



Kanti Children's Hospital, Nepal

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Arohi Balika during treatment in Kanti Children's Hospital

October–December 2018

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Background

Kanti Children’s Hospital is the only government referral level children’s hospital in Nepal and provides medical care to children up to age 14. The targeted number of children to be served directly and indirectly by the hospital is approximately 10,068,900 each year (34.9% of total population, Nepal Population Report, 2016).

The administration of the hospital is overseen by the Kanti Children’s Hospital Development Board, which is an autonomous body under the Ministry of Health. The hospital is heavily dependent on the government for financial support and human resources. Thus, although Kanti Children’s Hospital provides free health services to financially challenged patients, there are always constraints with regard to the availability of funds, which makes it challenging to provide medical support to every child that is referred to the hospital.

RMF’s Presence

Shortly after the April 2015 earthquake, Real Medicine Foundation (RMF) started its support of Kanti Children’s Hospital by donating more than \$400,000 worth of medicines, medical supplies, and laboratory supplies. RMF continues to support a blood bank, lodging, food, transportation, medicines, laboratory services, and other necessities for needy patients and their families. In March 2017, RMF also began supporting human resources at Kanti Children’s Hospital and is now providing the hospital with medical officers who serve in the Surgical ICU and Neonatal ICU, as well as registered nurses who serve in the triage area and Medical ward.

Summary of Activities October–December 2018

- Medical staff members supported by RMF Nepal have continued to serve at Kanti Children’s Hospital.
- Dr. Sanish Manandhar joined our team as an RMF Medical Officer at Kanti Children’s Hospital.
- During the reporting period, 620 patients were treated in the Medical ward, 194 in the Pediatric ICU, 103 in the Surgical ICU, and 480 patients were triaged in the Emergency department.



Dr. Sanish Manandhar, new RMF Medical Officer

Dr. Sanish Manandhar: New RMF Medical Officer at Kanti Hospital

Dr. Sanish Manandhar is from the historic town of Sankhu in Kathmandu. He completed his MBBS at Kathmandu University, Nepal Medical College in 2017. While in medical school, Dr. Sanish gained a wide range of experience at different medical institutions. He participated in health camps in Sindhupalchok after the 2015 earthquake, as well as many other health camps.

Dr. Sanish now works as an RMF Medical Officer in the surgical department of Kanti Children’s Hospital. His main responsibility is providing surgical treatment for the patients, but he also reports to RMF Nepal regarding patients’ diagnoses and treatment.

Pediatric Intensive Care Unit (PICU)

RMF’s medical officers served a total of **194 patients** in the PICU of Kanti Children’s Hospital from October to December of 2018. During this period, sepsis and respiratory diseases had the highest admission rates in the PICU. The total number of patients and their diagnoses are shown in **Table 1**.

Table 1: Number of patients treated at the PICU (October–December 2018)

SN	Diagnosis/Classification	October	November	December	Total
1	Late Onset Neonatal Sepsis (LONNS)	4	6	1	11

2	Sepsis	1	5	6	12
3	Acute Leukemia	1	0	0	1
4	Congenital Heart Disease (CHD)	1	0	2	3
5	Ewing's Sarcoma	1	0	0	1
6	Hepatic Encephalopathy	1	0	0	1
7	Birth Asphyxia with Sepsis	1	0	0	1
8	Meningoencephalitis	1	1	0	2
9	Bronchopneumonia	1	1	0	2
10	FTT with Sepsis	1	0	0	1
11	Meningitis	4	3	1	8
12	Pericardial Effusion	2	0	2	4
13	Pneumonia in RD	6	6	14	26
14	Down's Phenotype	2	1	2	5
15	Status Epilepticus	2	2	1	5
16	ACHD with Pneumonia	4	2	1	7
17	AGE with Moderate Dehydration	0	0	0	0
18	Septic Shock	2	1	0	3
19	CHD in RD	1	1	0	2
20	Sepsis with Coagulopathy	1	0	0	1
21	GDD with Sepsis	2	0	2	4
22	CCHD with Pneumonia	1	4	1	6
23	Bronchiolitis in RD	2	1	7	10
24	Rheumatic Heart Disease (RHD)	1	0	0	1
25	Tubular Pericarditis	1	0	0	1
26	Seizure Disorder	1	0	3	4
27	Acute Encephalitis Syndrome (AES)	1	0	1	2
28	Lymphoma	1	1	0	2
29	Right-Sided Hemiparesis with Seizure Disorder	1	0	0	1
30	Hepatic Encephalopathy	1	0	1	2
31	Nephrotic Syndrome	1	0	2	3
32	Disseminated Intravascular Coagulation (DIC)	1	0	0	1
33	Sepsis with RTA with FTT	1	0	1	2
34	Acute Lymphoblastic Leukemia (ALL)	1	1	2	4
35	Pancytopenia	1	1	0	2
36	Nephritic Syndrome	1	0	0	1
37	Neuroblastoma	1	0	0	1
38	PSGN	0	2	0	2
39	DORV r/o IE	0	2	0	2
40	Bycypopenia	0	1	1	2
41	CHD in Sinus Rhythm	0	1	1	2
42	Nephropathy	0	2	0	2
43	Complex Febrile Seizure with Brucella	0	1	0	1
44	AGE with Severe Dehydration	0	2	7	9
45	Aspiration Pneumonia	0	1	1	2

46	Cardiogenic Shock	0	1	0	1
47	TB under ATT in RD	0	1	0	1
48	Complex Febrile Seizure	0	1	0	1
49	Sepsis with Acute Kidney Injury (AKI)	0	2	0	2
50	Wilms Tumor Stage IV	0	1	1	2
51	Portal Hypertension	0	1	0	1
52	Fanconi Anemia	0	1	0	1
53	Subcutaneous Emphysema	0	1	0	1
54	Type I Diabetes	0	1	0	1
55	Idiopathic Thrombocytopenic Purpura	0	1	0	1
56	Hydrocephalus	0	0	1	1
57	TBM/Splenic Abscess	0	0	2	2
58	Pertussis-like Illness	0	0	2	2
59	Unknown Substance Poisoning	0	0	1	1
60	HIE with Hypothyroidism	0	0	1	1
61	K/C/O Beta Thalassemia in RD	0	0	1	1
62	Upper Gastrointestinal (UGI) Bleeding	0	0	2	2
63	Rhabdomyosarcoma	0	0	1	1
64	Acute Glomerulonephritis (AGN)	0	0	1	1
65	T-NHL Relapse	0	0	1	1
66	BA with AE	0	0	2	2
67	Croup in RD	0	0	1	1
68	Kala-Azar	0	0	1	1
	Total	56	60	78	194

Surgical ICU

RMF medical officers have served a total of **103 patients** in the Surgical ICU of Kanti Children's Hospital, from October to December 2018. The most common disease treated in the SICU was anorectal malformation (ARM), followed by Hirschsprung's disease, both of which are congenital disorders that affect the digestive system. The monthly number of patients and their diagnoses are shown in **Table 2**.

Table 2: Number of patients treated at the Surgical ICU (October–December 2018)

SN	Diagnosis/Classification	October	November	December	Total
1	Anorectal Malformation	9	7	6	22
2	Hirschsprung's Disease	2	4	6	12
3	Gastroschisis	0	1	2	3
4	Omphalocele	0	4	2	6
5	Tracheoesophageal Fistula	3	4	2	9
6	Infantile Hypertrophic Pyloric Stenosis	5	2	3	10
7	Duodenal Atresia	2	3	0	5
8	Jejunal Atresia	1	0	0	1
9	Ileal Atresia	2	1	2	5
10	Subacute Intestinal Obstruction	4	3	2	9
11	Intussusception	1	4	2	7
12	Malrotation	0	1	0	1

13	Thalassemia (S/P Splenectomy)	0	0	1	1
14	Diaphragmatic Hernia	0	1	1	2
15	Appendicular Perforation	0	2	0	2
16	Sacrococcygeal Teratoma	0	0	2	2
17	Ovarian Mass	0	1	0	1
18	Choledochal Cyst	1	0	0	1
19	Patent Vitello-intestinal Duct	0	0	1	1
20	Bladder Exstrophy	1	0	0	1
21	Burn	2	0	0	2
	Total	33	38	32	103

Emergency Unit Triage

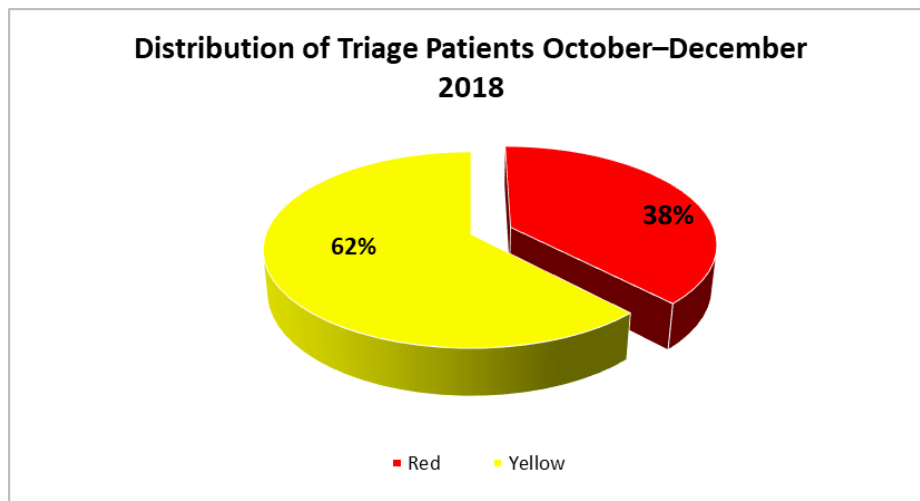
RMF nurses use a triage system while serving in the Emergency Unit of Kanti Children’s Hospital. Through this system, they classify and provide tags to the patients: code red requires immediate medical action for survival, code yellow indicates a serious but not life-threatening condition, code green indicates a less severe condition that can wait, and code black means dead on arrival. In the triage section of the Emergency Unit, patients are sent to the respective color zone for treatment, generally either the red or the yellow zone.

From October to December 2018, RMF nurses triaged a total of **480 patients**, with 182 code reds and 298 code yellows. **Table 3** shows the age groups and classifications of patients managed during the reporting period. **Chart 1** shows the distribution of classifications in the triage area during this period.

Table 3: Number of patients triaged (October–December 2018)

Age	October			November			December			Total		
	Red	Yellow	Total	Red	Yellow	Total	Red	Yellow	Total	Red	Yellow	Total
0–28 Days	37	15	52	7	39	46	4	29	33	48	83	131
29 days–1 year	38	15	53	5	50	55	8	29	37	51	94	145
2–5 years	39	10	49	8	33	41	2	19	21	49	62	111
5–10 years	18	2	20	2	28	30	5	11	16	25	41	66
10+ years	3	4	7	4	8	12	2	6	8	9	18	27
Total	135	46	181	26	158	184	21	94	115	182	298	480

Chart 1



Children 29 days–1 year of age had the highest admission rates in the Emergency Unit, followed by children aged 0–28 days (neonates). This reflects the high infant mortality rate in Nepal, which is 32 deaths per 1,000 live births, as well as the neonatal mortality rate, which is 21 per 1,000 live births. ([Nepal Demographic Health Survey, 2016](#)).

Medical Ward

From October to December 2018, a total of **620 patients** were admitted to and treated in the Medical ward. Among them, 221 patients were female and 399 were male. Children under 1 year of age had the highest admission rates, followed by children 6–12 years of age. The most common conditions treated in the Medical ward were cardiovascular, followed by respiratory diseases. The number of patients by age is shown in **Table 4**, while patients' disorders and diagnoses are shown in **Table 5** according to systems of the body, and the number of patients by sex is shown in **Table 6** and illustrated in **Chart 2**.

Table 4: Medical ward patient numbers by age (October–December 2018)

Age	October	November	December	Total
< 1 year	67	32	49	148
1–3 years	42	29	35	106
3–6 years	28	31	52	111
6–12 years	57	41	33	131
>12 years	42	43	39	124
Total	236	176	208	620

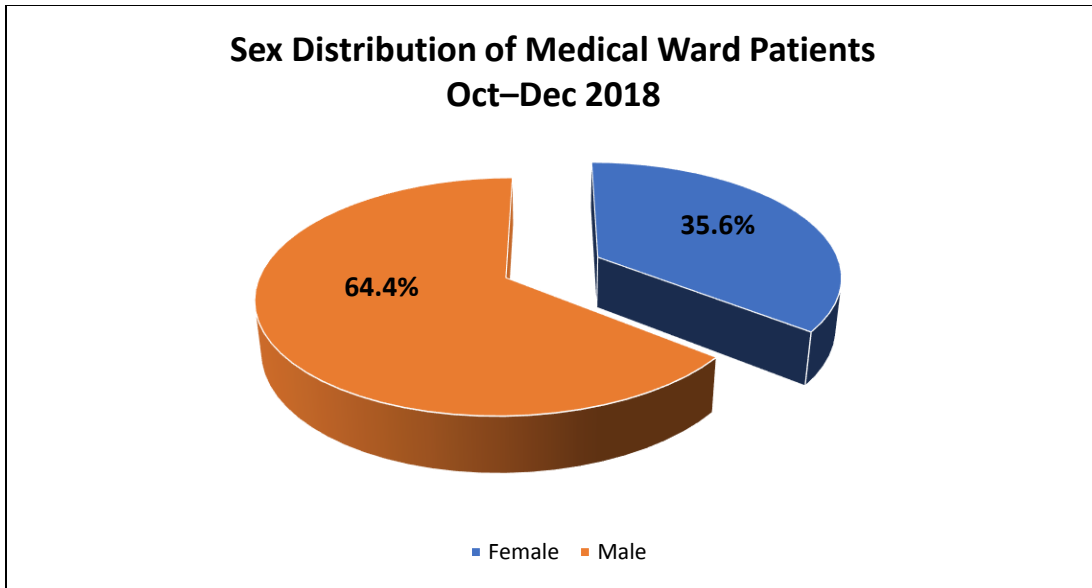
Table 5: Diagnoses per system of the body for patients admitted to the Medical ward (October–December 2018)

SN	System of the Body	October	November	December	Total
1	Respiratory	76	36	55	167
2	Cardiovascular	70	39	69	178
3	Gastrointestinal	24	18	17	59
4	Urinary	32	60	33	125
5	Nervous	15	12	17	44
6	Endocrine	2	0	2	4
7	Musculoskeletal	2	3	4	9
8	Chromosomal	3	1	2	6
9	PEM	7	3	5	15
10	Other	5	4	4	13
Total		236	176	208	620

Table 6: Male and female patients treated in the Medical ward (October–December 2018)

Sex	October	November	December	Total
Male	149	110	140	399
Female	87	66	68	221
Total	236	176	208	620

Chart 2



399 patients out of 620 were male, which shows that the male admission rate was approximately 1.5 times that of female admissions. This could indicate that parents are more likely to engage in health seeking behavior for boys, or it could imply that boys face greater vulnerability to diseases.

Success Stories

1. Baby of Ambika Devi Receives Emergency Treatment for Sepsis

Ambika Devi’s baby was received as a referral case from Narayani Sub-Regional Hospital, Birgunj. According to the father, the child was admitted to the NICU immediately after a cesarean section birth due to respiratory problems. The reports showed that the child was admitted there for respiratory distress and was referred to Kanti Children’s Hospital when his condition did not improve despite intensive care. The baby had a temperature of 101°F, a heart rate of 100 breaths/minute, and oxygen saturation of 84% with oxygen therapy via headbox. The patient was screened for sepsis and, after a consultation, transferred to the NICU with a provisional diagnosis of sepsis with respiratory distress. RMF Nurse Nirjala competently classified the patient as a code red case and sought the immediate attention of the doctor on duty.



Baby of Ambika Devi in the Emergency department of Kanti Children’s Hospital

2. Anshika Mishra Diagnosed and Treated for Intussusception

Anshika Mishra, an 8-month-old girl, was admitted to the Emergency Department with non-bilious vomiting for 4 days, as well as abdominal distension. She had also been passing stool containing blood and mucus for 3 days.



Anshik Mishra in the SICU on the 2nd postoperative day

RMF Medical Officer Dr. Sanish provided the surgical consultation for the patient. A rectal examination revealed signs of intussusception, a type of intestinal obstruction, leading to a provisional diagnosis. All baseline laboratory investigations were sent, and an abdominal and pelvic ultrasound was done. The results of the ultrasound also suggested intussusception.

Anshika was admitted, and surgery was planned on that very day. Once a blood transfusion was arranged, the patient was shifted to the Operating Theatre, where an exploratory laparotomy (an investigative surgical procedure) was performed. An ileoileocolic intussusception was found and manually reduced, and an appendectomy was also performed. All three surgeries went as planned and were performed successfully.

Anshika was then transferred to the Surgical ICU. Her postoperative days were uneventful, and once she started eating, she was transferred to the Surgical ward on the 5th postoperative day. She was soon discharged with oral medications. Anshika's parents were glad to have their daughter treated at Kanti Children's Hospital, happy about the successful operations which saved their child's life, and grateful to all the hospital staff.

3. Kriti Maya Magar Managed for GDD-Related Seizures

Kriti Maya Magar, a 1-year-old girl, was admitted to the Medical ward with a diagnosis of global developmental delay (GDD) with left-sided hemiparesis, or weakness on one side of the body. She was well until one day prior to admission, when she developed a high-grade fever and abnormal body movements, including the rolling of her eyes and salivation during the febrile episode. As a result of her condition, Kriti's parents took her to the nearest hospital, and she was referred from there to Kanti Children's Hospital.

After stabilizing the child in the Emergency Unit and keeping her under observation for 24 hours, hospital staff transferred Kriti to the Medical ward. RMF Nurse Rusa attended the case and also thoroughly answered questions for Kriti's parents. At the time of admission to the Medical ward, Kriti was weak and required oxygen inhalation.



She was kept under close observation because she had a history of seizures. During hospitalization, Kriti had 3 more seizures, which were immediately managed by hospital staff. Her parents were continuously informed of and counseled on the condition of their child. When Kriti's condition improved, she was discharged and advised to visit the neurologist for a thorough consultation and further treatment.

Kriti Maya Magar in the Medical ward

4. Jenisha Bhat Diagnosed with Scrub Typhus



Jenisha Bhat suffering from scrub typhus

Jenisha Bhat, a 4-year-old girl, was admitted to the Medical ward. According to her caregiver, Jenisha was well until 8 days prior to admission, when she developed a fever (temperature not recorded), abdominal distension, and generalized swelling of the body.

RMF Nurse Rusa received the child during admission and noted that her condition was very poor. When her laboratory tests were done, Jenisha tested positive for scrub typhus, and her treatment was planned accordingly. The Department of Epidemiology was informed about the case, and records were kept. Jenisha's parents were advised to maintain hygiene in the home in order to prevent rodents, which are the carriers of the ticks that transmit scrub typhus to humans.

5. Shriya Deula Tested and Treated for TB

Shriya Deula, an 11-year-old girl, was admitted to the Medical ward with a diagnosis of disseminated tuberculosis. According to her caregiver, Shriya was well until 1 month prior to admission, when she developed a cough, a sudden-onset fever that worsened at night, abdominal pain associated with decreased appetite, weight loss from 28 kg to 24 kg within a month, and vomiting.

Initially, Shriya was taken to local health facility, where some medications were prescribed, but her condition worsened. Shriya's father then decided to bring her to Kanti Children's Hospital. After receiving the child at Medical ward and obtaining her medical history, RMF Nurse Rusa suspected tuberculosis. Thus, she maintained all the necessary precautions and alerted the other nurses. Finally, Shriya's AFB test results were positive, which confirmed her TB diagnosis. She was treated with antibiotics and antitubercular treatment (ATT). When her condition improved, she was discharged. Nurse Rusa counseled Shriya and her parents to strictly follow the ATT treatment instructions.



Shriya Deula

6. Laxman Joshi Diagnosed with Duchenne Muscular Dystrophy

Laxman Joshi, a 6-year-old boy from Dhangadhi, arrived at the Outpatient department (OPD) on October 20, 2018 with bilateral swelling of the calf muscles and difficulty standing properly after sitting. According to his father, Laxman's calf muscles first began to show signs of bilateral swelling 2 years ago. The condition began suddenly and worsened progressively, but his biceps muscles were not affected.



Laxman Joshi and his father

The patient had no history of loss of consciousness, acute bacterial meningitis, or surgical intervention, and no similar family history on his maternal side. Basic laboratory tests were done, such as total blood count, inflammatory markers, ECHO, creatine phosphokinase (CPK) to check for Duchenne muscular dystrophy (DMD), and a brain and spine MRI. All reports were in the normal range except for the CPK, which was prominently high, confirming Laxman's diagnosis of Duchenne muscular dystrophy, an incurable neuromuscular disorder which mainly affects males.

At the time of Laxman's discharge, hospital staff recommended that the child receive the necessary immunizations, including meningitis, Pneumovax, Hib, and varicella. They also suggested physiotherapy and provided some multivitamins and calcium tablets. Laxman was advised to return for regular follow-ups. Finally, hospital staff discussed the possible outcomes of the disease with Laxman's father.