Evaluation of training for malaria diagnosis in Africa and assessment of diagnostic competency using internet based virtual slides prior to evaluation of a pilot virtual training programme for malaria diagnosis

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Introduction

Microscopy is the internationally recognised gold standard method for malaria diagnosis; however the ability to reach a correct diagnosis is affected by training, experience and adequate laboratory facilities, e.g. appropriate stains and functioning microscopes.

An internet based training programme designed to improve diagnostic accuracy is being developed, primarily for use in Africa. The project is supported by the department of Essential Health Technology at the World Health Organization.

The project has three stages

- initial assessment stage (40 images - 3 months)
- Training programme (6 months)
- Final assessment stage (40 images - 3 months)

Prior to the initial assessment stage a recruitment questionnaire was distributed to assess the participants level of training and education and availability of internet access.

The results of the initial and final assessment stages will be compared to determine whether the training programme has an effect on the diagnosis of malaria.

Materials and methods

The training programme amongst other materials uses “virtual slides,” composites of 40 individual images taken using a Zeiss Axio Imager M1 microscope with a 63X oil immersion objective, to replicate the microscope viewing experience.

42 participants have been recruited from 14 laboratories around the world, the majority in Africa. Participants were recruited using the following criteria

- Malaria cases assessed per week (>10)
- Involvement of a local person within the laboratory to act as a coordinator
- Willingness to participate in the entire project

English is not the first language for the majority of participants, this has been taken into account throughout the design of the project.

Results

Problems recruiting participants include

- Continued engagement over a 2 year period
- Expectations of being paid for involvement
- Problems with email communication

Ensuring continued participant engagement throughout the project is a major factor in gaining reliable results for the project.

Internet access responses showed that half of the participants have access to the internet at their place of work.

The remaining participants require funding to use internet cafes, the cost of which varies depending upon the location.

Summary

42 participants have been recruited and are able to access the internet based training programme, either locally within the hospital, or with the help of funding provided to use internet cafes. The training programme being developed will aim to improve the diagnosis of malaria, acting not only as a training scheme but ultimately as a source of reference material to aid diagnosis.

Future direction

The assessment stage of the project is now underway with the participants having access to 40 images on which to give a diagnosis. On completion of this stage the training programme will be made available, consisting of annotated images alongside an online image atlas and descriptive notes, with quizzes to provide an interactive learning environment. Results of project will be analysed and categorised against participant experience and training.

Acknowledgement

Thank you to participants for their involvement in this project.

References

4. Warhurst, D.C. and Williams, JE: Laboratory diagnosis of malaria. Journal Of Clinical Pathology, 49 (7), 533-538

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Figure 1: The virtual microscope software, showing entire image and magnified view at 63X

Figure 2: Locations of laboratories from which participants have been recruited

Figure 3: Comparison of laboratory staff experience

Figure 4: Timeline of project participation

Figure 5: Example of page from the training programme

NB: All images are representative of the procedure; resolution is affected by poster presentation format.