

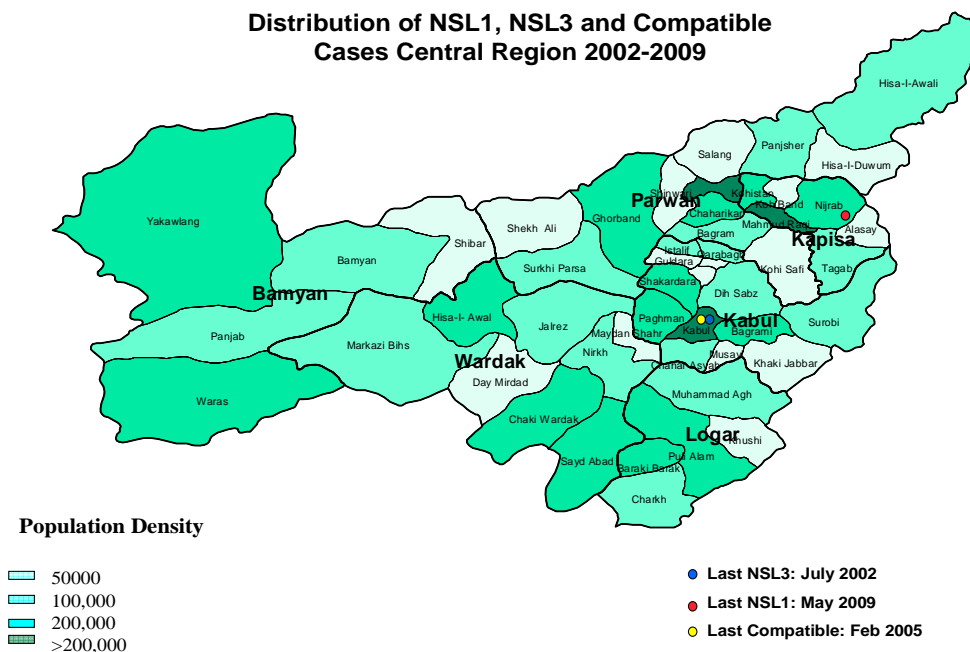
## Epidemiological Investigation Report: Confirmed Poliomyelitis Case (AFG/05/09/098), Nijrab District, Kapisa Province, Afghanistan

This epidemiological investigation was carried out in response to the occurrence of recent case of poliomyelitis (AFG/05/09/098) with isolation of type 1 (NSL1) poliovirus from Nijrab district of Kapisa province, Central Region of Afghanistan. This is the first case of wild polio virus ever isolated from the province of Kapisa since the AFP surveillance system has been put in place in the country.

Central Region, with an estimated population of 8.8 million is subdivided into 6 provinces: Kabul, Kapisa, Parwan, Logar, Wardak and Bamyan (Fig 1). There are 50 districts in the region while 6 districts of neighboring regions are also covered by the Central region due to convenient geographical access of the population to its health services. Kabul, Mahmood Raqi and Jabul Siraj are among the most densely populated districts in the region (Fig 1). The total target of children below 5 years of age in the region is almost 1.76 million.

Before the occurrence of this recent case, NSL1 has never been isolated from any part of the region since 1999. The last NSL3 type of poliovirus was isolated in July 2002, almost 7 years back, from Kabul city while the last compatible case was also reported from Kabul city in February 2005 (Fig 1).

**Figure 1**



A team of two Assistant Regional Polio Officers (ARPOs), one Provincial Polio Officer (PPO) and one District Coordinator had conducted the field investigation. The basic objectives of this investigation were to obtain detail information about the case, its possible source of infection and more importantly, to assess the immunity barrier in the area in order to interrupt the transmission of wild polio virus in the province and thereby in the region by identifying and taking appropriate corrective measures.

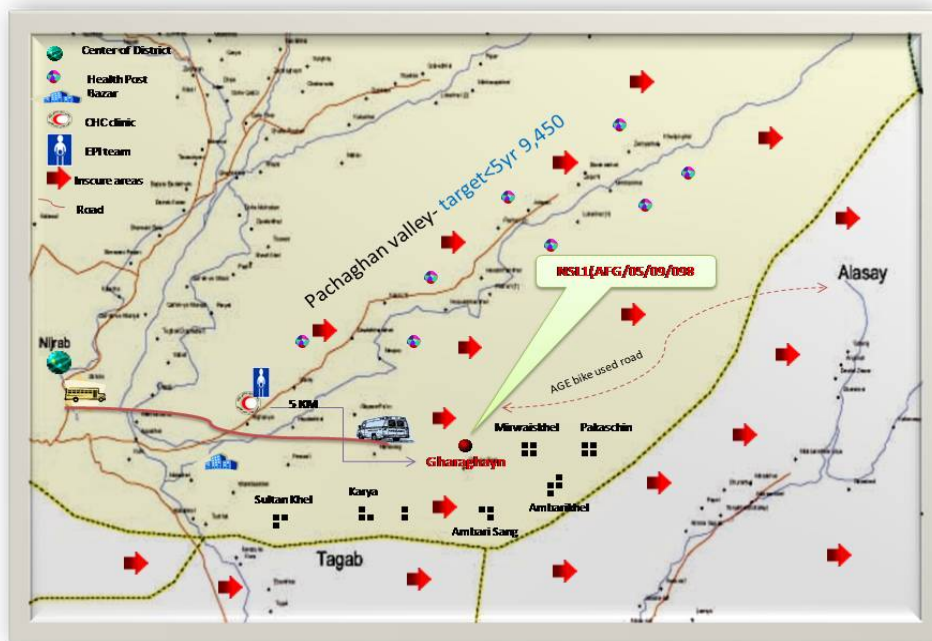
**Area background of Nijrab district:**

Kapisa province is subdivided into six districts with an estimated total target of almost 132,000 children below 5 years of age.

Nijrab is one of the mountainous districts of Kapisa province which is geographically divided into five valleys: Pachaghan, Puta, Farakhsha, Kalan and Ghaus. For NIDs operation, the district is subdivided into 20 clusters and distributed among 94 teams. Health services in this district are provided through one District Hospital, one Comprehensive Health Centers (CHC) and three Basic Health Centers (BHC). The total population of the district is 129,000 while the population of Pachaghan valley, where the index village is located, is 37800 and the target of under 5 years old children in this area is 9450 (Fig 2). The inhabitants of the valley consists of different ethnicities including Pashai, Pashtoon, Tajik and Parach, howeverbut the Pashais are in predominance. Majority of the people are farmers by occupation and generally are poor and lack the basic facilities of life. The main sources of drinking water are streams and springs.

Pachaghan is the most security affected valley in Nejrab district and it borders Alasai and Tagab districts which altogether make one block of seriously conflict affected area (Fig 2). This valley remains under the army operation against the Anti-Government Elements (AGE) from time to time since 2008. Movement of the WHO PPOs is limited to Nijrab district hospital and the nearby clinics and in addition they are also unable to monitor the campaign in Pachghan Valley and its adjoining Tagab and Alasay districts. It is important to mention that at least two rounds of NIDs in 2008 were delayed in Alasay due to army search operations and air strike. The case is a resident of Gharaghin village (Fig 2) with an estimated number of 96 houses. The village is located about 5 kms away from the immediate health facility i.e. CHC, Pachaghan.

**Figure 2**



**Clinical history:**

Sadia, a female child of 30 months of age, had a history of mild fever that persisted for 3 days and was followed by onset of paralysis of right leg on May 21, 2009. One day later she was taken to a CHS (community health supervisor) house who had notified the case and after that the AFP focal point immediately investigated the case. Two stool specimens were collected on May 22 and 23 respectively. The condition of the child had deteriorated and the parents noticed the progression of paralysis to her left leg and also development of weakness in both arms. Father of the child, a teacher and also worked as NIDs volunteer, decided to seek treatment at Indragandhi Institute of Child Health at Kabul, where the child was admitted with the provisional diagnosis of Guillain-Barré Syndrome (GBS).

Due to serious security and the presence of security forces in the area, the investigation team was unable to visit the index village and the family of the child was called to CHC where ARPO examined the child along with the focal point on June 4, 2009 . On examination by ARPO, both lower limbs were found floppy and the upper limbs weak. Muscle power and tone were diminished while the deep tendon reflexes were found significantly sluggish. Sensation of the limbs was normal. The child was in conscious state and able to eat. Clinical examination was suggestive of GBS (Fig 3).

**Figure 3: Sadia, 30 months, first case of type 1 polio virus  
Central Region, Afghanistan, May 2009**



**Collection of specimens from contacts of the index case**

Although adequate specimens were collected from the index case, however because this is the first case in the region, it was suggested to collect a few additional stool samples from the immediate contacts of this case. Key information of five case contacts are given in Table 1:

**Table 1: Information on the immediate contacts of the index polio type 1 case  
Nijrab district, Kapisa, Central Region, Afghanistan, June 2009**

Sr No.	Name of the	Relation with the index case	Age	Sex	No. OPV doses	No. OPV	Travel History in
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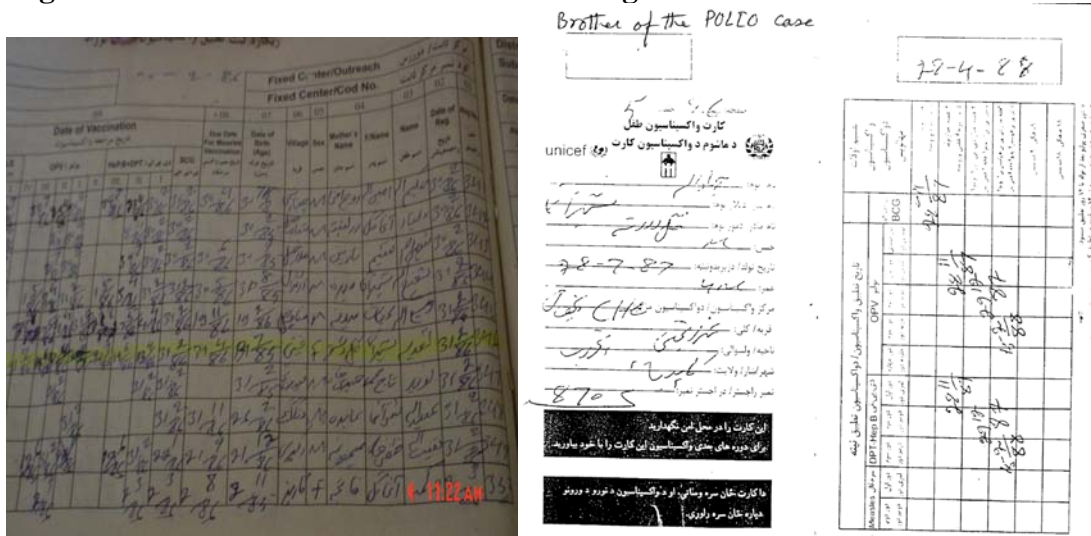
	contact				through routine immunization	doses through NIDs	past .....days
1	A.Ahad	Cousin	36m	M	2	10	No
2	Jahadullah	Brother	07m	M	3	3	No
3	Aisa	Sister	42m	F	3	12	No
4	Khalda	Neighbor	18m	F	0	7	No
5	Malallai	Neighbor	9m	F	2	5	No

**Vaccination history:**

According to history given by father, the child, Sadia had received 3 doses of OPV through routine immunization. Although EPI card was lost but the BCG scar was visible and her name was found with record of receiving all 3 doses of OPV in the EPI register at the fixed center, (Fig 4). Her younger brother had also received 3 OPV doses through routine immunization and his EPI card was made available to the investigation team(Fig 4).

According to the father Sadia received more than 7 doses of OPV at home although he was not able to remember the exact number of doses. Nevertheless, the parents were able to recall that in last 12 months the child had received 4 doses of OPV. Finger mark, although slightly faint, was also observed indicating that she had received OPV dose in the last NIDs that took place in her area on 23 May 2009.

**Figure 4: Index case vaccination record in Register of fixed site and EPI Card of sibling**



**Travel history and population movement in the the village of the index case:**

There is no history of travel by any family member of the case nor any visitor came to their home in the last one month preceding the paralysis except routine visits of neighbors and close relatives living in the same village.

According to the father of the child, one day before onset of paralysis, a student of religious school in Mardan NWFP came to some Rahmatullah’s house that is located next to the house of the index case. The visitor is single and is still living there. Some of the teenage boys from the index village and nearby areas are studying in religious schools/Madrisas of Mardan and Swat in Pakistan. These boys usually came to the neighboring houses and villages. Though limited, yet people and families often visit Kabul to seek treatment, and also for business. There is no Internally Displaced Populations (IDPs) or nomadic settlement in the area.

It is important to mention that although most of the families of returnees, from Pakistan during 2007-08 repatriation, were settled in Eastern Region followed by Kabul and its nearby areas but families are also settled in different parts of Kapisa province, mainly in Mahmood Raqi District. These families have relatives in NWFP Pakistan.

**Vaccination Coverage Surveys in the Area:**

Post campaign assessment coverage surveys in the last four rounds show consistently high OPV coverage of at least 95% in each of the clusters except one cluster in January 2009 round (Table 3).

The investigation team was not able to reach the index village due to security situation and heavy presence of security forces. Team has trained the Focal Point (Dr. Jalil) who is local from the area to carry out household survey in the index case village and two of its surrounding villages as well. The team of ARPO and PPO were able to conduct household survey in Darkai village which is close to the CHC which showed consistent high coverage in last four rounds. In fact, team was unable to find any missed child in 35 children screened in 20 houses. The reported routine EPI coverage for OPV3 for Nijrab district is 75% but

according to the field survey in Darkai village, the routine OPV 3 coverage among children above 6 months of age was 59%, 52 % in index Village (Gharaghin), 32% in Hopari and 30% in Ambarkhail villages.

**Table 2: Household OPV Coverage (%) in the index and surrounding villages as assessed during field investigation, Nijrab District, Kapisa**

Campaign Month	Index Village	Hopari Village	Ambarikhail Village	Dakari Village
Oct 2008	96%	97%	98%	100 %
Jan 2009	96%	97%	97%	100%
Mar 2009	95%	97%	97%	100%
May 2009	100%	100%	100%	100%

**Table 3: Post Campaign Monitoring Results, OPV coverage by round 2008-09, District Nijrab (Kapisa)**

Campaign Month	Total Clusters	Number clusters Evaluated	Total clusters below 95%	Total Sub-Cluster below 90%
Oct 2008	20	16	0	0
Jan 2009	20	16	1	1
Mar 2009	20	16	0	1
May 2009	20	14	0	0

**Cluster level campaign indicators:** The index case lives in cluster 57 of Najrab district in Pachaghan valley. Supervisor and volunteers are the residents of the area. Team 57C covers the index village on 3rd day of campaign according to the microplan which was confirmed by the tally sheet audit. The teams of the cluster vaccinate on average 110-120 children per day. According to tally sheet audit, percent of absent children recoded by team C at back of tally sheets in last three rounds was 3%, 6% and 5% respectively. Door marking of NIDs for last two rounds were visible on the doors of Dakari village located on way to the index village ( we can write something about the door marking of index village itself).

#### **Quality of AFP surveillance**

The surveillance network in the district includes two Focal Points and 16 reporting sites including 3 BHCs (Table 4). Besides these, NIDs volunteers are also trained on reporting of AFP cases to their respective focal points.

Interview with the focal points and health staff reflects good knowledge about AFP surveillance and its reporting among the staff. Record of active surveillance and zero reports was well maintained. Nijrab hospital and CHC Pachaghan were visited regularly by the PPO of Kapisa province, however after his death in a traffic accident in March 2009 (pls correct if I am wrong) these facilities were visited by an ARPO of the Central Region.

Analysis of AFP surveillance indicators by district and by province shows that most of the indicators are up to the mark except predominance of the male cases at provincial level: no female case was reported from Nijrab in 2008. However, male to female ratio in 2009 shows almost equal reporting. Although Sabin Like virus was isolated from the specimens of Nijrab cases in 2008 but in 2009, till to date no non-polio entero virus or Sabin Like virus has been isolated in 2009.

**Table 4: Distribution of surveillance network by reporting sites, Nijrab district**

District	No. Focal Point	No. and type of Health Facilities	No. General Practitioners	No. of Pharmacy	No. of Shrine	No. of Faith healer	Others
Nijrab	2	01 District Hospital 01 CHC 03 BHC	3	5	1	2	2

**Table 5: Comparison of Provincial and District Surveillance indicators 2008-2009**

Year 2008

	Exp	Rep	Detect 7 Day %	ADEQ %	M/F	EV%	SL%	GBS	Med OPV	Med Age
Region	64	290	86	96	175/115	18	4	104	12 (1-26)	39 (1-178)
Kapisa	9	20	90	90	18/2	12	12	7	11 (3-20)	48 (4-168)
Nijrab	1	9	89	100	9/0	0	22	2	14 (3-20)	72 (9-156)

Year 2009

	Exp	Rep	Detect 7Day%	ADEQ%	M/F	EV%	SL%	GBS	Med OPV	Med Age
Region	64	106	89	99	64/42	15	8	30	12 (6-21)	40 (5-168)
Kapisa	9	9	100	100	5/4	0	0	2	13 (9-15)	48 (15-144)
Nijrab	1	3	78	100	1/2	0	0	0	12 (9-15)	72 (9-156)

#### Search for Additional Cases:

Additional cases of AFP were also searched in the hospital record, in the villages during household coverage survey and during interviews with the community people. No additional case was found during the investigation.

#### Discussion/Conclusion

Occurrence of NSL1 type of polio virus from one of the districts of Central region, which previously did not have evidence of poliovirus since last more than 6 years is of paramount importance particularly its isolation in one of the relatively isolated, difficult and security affected area. Main challenge for the program is to assess the immunity level in the area and take appropriate and immediate action to prevent any further spread of the virus.

Although genetic sequencing data is suggestive of an importation having links with NSL1 (B-4A) circulation in Punjab, Pakistan but it is difficult to identify the potential source of infection based on this preliminary epidemiological analysis particularly with absence of travel history or any significant population movement. There can be also different possibilities. There is a possibility that some of the repatriated families from NWFP and few more families, which are not identified during this investigation, might have come to certain parts of this province or district and have introduced this virus with occurrence of this sporadic case. Also there is history of students from this and its nearby areas studying in various religious school in NWFP and they visit their families in this area and might have carried the virus to this area. Secondly, the child belong of Pashai tribe and people of same tribe also living in Laghman, Kunar and Nuristan provinces of Eastern region and, though limited movement, but families travel to various parts of Eastern Region where NSL1 (B-4A) is also isolated, might be another potential source. The possibility of an ongoing transmission not picked up by system remains very low in the presence of a sensitive surveillance system.

Secondly, and more importantly, is to consider the possibility of establishment of this circulation in the province/region. The overall median OPV doses in the region, province and district among AFP cases below 5 years of age ranges between 12-14 during 2008 and 2009. The analysis of post campaign assessment data for the last three rounds and the household coverage survey in the area also shows a consistent quality of campaign. Although this shows presence of an immunity barrier in the area but routine immunization coverage of OPV 3 was 75% (reported) but in the areas surveyed by the team it varied between 30-59% indicating an area of immunity gap in the district. Considering the persistent campaign quality in the area, scattered population, less frequent population movement, the possibility of establishment of NSL1 circulation may not be high. The probability can be further minimized if mop-up with mOPV1 of good quality is implemented. However, the worsening security situation in Nijrab and its surrounding districts of Tagab and Alasai and low routine EPI coverage in the area will pose risk to maintain high immunity level in this area.

#### **Actions Taken:**

- National standing committee meeting was immediately held which was attended by National EPI, UNICEF and WHO perssonel. The situation was reviewed in context to responding the situation, availability of mOPV1 and operation cost.
- A meeting with of Director of Public Health Kapisa was held immediately explaining the situation and suggesting to alert all clinic staff on AFP reporting.
- A team of ARPOs and PPO was immediately formed and went to field for epidemiological investigation.
- After the death of PPO Kapisa in an accident the post was vacant and currently under recruitment process. PPO Bamyar is immediately transferred to Kapisa as his duty station and support the MoPH in PEI activities
- A mop up campaign with mOPV1 is planned from June 21 to target almost 1.3 million children living in Kapisa, Kabul and Parwan provinces.
- Regional team has planned to visit Kapisa and meet with MoPH and other stake holders to explain the situation and discuss actions required to ensure high quality of campaign starting from June 21-23.