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LETTER TO THE EDITOR

**ACUTE DIARRHOEA OUTBREAK IN AMBUNTI DISTRICT IN EAST SEPIK PROVINCE, PAPUA
NEW GUINEA: A CASE REPORT**

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SUMMARY

In late December 2010 ten people from the village of Iniok, in the Ambunti District of East Sepik Province, Papua New Guinea died from acute watery diarrhea within the space of two weeks. This outbreak was reported in the local newspaper as cholera although no laboratory confirmation was made. With logistical support from the Frieda River Project operating in the area, a concerted effort from the project and district health authorities contained the outbreak in two weeks. This case study reflects on the containment of the outbreak, and discusses lessons learnt with future implications.

Keywords: Diarrhoea, Outbreak, Frieda River Project, Ambunti, East Sepik Province.

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INTRODUCTION:

The Frieda River Project is located on the border of East Sepik and Sandaun Provinces about 200.0 km from the coast and about 70.0 km from the Sepik River (Figure 1.0). Frieda River is a tributary of the Sepik River. The Project is a joint venture between Xstrata Frieda River Ltd and Highlands Pacific Ltd. The Frieda River Project is managed by Xstrata Copper [1]. The project is located in one of the most remote areas of Papua New Guinea (PNG). The project is made up of three separate camps with no road links. The Project is operated by helicopter, including the logistics for an extensive drilling campaign. Other

logistical support into the Project site is provided by Twin Otter airplanes and barges that navigate the Sepik River from Lae. The barges dock at Iniok village (10 minutes by chopper) where supplies and machinery are airlifted by helicopter into the project site. During the drilling program, the project employed more than 400 people [1]. The communities affected by the project or will be affected by the project have been divided into three (3) zones. Zone one being six 'project villages' (Paupe, Ok Isai, Wabia, Wamemin 1, Wamemin 2, and Amaromin [2]. Except for Paupe, all villages are in the Sandaun Province.



Figure 1: Map showing location of Frieda River Project site
 Source: *Frieda River Project Sustainability Report 2011* [2]

The Outbreak at Iniok Village:

Towards the end December 2010 an adult male from Iniok village returning from Madang developed acute watery diarrhea, and after one day of being ill was taken to Hauna Health Centre for treatment as he was severely dehydrated. Hauna Health Centre is reachable by motorized canoe and is more than 3 hours away from Iniok village. At the health centre, he

was treated by a volunteer nursing officer who recognized the condition of the patient as a possible case of cholera. The patient died at Hauna Health Centre the same day. Within two weeks of the index case a total of 10 people died, all with acute onset of profuse watery diarrhea. The report of the outbreak quickly got the attention of the PNG media. Below is an article on the cholera outbreak reported in The National newspaper which is one of the major newspapers in PNG.

Cholera in East Sepik spread: By Duncan Willis: The National, Monday 3rd January 2011.

THE cholera outbreak in East Sepik has spread to Ambunti district's Iniok village and neighboring villages from the Tunap sub-district. At least 10 people have been confirmed dead since last Friday with unconfirmed reports of more casualties. Ambunti-Dreikikir district administrator Solomon Hopkos confirmed this last Friday after being alerted by community affairs officers of Xstrata Copper company which is developing the Frieda River copper-gold project in the district. Its helicopter flew health officials and necessary medical drugs from the Burui health centre to the affected communities. "I have mobilised health officials from Maprik and Burui health centres and a medical team has already been sent to the villages by the company's helicopter," Hopkos said. He said he had tried to contact the provincial health office in Wewak but was unsuccessful since everyone was out for the Christmas and New Year holidays. "I have sent them a fax and I am still awaiting their response." District health officer Dominica Wain, who is currently in the affected villagers to assess the situation, said: "As of last Wednesday and Thursday, more people are being affected and the death toll is increasing." Xstrata Copper Company has been assisting the district with logistics while waiting for the government to intervene and assist them to help fight the outbreak. Since cholera is waterborne, contaminated waste in the river will prove fatal because there are many villages along the banks of the Sepik River and it could spread to villages downstream. Hopkos and the district medical team are currently assessing the situation with very little funding and is appealing to the government and Health Department to take action and move in as soon as possible. "I have a VHF radio operating 12 hours a day that we are monitoring constantly with Iniok, but we are requesting provincial and national health support," he said. "Health officials from Ambunti, Burui and Maprik are on the ground and are currently dealing with the situation." [3].

Outbreak Response and Containment:**Initial Response**

When the first death occurred at Iniok, Frieda River Project employees stationed there informed the site management and through the Community Affairs department established communication with the district health authorities to assemble and dispatch a government health team to Iniok. The Ambunti District Health Services assembled a Rapid Cholera Response (RCRT) Team, and with helicopter support from the Frieda River Project the team was dispatched to Iniok to start its initial investigation and control of the outbreak.

The RCRT was made up of a Health Extension Officer (HEO) who was the team leader, two Community Health Workers (CHW) and a Nursing Officer (NO). The team leader and the two CHW were part of the government team that responded to an earlier outbreak in Maprik so were experienced in recognizing cholera symptoms and administering preventative strategies. The project site doctor also worked with the RCRT and provided daily reports to the project management.

Outbreak containment

The outbreak was contained by implementing basic hygiene measures. Specifically, the

following activities were carried out in the affected and high risk villages:

- Encouraging and emphasizing boiling of drinking water.
- Washing of hands with soap before preparing meals and before eating. In addition families were instructed to have meals together with all members of the family present so as not to allow food to be stored away for other family members who were absent during the meal times.
- Covering of food from flies, rats and cockroaches.
- Instructing lactating mothers to wash themselves and their hands before breastfeeding their babies.
- Very strict guidelines to villagers on how to bury dead victims of the outbreak and any contaminated materials. Villagers were instructed to select about five members who were to transport the dead victim to the burial site for burial. The victim was to be buried with his or her contaminated clothes. The handlers' clothes were to be washed in very hot water at the burial site and the handlers were instructed to have a full bath with soap and return to the village in clean clothes.
- The affected villagers were also instructed not to stage a "house krait" (mourning house) for dead victims of the outbreak. Dead victims were to be buried on the same day. And the cultural practice of touching, kissing or throwing oneself on the dead person's body was strictly prohibited.
- Shaking of hands in the village was prohibited.
- All the villagers including children in Iniok, Paupe, Ok Esau and Wabia villages were given prophylactic treatment. Co-trimoxazole was given to children, lactating and pregnant women; Doxycilline was given to all other adults. The regimen was once only according to their weight. Infants under one year were not given these medications.
- Villagers who had diarrhoea with dehydration were treated with intravenous normal saline.

These very basic measures effectively stopped the outbreak. The Frieda River Project also assisted with other necessary logistic support throughout the Government response. Following the Project's outbreak guidelines, and with the recommendation of the project medical team, in-coming employees that were on leave and stayed in the villages during the outbreak were prevented from returning to work until the outbreak was contained and clearance given. This delay had a negative impact on the project's drilling program schedule, but it was an important public health decision that prevented the possible introduction of the disease into the Project's camps. When the employees were allowed to commence work all of them were screened for symptoms of diarrheal illness and in addition given Doxycilline (100mg 12 hourly for 2 weeks) whether they had symptoms or not. None of the workers were quarantined or sent back home.

Ongoing preventative activities and diarrheal illness surveillance:

Cholera awareness and prevention of diarrheal illness in the Project camps is an integral part of induction procedures and weekly health talks. The Project also has a community health program and cholera prevention is an important component of health education in the villages. Community clinics are conducted once every month in the villages by the project medical team. There is also a daily VHF radio schedule that is managed by the community affairs team through which the medical team receives reports and updates of disease trends in the villages. Diarrheal illness in the Project camps is an illness that must be reported; all reports are made to the site medical doctor who notifies the operations manager daily.

DISCUSSION:

It is not known if the diarrheal illness outbreak was cholera. The symptoms were highly suggestive of cholera but no laboratory confirmation was done. The outbreak at Iniok was contained using basic hygiene messages. The quick response to the outbreak site was made possible with logistic support from the Project and is a good example of a private-public partnership to contain disease outbreaks in PNG. The main impact of the disease outbreak on the project schedule was a three

weeks delay in crew change, which subsequently had a negative impact on the drilling program schedule. It was an important public health decision that the Frieda River Project site management made to prevent possible disease introduction and outbreak in the site camps. Operating exploration projects in remote locations in PNG presents unique challenges, one of which is the high risk of infectious diseases. Most companies also recruit unskilled labor from neighboring villages and a disease outbreak in the community has a high possibility of being introduced into project site camps. It is vital therefore to consider these factors and have a public health program to monitor disease trends in the community as well as preventing disease outbreaks in the camps. Monitoring disease trends in communities in the vicinity of a project site in PNG is a vital responsibility of the project medical team. Early signs of disease outbreaks can be detected by active disease monitoring and putting in place procedures for disease reporting. These reports can be used by the project management for timely decision making, planning and allocating resources where needed. Further, having standard operating procedures for responding to disease outbreaks allows a coordinated approach in containing any outbreak. The Frieda River Project response to the Iniok outbreak was done using the site emergency response procedure which allowed proper logistical

support for district health authorities as well as qualified health personnel to travel to the affected village and contain the outbreak. Building good relationships with various stakeholders early in an exploration project is also an important aspect of any project in PNG. The community affairs department of the Frieda River Project had built a good working relationship with Ambunti District government which facilitated easier communication and response from the government.

CONCLUSIONS:

Lessons learnt from this case study can be summarized as follows:

- Infectious disease outbreaks are a threat to exploration project sites and remote locations in PNG and this risk can be managed with risk assessment planning.
- Having an emergency response or epidemic response plan at project will allow a well coordinated response to an outbreak.
- Building relationships with the community and the government is an important aspect to monitor disease

trends and in responding to disease outbreaks.

- Ongoing public health education in project camps, but more importantly in project affected villages, prevents the introduction of diseases from the villages into the project site.
- Disease monitoring in the community near a project site will provide early warning signals of potential disease outbreak in the sites.

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