# IPOPI PIDetect 2022: Enhancing Diagnostic Abilities in Bangladesh

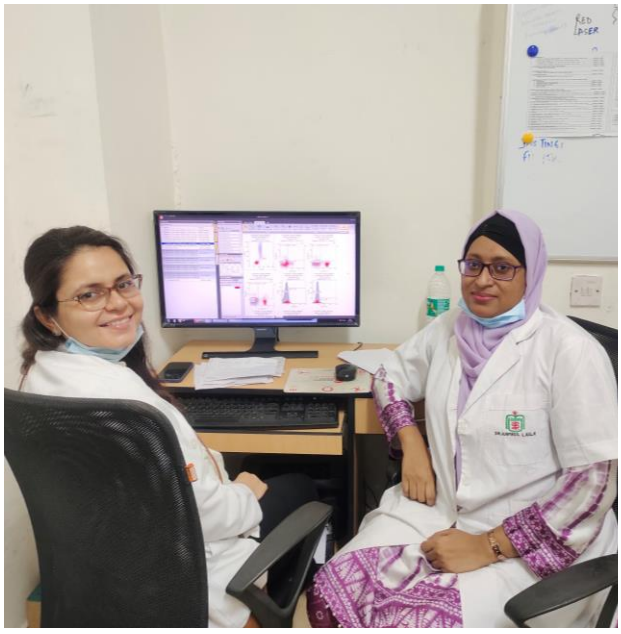
Primary immunodeficiencies (PIDs) are believed to affect around 6 million people worldwide, but 70 to 90% of patients do not have access to proper care. The key factor behind these numbers is a low diagnosis rate, particularly in low- and middle-income countries (LMIC). To address this problem, IPOPI has launched the PIDetect programme, which provides intensive training to selected doctors from LMIC to improve their skills in recognising and diagnosing PIDs. The programme is hosted in a PID reference centre and is aimed both at clinicians and laboratory scientists with an interest in PIDs. It comprises intensive clinical and/or laboratory training tailored to the individual needs and background of each attendee, followed by a local implementation activity whereby the acquired expertise is shared more widely with doctors in the target country.

Dr Laila Kamrul, Dr Ismet Nigar and Dr Chandan Roy, healthcare professionals under guidance of Prof Mohammed Imnul Islam at the Bangabandhu Sheik Mujib Medical University (BSMMU) in Dhaka, Bangladesh, took part in the 2022 IPOPI PIDetect program, with actual training taking place from 2022 to 2024. During their participation, they received four weeks of clinical and laboratory diagnostic training provided by Prof Surjit Singh and his team at the Chandigarh Post Graduate Institute of Medical Education and Research, (PGIMER) India.

**PID diagnostics and care in Bangladesh**

*We need skilled resources to build a vibrant health sector on to detect and treat PID cases in the coming years– Dr Laila Kamrul*

The BSMMU university hospital in Dhaka where the three medical professionals are employed is the only tertiary care centre in Bangladesh, a country counting 170 million inhabitants, regularly receiving suspected PID cases. The current methods used for PID diagnosis are based on family history, use of the ten PID warning signs, few immunological laboratory tests and most recently limited DNA sequencing. Using this approach, 70 patients have successfully been diagnosed with PID since 2012. The doctors describe the environment for PID patient care in Bangladesh as challenging due to the limited laboratory facilities and the high cost of specific management, such as for the use of intravenous immunoglobulin therapy. At present, hematopoietic stem cell transplantation is not available as a treatment option for PIDs in Bangladesh.



*Dr Laila Kamrul (right) acquiring new flow cytometry skills.*

**Training content and learning environment**

*Prof Surjit Singh is very much supportive of the foreign trainee – Dr Ismet Nigar*

*The learned techniques will help me to perform the laboratory tests for the diagnosis of PID with confidence and quality – Dr Chandan Roy*

As a paediatrician, Dr Kamrul had the opportunity to observe and manage a variety of PID cases, both in inpatient and outpatient settings. During her training, she learned about new diagnostic techniques and investigations that are not currently available in her home country. She was exposed to a wide range of PIDs which she had never encountered before. These included leukocyte adhesion deficiency (LAD), severe congenital neutropenia (SCN), cyclic neutropenia, autoimmune lymphoproliferative syndrome (ALPS) and familial hemophagocytic lymphohistiocytosis (fHLH), amongst many others.

*Dr Chandan Roy investigating samples under a microscope.*

Dr Nigar and Dr Roy on the other hand are laboratory scientists who specialize in microbiology and immunology. During their training, they broadened their expertise in laboratory procedures for PID diagnosis, including immunological tests using flow cytometry, DNA sequencing, chromosomal microarray and analysis of the retrieved data. When visiting, Dr Nigar also had the opportunity to attend the Global Initiative of Academic Networks (GIAN) conference and gain knowledge on various aspects of immunological testing.

Tailored training sessions were provided to the healthcare professionals based on their different backgrounds, which were well-matched to complement each other, and catered to their specific needs and interests. The training was considered to be highly relevant, and the facilities were described as advanced, attractive learning environments. Most importantly, it was agreed that the learned skills are particularly useful and can effectively be implemented in their home institution.

**Implementation of newly learned skills**

*As a first step in genetic profiling of PID patients, we are very eager to introduce Sanger sequencing in our laboratory – Dr Ismet Nigar*

The ability to effectively apply the acquired skills and techniques in the participants' home countries is a key factor in the success of the PIDetect programme. Fortunately, the trainees indicated that the subjects taught during their training nicely aligned with the current possibilities for improvement in their facility, thus lowering the threshold for actual implementation. More specifically, the learned laboratory techniques were either based on further expanding the use of existing equipment, or were considered inexpensive and easy to implement.

*Dr Ismet Nigar receiving farewell wishes from Prof Surjit Singh and his colleagues.*

**Spreading knowledge and awareness**

The aim of PIDetect is also to help spread the newly acquired knowledge on PID diagnostics more widely throughout the target country. Useful dissemination tools that were suggested include delivering presentations to fellow colleagues, presenting cases at conferences, and including the topic in student classes and tutorials. Next to these initiatives a CME-accredited conference was organised by Prof Islam and his team on May 2nd, 2024.


*Prof Mohammed Imnul Islam providing a lecture during the conference on PIDs in the Department of Peadiatrics at the Bangabandhu Sheik Mujib Medical University (BSMMU), Dhaka, Bangladesh.*

The conference was well-attended and the lectures were organised to address a wide range of medical professionals. As such, a broad introduction to PIDs was provided, covering the different types of PID, the global status and trends in diagnosis, early warning signs, patterns and useful algorithms for detection and diagnosis. Next, a second session specifically focused in more depth on the laboratory diagnosis of PIDs in Bangladesh and its opportunities for the future. All three PIDetect trainees were actively involved in the organisation of this event.

We would like to extend our heartfelt gratitude to Prof Surjit Singh and his team for welcoming Dr Kamrul, Dr Nigar and Dr Roy to his institute and for providing them with such an enriching training experience. Finally, we are grateful to our sponsor, Takeda, for making this IPOPI PIDetect programme possible.

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