

# Compendium of new and emerging health technologies



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# Mobile phone image transmission for diagnosis

Country of origin | Italy

## Health problem addressed

Limited training and geographical isolation of laboratory technicians (and health workers in general) in remote, underserved areas severely affect quality of diagnosis, hence of control and therapy of many diseases. In most cases, diagnostic confirmation relies on slow, unaffordable, unpractical or inappropriate technologies.

## Product description

Our solution allows to directly capture high quality images from optical eye piece of a microscope or other optical devices with a camera-integrated m-phone (with no additional adaptors or devices) and to send them as MMS via mobile phone network to distant diagnostic centres for prompt diagnosis or second opinion.



## Product functionality

The m-phone with integrated camera functions as image transmission unit. It offers a possibility to connect basic health care facilities in remote areas with more specialised health care facilities in the field of medical image diagnostics.

## Developer's claims of product benefits

Existing integrated optical-digital devices and digital cameras, requiring a computer with access to broad band internet connection, are not readily available, bulky, complex to use and expensive, especially in low resourced contexts. Alternative ad hoc devices, such as microscopic optical extensions of m-phones and m-phone-to-microscope connectors are unnecessary and unpractical. Our solution presents a cheap, appropriate option, requiring only the existing microscope (or other optical instrument) and any camera-integrated m-phone with access to MMS network. User-friendly, readily available and easy to maintain, it represents an appropriate solution in most isolated settings.

## Operating steps

The image of the field under observation is taken by slowly approaching the lens of the m-phone's camera to the eyepiece of the microscope (or other optical instrument) until a satisfactory image is shown on the screen. Once taken, the picture is sent as an MMS to a distant diagnostic centre for second opinion.

## Development stage

The application of the methodology to tele-microscopy has been first described by Bellina L. and Missoni E. in 2009. Subsequent field studies (Bellina L. and Missoni E. 2010) demonstrated its feasibility in most disadvantaged rural settings (Uganda and Bangladesh). Testing of further clinical applications is underway. Regulatory process: The technique relates to the combined use of existing and readily available products. The regulatory framework of those products applies.

## Future work and challenges

The mobile diagnosis has to be integrated in the normal diagnostic procedures and data flow of local health systems including availability of expertise for remote second opinion and immediate feed-back. Further studies are required for the development of the appropriate ITC network and management system.

## Use and maintenance

User: Nurse, midwife, physician, technician

Training: Basic instructions (approach to light beam, centering image, avoiding external light interference, etc.) and less than half an hour trials for good results are needed.

Maintenance: Nurse, physician, technician

## Environment of use

Requirements: The technology requires stable power supply for microscope and mobile cell phones, and access to a cell phone network providing MMS.

## Product specifications

Consumables: None

Other features: Portable and reusable. Runs on batteries and is compatible with telemedicine systems.

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