

Reference

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Digital camera telemedicine for British and NATO forces – a simple solution with civilian and humanitarian applications

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The British Defence Medical Services Telemedicine Unit uses store-and-forward telemedicine based on commercially available digital cameras to capture diagnostic quality still images of clinical importance. Telemedicine has been used by medical units in Bosnia¹, the Falkland Islands, South Georgia, Gibraltar and one of HM ships. More recently, it has been used in Cyprus, Belize, Kuwait, Macedonia and Kosovo²⁻⁴.

The resulting JPEG images of wounds, blood films, electrocardiograms, eye and skin lesions and radiographs (ranging in size between 30 and 400 kByte) are downloaded on to laptop or desktop computers and transferred by email via conventional telephone lines or satellite telephones to specialists at the Royal Hospital Haslar for prompt advice on diagnosis and management.

Some 300 referrals to date have been sent from previously isolated practitioners over distances as great as 14,000 km (e.g. from South Georgia and the Falkland Islands), with patient management being significantly altered in over 100 cases, and reassurance provided in most of the others. Considerable cost savings have resulted from the prevention of several unnecessary aeromedical evacuations.

Particular use was made of this digital-camera-based system from the British field hospital in



Fig 1 Left lateral view showing exit wound. Photograph taken with a digital still camera (C1400XL, Olympus) at a resolution of approximately 1.4 million pixels.

Kosovo in summer 1999, not only for military referrals but also to aid in the aeromedical evacuation of wounded civilians requiring specialist reconstructive surgery abroad. Digital photographs of such wounded patients acted as a catalyst for the setting up of previously non-existent evacuation chains. The patient featured in Fig 1 (with his permission) was wounded some three months previously by a bullet in the face when fleeing a massacre. There were no reconstructive maxillofacial surgical facilities available in Kosovo, nor was there any mechanism at the time to evacuate such patients for care abroad. He was brought to the attention of the British field hospital by an American physician working with the International Medical Corps (a non-governmental organization). After his telemedicine referral to a maxillofacial reconstructive surgeon in the UK, he was aeromedically evacuated in September 1999 for treatment. As a result of this and other examples, the Pristina University Hospital in Kosovo has procured a digital camera to facilitate further aeromedical evacuations.

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