Plastic baton round injuries
D Hughes, K Maguire, F Dunn, S Fitzpatrick, L G Rocke

Objectives: To review the injuries resulting from a new plastic baton round.
Methods: Review of case notes of patients presenting with injuries caused by plastic baton rounds over a four month period in Northern Ireland.
Results: Twenty nine patients were identified, 28 with 30 injuries were included in the study. Eighty nine per cent were male; the average age was 24.3 years. Seven patients required admission. There were no fatalities. Five injuries were to the upper limbs and 16 to the lower limbs. Three patients sustained pulmonary contusions. There were no head injuries.
Conclusions: Although the numbers in this study are small it should be noted that no patient suffered a face, neck, or head injury. This is in contrast with previous studies in which up to 41.4% of attendances were for face, neck, or head injuries. In this study there were seven injuries to the trunk. Of the 14 deaths attributable to plastic baton rounds in Northern Ireland, all have been the result of head or chest trauma.

METHODS
Patient records were collected retrospectively from all accident and emergency departments in Northern Ireland. Only three departments reported seeing patients with injuries said to be caused by plastic baton rounds. These were two hospitals in Belfast, the Royal Victoria Hospital and the Ulster Hospital and one in Portadown—Craigavon Area Hospital. As a further means of checking on the total number of injuries inflicted from baton rounds fired in Northern Ireland discussions were held with the office of the Police Ombudsman for Northern Ireland and The Independent Assessor of Military Complaints Procedures.

All sets of notes collected were reviewed and the following data were collected—age of patient, sex of patient, site of injury, and whether or not the patient required hospital admission. For all patients an injury score was then calculated, using the abbreviated injury scale. Injuries are ranked on a scale of 1 to 6, with 1 being minor, 3 serious and 6 an unsurvivable injury. This represents the “threat to life” associated with an injury and is not meant to represent a comprehensive measure of severity.

RESULTS
The notes from 29 patients were collected from the three A&E departments. One patient was excluded as he gave two different accounts of how he sustained his injury at two separate attendances. The remaining 28 patients sustained 30 injuries attributable to baton rounds (two patients were struck on two contiguous regions of the body by a single plastic baton round or by more than one plastic baton round). There were 25 male and three female patients. Of the 28 patients, seven patients required hospital admission. There were no fatalities or intensive care unit admissions. The ages of the patients ranged from 13 years to 47 years with a mean of 24.3 years.

Of the seven patients admitted, three had sustained a pulmonary contusion and required supplemental oxygen, nebulisers, and overnight observation with outpatient review.
One had a soft tissue injury to the leg and was felt to be at risk of developing a compartment syndrome. Three had sustained fractured, two to the upper limb, both of which required internal fixation. One of these was a compound comminuted elbow fracture. The patient with the serious lower limb injury had sustained a compound calcaneal injury. Two patients sustained pre-tibial lacerations that required up to four weeks' outpatient follow up and treatment. No patient presented with an injury to the head, face, or neck during the study period. Table 1 shows the AIS scoring of injuries.

### DISCUSSION

Northern Ireland occupies a unique position within the UK because of its history of civil unrest over the past 30 years. The security forces in Northern Ireland have used plastic baton rounds since their introduction in 1973. In the rest of the UK they have been available for use by police forces since 1988 but had never been used until 2002, after the authorisation of the Home Office to use them as a less lethal alternative to firearms. These missiles are intended to cause painful, non-serious, or life threatening injuries thus dissuading people engaged in activities of civil unrest. At the time of writing the use of plastic baton rounds has been reported twice on the UK mainland. The first occasion was in north Wales in February 2002 and the second in Surrey in April 2002.

Clinically the mode of injury is essentially blunt trauma. Because of the small cross section area and high energy delivered this has the potential to cause serious injury. The usual superficial injury seen on a patient struck by a plastic baton round is a roughly 4 cm diameter circular abrasion with an area of surrounding contusion (see fig 1). The numbers in this study are small but it is important to note that no patient suffered a face, neck, or head injury. The four previous studies by Sheridan and Whitlock,4 Rocke,5 Ritchie,6 and Steele6 respectively had 40.5%, 41.4%, 23%, and 19.2% of patients with head, face, or neck injuries. In this study 26% of injuries were truncal and the potential seriousness of these injuries should not be overlooked. There was no statistical difference between the areas of the body hit when compared with the last study by Steele until we looked at the number of head injuries (using Fisher’s exact test ). Here there was a significant difference in this group (p = 0.032) that would be expected with no injuries in our study group. Of the 14 deaths attributable to plastic baton rounds in Northern Ireland, all have been the result of head or chest trauma and therefore reductions in injuries to these areas is most important. Three of our patients did present with pulmonary contusions, easily identifiable as discrete circular areas of increased density on the chest radiograph.

Most injuries were to the upper or lower limbs. While most of these were uncomplicated soft tissue injuries we did see a number of more serious compound and/or comminuted fractures, two of which required internal fixation. With unrest growing around the world and police forces from America to Italy using plastic baton rounds it almost seems inevitable that these missiles will come more to the fore in Britain. It is therefore important to make the point that the risk of death or severe injury is very much reduced if the impact on the body is below the rib cage or on limbs only.

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### REFERENCES