investigation. Dr Mulhem was not the first doctor to be convicted of killing by accident and sadly he is unlikely to be the last.

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Shock in polytrauma

Needs better definition and perhaps more selective treatment

By 2020 bodily injuries are predicted to outpace infectious diseases worldwide in terms of years of productive life lost.[1 2] Evolving experience has shown that treatment plans for serious injuries require discrimination between the mechanism of injuries, their anatomic involvement, and their "staging."[2] Yet traditionally, many emergency medical services developed more simplified treatment algorithms without such discriminations, leading to misinterpretations and invalid conclusions from studies.[2] Also deployment configurations may account for conflicting data regarding certain interventions and unrecognised confounders (for example, overzealous ventilation or fluid resuscitation in severe haemorrhagic states) may obscure the benefits of other treatment.[2 3 4 5] Finally prospective clinical trials to either validate or refute interventions currently used are lacking.[3]

Evolving recommendations for haemorrhage after trauma

With these perspectives in mind traditional recommendations for managing shock in polytrauma are being questioned as being universally applicable, particularly in the preoperative phases of resuscitation.[4 5 6] Specifically the strategy of universally providing rapid infusions of crystalloid or colloid fluids to restore normal blood pressures before definitive haemostasis is being reconsidered.

Experimental and clinical data now indicate that aggressive fluid resuscitation before bleeding is controlled can cause additional haemorrhage through hydraulic acceleration of bleeding, dislodgement of soft clots, and the dissolution and dilution of clotting factors.[5 6] Because of the high risk of uncontrolled internal bleeding consensus statements now recommend deferring infusions until operative intervention when patients with penetrating injuries of the torso are conscious or have palpable pulses.[6]

Discriminating between mechanisms, sites, and staging of injury

The problem is that the studies leading to these new recommendations have been done mostly in animal models by using distinct vascular lacerations or in humans with penetrating torso injuries.[3 5 6] Studies have not fully addressed the complicated issue of polytrauma.

Polytrauma, defined as a situation entailing severe blunt trauma with injuries to multiple organ systems, entails a different pathophysiology to the more focused tissue injury and exsanguination usually resulting from critical penetrating or lacerating injuries. With or without fractures of limbs, haemopneumothoraces, lacerations of the mesenteric artery, or splenic ruptures, the massive and widespread degree of soft tissue injury creates a larger risk for systemic soft tissue inflammation, contusions, and oedema. Although generally self limited, a fracture of the femur is often associated with important soft tissue injury and can lead to noteworthy blood loss into the connective tissues with ensuing oedema. Multiple fractures of long bones can lead to shock conditions by themselves, and studies have correlated worse outcomes with patients who have a head injury and hypotension. Therefore there are many rationales for providing fluid infusions for patients with polytrauma, even for those not yet reaching definitive surgical haemostasis.

Nevertheless patients with polytrauma can also have distinct vascular injuries that are subject to some of the same concerns held for those with penetrating injuries.[7 8 9] Creation of a secondary bleed may only worsen the outcome even with severe head injuries.[5 7] Also hypotensive patients with trauma to the head may have worse outcomes, not only because the hypotension is a surrogate marker for more severe injuries but also because the traditional treatments for head injuries, both ventilatory and haemodynamic, may themselves be the cause of iatrogenic injury.[4 5 7 10] Animal models of blunt head injury now indicate that slow infusions may be preferable to rapid boluses because they may avoid disruption of soft clot formation, thus allowing formation of fibrinous clots.[5 8] Therefore future research initiatives should not only stratify patients with blunt trauma and those with severe head injury[2 9] but also the timing and rate of fluid infusions.[8]

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Considering advances in technology

Promising new solutions, such as haemoglobin based oxygen carriers, may help to resolve the nihilistic dilemma now faced by many clinicians.[11] Perhaps by providing limited slow infusions of a solution that can be stored without special refrigeration but has augmented capacity to carry oxygen might safely provide earlier treatment to patients with polytrauma.

Recent technological developments may also better delineate patients with true hypoperfusion. In contrast to traditional crude parameters such as blood pressure, new monitoring devices (for example, sublingual CO_2 monitoring) may help better to titrate therapeutic interventions and their timing.[12] We may be able to obviate some of the current controversies revolving around the management of shock in polytrauma by better determining a situation in which the relative benefits of delaying treatment is outweighed by a more precise titration and better timed infusion of an oxygen carrying solution.[2] We may also define shock more precisely. The all too common assumption that injured people with hypotension are in shock warrants re-evaluation.

For now it is still the experience and judgment of the discerning knowledgeable clinician that best guides the treatment of the polytrauma patient. Victims of polytrauma will be benefited if that clinician pays attention to the differences in various mechanisms of injury, their anatomical involvement, and the staging of those processes and also recognises that, in some circumstances, less treatment may be better.[2 4 6 10]

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Intensive education for lifestyle change in diabetes

Ongoing input is required to effect and maintain change in behaviour

In the past 10 years the diabetes control and complications trial and the UK prospective diabetes study (UKPDS) have shown that tight control of diabetes reduces the risk of complications in type 1 and type 2 diabetes.[1 2] As a result of these studies we have set our patients demanding targets, which often require important changes in their lifestyle. But we have failed to provide the education and self management training needed to help them meet these targets. In this context, intensive modifications to lifestyle means structured education designed to facilitate change in behaviour. Such education programmes are used in type 1 and type 2 diabetes and in prevention of diabetes in people with impaired glucose tolerance.

Traditional education for diabetes treats the patient as a receptacle for knowledge or a pot to be filled with information by doctors, nurses, and dieticians. To achieve change in behaviour education must encourage self motivation and self determination,[3] and a professional who simply tells patients to make a change "for their own good" invites a negative response.

Helping people to change their lifestyle is never easy and can be done only by approaching the problem from the patients' point of view.[4] In type 1 diabetes this approach was developed and refined in Germany by Ingrid Mühlhauser and the late Michael Berger.[5] Centres in other countries have adapted the German programme, which has recently been transplanted to the United Kingdom as the dose adjustment for normal eating (DAFNE) project. A randomised controlled trial including three centres showed that this programme leads to improvements in glycosylated haemoglobin A_{1c} test, dietary freedom, and quality of life.[6] DAFNE has been successfully rolled out to other centres in the United Kingdom, but the cost of the programme has led other units to modify it. These programmes with reduced professional input are cheaper but require evaluation.

The epidemic of type 2 diabetes, projected to reach 333 million cases worldwide by 2025, is causing alarm in both medical and political circles. Since increasing obesity and decreasing physical activity are responsible, modifications of lifestyle, focusing on diet and exercise, is the logical way of stemming the tide.

Several studies have shown that programmes designed to bring about lifestyle changes can slow the progression of impaired glucose tolerance to diabetes. The United States diabetes prevention programme randomised 3234 subjects with impaired glucose toler-

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