Letters

Eye injuries and tasers

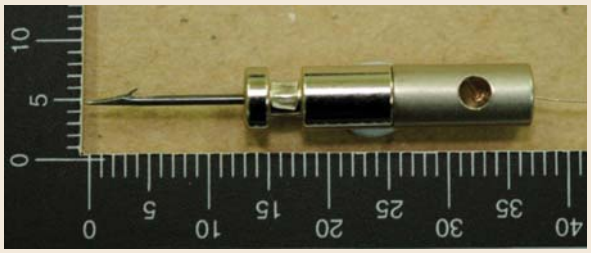
To the Editor: Taser (TASER International) injuries have been topical in the news media. This provides an important reminder of the possible traumatic sequelae associated with the use of electronic control devices.

A taser is a battery-powered unit that uses a nitrogen cartridge to propel two darts on a 7 m copper wire.[1] Each dart consists of a 4 mm harpoon-like barbed electrode on a 13 mm × 1 mm shaft (Box), deployed at 18 m/s from a distance of 3–6 m. Increasingly, tasers are being used by police in every state of Australia to subdue violent people.

When the deployed darts attach to a target individual's skin or clothing, a current of up to 50 000 volts is released for a period of up to 5 s, depending on the skin's resistance (which varies based on fat content, thickness, cleanliness and body chemistry).[2] The mechanical impact of the barbs, combined with the subsequent voltage released, represents a considerable hazard to eyes, genitalia and large blood vessels in the neck.[2]

Essentially, the eyeball is a liquid-filled globe with a wall thickness < 1 mm, making it particularly susceptible to electrical damage. TASER International states that "serious injury, including permanent vision loss" can result from barb contact with the eye.[3] Our literature search found seven case reports and one review of ocular damage relating to taser use.[1,2,4-8] In five cases, penetration of the globe was reported;[1,4,5,7,8] in three cases, entry through the lids made this difficult to determine without ophthalmic surgical examination.[1,2,7] Ocular damage associated with taser use includes mydriasis, iritis, macular cysts, lid lacerations, cataracts, retinal detachment, optic neuritis, vitreous haemorrhage and globe penetration.[6] Damage may be thermal or mechanical,[6] with visual outcome ranging from final visual acuity of 6/9 to total vision loss and enucleation.[1,2,4,5,7,8]

Taser dart, showing dimensions (mm)



As taser use increases, medical staff need to be aware of the implications of both the impact energy and the electrical damage associated with taser deployment. As in the management of a barbed fishhook penetrating the eye or ocular area, a taser barb should not be removed at the scene but should be immobilised (eg, by covering it with a foam or paper cup) until appropriate ophthalmic surgical removal is possible.[1]

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Severe alkali burns from beer line cleaners warrant mandatory safety guidelines

To the Editor: Two patients at our tertiary referral eye hospital had received severe alkali burns to the face and eyes while cleaning beer lines. In hotels, pubs and clubs, beer lines are cleaned weekly using strong alkaline solutions at high pressure. In an accident, alkali released under high pressure can produce blinding damage.

Our patients were young, typical of workers at these venues, and their injuries have had major impacts on their lives. One incident involved the face (60%–80% of facial skin) and both eyes (grade IV[1]) of a 23-year-old man (Box) using a commercially available beer line cleaner (potassium hydroxide; pH, 14). His eyes were immediately irrigated with water. His initial visual acuity was hand movements in the right eye and light perception in the left eye. He had bilateral corneal opacification and ocular ischaemia with hypotony in the left eye. He was treated according to burns protocol,[1] but a non-healing right corneal ulcer developed, requiring multiple operations. Bilateral reconstructive eyelid surgery was also needed.[2] His vision is currently light perception and no light perception with hypotony, respectively, in his right and left eyes. He requires further surgery to preserve his remaining vision, as well as ongoing psychological and social support.

The second patient received a grade IV injury to her left eye in 2006. Multiple operations were needed to heal the ocular surface, along with psychological and social support. After 4 years of treatment, her final visual acuity was light perception. She returned to limited work late in 2010.

Alkali injuries to the eye are devastating as they cause liquefactive necrosis and pass rapidly through the cornea to the eye's internal structures.[3] Damage to the stem cells of the ocular surface and intraocular structures produces permanent, difficult-to-treat and often blinding ocular disease. First aid should include copious ocular irrigation with water before referral to an emergency department.

Neither patient was wearing safety glasses. We found there are no mandatory safety guidelines in Australia (http://www.safeworkaustralia.gov.au), the United Kingdom (http://www.hse.gov.uk) or the United States (http://www.osha.gov), and perhaps worldwide, for beer line cleaning. Although the product information recommends use of safety equipment, this is not enforced and the equipment is usually not sufficient. Most workplaces provide safety glasses, but these offer suboptimal protection from a splash injury. Non-vented safety goggles are needed for adequate protection and should be worn throughout the cleaning procedure, from set-up to clean-up. We suggest that mandatory guidelines are indicated, as although such injuries are uncommon, they are severe and debilitating in the working-age group, with significant costs to the individual, health system and society.

> "Alkali injuries to the eye are devastating as they cause liquefactive necrosis"
>
> Samarawickrama et al

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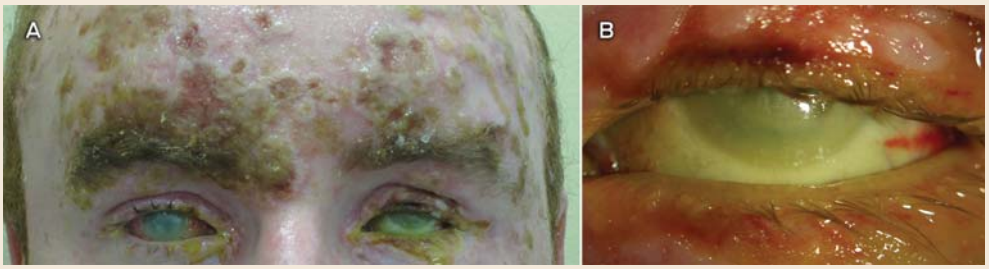
Linking data to improve health outcomes

To the Editor: Olver raises important issues concerning data linkage and the future of public health research in Australia.[1] We agree, but want to highlight several other impediments to research opportunities in Australia.

Severe facial and ocular burns soon after injury



***A:** Image shows the limbal and scleral ischaemia of the left eye and bilateral opaque corneas. The sunken appearance of the left eye, indicative of hypotony, is a very poor prognostic sign.* ***B:** A close-up view of the left eye, showing the cloudy cornea and limbal ischaemia.* ◆

First, ethics applications to link multiple health databases are complex and inefficient. Each state has a different process — some require only a letter, others require full applications to ethics committees and data custodians. Multiple applications to multiple states should be unnecessary when a centralised data source is being used. Further, some ethics committees only meet quarterly, and meetings do not align between states. The process can take up to 2 years before approval is achieved. While the introduction of the National Ethics Application Form in 2006 heralded the streamlining of applications, this has not occurred, as the uptake of the form has been uneven across states.[2]

As a nation, we should learn from other models. Scandinavian countries lead the way in health linkage research[3,4] owing to their well thought out systems of unique health identifiers and administrative processes, which are not held up by bureaucracy. In Australia, linkage is conducted using probabilistic matching. This requires thorough understanding of the component databases and expertise in statistics and programming. This process is arduous and prone to errors and could be simplified by the use of unique health identifiers. Despite years of lobbying from researchers and some parliamentary members, we do not seem any closer to this becoming a reality.

Data linkage projects are where future public health research is headed. We need to minimise administration and long lag times between project approval and receiving data and to upskill staff in management and linkage of large datasets. This will facilitate productive research in Australia with more competitive outputs and, ultimately, better health outcomes for all Australians.

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To the Editor: The editorial by Olver[1] is a reminder of the usefulness of linking health datasets for research and evaluation. While data linkage is not a foreign concept to many health services researchers, such work with regard to Australian primary care is very limited. The recent review of Medicare Locals noted that the few linkages created "only occur in pockets and are often constrained by administrative, collaborative and/or legislative factors".[2] The public interest is not served by these barriers.

The unavailability of and lack of access to general practice data have hindered our ability to build a comprehensive picture of the interface between general practice and other health care services.[3] The benefits of linking anonymised, individual-level general practice data with other routinely collected health data are enormous; it enables us to map the entire patient journey both retrospectively and prospectively, gives us an insight into patients' use of health services, and provides us with the opportunity to assess whether the organisation of care for patients is effective and whether health services can be accessed by patients at the "right time". Such capabilities are very relevant for addressing issues such as the increasing demand for emergency department services and access to after-hours medical care.

Further attention to and investment in securing general practice data is urgently required. Until this is achieved, we will be unable to fully realise the benefits of data linkage for informing health policy and practice in primary care.

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> "The [ethics application] process can take up to 2 years before approval is achieved"
>
> Harding et al

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Newborn bloodspot screening: setting the Australian national policy agenda

To the Editor: The recent article by Maxwell and O'Leary[1] is timely in outlining the obstacles to introducing newborn screening tests in Australia, and the need for a nationally consistent approach, where the benefits of screening are proven. These obstacles exist despite clear policy developed by the professional newborn screening community.[2]

The absence of newborn screening for congenital adrenal hyperplasia (CAH) is the clearest example of the impact from the absence of any national mechanism, where initiatives to introduce such testing have bounced between state and

Correction

Incorrect statement: In "*Aboriginal community controlled health services: leading the way in primary care*" in the 16 June 2014 issue of the Journal (*Med J Aust* 2014; 200: 649-652), there was an error in the "Workforce and training" section on page 651. The sentence "The Leaders in Indigenous Medical Education (LIME) Network has recently signed an agreement with the National Aboriginal Community Controlled Health Organisation seeking to increase Aboriginal medical student placements in Indigenous primary health care settings with a view to increasing participation in and enhancing the effectiveness of the medical workforce" should have stated that the agreement was made with Medical Deans Australia New Zealand, not the LIME Network. The LIME Network is a project of Medical Deans that orchestrates many of their Indigenous health initiatives, but the partnerships between organisations are made at the Medical Deans level. ❑

federal bodies for many years, despite clear evidence of benefit.[3] It is likely that a number of Australian children have died as a result of missed diagnoses while these initiatives have floundered.[4] In addition, the incidence of CAH in Aboriginal children is about 2.5 times that in non-Aboriginal children, suggesting an even greater need for national screening.[4]

CAH newborn screening has benefits additional to reduced mortality. There is a great difference for families in taking onboard the complexities of managing a child with CAH who is well, having been diagnosed through newborn screening, rather than a critically unwell neonate unnecessarily in adrenal crisis in the intensive care unit. Those of us who manage children with CAH in New Zealand, where screening exists, have observed this crucial difference.

Working groups and governmental announcements supporting screening for CAH are welcome; however, action is required now to introduce newborn screening for CAH Australia-wide. All that is required is political will, without which more Australian children will die unnecessarily.

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Competing interests: We are representatives of the Australasian Paediatric Endocrine Group, the key professional body for paediatric endocrinologists in Australasia.

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Increasing incidence of *Clostridium difficile* infection, Australia, 2011–2012

To the Editor: Slimings and colleagues suggest that strain typing of *Clostridium difficile* would give greater insight into the epidemiology of this infection in Australia,[1] as it has in the United Kingdom,[2] demonstrating less inhospital transmission than suspected in the past. We believe this to be the case.

In a 2-year study of symptomatic *C. difficile* infection at our 350-bed tertiary hospital,[3] we identified 262 cases between October 2011 and October 2013. Of these, 150 (57%) were hospital-onset cases after 48 hours of admission. Ribotyping of 147 of these strains showed 44 different types. There appeared to be no secondary cases of diarrhoea from symptomatic patients in our hospital, where patients with *C. difficile* infection are isolated immediately after being identified.

We identified only one possible cluster of seven cases of ribotype QX076 on a rehabilitation ward between March and September 2013. This ward has only two rooms with ensuite toilet facilities, with most toilets being shared by four patients. When a toilet is flushed without the lid closed, aerosol production may lead to surface contamination within the toilet environment, increasing the risk of case-to-case transmission of *C. difficile*.[4] Apart from this cluster, most cases were singletons. As we found many different ribotypes, it could be hypothesised that cross-transmission is generally rare, with clustering being the exception rather than the rule.

The greatest numbers of cases were found on haematology/oncology and geriatric wards. No cases involving ribotype UK 027 were identified. The most common ribotypes in hospital- and community-onset cases belonged to the UK 014/020 group. There were 53 cases (20%) of community-onset infections without evidence of health care system contact. Fifteen of these had ribotypes not found in the hospital-onset cases.

Further investigations are required to assess the role of asymptomatic carriers in hospital infection and to define the relationship to toilet facilities and cleaning efficacy.

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