

File Form 654

Digital X-Ray machine for IMPACT Bangladesh's community hospital in Chuadanga District Final report for the Eagle Foundation – February 2024

Donor name: Fondation Eagle

Fondation Eagle reference: FF 654

Name of Charity: IMPACT UK

Introduction: This grant from Fondation Eagle was for a much-needed replacement X-ray machine for IMPACT Bangladesh's (IFB) new community hospital in Chuadanga, which opened in October 2022. The existing 19-year-old machine been moved from their old hospital site but was no longer fit for purpose. It frequently broke down and was no longer cost effective to repair. Most concerning of all, was the low-quality imaging produced. High quality radiology services are essential in any modern hospital setting and used by every department, so IMPACT Bangladesh is extremely grateful that your grant has enabled them to purchase a brand new DRGEM high frequency digital radiography X-ray machine. We are pleased to report that there has been a three-fold increase in the number of patients benefiting from IFB's imaging services since the machine was installed.

Date of grant accepted: 16/12/2022 (funds received by IMPACT UK 23/12/2022)

Amount: GBP 26,817

Conversion rate, date & amount in local currency: BDT 3,645,583 Exchange rate 1GBP = 135.943 BDT (08/06/2023)

Expenditure: GBP 26,802

Amount remaining: There was an underspend of GBP 15 as detailed in the budget note below.

Name and exact location of the project: IMPACT hospital and diagnostic centre, Kedargonj, Chuadanga District

Period of Project: 23/12/2022 – 23/12/2023

Project beneficiaries: 2,513 people to date. 35,000 people are expected to benefit over the equipment's lifespan



IFB's radiographer, Rafiqul Alam, preparing a young patient for an x-ray procedure

Details of the project: Chuadanga in southwestern Bangladesh is a district of 1.1 million people bordering the Indian state of West Bengal. Around three-quarters of the population live rurally, with most dependent on agricultural livelihoods. A high proportion are landless, with limited access to modern farming technology. *'Being situated in the border region, our district is located faraway from major regional and national cities and this is one of the reasons for the poverty here. Other factors include a lack of economic diversity, lower public and private investments and limited political attention'* – IMPACT Bangladesh.

IMPACT has been working in the area since 2002, starting with a small hospital set-up which expanded over the years into a 50-bed facility to meet growing demand from the local community. Wider activities include an extensive rural health and development programme including village health clinics, maternal health projects and action to combat malnutrition. By 2016 the IMPACT hospital site had reached peak capacity and work started on a much larger new hospital, near to the existing premises. This opened in October 2022. The X-ray department was relocated and the newly built, modern location brought into sharp focus the urgent need for upgraded imaging equipment. We are so grateful to Fondation Eagle for enabling this to happen.

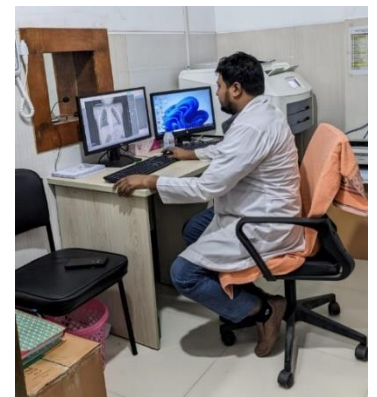
'Our new hospital was initially equipped with instruments from our previous hospital site but our X-ray machine was very old and the imaging quality had deteriorated over time. It was no longer fit to meet the needs of our high volume of patients. This newly installed equipment will strengthen the capacity of our hospital services to detect disease and for us to provide services to the many communities stricken by poverty in the area. Our aim is to break the cycle of disability and poverty by providing comprehensive healthcare service to the poorest people. Thank you for supporting this aim.' IMPACT Bangladesh

Radiology plays a vital role in any modern hospital setting for diagnosing disease; monitoring ongoing therapies; and determining the extent of injuries. The latter function is especially important in a region where so many people are dependent on physically demanding jobs for their livelihoods and where road traffic accidents are a leading cause of fatality and serious injury. High quality imaging is also critical for diagnosing many of the medical conditions associated with low socio-economic living conditions, such as overcrowding and exposure to dust, dirt and allergens – all responsible for the high incidence of respiratory disease and ENT infections.

The new Eagle-funded x-ray machine was installed by technicians in May 2023. The DRGEM high frequency model procured by IFB was imported from Korea via one of their trusted medical suppliers (PSM Enterprise in Dhaka). Their engineers also delivered and installed the machine. It came complete with the following components: generator; x-ray tube; tube stand; patient table; bucky stand (a device used in radiology to improve the quality of images); flat panel detector; and dry film imager. The primary advantage of the new x-ray machine over the older model is that it produces far superior images of 500 milliamperre per second (mAs), compared to 200 mAs previously. The improved quality for diagnostics is greatly appreciated across all the departments of the hospital. And because the images can be digitally transmitted, it has opened up opportunities for IMPACT's medics to liaise electronically regarding the most complex cases with experienced radiologists and imaging consultants in Dhaka.



The new x-ray machine during installation and in-situ



In the first six months of installation, 2,513 people have benefited from imaging services for a wide-range of chronic and acute medical conditions. Into the future, we anticipate that 3,500 people will benefit each year.

The new machine is much more accurate for making clinical decisions, as X-ray technicians can change an image’s optical density and enlarge it, there is also less processing time involved. For both these reasons, the number of patients benefiting from imaging services at IFB’s hospital has increased considerably since May 2023. Now, most patients can be examined on site, whereas previously IMPACT had to refer more complex cases to services in neighbouring districts, such as Kushtia or Khulna. Due to the costs involved, the poorest patients would only ever do so in case of emergency.



Nurse Nasreen prepares a young patient for her procedure

Because of the speed and accuracy of the new machine, it also means that patients are exposed to radiation for shorter periods, and are less likely to be called back for a second x-ray. Indeed, newer x-ray machines, such as this model, produce 80% less radiation than the more traditional machines.

Table showing the number and type of x-rays performed using the old and new machine over six-month periods:

	After Installation of the new x-ray equipment (June-December 2023)	With the conventional x-ray equipment (December 2022-April 2023)
Male	827 (33%)	125 (16%)
Female	1,061 (42%)	423 (52%)
Children (U-5)	625 (25%)	252 (32%)
Total	2,513	800

	After Installation of the new x-ray equipment (June-December,2023)	With the conventional x-ray equipment (December 2022-April,2023)
Chest complaints	97 (4%)	12(1.5%)
Orthopaedic/clubfoot patients	627 (25%)	120 (15%)
Tonsil	149 (6%)	46 (5.8%)
ENT patients	1100 (44%)	522 (65%)
Lower back pain patients	280 (11%)	78 (9.8%)
Other	260 (10%)	22(3%)
Total	2,513	800

The ‘other category’ includes various conditions such as fractures and infections; arthritis; osteoporosis; heart inflammation; digestive tract problems; and swallowed items.

Staff testimonials

All three of IMPACT Bangladesh's hospitals employ a fully qualified, onsite radiographer, with a government recognised qualification and at least five years of work experience.

Rafiqul Alam is the lead radiographer at IMPACT's

Chuadanga hospital: *'Previously we had an old model X-ray machine, but the new digital machine produces higher-quality images, with greater details and contrast, helping the consultants and doctors in easy diagnosis of various medical conditions. Also, the new machine generates online X-ray reports, so we can share with experts elsewhere more easily and keep more accessible patient records. In addition, the new X-ray machine produces imaging in a shorter period which has increased the efficiency of the department. We express our sincere gratitude to the donor for the digital X-ray machine that has last but not least added to patient satisfaction.'*



Rafiqul using the new X-ray machine



Dr. Zayma Jarnaj (Senior Medical Officer): *'We had an old version of the X-ray machine at our hospital before this equipment was kindly donated. The new equipment helps in the easy diagnosis of illness of patients, which has led to an increase in patient satisfaction and a more efficient disease identification. On behalf of the IMPACT Chuadanga hospital medical staff, I thank the donor for the generous donation of this digital X-ray machine at our hospital.'*

Dr. Tamanna Jannat (Medical Officer): *'It was not possible to identify the exact problem of the patients with the old machine, as it could not produce sufficiently sharp and detailed x-ray images. Sometimes, I had to ask them for another round of X-rays. It was time-consuming, as well as bothersome for the patient also. I am especially pleased with the enhanced quality for the early detection of osteoporosis. Women from low socio-economic background in this region are so burdened with household activities and running small business, like grocery shop or a tea stall, etc., they pay little attention to their nutrition needs and this affects bone health in later life and*



contributes to a deterioration in the health condition as they age. Early detection helps to reduce future complications, which has been possible due to the new x-ray equipment.'



Dr. Mohammed Rabbi (Medical Officer): *'The sharpness of the x-ray imaging has made it easier for accurate identification of patient problems. Such facility is not available elsewhere in our district, so we have more patient flow to the hospital now, as well as increased patient satisfaction. It feels good to see that patients leaving for their home from the hospital with a smiling face!'*

The individual IMPACT – patient stories:

'Selina (8) is from Daulatpur Upazila. Her parents- Sanaullah and Sabrina brought her to our hospital in Chuadanga with complaints of sore throat and pain. Sanaullah runs a local tea shop at Daulatpur. Little Selina has been suffering from cold and throat soreness for two months. Sanaullah has consulted many local doctors in his vicinity, but there was no noticeable improvement in Selina's condition. One of his neighbors suggested taking his daughter to the IMPACT hospital for treatment. Our ENT specialist examined the little girl and advised throat x-ray imaging. The report suggested that Selina has swollen and inflamed tonsillitis. The doctor prescribed antibiotics and other necessary medications for Selina. Sanaullah returned with his daughter two weeks later at the hospital. He expressed his joy and gratitude for the treatment of his daughter. Quoting Sanaullah, "I have seen many doctors near our home. No one could diagnose the problem. The hospital has advanced equipment that helps in the identification of the actual problem. My daughter was in extreme pain for the last few days. It is a relief now that her tonsil problem has been cured.'

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'Morioum (10) had been suffering from shortness of breath, fatigue, and chest pain. These complications sometimes worsened with more severe symptoms like fainting, occasional dizziness, and producing unusually loud sounds when the heart beats. Her parents brought their daughter to see our pediatrician. After blood tests and an x-ray, it was found that Morioum has a serious condition called cardiomyopathy, which stiffens the heart muscles. This will require ongoing treatment and monitoring throughout her life – and potentially surgery and extensive medication in the future. Thankfully she is now under the good care of our cardiology department'

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'Kulsum lives with her son who runs a small grocery shop in the vicinity. She came to our hospital with complaints of pain in her pelvic region for a few months. Kulsum's son managed to accompany her to the hospital. After examination and recording her medical history, the doctor suggested an x-ray of her pelvis. Kulsum said, "I did X-rays multiple times before at the the old IMPACT hospital across the street. There, the x-ray procedure was lengthy. Here, the equipment seems so advanced. The doctor examined my pelvic X-ray and observed that I had swelling in my pelvic area. He prescribed me some medications and asked me to have them whenever I was in pain and distress. Additionally, the doctor also advised me to avoid standing for a long period. But I am poor and help run



our small grocery shop, so it is not possible to always sit down but I will try. I am happy that my problem has been diagnosed easily. We were afraid that we would have to travel to another district to seek treatment. We cannot keep our shop closed as our family depends on the earnings from the shop.' IMPACT Bangladesh

'Shohag (56) is a farmer who lives at Jibon Nagar. He came to the hospital with breathing complications. He said, "I was having difficulties breathing. I did not know what caused such discomfort. I discussed it with my son who brought me to the hospital. I saw a doctor at the hospital. He examined my vitals and suggested an x-ray. Accordingly, I had my x-ray imaging done. It was done in one go and did not take much time and the report was generated straight away. The doctor informed me that I was suffering from pneumonia. He prescribed medications, and also asked us for a follow-up visit after seven days. I visited the doctor again. He recommended another x-ray of my chest. Seeing the results of my chest x-ray, the doctor advised me to continue the medications. Further, he told me to have another chest x-ray after two weeks. After seeing the results, he told me that my condition had finally resolved. I am advised to eat healthier foods and plenty of water. I am very happy to have received such advanced facilities at the hospital. The x-ray imaging was done swiftly which helped in early identification of my condition." IMPACT Bangladesh



Thank you Fondation Eagle. This gift of an X-ray machine could not have been timelier for IMPACT Bangladesh, just after they opened their new hospital. Every department of the hospital will benefit from the updated technology, and over the course of the equipment's ten-year lifespan, we expect approximately 35,000 people patients to benefit. We are so grateful for your vital partnership.



From this...
....to this! Thank you.



Expenditure

Item	Budget GBP	Budget BDT	Expenditure GBP	Expenditure BDT
Digital X-Ray Machine (GXR-S series)	25,540	3,471,984	29,939	4,069,997
Project Management @ 5%	1,277	173,599	1,277	173,599
Sale of old x-ray machine for scrap	-	-	-4,414	-600,000
Grand total	26,817	3,645,583	26,802	3,643,596

BDT 3,645,583 Exchange rate 1GBP = 135.943 BDT (08/06/2023)

Budget note: There was an overspend of GBP 4,399 on the x-ray machine due to currency fluctuations and rising costs of transportation between the time of the initial quote and the purchase point. This was counterbalanced by the sale of the old machine for lucrative scrap, which results in an overall underspend of GBP 15. This will be returned to Fondation Eagle.