

Mortality Review: Death of a Four-year-old

Note: This case is part of the regular mortality reviews that Nyaya Health conducts. The rationale behind these reviews is that death is the ultimate arbiter of epidemiological truth and that every death in the catchment area, even if apparently not related to care provided at the clinic, should be reviewed by the staff team. The reports of death will be compiled by staff members and by CHWs. Deaths are analyzed by their proximate causes, as well as their biological, structural, and societal precursors.

Brief Assessment

A 4 year old girl was brought into Bayalpata Hospital ED at approximately 10:30am on 11/6/09 with fever and loss of consciousness by her uncle. The complete history was very vague and difficult to obtain. From various family members, it was determined that she had had fever anywhere from a few days to 1 month. The night prior to presentation, she had episodes of seizures as well and she had lost consciousness to the point that her family had presumed her dead. She started to breathe again, which is when the family decided to bring her to the hospital.

On arrival, she had very labored breathing with a RR in the 70s and severe chest retractions, HR in the 170s and O2 sat in the high 80s. She also produced a large amount of coffee ground-like vomitus. Her physical exam was notable for a pediatric Glasgow coma scale of 8, reactive pupils, crackles and rhochi mid-way up her lung fields. No notable neck rigidity or skin findings. Within an hour of arrival, she had a seizure characterized by clenching of her teeth and tonic-clonic movements of her head and arms.

She was treated for presumed meningitis/encephalitis with Ceftriaxone, Dexamethasone and Diazepam for seizure control. She was also started on IV fluids and given oxygen.

At approximately 4pm, the on-call ANMs took her vitals and noted that she was doing a little bit better. Her RR had slowed down to the 60s, her O2 sat was 92% and her pulse was in the 150s. However, around 4:20pm, family members called for the nurse because the child was no longer breathing. On assessment by a physician, the child was pulseless, without breath sounds and did not have a corneal reflex.

The child was from a village about 4 hours away from the hospital. She lived with her mother and 4 siblings. She was the youngest daughter in the family. Her father was away working in India. She was from the Dalit community.

Top possible causes of death

In the absence of laboratory and autopsy data, it is near impossible to determine the cause of death. Possible etiologies include:

- 1] bacterial meningitis with secondary aspiration pneumonia
- 2] encephalitis
- 3] brain tumor
- 4] seizure disorder with secondary aspiration pneumonia

Systems-level Analysis

Nyaya Health assesses the root causes of mortality within the following levels of analysis.

1) Clinic operations

Staff felt that she was triaged effectively and seen by the physician in a timely manner and with sufficient resources and time to evaluate the patient.

2) Supply chain

In this case, the medicines that staff felt were needed were available. No supply chains issues were identified.

3) Equipment/machinery

a] We do not have ICU level care (with ventilators and resuscitation equipment) which is what the child needed on initial presentation. The closest ICU is in Nepalgunj which is at least a 12 hour bus/ jeep ride away. The cost of the ICU is also prohibitive for most people as it is Rs. 10,000 per day just for a bed.

4) Personnel and Communication

There were no identified gaps in communication between providers.

5) Outreach

Besides the lack of ICU level care, outreach is probably one of the most important systems issues that may perhaps have prevented this death. According to the history, the child may have been sick over the last few weeks but remained at home; the family did not seek any healthcare for her until she lost consciousness. One government FCHV is assigned to each ward but there is no indication that the family sought the services of such a FCHV (female community health volunteer). It is unclear if they even went to a nearby sub-health post. Nyaya currently does not have a community health worker in Budakot. Perhaps if Nyaya had a larger community health worker network or if we had better linkages with the government FCHVs, we would have known about this sick child earlier and she may have presented to the hospital earlier.

6) Societal

If the child really had been sick for a month and the family had not sought care, issues of education and the socio-economic status of family members arise. The child is from the Dalit community which historically has been the poorest and most downtrodden community due to discrimination by higher castes. The child's father was in India, her mother worked in the fields for much of the day (especially in this rice harvesting season). The child was likely in the care of older siblings or extended family members throughout the day.

It was unclear the extent that female children are undervalued in rural Achham played a role in her delays in getting follow-up treatment. We know this to be a common problem, however.

7) Structural

As with so many of our patients, the poor roads and entrenched poverty prevented the family from seeking care at an earlier date.

Final Evaluation and Response

The primary systems issue that likely contributed to this tragedy was the lack of community health care and education which prevented the family from seeking treatment earlier. The lack of ICU level care in Achham and the difficulties of referral to a tertiary center are other systems issues. To prevent similar deaths from occurring in the future, Nyaya Health will consider the following systems-level changes:

1] Nyaya will work on expanding its community health worker program which currently exists in only 8 wards in 3 neighboring VDCs. We will also explore ways in which we can form linkages with government FCHVs, government sub-health posts and health posts in other VDCs as a means of community outreach and education.

2] Nyaya will work on operating an ambulance as soon as our budget allows in order to improve the referral process for very sick patients. For example, in this case, perhaps we would have considered bag-valve-mask ventilation of the child if we knew we had an ambulance on hand to take the child directly to an ICU in Nepalgunj. We may also be able to form linkages with Nepalgunj Medical College so that there is some charity program for the patients that we refer.