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ABSTRACT BOOK

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community to TB diagnostic services. Based on the lessons learned, a national policy was developed to implement CSCPs across all of Malawi. To date only a few districts have implemented CSCPs, four of which are supported by Project Hope and TB CAP.
Description: This presentation specifically focuses on the experiences of Project Hope and TB CAP to implement CSCPs. A comparative analysis will be used to discuss the two approaches used, their results and recommendations for further scale-up.
Results and conclusions: The following questions will be addressed:

1 Are CSCPs an effective approach to increasing TB case finding?
2 Are CSCPs valuable in creating greater efficacy among the community?
3 Using qualitative and quantitative data, what are the added benefits of each approach?
4 Recommendations on how to move from district pilot sites to National scale-up.

Short message service for health education, adherence and mobile image transfer: Uganda results

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Setting: Rural health care clinics, such as those found in Sub-Saharan Africa, are typically under-staffed and lack training and support. Microscopes are the main instruments used for diagnosis of infectious diseases, and while they are available at most levels of health clinics, the lack of education, confidence (other) resources and experience amongst the staff are the main grounds for misdiagnosis of illnesses which is a cause of inappropriate treatment and thus poor patient care. These challenges will be addressed by combining microscopy with mobile networks (MobiScopy). This system will create a knowledge sharing forum specifically designed for rural health care workers to improve microscopy based diagnostics.

Objectives/expected benefits: Reduction of costs for quality assurance (QA) and increased compliance. Strengthened education of rural health care workers and improved diagnosis of illnesses and proper treatment. Creation of local business opportunities by franchising MobiScopy to other developing countries.
Design: Selection of regional/reference hospital and five remote satellite health centre laboratories. Improvement of current quality control procedures can be determined by evaluating the existing and novel systems concurrently over a period of time.
Conclusions: Under-educated and under-experienced health care workers will be empowered to meet quality assurance standards and accurately and confidently diagnose parasitical and bacterial infections and receive health education where necessary.

Increasing connectivity of isolated health workers in poor countries using locally available technology

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Setting: We previously showed that images from a microscope can be easily taken and sent for remote reference with m-phones, without any adaptor.
Aim: Testing the viability of our Mobile Diagnosis approach in poor resources settings, and validating health-care applications beyond the laboratory and in extension services.
Methods: We tested Mobile Diagnosis with local health workers in rural areas of two developing countries. Multimedia Messaging Services (MMS) availability and local use was verified. Structured interviews helped to define local diagnostic capacities, workload, extension services, use of clinical and laboratory equipment, availability and use of m-phones, and others. In Uganda (Lacor) 20 trained lab-technicians and 25 trainees were involved. In Bangladesh (rural districts of Bhuapur and Comilla) 16 lab-technicians and 6 medical doctors (GPs) participated, as well as the Grameen Kalyan's reference center in Dhaka where images were received and diagnosis confirmed. Mobile Diagnosis was tested as didactic tool.
Results: Where there was a laboratory there was a technician and a microscope, often inadequately used for lack of training. Use of integrated camera m-phones was widely spread. MMS commonly accessible in Bangladesh, less so in rural Uganda, however not used in both, costs and setting procedure being possible obstacles. Clinical and microscopy use of m-phones was previously unknown, but easily learnt. Microscopy images on the m-phone screen proved to be an excellent educational tool. Mobile Diagnosis was readily extended to dermatological, radiological and ultrasound diagnostics. Different cultural attitudes toward the use of available equipment were noted between Bengali and African health workers.

Conclusions: Mobile Diagnosis may contribute to increase quality of diagnostics and care, but challenges rest in education, initiative, organisation and understanding of local context, rather than in costly new technology.

Mobile phone based clinical microscopy for global health applications

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Sputum smear microscopy is the clinical standard for tuberculosis (TB) diagnosis in many developing countries. However, microscopy services are currently confined to centralized health centers and require trained laboratory personnel. Mobile fluorescence imaging coupled with wireless transmission presents an opportunity to overcome these barriers to rapid and inexpensive point-of-care TB diagnosis. We have developed a mobile digital fluorescence imaging system called CellScope that enables point-of-care TB microscopy. Originally based on a standard camera phone platform, we have recently built a stand-alone device coupled with an inexpensive netbook computer that has significantly improved optical performance. CellScope has several potential advantages over traditional microscopy: (1) portability allows microscopy services to be provided at a patient's doorstep; (2) battery-powered LED illumination enables both brightfield and fluorescence imaging in daylight; (3) digital image processing enhances identification of bacilli; (4) automated reading algorithms reduce the need for trained microscopists; and (5) wireless connectivity allows images to be transmitted over cellular networks for interpretation by trained personnel or for external quality assurance. We are currently refining the second-generation CellScope using Auramine O-stained sputum samples from tuberculosis suspects in San Francisco and Uganda. Preliminary testing demonstrates that CellScope is capable of high quality digital imaging of sputum smears—sub-micron resolution enables visualization of the characteristic beaded appearance of tuberculous bacilli. CellScope is a powerful new tool that brings fluorescence imaging into the digital era. This technology has the potential to dramatically expand access to TB diagnostic services, facilitate training and quality assurance programs, and enhance tuberculosis surveillance activities.

TOBACCO AND LUNG HEALTH: EVIDENCE FOR INCREASED RISK OF TB, PNEUMONIA, AND ASTHMA IN CHILDREN AND ADULTS

Smoking and the risk of community-acquired pneumonia, bronchiolitis and asthma

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Smoking is a major risk factor for a number of medical conditions, which is not surprising given its significant effects on the body, including interactions with both innate and adaptive immunity. In asthmatics, studies have clearly shown that 1) smoking is more prevalent among individuals with asthma than among those without the disease, 2) smoking itself is a risk factor for the development of asthma, and 3) smoking is associated with a decrease in overall asthma control, a decreased response to agents such as inhaled and oral corticosteroids, and an increased risk of asthmatic attacks, exacerbations and mortality. Bronchiolar disorders are a myriad of conditions that variously effect adults and children and a number of these are associated with smoking. For example, respiratory bronchiolitis is one of the most common causes of the primary bronchiolar disorders and most cases are associated with cigarette smoking in adults. In children there is very good evidence that environmental cigarette smoke exposure is a risk factor for bronchiolitis, including that caused by Respiratory Syncitial virus, which also worsens the severity and prognosis. A number of studies over a considerable period of time have documented that smoking predisposes patients to community-acquired pneumonia (CAP), in general, and pneumococcal infections in particular. This increased risk is demonstrated in HIV-infected persons as well, and persists even after the initiation of anti-retroviral therapy. A decrease in smoking exposure has been shown to be associated with a decrease in the prevalence of a number of these conditions, as well as a decrease in their severity if present in patients who previously smoked.