25 - 12.40	3	20 -5.81 - 45.81	2	0	0	5.56 -6.10 - 17.21	1	0	0
Good treatment	94.42(93.18) 87.60 - 101.25	41	80 54.19 - 105.81	8	100 96.43 - 103.57	14	94.44 82.79 - 106.10	17	100 75.00 - 125.00	2
Reason for being dissatisfied		n=7		n=1		n=4		n=2		n=0
Good doctor/ Staff not available	15.19(14.29) - 14.27 - 44.65	1	0	0	25 -23.12 - 73.12	1	0	0	0	0
Treatment not good	84.81(85.71) 55.35 - 114.27	6	100 50.00 - 150.00	1	75 26.88 - 123.12	3	100 75.00 - 125.00	2	0	0
Private qualified health provider										
Children whose parents were satisfied with behaviour of doctor/health worker	98.02(98.03) 95.83 - 100.21	149/152	98.04 93.25 - 102.82	50/51	97.06 89.91 - 104.21	33/34	98.48 94.78 - 102.19	65/66	100 50.00 - 150.00	1/1
Children whose parents were satisfied with the treatment	93.93(94.12) 90.43 - 97.43	144/153	94.12 86.68 - 101.5	48/51	91.43 80.73 - 102.13	32/35	96.97 92.08 - 101.86	64/66	0	0
Reason for being satisfied		n=144		n=48		n=32		n=64		n=0
Good doctor/staff available	5.69(6.25) 2.17 - 9.21	9	10.42 2.12 - 18.71	5	3.13 -3.50 - 9.75	1	4.69 -0.44 - 9.82	3	0	0
Good treatment	94.31(93.75) 90.79 - 97.83	135	89.58 81.29 - 97.88	43	96.88 90.25 - 103.50	31	95.31 90.18 - 100.44	61	0	0
Reason for being dissatisfied		n=9		n=3		n=3		n=2		n=1
Treatment not good	100(100) 94.44 - 105.56	9	100 83.33 - 116.67	3	100 83.33 - 116.67	3	100 75.00 - 125.00	2	100 50.00 - 150.00	1
Private non-qualified health provider										
Children whose parents were satisfied with behaviour of doctor/health worker	90.04(90.91) 79.95 - 100.13	30/33	100 92.86 - 107.14	7/7	76.92 50.17 - 103.67	10/13	100 96.15 - 103.85	13/13	0	0
Children whose parents were satisfied with the treatment	90.04(90.91) 79.95 - 100.13	30/33	100 92.86 - 107.14	7/7	23.08 -3.67 - 49.83	3/3	100 96.15 - 103.85	13/13	0	0
Reason for being satisfied		n=29		n=7		n=10		n=12		n=0
Good treatment	100(100) 98.28 - 101.72	29	100 92.86 - 107.14	7	100 95.00 - 105.00	10	100 95.83 - 104.17	12	0	0
Reason for being dissatisfied		n=3		n=0		n=3		n=0		n=0
Treatment not good	100(100) 83.33 - 116.67	3	0	0	100 83.33 - 116.67	3	0	0	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Cost of treatment of ARI										
Any family member need to take time off from money-earning work to take the child for treatment of ARI	92.1(92.12) 89.04 - 95.17	222/241	92.75 85.91 - 99.60	64/69	95.59 89.97 - 101.2	65/68	89.11 82.54 - 95.68	90/101	100 83.33 - 116.67	3
Mean time taken off from money-earning work to take the child for treatment of ARI	6.378(6.26) 1.334 - 3.763	221	5.141 2.606 - 7.676	64	6.727 4.221 - 9.232	64	6.811 3.457 - 10.166	90	3.667 -0.784 - 8.118	3
Type of work the time was taken off to take the child for treatment of ARI		*n*=214		*n*=60		*n*=63		*n*=88		*n*=3
Housewife	85.95(86.45) 81.81 - 90.09	185	90 81.58 - 98.42	54	80.95 70.46 - 91.44	51	88.64 81.44 - 95.84	78	66.67 -3.34 - 136.68	2
Unskilled, farmer, student, retired	9.92(9.35) 6.33 - 13.52	20	5 -1.35 - 11.35	3	12.7 3.68 - 21.71	8	9.09 2.52 - 15.67	8	33.33 -36.68 - 103.34	1
Skilled, clerical, professional	4.12(4.21) 1.65 - 6.59	9	5 -1.35 - 11.35	3	6.35 -0.47 - 13.16	4	2.27 -1.41 - 5.95	2	0	0
Travel cost										
Government health facility										
Paid some cost	96.59(96.77) 89.62 - 103.57	30/31	100 91.67 - 108.33	6/6	100 92.86 - 107.14	7/7	94.12 81.79 - 106.45	16/17	100 50.00 - 150.00	1/1
Mean amount paid in Pak Rs.	275.346 -- - --	30	100 -31.89 - 231.9	6	684.286 -230.8 - 1599	7	117.125 61.6 - 172.7	16	500 499.5 - 500	1
Private qualified health provider										
Paid some cost	100(100) 99.58 - 100.42	119/119	100 98.65 - 101.35	37/37	100 97.92 - 102.08	24/24	100 99.14 - 100.86	58/58	0	0
Mean amount paid in Pak Rs.	113.551 -- - --	119	128.892 87.42 - 170.36	37	152.292 101.91 - 202.7	24	90.672 46.86 - 134.49	58	0	0
Private non-qualified health provider										
Paid some cost	94.3(95) 83.28 - 105.33	19/20	100 91.67 - 108.33	6/6	75 26.88 - 123.12	3/4	100 95.00 - 105.00	10/10	0	0
Mean amount paid in Pak Rs.	87.225 -- - --	19	28.33 19.32 - 37.34	6	30 13.38 - 46.61	3	128 44.72 - 211.27	10	0	0
Treatment cost at the facility										
Government health facility										
Paid some cost	69.23(67.92) 57.85 - 80.60	36/53	50 17.54 - 82.46	6/12	66.67 42.11 - 91.22	12/18	80.95 61.78 - 100.1	17/21	50 -44.30 - 144.30	1/2
Mean amount paid in Pak Rs.	1514.02(1572.3) ---- - ----	36	3000 -2103. - 8103.	6	1913.7 -498 - 4325.9	12	625.8 -47.6 - 1299.4	17	5000 4999.5 - 5000.5	1
Private qualified health provider										
Paid some cost	99.08(99.34) 97.47 - 100.69	150/151	100 99.00 - 101.00	50/	100 98.48 - 101.52	33/33	100 99.25 - 100.75	67/67	0	0
Mean amount paid in Pak Rs.	869.342(863) ---- - ----	150	963.9 381.5 - 1546.	33	845.97 316.400 - 1375.541	67	963.94 381.6-1546.3	150	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Private non-qualified health provider										
Paid some cost	70.29(69.44) 56.37 - 84.20	25/36	57.14 13.34 - 100.95	4/7	66.67 39.48 - 93.86	10/15	78.57 53.51 - 103.64	11/14	0	0
Mean amount paid in Pak Rs.	289.122(283) ---- - ----	25	190 41.0 - 338.9	4	348 -17.5 - 713.5	10	257.7 96.8 - 418.5	11	0	0
Cost of medicines or investigations outside the facility										
Government health facility										
Paid some cost	86.27(84.62) 77.46 - 95.08	44/52	66.67 35.83 - 97.51	8/12	82.35 61.29 - 103.42	14/17	95.24 83.75 - 106.73	20/21	100 75.00 - 125.00	2/2
Mean amount paid in Pak Rs.	1431.15(1323.8) 606.16 - 243.07	44	262.5 164.8 - 360.1	8	2071.4 -710.3 – 4853	14	957 422.7 -1492.2	20	4000 2039.7 - 5960.2	2
Private qualified health provider										
Paid some cost	91.05(90.67) 86.88 - 95.22	136/150	88 77.99 - 98.01	44/50	93.94 84.28 - 103.60	31/33	90.91 83.22 - 98.60	60/66	100 50.00 - 150.00	1/1
Mean amount paid in Pak Rs.	693.76(693.3) 101.67 - 494.49	136	699.3 452.5 - 946.1	44	771.9 486.8 - 1057.0	31	643.25 326.28-960.22	60	1001.0 500 - 1000.500	1
Private non-qualified health provider										
Paid some cost	48.87(46.43) 31.54 - 66.20	13/28	16.67 -21.49 - 54.82	1/6	55.56 17.54 - 93.58	5/9	53.85 22.90 - 84.79	7/13	0	0
Mean amount paid in Pak Rs.	303.375(296.1) 64.981 - 176.013	13	50 49.5 - 50.5	1	350 21.9 - 678.0	5	292.8 143.9 - 441.75	7	0	0
Childhood Measles										
Prevalence of measles										
Children 10-59 months ever suffering from measles	17.7(17.74) 16.47 - 18.92	677/3817	16.48 14.33 - 18.64	196/1189	21.74 18.87 - 24.61	180/828	18.54 16.55 - 20.54	280/1510	7.24 4.09 - 10.40	21/290
Children 10-59 months suffering from measles during last 24 months	12.54(12.55) 11.48-13.61	479/3817	11.52 9.67-13.38	137/1189	14.86 12.37-17.34	123/828	13.44 11.69-15.20	203/1510	5.52 2.72-8.32	16/290
Taking children with Measles for treatment at the health facility (Among children who suffered from measles during last 24 months)										
Type of health facility where child was taken for treatment of measles		n=478		n=136		n=123		n=203		n=16
Nowhere	53.64(53.56) 49.07 - 58.22	256	55.88 47.17 - 64.60	76	65.04 56.21 - 73.87	80	42.86 35.80 - 49.91	87	81.25 59.00 - 103.50	13
Government health facilities	7.61(7.74) 5.13 - 10.09	37	9.56 4.25 - 14.87	13	10.57 4.73 - 16.41	13	4.43 1.36 - 7.51	9	12.5 -6.83 - 31.83	2
Private qualified facility/practitioners	36.83(36.82) 32.41 - 41.26	176	33.09 24.81 - 41.36	45	21.95 14.23 - 29.67	27	50.74 43.62 - 57.86	103	6.25 -8.74 - 21.24	1
Private unqualified practitioners incl. spiritual or religious healer	1.91(1.88) 0.58 - 3.25	9	1.47 -0.92 - 3.86	2	2.44 -0.69 - 5.57	3	1.97 -0.19 - 4.13	4	0	0
Children 12-59 months taken somewhere or consulted for treatment of measles	46.36(46.44) 41.78 - 50.93	222/478	44.12 35.40 - 52.83	60/136	34.96 26.13 - 43.79	43/123	57.14 50.09 - 64.20	116/203	18.75 -3.50 - 41.00	3/16

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Cost of treatment for measles										
Opportunity cost										
Any family member needing to take time off from money-earning work to take the child for treatment of measles	93.99(94.31) 90.55 - 97.43	199/211	96.43 90.68 - 102.18	54/56	93.02 84.25 - 101.80	40/43	94.5 89.76 - 99.24	103/109	66.67 -3.34 - 136.68	2/3
Amount of time taken off from money-earning work		n=198		n=54		n=40		n=102		n=2
Less than three hours	44.18(45.96) 37.01 - 51.35	91	62.96 49.16 - 76.77	34	40 23.57 - 56.43	16	39.22 29.25 - 49.18	40	50 -44.30 - 144.30	1
3-7 hours	41.01(40.4) 33.90 - 48.11	80	33.33 19.83 - 46.83	18	37.5 21.25 - 53.75	15	46.08 35.91 - 56.24	47	0	0
8 hours (one day) or more	14.81(13.64) 9.61 - 20.01	27	3.7 -2.26 - 9.67	2	22.5 8.31 - 36.69	9	14.71 7.34 - 22.07	15	50 -44.30 - 144.30	1
Type of work the time was taken off from		n=193		n=54		n=38		n=99		n=2
Housewife	87.86(87.56) 82.99 - 92.73	169	83.33 72.47 - 94.20	45	78.95 64.67 - 93.23	30	93.94 88.73 - 99.14	93	50 -44.30 - 144.30	1
Unskilled, farmer, student, retired	9.09(9.33) 4.78 - 13.41	18	12.96 3.08 - 22.85	7	15.79 2.88 - 28.70	6	4.04 -0.34 - 8.42	4	50 -44.30 - 144.30	1
Skilled, clerical, professional	3.05(3.11) 0.36 - 5.74	6	3.7 -2.26 - 9.67	2	5.26 -3.15 - 13.68	2	2.02 -1.26 - 5.30	2	0	0
Travel cost										
Paid some cost	64.69(62.56) 58.14 - 71.25	137/219	39.66 26.20 - 53.11	23/58	55.81 39.81 - 71.82	24/43	77.39 69.31 - 85.47	89/115	33.33 -36.68 - 103.34	1/3
Mean amount paid in Pak Rs.	230.58	137	62.174 32.146 - 92.2	23	746.25 174.4 - 1318.0	24	112.45 70.66 - 154.24	89	500 499.5 - 500.5	1
Treatment cost for measles										
Proportion who paid some cost	96.74(96.76) 94.14 - 99.34	209/216	94.83 88.27 - 101.39	55/58	100 98.84 - 101.16	43/43	98.21 95.32 - 101.11	110/112	33.33 -36.68 - 103.34	1/3
Mean amount paid in Pak Rs.	1193.0	208	506.473 311.1 - 701.8	55	1013.9 556.4 - 1471.4	43	1483.2 384.6 - 581.7	109	2000 1999.5 - 2000.5	1
Immunization of Children										
Who decides about immunizing the child (children 0-59 months of age)		*n=4876*		*n=1505*		*n=1097*		*n=1898*		*n=376*
Mothers alone (incl step mother)	52.61(52.77) 51.42 - 53.80	2573	51.96 49.40-54.52	782	40.57 37.61-43.52	445	62.12 59.91-64.33	1179	44.41 39.26-49.57	167
Mother with father	32.9(32.88) 31.78 - 34.02	1603	35.55 33.10-38.00	535	36.55 33.66-39.45	401	25.61 23.62-27.60	486	48.14 42.95-53.32	181
Mother not involved at all	14.49(14.36) 13.65 - 15.33	700	12.49 10.79-14.20	188	22.88 20.35-25.41	251	12.28 10.77-13.78	233	7.45 4.66-10.23	28
Mother decides or is involved in the decision	85.38(85.52) 84.54 - 86.23	4176/4883	87.45 85.74-88.16	1317/1506	77.05 74.52-79.58	846/1098	87.49 85.98-89.01	1665/1903	92.55 89.77-95.34	348/376

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
VACCINE COVERAGE (among children 12-23 months of age)										
Number of children aged 12 to 23 months		911		310		210		334		57
BCG (vaccine for Tuberculosis)										
Children reported to have received BCG (TB) vaccine	67.19(68.77) 64.57 - 69.82	621/903	77.42 72.60 - 82.24	240/310	66.99 60.37 - 73.60	140/209	66.16 60.91 - 71.41	219/331	41.51 27.30 - 55.72	22/53
Children with BCG scar on left upper arm	54.44(55.72) 51.52 - 57.36	458/822	62.24 56.44 - 68.03	178/286	55.91 48.51 - 63.32	104/186	53.54 47.69 - 59.38	159/297	32.08 18.57 - 45.59	17/53
Reasons for not giving BCG		*n=1260*		*n=248*		*n=325*		*n=507*		*n=180*
Parental lack of care	3.74(3.89) 2.65 - 4.82	49	4.03 1.38 - 6.68	10	3.38 1.26 - 5.50	11	5.52 3.44 - 7.61	28	0	0
No tradition to vaccinate, family problem	3.78(3.73) 2.69 - 4.88	47	2.02 0.07 - 3.97	5	4.62 2.18 - 7.05	15	4.73 2.79 - 6.68	24	1.67 -0.48 - 3.81	3
Family don't allow	1.4(1.75) 0.71 - 2.09	22	5.65 2.57 - 8.72	14	0.62 -0.39 - 1.62	2	1.18 0.14 - 2.22	6	0	0
Don't know about it/lack of awareness	8.75(8.89) 7.15 - 10.35	112	9.27 5.46 - 13.09	23	6.77 3.88 - 9.65	22	11.05 8.22 - 13.87	56	6.11 2.33 - 9.89	11
Don't believe it works	2.47(2.78) 1.57 - 3.36	35	6.45 3.19 - 9.71	16	0.62 -0.39 - 1.62	2	2.76 1.24 - 4.29	14	1.67 -0.48 - 3.81	3
Side effects feared	5.09(5.56) 3.84 - 6.35	70	9.27 5.46 - 13.09	23	4.92 2.42 - 7.43	16	6.11 3.93 - 8.30	31	0	0
Poverty, demand money	5.45(5.32) 4.16 - 6.74	67	1.21 -0.35 - 2.77	3	4.62 2.18 - 7.05	15	9.27 6.65 - 11.89	47	1.11 -0.70 - 2.92	2
Lack of time, people to take child	4.91(5.16) 3.68 - 6.14	65	6.05 2.88 - 9.22	15	4.62 2.18 - 7.05	15	6.9 4.60 - 9.21	35	0	0
Child/mother sick	1.82(1.9) 1.04 - 2.60	24	2.42 0.31 - 4.53	6	1.85 0.23 - 3.46	6	2.17 0.80 - 3.54	11	0.56 -0.81 - 1.92	1
Too far away, no facility	32.22(32.46) 29.60 - 34.84	409	35.48 29.33 - 41.64	88	35.69 30.33 - 41.05	116	29.39 25.32 - 33.45	149	31.11 24.07 - 38.15	56
No vaccine, no doctor, doctor refused	0.57(0.63) 0.12 - 1.03	8	1.21 -0.35 - 2.77	3	0.62 -0.39 - 1.62	2	0.59 -0.17 - 1.36	3	0	0
Visiting team did not come, not at home when team come	25.36(23.49) 22.91 - 27.80	296	11.69 7.49 - 15.89	29	28.62 23.55 - 33.68	93	15.98 12.69 - 19.26	81	51.67 44.09 - 59.24	93
Child under age for the vaccine, will have it later/next month	0.26(0.24) -0.06 - 0.59	3	0	0	0	0	0.39 -0.25 - 1.04	2	0.56 -0.81 - 1.92	1
Don't know, no reason	4.17(4.21) 3.03 - 5.32	53	5.24 2.27 - 8.22	13	3.08 1.05 - 5.11	10	3.94 2.15 - 5.74	20	5.56 1.93 - 9.18	10
DPT (vaccine for diphtheria, purtussis, Tetanus)										
Children received any DPT vaccine	62.87(64.86) 60.17 - 65.57	585/902	75.73 70.79 - 80.67	234/309	62.98 56.18 - 69.78	131/208	61.45 56.06 - 66.83	204/332	30.19 16.89 - 43.49	16/53
Children received full course of DPT vaccine	51.81(54.1) 49.02 - 54.61	488/902	67.96 62.60 - 73.33	210/309	53.37 46.35 - 60.39	111/208	46.39 40.87 - 51.90	154/332	24.53 12.00 - 37.06	13/53

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Reasons for not giving full course of DPT vaccine		*n=1332*		*n=265*		*n=339*		*n=533*		*n=195*
Parental lack of care	3.64(3.83) 2.60 - 4.68	51	4.53 1.84 - 7.22	12	3.83 1.64 - 6.03	13	4.88 2.96 - 6.80	26	0	0
No tradition to vaccinate, family problem	4.21(4.13) 3.09 - 5.33	55	1.89 0.06 - 3.71	5	6.49 3.72 - 9.26	22	4.69 2.80 - 6.58	25	1.54 -0.45 - 3.52	3
Family don't allow	1.51(1.8) 0.82 - 2.20	24	4.91 2.12 - 7.69	13	0.59 -0.37 - 1.55	2	1.69 0.50 - 2.88	9	0	0
Don't know about it/lack of awareness	8.06(8.11) 6.56 - 9.56	108	7.55 4.18 - 10.92	20	6.19 3.48 - 8.91	21	10.32 7.64 - 13.00	55	6.15 2.52 - 9.78	12
Don't believe it works	2.13(2.33) 1.32 - 2.94	31	4.53 1.84 - 7.22	12	0.59 -0.37 - 1.55	2	2.63 1.18 - 4.08	14	1.54 -0.45 - 3.52	3
Side effects feared	3.54(4.05) 2.51 - 4.57	54	9.06 5.41 - 12.70	24	2.06 0.40 - 3.73	7	4.32 2.50 - 6.13	23	0	0
Poverty, demand money	5.68(5.41) 4.40 - 6.96	72	0	0	4.42 2.09 - 6.76	15	9.76 7.14 - 12.37	52	2.56 0.09 - 5.04	5
Lack of time, people to take child	5.72(6.01) 4.44 - 7.00	80	6.79 3.57 - 10.01	18	4.42 2.09 - 6.76	15	8.82 6.32 - 11.32	47	0	0
Child/mother sick	1.65(1.73) 0.93 - 2.38	23	1.89 0.06 - 3.71	5	2.06 0.40 - 3.73	7	2.06 0.76 - 3.36	11	0	0
Too far away, no facility	32.33(32.88) 29.78 - 34.88	438	38.11 32.08 - 44.15	101	33.33 28.17 - 38.50	113	31.89 27.84 - 35.95	170	27.69 21.16 - 34.23	54
No vaccine, no doctor, doctor refused	0.75(0.83) 0.25 - 1.25	11	1.51 -0.15 - 3.17	4	0.88 -0.26 - 2.03	3	0.75 -0.08 - 1.58	4	0	0
Visiting team did not come, not at home when team come	25.46(23.57) 23.08 - 27.84	314	12.83 8.61 - 17.05	34	29.5 24.50 - 34.50	100	14.26 11.20 - 17.32	76	53.33 46.07 - 60.59	104
Child under age for the vaccine, will have it later/next month	0.56(0.6) 0.12 - 1.00	8	1.13 -0.33 - 2.59	3	0.29 -0.43 - 1.02	1	0.56 -0.17 - 1.29	3	0.51 -0.75 - 1.77	1
Don't know, no reason	4.77(4.73) 3.58 - 5.95	63	5.28 2.40 - 8.17	14	5.31 2.78 - 7.84	18	3.38 1.75 - 5.00	18	6.67 2.91 - 10.42	13
POLIO vaccine during last 12 months										
Children 12-23 months reported to have received any POLIO vaccine during last 12 months	98.2(99.2) 98.59-99.75	897/904	99.35 98.30-100.41	307/309	98.55 96.68-100.42	204/207	99.40 98.41-100.38	330/332	100 99.11-100.89	56/56
Children 0-59 months reported to have received any POLIO vaccine during last 12 months	97.35(97.51) 96.96 - 97.74	4739/4860	98.54 97.90 - 99.18	1483/1505	96.98 95.92 - 98.04	1059/1092	97.37 96.62 - 98.11	1849/1899	95.6 93.36 - 97.85	348/364
Reasons for not receiving Polio vaccine		n=15		n=5		n=3		n=6		n=1
No tradition to vaccinate, family problem	7.35(6.67) -9.19 - 23.90	1	0	0	0	0	16.67 -21.49 - 54.82	1	0	0
Family don't allow	4.81(6.67) -9.35 - 18.98	1	20 -25.06 - 65.06	1	0	0	0	0	0	0
Don't believe it works	7.35(6.67) -9.19 - 23.90	1	0	0	0	0	16.67 -21.49 - 54.82	1	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Lack of time, people to take child	4.81(6.67) -9.35 - 18.98	1	20 -25.06 - 65.06	1	0	0	0	0	0	0
Child/mother sick	7.56(6.67) -9.15 - 24.26	1	0	0	33.33 -36.68 - 103.3	1	0	0	0	0
Too far away, no facility	14.91(13.33) -6.45 - 36.27	2	0	0	33.33 -36.68 - 103.3	1	16.67 -21.49 - 54.82	1	0	0
Visiting team did not come, not at home when team come	33.68(33.33) 6.43 - 60.93	5	40 –12.94 - 92.9	2	33.33 -36.68 - 103.3	1	16.67 -21.49 - 54.82	1	100 50.00 - 150.00	1
Child under age for the vaccine, will have it later/next month	12.17(13.33) -7.71 - 32.05	2	20 -25.06 - 65.06	1	0	0	16.67 -21.49 - 54.82	1	0	0
Don't know, no reason	7.35(6.67) -9.19 - 23.90	1	0	0	0	0	16.67 -21.49 - 54.82	1	0	0
MEASLES vaccine										
Children aged 12 to 23 months reported to have received measles vaccine	51.05 (52.77) 47.73 – 54.36	477/904	62.58 57.03 – 68.13	194/310	50.48 43.48 – 57.48	106/210	49.24 43.71 – 54.78	163/331	26.42 13.60 - 39.23	14/53
Children 10-59 months reported to have received measles vaccine	50.76(53.05) 49.19 - 52.33	2103/3964	67.02 64.36 - 69.68	829/1237	48.48 45.14 - 51.82	431/889	50.55 48.03 - 53.07	785/1553	20.35 15.50 - 25.20	58/285
Children 10-59 months reported to have received measles vaccine during last 24 months	24.55(25.75) 23.18 - 25.91	1002/3891	33.41 30.73 - 36.09	410/1227	24.05 21.15 - 26.95	209/869	23.22 21.06 - 25.38	352/1516	11.11 7.24 - 14.98	31/279
Reasons for not vaccinating against measles among children aged 12 – 59 months		n=1754		*n=388*		*n=429*		*n=721*		*n=216*
Parental lack of care	4.23(4.5) 3.26 - 5.20	79	6.19 3.66 - 8.71	24	4.66 2.55 - 6.77	20	4.85 3.22 - 6.49	35	0	0
No tradition to vaccinate, family problem	3.27(3.25) 2.41 - 4.13	57	2.06 0.52 - 3.60	8	4.66 2.55 - 6.77	20	3.88 2.40 - 5.36	28	0.46 -0.67 - 1.60	1
Family don't allow	1.31(1.48) 0.75 - 1.87	26	3.09 1.24 - 4.94	12	1.4 0.17 - 2.63	6	1.11 0.28 - 1.94	8	0	0
Don't know about it/lack of awareness	8.08(8.1) 6.78 - 9.38	142	7.47 4.73 - 10.22	29	6.06 3.69 - 8.44	26	10.12 7.85 - 12.40	73	6.48 2.97 - 10.00	14
Don't believe it works	2.24(2.45) 1.52 - 2.96	43	4.9 2.62 - 7.17	19	0.93 -0.09 - 1.96	4	2.08 0.97 - 3.19	15	2.31 0.08 - 4.55	5
Side effects feared	2.94(3.31) 2.12 - 3.76	58	6.7 4.08 - 9.32	26	2.1 0.63 - 3.57	9	3.05 1.73 - 4.38	22	0.46 -0.67 - 1.60	1
Poverty, demand money	4.92(4.73) 3.88 - 5.96	83	0.77 -0.23 - 1.77	3	3.5 1.64 - 5.35	15	8.74 6.61 - 10.87	63	0.93 -0.58 - 2.43	2
Lack of time, people to take child	7.63(8.04) 6.36 - 8.90	141	9.79 6.71 - 12.88	38	5.83 3.49 - 8.16	25	10.82 8.48 - 13.15	78	0	0
Child/mother sick	2.42(2.57) 1.67 - 3.16	45	3.61 1.62 - 5.59	14	2.33 0.79 - 3.88	10	2.77 1.51 - 4.04	20	0.46 -0.67 - 1.60	1
Too far away, no facility	30.74(30.96) 28.55 - 32.93	543	33.51 28.68 - 38.33	130	34.73 30.11 - 39.35	149	27.74 24.40 - 31.08	200	29.63 23.31 - 35.95	64
No vaccine, no doctor, doctor refused	0.83(0.91) 0.38 - 1.29	16	1.55 0.19 - 2.90	6	0.93 -0.09 - 1.96	4	0.83 0.10 - 1.56	6	0	0

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
Visiting team did not come, not at home when team come	25.64(23.95) 23.57 - 27.71	420	13.92 10.34 - 17.49	54	27.97 23.61 - 32.34	120	18.59 15.68 - 21.49	134	51.85 44.96 - 58.75	112
Child under age for the vaccine, will have it later/next month	1.4(1.48) 0.82 - 1.98	26	2.06 0.52 - 3.60	8	0.93 -0.09 - 1.96	4	1.8 0.76 - 2.84	13	0.46 -0.67 - 1.60	1
Already had measles	0.2(0.23) -0.04 - 0.43	4	0.52 -0.33 - 1.36	2	0	0	0.28 -0.18 - 0.73	2	0	0
Don't know, no reason	4.15(4.05) 3.19 - 5.11	71	3.87 1.82 - 5.91	15	3.96 2.00 – 5.93	17	3.33 1.95 - 4.71	24	6.94 3.32 - 10.57	15
Source and cost of measles immunisation (Among children who were vaccinated during last 24 months)										
Source from where child received vaccination		n=982		n=400		n=207		n=346		n=29
Government health facility	69.77(71.69) 66.85 - 72.70	704	80 75.95 - 84.04	320	69.08 62.54 - 75.62	143	69.36 64.36 - 74.37	240	3.45 -4.92 - 11.81	1
Private qualified facility	2.09(1.83) 1.14 - 3.03	18	0.25 -0.36 - 0.86	1	0	0	4.62 2.27 - 6.98	16	3.45 -4.92 - 11.81	1
Private, non medically qualified practitioner (incl spiritual, religious)	0.36(0.31) -0.07 - 0.78	3	0	0	0.97 -0.61 - 2.54	2	0.29 -0.42 - 1.00	1	0	0
Vaccination team/at home	27.78(26.17) 24.93 - 30.63	257	19.75 15.72 - 23.78	79	29.95 23.47 - 36.43	62	25.72 20.97 - 30.47	89	93.1 82.16 - 104.05	27
Proportion of children taken to a health facility for measles vaccination	44.34(41.03) 40.64 - 48.04	295/719	21.81 17.13 - 26.48	70/321	13.89 7.89 - 19.88	20/144	80.95 75.91 - 86.00	204/252	50 -44.30 - 144.30	1/2
Opportunity cost										
Any family member needing to take time off from money-earning work to take the child for treatment of measles	91.89(91.44) 89.82 - 93.97	652/713	89.06 85.49 - 92.64	285/320	92.96 88.40 - 97.52	132/142	93.57 90.33 - 96.82	233/249	100 75.00 - 125.00	2/2
Amount of time taken off from money-earning work		n=636		n=274		n=132		n=228		n=2
Less than three hours	66.74(68.4) 63.00 - 70.48	435	78.1 73.02 - 83.18	214	74.24 66.40 - 82.08	98	53.51 46.82 - 60.20	122	50 -44.30 - 144.30	1
3-7 hours	29.43(27.99) 25.81 - 33.05	178	19.34 14.48 - 24.20	53	23.48 15.87 - 31.10	31	41.23 34.62 - 47.84	94	0	0
8 hours (one day) or more	3.83(3.62) 2.26 - 5.40	23	2.55 0.50 - 4.61	7	2.27 -0.65 - 5.19	3	5.26 2.15 - 8.38	12	50 -44.30 - 144.30	1
Type of work the time was taken off from		n=634		n=281		n=128		n=224		n=2
Housewife	97.34(97.48) 96.01 - 98.68	618	97.86(97.86) 96.00 - 99.73	275	94.53(94.53) 90.20 - 98.86	121	99.1(99.1) 97.64 - 100.56	221	50(50) -44.30 - 144.30	1
Unskilled, farmer, student, retired	1.67(1.42) 0.59 - 2.75	9	0.36(0.36) -0.52 - 1.23	1	3.91(3.91) 0.16 - 7.65	5	0.9(0.9) -0.56 - 2.36	2	50(50) -44.30 - 144.30	1
Skilled, clerical, professional	0.99(1.1) 0.14 - 1.83	7	1.78(1.78) 0.06 - 3.50	5	1.56(1.56) -0.98 - 4.10	2	0	0	0	0
Travel cost										
Proportion who walked to the health facility for measles vaccination										
Urban	75.59(75.68)		76.47		85.71		69.23			

Indicator	District % wt (unwt) 95% CI	Based on	BELA Unwt 95% CI	Based on	UTHAL unwt 95% CI	Based on	HUB unwt 95% CI	Based on	DURREJI unwt 95% CI	Based on
	60.40-90.78	28/37	53.37-99.58	13/17	52.65-118.78	6/7	40.30-98.17	9/13	0	0
Rural	27.41(31.11) 13.27-41.56	14/45	69.23 40.30-98.17	9/13	50 1.66-98.34	3/6	4.0 -5.68-13.68	1/25	100 50-150	1/1
Paid some cost	48.03(44.44) 36.53-59.53	36/81	17.24 1.77-32.71	5/29	30.77 1.83-59.70	4/13	71.05 55.32-86.79	27/38	100 50-150	1/1
Cost for measles vaccine										
Proportion of all 10-59 children receiving measles vaccine during last 24 months who paid some cost for measles vaccine	5.01(4.32) 3.35 - 6.68	31/718	0.63 -0.39 - 1.64	2/320	3.45 0.13 - 6.76	5/145	9.16 5.39 - 12.93	23/251	50 -44.30 - 144.30	1/2
Proportion of all 10-59 children who were taken to a health facility for measles vaccine during last 24 months and paid some cost for measles vaccine	4.97(4.24) 3.30 - 6.65	30/707	0.32 -0.47 - 1.11	1/312	3.47 0.13 - 6.81	5/144	9.24 5.44 - 13.03	23/249	50 -44.30 - 144.30	1/2
Nutritional status of the child										
Proportion mothers perceiving their child normal or big for age	92.15(92.46) 91.51 - 92.80	4513/4881	94.37 93.18 - 95.57	1425/1510	90.98 89.24 - 92.72	999/1098	92.51 91.30 - 93.73	1755/1897	88.83 85.51 - 92.15	334/376
Proportion of 0-59 months old children measured as malnourished (MUAC < 12.5 cm)	14.8(14.38) 13.92 - 15.69	641/4457	12.1 10.34 - 13.86	167/1380	15.48 13.17 - 17.79	152/982	14.13 12.46 - 15.79	246/1741	21.47 17.05 - 25.89	76/354

Table 2. Decision maker indicators by tehsil

(Note: most of the decision makers were the mothers of the children)

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
GENERAL INFORMATION										
Total number of decision makers interviewed	3308		986		742		1280		300	
Male decision makers	8.38(8.07) 7.42 - 9.34	3308	5.88 4.36 – 7.40	986	13.48 10.95 – 16.00	742	6.33 4.96 – 7.70	1280	9.33 5.87 – 12.79	300
Decision makers with some formal education	9.05(9.34) 8.06 - 10.05	3298	10.76 8.78 – 12.75	985	9.31 7.15 – 11.47	741	9.51 7.85 – 11.16	1273	4.01 1.62 – 6.41	299
Awareness about immunization										
Decision makers having heard about immunization	85.34(86.7) 84.08 - 86.60	3113	93.23 91.57 - 94.90	931	85.11 82.41 - 87.81	705	88.76 86.92 - 90.60	1183	61.56 55.83 - 67.30	294
Sources from where heard about immunization SPSS		*n=3258*		*n=977*		*n=722*		*n=1265*		*n=294*
Nowhere	12.7	414	6.4	63	14.5	105	10.5	133	38.4	113
Electronic media	8.2	267	7.6	74	5.3	38	11.7	148	2.4	7
Written material (newspaper, pamphlet)	.9	30	.6	6	1.4	10	1.0	13	.3	1
Family, neighbours, friends	25.1	817	22.9	224	21.3	154	28.4	359	27.2	80
School	.2	8	.3	3	.1	1	.3	4	.0	0
Doctor, hospital	33.7	1099	41.7	407	33.1	239	32.3	409	15.0	44
LHW, LHV, Dai	4.8	155	7.3	71	10.0	72	.8	10	.7	2
Vaccination team	14.2	463	10.1	99	13.3	96	17.2	218	17.0	50
NGO	.0	1	0	0	.1	1	0	0	0	0
Announcement	3.5	114	6.9	67	4.6	33	1.1	14	0	0
Don't know (incl. I knew myself)	.4	14	.1	1	.6	4	.7	9	0	0
Decision makers reporting that LHW spoke to them about immunization	7.55(8.27) 6.63 - 8.47	3289	13.48 11.29 - 15.67	979	14.83 12.19 - 17.47	735	2.27 1.42 - 3.13	1275	0.67 -0.42 - 1.75	300
Decision makers mentioning at least one illness preventable by immunization	77.59 (79.12) 76.14 – 79.04	2584/3266	87.77 85.67 – 89.87	861/981	72.12 68.82 – 75.43	533/739	81.5 79.32 – 83.68	1031/1265	56.58 50.61 – 62.56	159/281
Decision makers mentioning at least one correct illness preventable by immunization	74.84(76.34) 73.33 - 76.34	3267	85.02 82.73 - 87.30	981	68.74 65.33 - 72.15	739	78.75 76.46 - 81.04	1266	55.16 49.17 - 61.15	281
Decision makers reporting that neighbours think its worthwhile to immunize children	80.25(82.08) 78.87 - 81.63	3271	92.78 91.12 - 94.45	984	73.88 70.63 - 77.12	735	84.2 82.15 - 86.24	1272	56.43 50.44 - 62.42	280
Decision makers who think its worthwhile to immunize children	89.67(90.83) 88.61-90.73	3272	96.85 95.71-97.99	984	86.83 83.83-88.93	734	93.17 91.75-94.60	1274	70.71 65.21-76.22	280

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Views about adverse effects of immunization										
Decision makers who had heard about any bad effects of immunization	3.53(3.63) 2.88 - 4.17	3251	4.18 2.88 - 5.49	980	4.86 3.22 - 6.50	720	2.99 2.02 - 3.97	1270	1.42 -0.14 - 2.99	281
Type of bad effects heard by decision makers		*n=3251*		*n=980*		*N=720*		*n=1270*		*N=281*
Nothing	96.53(96.37) 95.89 - 97.17	3133	95.82 94.51 - 97.12	939	95.14 93.50 - 96.78	685	97.01 96.03 - 97.98	1232	98.58 97.01 - 100.14	277
Actual side-effects	2.48(2.61) 1.93 - 3.03	85	3.16 2.02 - 4.31	31	3.47 2.07 - 4.88	25	2.13 1.29 - 2.96	27	0.71 -0.45 - 1.87	2
Incorrect perceptions	0.37(0.4) 0.15 - 0.60	13	0.41 -0.04 - 0.86	4	0.56 -0.06 - 1.17	4	0.39 0.01 - 0.78	5	0	0
Not specified	0.62(0.62) 0.33-0.90	20	0.61 0.07-1.15	6	0.83 0.10-1.57	6	0.47 0.06-0.89	6	0.71 -0.45-1.87	2
Source of information about bad effects of immunization		n=108		n=40		n=34		n=31		n=3
Nowhere	3.44(2.78) -0.46-7.34	3	0	0	5.88 -3.50-15.26	2	0	0	33.33 -36.68-103.34	1
Electronic media (incl govt)	1.07(0.93) -1.33-3.48	1	0	0	2.94 -4.21-10.09	1	0	0	0	0
Written material (newspaper, books, pamphlets)	0.68(0.93) -1.33-2.70	1	2.50 -3.59-8.59	1	0	0	0	0	0	0
Family, neighbours, friends	35.44(35.19) 25.96-44.93	38	32.50 16.73-48.27	13	23.53 7.80-39.26	8	51.61 32.41-70.82	16	33.33 -36.68-103.34	1
Doctor/hospital	34.06(35.19) 24.96-43.46	38	42.50 25.93-59.07	17	29.41 12.63-46.20	10	32.26 14.19-50.33	10	33.33 -36.68-103.34	1
Vaccination team	1.04(0.93) -1.34-3.42	1	0	0	0	0	3.23 -4.61-11.06	1	0	0
Don't know/didn't mention source	24.26(24.07) 15.71-32.80	26	22.50 8.31-36.69	9	38.24 20.43-56.04	13	12.90 -0.51-26.32	4	0	0
Decision makers reporting that they have actually seen any bad effect of immunization	4.94(5.10) 94.29 - 95.83	3158	4.52 4.28 - 7.41	924	6.28 4.41 - 8.41	701	4.70 3.49 - 5.91	1255	1.44 -0.14 - 3.46	278
Type of bad effects seen by decision makers		*n=3158*		*n=924*		*n=701*		*n=1255*		*n=278*
Nothing	95.09(94.9) 94.32 - 95.86	2997	94.16 92.59 - 95.72	870	93.72 91.86 - 95.59	657	95.3 94.09 - 96.51	1196	98.56 96.98 - 100.14	274
Actual side-effects	3.3(3.58) 2.66 - 3.94	113	5.09 3.62 - 6.56	47	3 1.66 - 4.33	21	3.27 2.24 - 4.29	41	1.44 -0.14 - 3.02	4
Incorrect perceptions	0.49(0.47) 0.23 - 0.75	15	0.22 -0.14 - 0.57	2	0.57 -0.06 - 1.20	4	0.72 0.21 - 1.22	9	0	0
Not specified	1.12(1.04) 0.74 - 1.51	33	0.54 0.01 - 1.07	5	2.71 1.44 - 3.98	19	0.72 0.21 - 1.22	9	0	0
Decision makers reporting that they had discussed in the family about immunization	83.93(85.31) 82.65 – 85.21	3234	92.82 91.15 - 94.49	975	78.59 75.53 - 81.65	724	88.15 86.32 - 89.97	1257	63.67 57.84 - 69.50	278
Decision makers knowing any dangerous complications of measles	57.6(57.99) 55.90 – 59.30	3299	60.06 56.95 - 63.17	984	57.86 54.23 - 61.49	738	57.98 55.24 - 60.73	1278	51.51 45.67 - 57.34	299

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Complications of measles as reported by decision makers		*n*=1874		*n*=580		*n*=413		*n*=732		*n*=149
Don't know	0.25(0.21) -0.00 – 0.50	4	0	0	0.48 -0.31 – 1.27	2	0.14 -0.20 – 0.47	1	0.67 -0.98 – 2.32	1
Child can die	33.83(33.67) 31.67 – 36.00	631	31.55 27.68 – 35.42	183	34.14 29.45 – 38.83	141	35.93 32.38 – 39.47	263	29.53 21.87 – 37.19	44
Other real complication of measles	44.99(44.82) 42.71 – 47.27	840	44.48 40.35 – 48.61	258	44.55 39.64 – 49.47	184	43.99 40.32 – 47.65	322	51.01 42.64 – 59.37	76
Not real complication of measles	20.92(21.29) 19.06 – 22.79	399	23.97 20.41 – 27.53	139	20.82 16.79 – 24.86	86	19.95 16.98 – 22.91	146	18.79 12.18 – 25.40	28
Decision makers who knew of any child who had suffered from measles	66.87(67.18) 65.26 – 68.49	3336	68.14 65.20 – 71.08	998	68.13 64.73 – 71.53	750	67.86 65.27 – 70.45	1288	58.67 52.93 – 64.41	300
Outcome of measles in the reported child with measles		*n=2181*		*n==663*		*n=491*		*n=855*		*n=172*
Nothing / Got better	16.3	355	16	106	17.3	85	15.1	129	20.3	35
Fever	65.6	1431	60.5	401	66.4	326	69	590	66.3	114
Skin problem/rashes	.1	2	0.2	1	0	0	0.1	1	0	0
Diarrhoea	40.5	883	41.2	273	35.8	176	42.9	367	39	67
Chest/respiratory infection	20.1	439	22.2	147	19.3	95	20.6	176	12.2	21
Weakness malnutrition	2.5	54	1.5	10	3.1	15	2.9	25	2.3	4
Child died	1.4	31	0.9	6	2.0	10	1.6	14	0.6	1
Non specific/Don't know	0.7	15	1.2	8	1.0	5	0.2	2	0	0
Decision makers thinking that measles is rare in their area	90.22(90.83) 89.20 – 91.25	3314	95.98 94.71 – 97.25	995	96.77 95.44 – 98.11	744	84 81.95 – 86.05	1225	86 84.16 – 91.84	300
Decision makers knowing correctly how a child catches measles	10.84(11.13) 9.77 – 11.91	3315	12.78 10.65 – 14.90	994	13.19 10.69 – 15.69	743	9.84 8.17 – 11.51	1280	6.04 3.17 – 8.91	298
Beliefs about treatment cost for a child with measles										
For treatment in a government health facility		*n*=3314		*n*=997		*n*=743		*n*=1274		*n*=300
Costs nothing	37.99(38.38) 36.32 - 39.66	1272	41.32 38.22 - 44.43	412	35.4 31.89 - 38.90	263	38.23 35.52 - 40.93	487	36.67 31.05 - 42.29	110
Costs something	32.91(33.98) 31.29 - 34.52	1126	39.92 36.83 - 43.01	398	41.05 37.45 - 44.65	305	29.67 27.12 - 32.22	378	15 10.79 - 19.21	45
Don't know about the cost	29.1(27.64) 27.54 - 30.66	916	18.76 16.28 - 21.23	187	23.55 20.43 - 26.67	175	32.1 29.50 - 34.71	409	48.33 42.51 - 54.15	145
For treatment in a private health facility		*n*=3318		*n*=996		*n*=746		*n*=1276		*n*=300
Costs nothing	1.03(1.08) 0.67 - 1.39	36	1.71 0.85 - 2.56	17	0.4 -0.12 - 0.92	3	0.78 0.26 - 1.31	10	2 0.25 - 3.75	6
Costs something	86.52(87.49) 85.35 - 87.70	2903	91.57 89.79 - 93.34	912	89.54 87.28 - 91.81	668	88.32 86.52 - 90.12	1127	65.33 59.78 - 70.89	196
Don't know about the cost	12.44(11.42) 11.31 - 13.58	379	6.73 5.12 - 8.33	67	10.05 7.83 - 12.28	75	10.89 9.14 - 12.64	139	32.67 27.19 - 38.14	98

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Opinion about immunization services										
Types of difficulties faced by decision makers in getting their children immunized		*n=3210*		*n=973*		*n=717*		*n=1240*		*n=280*
No difficulty	32.9	1056	39.6	385	37.2	267	28.0	347	20.4	57
No facility nearby/teams don't come/irregular	35.3	1133	30.8	300	35.7	256	36.4	451	45.0	126
Transportation/roads problem	24.1	774	19.7	192	21.5	154	27.0	335	33.2	93
Don't have time/no one to take	4.0	128	6.5	63	2.2	16	4.0	49	0	0
Poor/don't have money	5.9	190	3.3	32	4.6	33	8.7	108	6.1	17
Poor quality of vaccination facility	2.1	68	1.4	14	2.0	14	2.6	32	2.9	8
Lack of awareness/info/don't go for immunization	2.1	69	1.4	14	2.6	19	1.9	23	4.6	13
Afraid of side effects of vaccination	.1	3	0	0	.1	1	.2	2	0	0
Things that would help to get every child immunized		*n=2985*		*n=924*		*n=671*		*n=1155*		*n=235*
Nothing	7.65(8.04) 6.68 - 8.62	240	10.93 8.86 - 13.00	101	3.58 2.10 - 5.06	24	8.57 6.91 - 10.23	99	6.81 3.38 - 10.24	16
Teams should come home	58.45(59.63) 56.67 - 60.24	1780	67.32 64.24 - 70.39	622	64.98 61.29 - 68.66	436	53.51 50.59 - 56.43	618	44.26 37.69 - 50.82	104
Vaccination facility nearby	28(26.7) 26.37 - 29.63	797	17.64 15.13 - 20.15	163	23.1 19.84 - 26.36	155	33.42 30.66 - 36.18	386	39.57 33.11 - 46.04	93
Better transport/road	5.44(5.16) 4.61 - 6.27	154	3.57 2.32 – 4.82	33	8.35 6.18 - 10.51	56	3.81 2.66 - 4.96	44	8.94 5.08 - 12.80	21
Provide information	0.46(0.47) 0.20 - 0.72	14	0.54 0.01 - 1.07	5	0	0	0.69 0.17 - 1.21	8	0.43 -0.62 - 1.47	1
Willingness to get children immunized										
Time that decision makers are willing to spend to take a child for immunization		*n*=3178		*n*=972		*n*=706		*n*=1240		*n*=260
Not willing/unable to spare any time	6.38(5.1) 5.51 - 7.24	162	1.54 0.72 - 2.37	15	3.54 2.11 - 4.98	25	4.03 2.90 - 5.17	50	27.69 22.06 - 33.32	72
Willing to take off up to one hour or less	20.51(22.66) 19.09 - 21.92	720	32.1 29.11 - 35.09	312	22.38 19.23 - 25.52	158	18.39 16.19 - 20.58	228	8.46 4.89 - 12.04	22
Willing to take off more than one hour upto 6 hours	53.85(54.44) 52.10 - 55.60	1730	52.88 49.69 - 56.07	514	51.27 47.52 - 55.03	362	60.56 57.80 - 63.33	751	39.62 33.48 - 45.75	103
Willing to take off more than 6 hours upto 12 hours	6(5.44) 5.15 - 6.84	173	2.88 1.78 - 3.98	28	6.94 4.99 - 8.89	49	6.37 4.97 - 7.77	79	6.54 3.34 - 9.74	17
Willing to take off more than 12 hours	13.27(12.37) 12.08 - 14.47	393	10.6 8.61 - 12.58	103	15.86 13.10 - 18.63	112	10.65 8.89 - 12.40	132	17.69 12.86 - 22.52	46
Mean time that decision makers are willing to spend to take a child for immunization	5.98(5.18) 5.2-6.7	3179	4.8 4.3-5.2	972	6.79 6.0-7.5	706	5.58 5.0-6.0	1241	8.00 6.32-9.67	260

Indicator	DISTRICT % wt (unwt) 95% CI	Based on	BELA % wt (unwt) 95% CI	Based on	UTHAL % wt (unwt) 95% CI	Based on	HUB % wt (unwt) 95% CI	Based on	DUREJI % wt (unwt) 95% CI	Based on
Distance that decision makers are willing to travel to take a child for immunization		*n*=3059		*n*=942		*n*=651		*n*=1215		*n*=251
Not willing/unable to travel any distance	7.04(6.05) 6.11 - 7.96	185	1.8 0.90 - 2.71	17	4.61 2.92 - 6.30	30	5.27 3.97 - 6.56	64	29.48 23.64 - 35.32	74
Willing to travel up to one km or less	17.9(19.03) 16.52 - 19.27	582	26.01 23.15 - 28.86	245	15.36 12.51 - 18.21	100	18.44 16.21 - 20.66	224	5.18 2.24 - 8.12	13
Willing to travel more than one km up to 5 km	37.14(37.46) 35.41 - 38.86	1146	38.64 35.48 - 41.80	364	38.56 34.74 - 42.37	251	37.86 35.09 - 40.63	460	28.29 22.52 - 34.06	71
Willing to travel more than 5 km up to 10 km	12.73(12.62) 11.53 - 13.93	386	11.89 9.77 - 14.01	112	12.75 10.11 - 15.39	83	12.84 10.92 - 14.76	156	13.94 9.46 - 18.43	35
Willing to travel more than 10 km up to 50 km	14.25(14.02) 12.99 - 15.50	429	11.57 9.48 - 13.67	109	18.43 15.38 - 21.49	120	14.4 12.39 - 16.42	175	9.96 6.06 - 13.86	25
Willing to travel more than 50 km up to 100 km	5.2(5.17) 4.40 - 6.01	158	4.56 3.18 - 5.95	43	4.3 2.67 - 5.94	28	6.34 4.93 - 7.75	77	3.98 1.37 - 6.60	10
Willing to travel more than 100 km	5.75(5.66) 4.91 - 6.59	173	5.52 4.01 - 7.03	52	5.99 4.09 - 7.89	39	4.86 3.61 - 6.11	59	9.16 5.39 - 12.93	23
Mean distance that decision makers are willing to travel to take a child for immunization	27.7(27.5) 21.9-33.6	3054	27.01 21.6-32.4	940	29.7 23.0-36.4	650	25.1 20.8-29.5	1213	35.0 21.9-48.1	251

Annex 6
Main indicators from community profiles and LHW interviews

Table 1. Indicators from community profiles

Indicator	% (n) communities
Total number of communities visited	144
Urban communities	27
Rural communities	117
Availability of health facilities	
Within 5 km	
Availability of a health facility	
Government	52.1 (75/144)
Private	23.1 (33/143)
Any (government or private)	54.2 (78/144)
Availability of an evening/24 hr health facility	
Government	6.9 (10/144)
Private	12.6 (18/143)
Any (government or private)	18.1 (26/144)
Within 1 km	
Availability of a health facility	
Government	19.4 (28/144)
Private	15.7 (18/115)
Any (government or private)	21.5 (31/144)
Availability of an evening/24 hr health facility	
Government	4.2 (6/144)
Private	7.8 (9/115)
Any (government or private)	9.0 (13/144)
Availability of immunization services	
Availability of a health facility with immunization services for children within 5 km	
Government	29.6 (42/142)
Private	0 (0/143)
Any (government or private)	29.2 (42/144)
Availability of a health facility with immunization services for children within 1 km	
Government	12.7 (18/142)
Private	0 (0/115)
Any (government or private)	15.9 (18/113)
Usual place for people in the community to take their children to be immunized	*(n=124)*
Nowhere	22.6 (28)
Government health facility	57.3 (71)
Vaccination team visit at home	20.2 (25)
Communities where people take their children to a health facility for immunization	57.3 (71)
Communities visited by a vaccination team/person for routine immunization	40.6 (56/138)
Frequency of visit by a vaccination team to the community for routine immunization	*(n=137)*
Never visited	59.9 (82)
At least once every month	6.6 (9)
Not every month but at least once every 6 months	21.9 (30)
Not every six months but at least once in a year	5.1 (7)
Less frequent than once in a year	6.6 (9)
Period since last visit by a vaccination team for routine immunization	*(n=134)*
Never visited	61.2 (82)
Last visit with in a month	11.9 (16)
More than one month, but with in the last 6 months	19.4 (26)
More than 6 months , but with in last year	3.7 (5)
More than a year ago	3.7 (5)

Indicator		% (n) communities
Polio campaign		
Communities with a Polio Campaign/Day celebrated within last one month		91.2 (124/136)
Number of polio campaign/days in the community in the last 12 months		*(n=137)*
	1	2.9 (4)
	2	13.9 (19)
	3	30.7 (42)
	4	27.0 (37)
	5	19.7 (27)
	6	1.5 (2)
	7	0.7 (1)
	8	1.5 (2)
	10	0.7 (1)
	12	0.7 (1)
	30	0.7 (1)
Community organization		
Communities with any NGOs/CBOs/voluntary organizations/committees		9.9 (14/141)
Communities with any women organization		0
Communities with any existing CCB		8.6 (12/140)
Communities with any project done by a CCB		5.1 (7/138)
Projects done by CCBs in the community		*(n=7)*
Dig for well, install hand pump, drinking water for the community		14.3 (1)
Protection wall		42.9 (3)
Paving of road		14.3 (1)
De-silting of rain stream		14.3 (1)
Construction of bus stop		14.3 (1)

Table 2. Indicators from LHW interviews

Indicator	Number of LHWs
General information	
Total number of LHWs interviewed	44
Age distribution of LHWs	*(n=44)*
18-30 years	31
31-40 years	11
41 years and above	2
Formal education level	*(n=44)*
Less than 10th grade	18
Up to 10th grade	18
More then 10th grade	8
Period since started working as an LHW	*(n=44)*
Less then one year	3
More then a year up to 5 years	29
More then 5 years up to 10 years	10
More then 10 years	2
Training of LHWs	
LHWs receiving their initial training within last three years	27/44
LHWs receiving any further refresher training	25/44
Period since received last refresher training	*(n=23)*
Within last three months/still going on	12
More than three months but within the last six months	1
More than six months but within the last one year	5
More than a year but within last five years	4
More than five years ago	1
Household visits	
Number of households covered by LHWs	*(n=44)*
150 or less households	39
More than 150 households	5
Factors that would aid LHWs to visit the households (multiple responses recorded)	*(n=42)*
Nothing needed	19
Community support	1
Provide transport	21
More LHWs/fewer households per LHW	1
Supervisory support	
Frequency of visit by a supervisor	*(n=44)*
More than once a month	31
Once a month or less frequently (including “no one visits”)	13
LHWs visited by a supervisor within last one month	27/36
Knowledge and perceptions about immunization	
LHWs that could mention at least one correct illness prevented by immunization	43/44
LHWs who think it’s worthwhile to immunize children	43/43
Reasons for considering immunization worthwhile	*(n=44)*
Illness protection	39
Important to immunize	5
Knowledge about adverse effects of immunization	
LHWs that have heard about any bad effects of immunization	3/44
Type of bad effects of immunisation heard by LHWs	*(n=44)*
Nothing	41
Actual side-effects	2
Incorrect perceptions	1

Indicator	Number of LHWs
Source from where heard about bad effects of immunization	*(n=1)*
Family/neighbours, (including knew myself)	1
LHWs who have themselves seen any bad effect of immunization	3/44
Type of bad effects of immunization actually seen by LHWs	
Nothing	41/44
Actual side-effects	3/44
Practices about immunization	
Advice given by LHWs to mothers and care givers about immunization of their children	*(n=45)*
Illness protection	29
Important to immunize	14
Get vaccination form birth	2
Information provide by LHWs to mothers/care givers about immunization (multiple responses recorded)	*(n=43)*
Importance and benefit	43
Schedule/follow schedule/ follow rules	1
Main reasons for some children not being immunized (multiple responses recorded)	*(n=43)*
No reason	1
Carelessness	6
Facility too far	10
Fear of side effects	15
Lack of awareness	4
Don't believe in it	3
Not allowed	10
Family problem/migration	1
Suggestions to help ensure that all children get immunized (multiple responses recorded)	*(n=42)*
Nothing	1
Mobile teams	16
Facility nearby/transport	5
Provide information/awareness	20
Mare staff/vaccinators/train LHWs	1
Ensure vaccine availability/generator/electricity	1
Knowledge about measles in the community	
LHW who know correctly how a child catches measles	19/42
LHWs'who think that measles is common in their community	42/43
Reasons mentioned by LHWs for reported frequency of measles in their community	*(n=43)*
Disease follows a natural cycle/comes back after regular interval	1
It's not the season	5
Children not vaccinated	1
God's will/spiritually controlled	34
All/most children vaccinated	1
Don't know	2
Chances of a child with no measles having contact with a child with measles	*(n=42)*
High	9
Low	23
Neither high nor low	10
Chances of a child with no measles vaccination to get measles	*(n=44)*
High	37
Low	3
Neither high nor low	4
Reasons reported by LHWS who think that there is a high chance	*(n=37)*
Disease follows a natural cycle/comes back after regular interval	2
Unhygienic environment/practices/lack of care	2
Children not vaccinated	31
Due to local climate(hot/cold/rainy/costal/natural)	2

Indicator	Number of LHWs
Reasons reported by LHWS who think that there is a low chance	*(n=6)*
Disease follows a natural cycle/comes back after regular interval	2
Better environment/practices/care	1
Children not vaccinated	3
Chances of a child with measles vaccination to get measles	*(n=44)*
High	1
Low	41
Neither high nor low	2
Reasons reported by LHWS who think that there is a high chance	*(n=1)*
Disease follows a natural cycle/comes back after regular interval	1
Reasons reported by LHWS who think that there is a low chance	*(n=41)*
Rare due to local climate(hot/cold/rainy/costal/natural)	41
Knowledge about complications of measles	
LHWS knowing any dangerous/severe complications if a child catches measles	33/43
Type of complications of measles reported by LHWs	*(n=32)*
Child can die	18
Other real complications of measles	11
Not real complications of measles	3
LHWs who knew any child who had suffered from measles	29/43
What happened to the child?	*(n=27)*
Fever	27
Gestro/Diarrhoea	4
Chest/respiratory infection	9
Weakness malnutrition	2
Perceptions about cost of treatment of measles	
Government health facility	*(n=44)*
Nothing	20
Something	18
Didn't know about the cost	6
Private health facility	*(n=43)*
Something	41
Didn't know about the cost	2
Knowledge and practices about childhood Acute Respiratory Infections (ARI)	
LHWs telling mother at least one correct information about ARI recognition	36/39
Advice given by LHWs to the mothers and families about treating a child with ARI (multiple responses recorded)	*(n=44)*
Nothing/don’t know	4
Take to Dr.	24
Protect form coldness	11
Get Immumized	1
Give medicine	27

Annex 7. Main themes from community focus group discussions

Theme	No. male groups	No. female groups
Total number of focus groups	32	32
Urban	9	9
Rural	23	23
Most important problem in relation to child health in the community	*(n=32)*	*(n=32)*
No problem	2	0
Lack of staff/bad behaviour of staff at health facility	4	7
Poor services/management at the health facility	7	6
Expensive/extra payments at the health facility	6	4
Health facility too far/difficult access	23	13
Poor sanitation/unhygienic conditions in the community	7	2
Lack/poor quality of drinking water in the community	14	7
Specific diseases such as malaria/diarrhoea/ARI/skin diseases/immunizable diseases	81	103
Measles in the community		
Period since last time many cases of measles reported in the community	*(n=32)*	*(n=32)*
Within the last year	16	15
More than a year but within last two years	5	5
More than two years but within last five years	9	12
More than five years ago	2	0
Chance of a child in the community to catch measles	*(n=32)*	*(n=32)*
Very high	14	17
High	3	3
Neither high nor low	2	0
Low	3	4
very low	7	5
No choice at all	2	1
Knowledge about measles vaccine		
Have heard positive info about measles vaccine	34/31	34/31
Have heard negative info about measles vaccine	0/31	5/31
Have not heard anything about measles vaccine	14/31	9/31
Effect of measles vaccination on chances of a child catching measles	*(n=30)*	*(n=30)*
Reduces the risk to a great extent	7	18
Reduces to a low extent or not at all	23	12
Participants thought measles would have to be very common to make people immunize their children	20/31	22/32
Participants considered measles as a very serious disease	30/31	29/29
Reasons for people not immunising despite knowing measles is a very serious disease	*(n=32)*	*(n=32)*
Facility too far/no mobile team/lack of transport	24	23
Parents careless/ignorant	11	8
Parents think it's of no benefit/don't trust vaccine	6	5
Fear of side effects/misconceptions	16	14
Poverty	22	16
Lack of awareness	11	19
Things that people take into account while deciding to immunize their children	*(n=32)*	*(n=32)*
Good growth of children	15	15
Prevents from specific diseases like measles/disability	23	18
General prevention of illness/fever	24	40
Things that people take into account while deciding NOT to immunize their children	*(n=32)*	*(n=31)*
Child may become ill/family planning	32	23
Our ancestors lived healthily without vaccine so can our children	8	7
Vaccines do not work	15	14
High cost for vaccination	13	18
Do not consider anything just don't do it	11	12
Participants agreed people are aware of high risk of measles in non-immunised children	26/31	26/31
Participants agreed making people aware of the risk would increase immunisation	31/31	30/32
Taking children for treatment of ARI and Measles		
Reasons why some children who suffer from ARI are not taken anywhere for treatment	*(n=32)*	*(n=32)*
Poverty/too many children	23	25
Health facility too far/no transport	14	9
Lack of awareness/education	14	12
Self medication treat at home	14	7
Prefer spiritual healing/home remedies	13	25
Keep child with measles in isolation/don't take out	9	22
Reasons why some children with measles are not taken anywhere for treatment	*(n=31)*	*(n=32)*
Measles treatment more expensive than ARI	8	13
ARI more dangerous than measles	3	0
Child with measles should not be taken outside	43	42
No treatment needed for measles	7	4
Prefer traditional/spiritual treatment for measles	8	7
No access to health facility	1	7
Lack of awareness/education	8	2

Theme	No. male groups	No. female groups
Reasons for people to prefer private health facilities over government	*(n=32)*	*(n=32)*
No/poor quality of medicines	30	25
Less funds/more patients	40	38
Private doctor are better/give good treatment	15	13
Govt. doctors behave badly/don't give good treatment/ask for money	25	33
Suggestions to help people get their children immunized		
Minimum arrangement that would allow everyone to get their children immunized	*(n=32)*	*(n=32)*
Door to door vaccination through mobile teams	29	25
Temporary vaccination camps/community can provide space/in schools	18	18
Establish small permanent vaccination posts	2	13
Provide transport in areas where no health facility nearby	3	7
Frequency of functionality in case a permanent facility is to be established	*(n=32)*	*(n=31)*
At least once a month or more often	16	25
Less than once a month	16	6
Most appropriate person to communicate and advice people on immunization	*(n=32)*	*(n=32)*
No one in the community/only God can convince	0	2
Doctor/health department	14	21
Community leader/influential/pesh Imam	47	27
Parents/family members	1	15
NGOs/social workers/teams from outside	10	10
Community women to each other	0	5
LHW	3	3
Best way to communicate and advice people on immunization	*(n=32)*	*(n=32)*
Pesh Imam in friday sermon/prayers	14	7
Media/poster/pamphlet	32	22
Community meetings/events	19	11
NGOs/Social workers/trained community members/teachers/teams from outside	16	26
Through doctors/health workers/health facilities	10	19