

INTERNATIONAL ABSTRACTS

TELEMEDICINE IN ACUTE PLASTIC SURGICAL TRAUMA AND BURNS

This paper from the U.K. assesses the viability of telemedicine. Visual images can enhance communication over a distance, especially where plastic surgery centres work on a hub-and-spoke basis with many district hospitals referring to one tertiary centre, as is often the case. Telemedicine could help to increase the efficiency of service for plastic surgery patients. Combined with the Electronic Patient Record system, it could also improve communication, patient triage, record keeping, audit, and lead to a better quality of clinical care and significant cost savings. The Queen Victoria Hospital receives calls from more than 28 hospitals in the Southeast of England resulting in approximately 20 referrals a day. A telemedicine system was developed to improve trauma management. This study was designed to establish whether digital images were sufficiently accurate to aid decision-making. A store-and-forward telemedicine system was devised and the images of 150 trauma referrals evaluated in terms of injury severity and operative priority by each member of the plastic surgical team. Correlation scores for assessed images were high. Accuracy of "transmitted image" in comparison to injury on examination scored > 97%. Operative priority scores tended to be higher than injury severity. Telemedicine is an accurate method by which to transfer information on plastic surgical trauma including burns.

Jones SM, Milroy C, Pickford MA
Ann R Coll Surg Engl, 86: 239-42, 2004.

TELEMEDICINE FOR ACUTE PLASTIC SURGICAL TRAUMA AND BURNS

This follow-up paper from the U.K. reports the findings of the introduction of telemedicine to a Regional Plastic Surgery Service, by way of a 10-week evaluation of all 973 referrals to the unit. Findings showed that the system was used for a wide variety of injuries and for 42% of the 452 patients where the system was available. Initial resistance was overcome by the ease of use of the system, with both receiving and referring clinicians reporting benefits. The third phase was a 12-week prospective cohort study of 996 patients comparing the referrals with and without the telemedicine system. The system was available for 389 patients, and used for 243 patients (63%). The groups were analysed by a chi squared test and confidence interval calculation. A significant difference in the initial management of patients was demonstrated, with 10% more being booked directly to the Day Surgery Unit. There was a decrease in the number of occasions in which patients could not be accepted due to a lack of capacity. The authors found no change in the patients being managed with telephone only advice and concluded that telemedicine is a valuable method of providing useful preliminary information in the referral process for injured patients and often significantly modifies their treatment and/or management plan. This has implications for the use of Information Technology resources and poten-

tially the delivery of healthcare in relation to the management of injured patients.

Wallace DL, Jones SM, Milroy C, Pickford MA
J Plast Reconstr Aesthet Surg, 61: 31-6, 2008.

USING TELECONSULTATION TO ENHANCE THE CARE OF PATIENTS WITH ACUTE BURNS

This paper from the U.K. reports on teleconsultation – real-time healthcare consultation via video-link – in relation to the management of acute burns. The project involves seven hospitals in the North of England. Three of these pilot sites are burns units, whilst the other four are Emergency Departments (EDs) in hospitals without specialist burns facilities. Traditional practice involves the EDs referring and transferring patients to the burns units on the basis of telephone information with no visual support. By allowing specialist burns practitioners to assess visually the extent and severity of injuries whilst patients remain in the referring ED, the project aims to:

- reduce the number of inappropriate transfers to burns services;
- expedite appropriate transfers and ensure that burns units are prepared optimally for receiving patients; and
- improve knowledge and skills in non-specialist EDs, thereby enhancing the management of burns.

It is hoped that lessons from the project will support the mainstreaming of teleconsultation as an adjunct to acute care delivery. The technical infrastructure for the project comprises video-enabled teleconsultation 'carts' deployed at each of the participating sites. To facilitate the specialist needs of burns management, the teleconsultation carts were fitted with high-fidelity, close-up cameras. In addition to procurement and installation, other preparatory steps involved with the project included the development of clinical guidelines that embedded teleconsultation procedures into existing pathways of burns management. Following installation of teleconsultation technologies, a programme of staff training and awareness-raising was undertaken. A six-month pilot of burns teleconsultation commenced in November 2012. The project is being evaluated in relation to activity, practitioner feedback and patient satisfaction. Data are also being gathered on the impact that the teleconsultations have on management plans and decisions to transfer for specialist care.

At time of submission, data are only available on the first few weeks' activity. Though small in number (n=9), teleconsultations for which data are available at this stage have provided some useful insights.

Technically, the system appears to provide the level of clinical detail and information necessary to carry out a specialist assessment of burns. On each occasion, clinicians reported having enough confidence in the system to confirm or alter management plans. Notably, there have already two occasions where the ED decision on transferring to a burns unit was changed following teleconsultation. Pa-

tient feedback in the early consultations has also been positive, with no concerns raised regarding privacy, dignity or the quality of the care received.

Feedback on the first few teleconsultations suggests that the system is capable of facilitating clinically effective, remote assessment of burns. In addition, the system appears to be acceptable to both clinicians and patients. If accepted, the presentation will provide results from the full six-month pilot and discuss larger-scale findings regarding the feasibility, acceptability and effectiveness of teleconsultation in burns care.

Barret DI, Andrew J, Cotton J
Int J Integr Care, 13, 2013

TELEMEDICINE AND BURN INJURIES: A REVIEW OF THE LITERATURE AND A PRESTUDY OF UNAIDED BURN-TRIAGE

The objective of this paper from Denmark is to evaluate the use of telemedicine in burns management. Correct estimation of the severity of burns is important to avoid patient over- and under-referrals. This study assesses how often guidelines for referral are met at the national burn centre (NBC), Denmark, where telemedicine is not routinely used. The potential usefulness of telemedicine in estimation of burns was also evaluated through a literature review. In a 3-months period, 97 burn injured patients were transferred for treatment at the NBC and 30% (n=29, 95% CI: 22-40%) of referrals were considered unnecessary according to the guidelines. Some studies indicate that electronic photo-transmission of the burns, evaluated by a burn surgeon, is as accurate as face-to-face assessment and significantly better than the estimation made by the referring physicians. Therefore, telemedicine may be useful as a safe and effective adjunct in the decision to transfer burn injured patients. Further studies are warranted to establish the extent of the potential uses of telemedicine in burn injuries. The number of unnecessary referrals in this study was 30%. It will be for burn specialists to decide the acceptable percentage of over-triage in the field of burns. However, it is also important to be aware of the potential under-triage and the consequences for the patients' morbidity and mortality. Implementing digital images transfer before admission might reduce both over-and under-triage and have a beneficial effect on the economy. Therefore, the authors propose digital transmission of photos as a supplemental diagnostic tool in decision making.

Reiband HK, Lundin K, Alsbyørn B, Sørensen AM, Rasmussen L
http://www.medetel.eu/download/2013/parallel_sessions/abstract/day2/Telemedicine_and_Burn_Injuries.pdf

DEODORANT SPRAY: A NEWLY IDENTIFIED CAUSE OF COLD BURN

This paper from Switzerland highlights the risk of burn injury from spray-on deodorants. Two patients encountered a first-degree cold burn after use of a deodorant spray. The spray-nozzle to skin-surface distance was 5 cm and the spraying lasted for 15 seconds. Under laboratory conditions, the deodorant in use was able to induce a decline in temperature of 60°C.

These 2 cases highlight a little-known potential for skin damage by deodorant sprays if used improperly.

May U, Stimer KH, Lauener R, Ring J, Möhrenschrager M
Pediatrics, 126: 716-8, 2010

FROSTBITE INJURY OF THE FOOT FROM A PORTABLE FIRE EXTINGUISHER

Frostbite burns are uncommon and their etiologies are varied. This paper from Turkey presents a case of sudden frostbite burn of the left foot caused by carbon dioxide. Carbon dioxide is used widely for industrial purposes, including in the production of some fire extinguishers because it can blanket a fire and cause its extinction. Solid carbon dioxide is always below -78°C and contact for more than a second may cause skin injury because of rapid and profound cooling. The patient presented a second degree frost-bite injury resulting from a sprained ankle having been cooled with a fire extinguisher for a period of 30-45 seconds. Immediately after the exposure, the skin of patient's foot had gone white and cold, causing an initial numbness followed by increasing pain. The foot was irrigated with 37°C heated and sterilized water for 15 minutes. The authors concluded that even short contact with carbon dioxide gas can result in severe frostbite injury. Decreasing the exposure time is an important first step in the treatment approach. After exposure, quick delivery of the patient to a burn center is essential. Measures to prevent severe edema are important to avoid deep tissue damage.

Sever C, Kulahci Y, Uygur F, Sahin C
Dermatology Online Journal, 15: 10, 2009

FREON GAS FROSTBITE: AN UNUSUAL BURN EVOLVING IN TWO STAGES

This paper from France presents two cases of frost-bite burns caused by freon gas. Freon gas is a halogenated derivative widely used in refrigeration and air conditioning. It is maintained at a temperature below -41°C and its contact with skin may cause very serious burns. This is usually an accident at work and the burns affect the hands of patients first. A major issue is that early clinical presentation is often reassuring and does not reflect the actual depth of the injury. The cases presented of frostbite to the hand were initially evaluated at a stage of superficial burns but evolved spontaneously in a few days to full thickness burns necessitating surgical treatment by excision and skin grafting. This evolution in two phases has not been described before and could help to better understand the pathophysiology of this frostbite and the possibilities of management.

Chaput B, Eburdery H, Courtade-Saïdi M, De Bonnacaze G, Grolleau JL, Garrido I
Chirurgie de la Main, 3: 166-9, 2012

WILDERNESS MEDICAL SOCIETY PRACTICE GUIDELINES FOR THE PREVENTION AND TREATMENT OF FROSTBITE

The Wilderness Medical Society, based in the U.S.A., convened an expert panel to develop a set of evidence-based guidelines for the prevention and treatment of frostbite. They present a review of pertinent pathophysiology and then discuss primary and secondary prevention measures and therapeutic management. Recommendations are made regarding each treatment and its role in management. These recommendations are graded based on the quality of supporting evidence and balance between the benefits and risks/burdens for each modality according to methodology stipulated by the American College of Chest Physicians.

McIntosh SE, Hamonko M, Freer L, Grissom CK, Auerbach PS, Rodway GW et al.
Wilderness & Environmental Medicine, 22: 156-66, 2011