Content for Online Platform

Title: Improve diagnostics of typhoid through Open Science: An Artificial Intelligence - based technique

Description:

Typhoid or enteric fever is an acute life-threatening febrile illness caused by *Salmonella typhi*, a gram-negative bacterium with a long history and impact on human lives. It remains the most frequently reported faecal- oral disease outbreaks worldwide, but mainly common in developing countries such as India, Asia and Africa where it poses public health threats due to its high endemicity, difficulty in adopting control measures, and because of its significant morbidity and mortality rates. Recent data estimates 16.6 million new infections and about 600,000 deaths each year. Typhoid fever becomes fatal when untreated or poorly treated and about 3% - 5% of people suffer from an acute illness of typhoid fever and become carriers of the bacteria after the acute illness. These people may become long-term carriers of the bacteria even though they have no symptoms and become the source of new outbreaks of typhoid fever for many years. There are a number of tests available presently, from molecular to immunological and biochemical to microbiological.

Aim:

Develop a more reliable method of typhoid fever diagnosis and data collection for rapid intervention and improved treatment.

Objective:

Combine AI systems with an irreplaceable human clinician for better diagnosis of typhoid fever and determination of its level of severity.

Mode of operation:

Use microculture test with blood and CNNs as algorithms on the collected images to train the algorithm. In the case we obtain a small volume of images, use transfer learning to automate the microbial cultures test. The reliability of this test will then be reinforced using the second algorithm which is a fast decision tree learner. This algorithm based on 18 symptoma variable will not only allow us to confirm the diagnosis, but above all to determine the level of severity of the disease.

Main challenges faced:

- Lack of local and high quality open data
- Poor data collection tools
- Inability of patients to adequately describe how they feel
- Poor diagnosis and auto-medication

Requirements

We are in search of persons with a desire to participate in projects targeting local health issues using biotechnology. No defined skills are necessary to make contributions foor this project but the following skills will be a nice to have;

- Data collection skills
- Content writing skills
- Communication skills

Frequently asked questions

- How does one get infected with typhoid fever?
- Is typhoid an airborne disease?
- What are the conventional methods of diagnosis of typhoid fever?
- What is AI and what are the main goals of AI?
- What are the advantages and disadvantages of the various methods currently used in the diagnosis of typhoid fever?
- What are CNNS?
- How can I contribute to this project?