

# The casualty profile from the Manchester bombing 1996: a proposal for the construction and dissemination of casualty profiles from major incidents

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## Abstract

**Objective**—To produce a casualty profile for the Manchester bombing and to illustrate the potential uses of such templates in major incident planning.

**Methods**—A retrospective review of casualty notes from the Manchester bombing.

**Results**—A complete anonymous casualty profile for the Manchester bombing is given with AIS90 coded injuries. The majority (129, 62%) of casualties sustained minor injuries from flying glass. A significant number of casualties (36, 18%) presented with emotional distress or medical problems. A wide age range of casualties was involved. Few patients (19, 9%) required admission to hospital. There were no deaths and no casualties sustained major trauma.

**Conclusions**—Casualty profiles may be useful in the planning and testing of health service major incident plans. Such information should be easily accessible to all emergency planners.

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Keywords: casualty profile; Manchester bombing; major incident plans.

On the 15th of June 1996 a bomb detonated in the centre of Manchester. It was the largest bomb ever detonated on the British mainland by the IRA. Although the immediate area had been cleared there were still several thousand people present in the city centre at the time of detonation. The bomb caused damage over a wide area, with over 200 people being injured up to half a mile from the site of the explosion.

Major incidents, although relatively rare events, present special problems for the emergency services. Their infrequent nature makes planning and the motivation for planning difficult to achieve. Although it is necessary to adopt an all-hazards approach to emergency planning, a lot can be learnt from an examination of past incidents. An appreciation of the demographics of casualties and their injuries from major incidents may be of value for assessing equipment, staffing, and organisational procedures when writing and testing plans. At present, information on the pattern of injuries sustained in past major incidents is lacking. We have assembled an anonymous

Table 1 Mechanism of injury for the casualties

Mechanism of injury	Number	Percentage
Flying glass	129	62%
Blunt trauma	41	20%
Medical/psychological	36	17%
Did not wait	2	1%

casualty profile from the Manchester bombing on 15 June 1996 for use by all emergency planners.

## Methods

A retrospective review of all emergency department notes was conducted in the nearest five hospitals to the scene of the explosion. This included one paediatric and four adult hospitals. Information was obtained for casualties attending the emergency departments on the day of the incident. Casualties presenting to hospitals on subsequent days were not included in the analysis. Casualties were included in the profile if their presenting complaint had been caused by, or precipitated by, the bombing. Injuries were classified according to the abbreviated injury score, 1990 edition,<sup>1</sup> by the authors. Casualties presenting to the accident and emergency (A&E) departments on the day of the incident with conditions not directly caused by the bomb were excluded from the profile.

The best possible description of injury was obtained from the casualty cards, although this was often quiet brief.

## Results

A comprehensive list of the casualties is presented in the appendix. The two most serious injuries for each casualty have been recorded, together with the corresponding AIS90 code.<sup>1</sup> A breakdown of the mechanism of injury is given in table 1, and table 2 shows the disposal of the casualties. The figure shows the age range of casualties on which data were available.

Table 2 Disposal of casualties

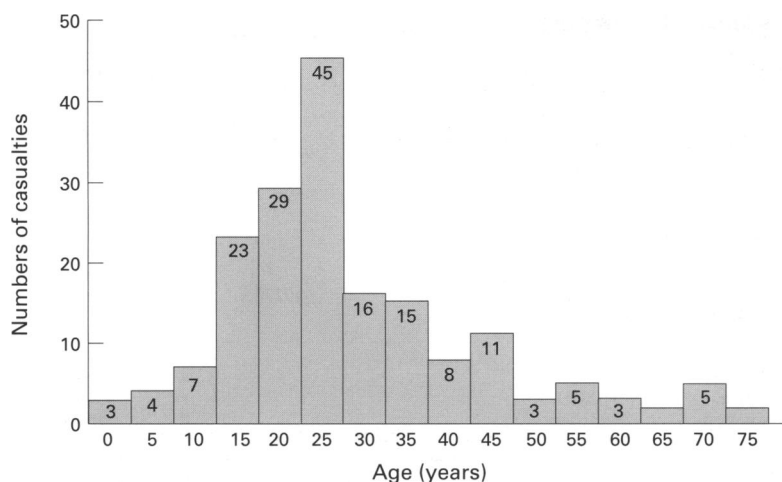
Disposal	Number	Percentage
Home	186	89%
Admitted for observation	10	5%
Admitted for operation	8	4%
Transferred for operation	1	0.5%
Did not wait	2	1%

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Age range of casualties.

### Discussion

All records related to the incident were included in the template; this list is unlikely to be exhaustive as some patients presented to distant hospitals or were not identified as being related to the incident on their record.

Seriously ill casualties unrelated to the bombing continued to present during the incident, arriving either by private transport or by ambulance. These casualties have not been included in the profile, as the profile should be superimposed upon a service's normal workload. This workload will obviously differ greatly between hospitals. An appreciation of the management of patients unrelated to an incident should be made whenever the profile is used.

A wide age range of casualties was involved in this incident (figure). A significant number of casualties (12%) were paediatric. Care must be taken when designing and testing plans that adequate provision is made for paediatric casualties.

Although the majority of injuries were caused by flying glass, many injuries resulted from blunt trauma (19.7%) (table 1). Thirty six casualties (17.3%) presented to A&E departments (and progressed through triage) with emotional and medical problems precipitated by the bomb. Such patients should be anticipated in future incidents and plans made to deal with them.

The large number of injuries caused by flying glass placed a heavy burden on the radio-

logy departments. Fifty per cent of casualties had some form of radiological investigation performed.

The vast majority (89.4%) of casualties returned home from the A&E department, though 10 were admitted for observation and nine were admitted for subsequent operation (table 2). The receiving hospitals progressed little beyond the reception phase of their major incident plans, and there was no significant effect upon routine work in the receiving hospitals beyond the day of the incident itself.

Several papers have recorded brief descriptions of the severities of injury sustained in terrorist bombings, although many of these are now quite old.<sup>2-18</sup> However, there is generally insufficient detail available on either the nature of the injuries sustained or the demographics of the casualties involved to aid planning.

It has previously been suggested that a database should be constructed for the description of each major incident to facilitate planning.<sup>15</sup> We propose that the casualty profile for all major incidents be offered for publication in this journal soon after it occurs. Submission of a simple profile, as we have described, would take little effort by receiving hospitals. The exact structure of the profile may change with different types of incident (for example, burns) but the basic structure should remain the same.

Casualty profiles for different types of incidents will allow proper planning of staff equipment and support services during major incidents. Furthermore, hospital major incident plans should be tested on a regular basis, either as full incident scenarios with live casualty simulations or as table top exercises or PEWCs (Practical Exercise Without Casualties). In order to make such exercises as realistic as possible it is desirable that a realistic casualty profile is used.

### CONCLUSION

Casualty profiles from real major incidents may be useful in planning and testing health service major incident plans. Detailed information on casualty profiles should be available to all professionals involved in emergency planning.

We would like to thank the consultants of the receiving hospitals for permission to review their patients' data.

### Appendix

#### List of injuries and disposal

	Age	MOI	Injury 1	AIS code 1	Injury 2	AIS code 2	X ray	Disposal
1		blunt	ear perforation	240216.1			y	home
2		blunt	abdo injury	515099.9	pregnant		n	admitted
3		blunt	ankle strain	850206.1			n	home
4		blunt	back strain	640678.1			y	home
5	1	blunt	head contusion	110402.1			n	home
6	11	blunt	wrist fracture	751800.2			y	home
7	14	blunt	knee contusion	850802.1			y	home
8	14	blunt	leg abrasion	810202.1			n	home
9	14	blunt	shoulder strain	751020.1			n	home
10	15	blunt	arm contusion	710402.1			n	home
11	15	blunt	facial contusions	210402.1			n	home
12	17	blunt	knee strain	850826.2	emotional distress		n	home
13	17	blunt	neck strain	640278.1			y	home

	<i>Age</i>	<i>MOI</i>	<i>Injury 1</i>	<i>AIS code 1</i>	<i>Injury 2</i>	<i>AIS code 2</i>	<i>X ray</i>	<i>Disposal</i>
14	18	blunt	? ear perforation	240216.1			n	home
15	19	blunt	head contusion	110402.1			y	home
16	20	blunt	head contusion	110402.1			y	home
17	22	blunt	ankle strain	850206.1			y	home
18	22	blunt	head laceration	110602.1	back strain	640678.1	n	home
19	23	blunt	knee strain	850826.2			y	home
20	23	blunt	neck strain	640278.1	back strain	640678.1	y	home
21	24	blunt	back strain	640478.1			n	home
22	25	blunt	head laceration	110602.1			y	home
23	26	blunt	? ear perforation	240216.1			n	home
24	27	blunt	back contusion	710602.1			y	home
25	27	blunt	back strain	640678.1	neck strain	640278.1	n	home
26	27	blunt	head contusion	110402.1			y	home
27	29	blunt	shoulder strain	751020.1			y	home
28	30	blunt	? ear perforation	240216.1			n	home
29	31	blunt	neck strain	640278.1			n	home
30	32	blunt	shoulder strain	751020.1			y	home
31	34	blunt	? ear perforation	240216.1			n	home
32	34	blunt	abdominal contusion	510402.1			y	home
33	34	blunt	back strain	640678.1	ankle strain	850206.1	n	home
34	35	blunt	elbow sprain	750620.1			y	home
35	35	blunt	facial laceration	210602.1			n	home
36	41	blunt	back strain	640678.1	neck strain	640278.1	y	home
37	42	blunt	head contusion	110402.1			y	home
38	45	blunt	head laceration	110602.1	neck strain	640278.1	y	home
39	46	blunt	neck strain	640278.1			n	home
40	56	blunt	facial fracture	250400.1			y	operation
41	57	blunt	? ear perforation	240216.1			n	home
42		dnw	unknown				n	dnw
43	42	dnw	unknown				n	home
44		fg	back laceration	410602.1	arm laceration	710602.1	y	home
45		fg	facial laceration	210602.1			y	home
46		fg	facial laceration	210602.1	facial laceration	210602.1	y	home
47		fg	hand laceration	710602.1			y	home
48		fg	head laceration	110602.1	finger laceration	710602.1	y	home
49		fg	head laceration	110602.1			n	home
50		fg	leg laceration	810602.1	leg laceration	810602.1	n	home
51		fg	multiple lacerations	910600.1			n	home
52		fg	tendon laceration, hand	740200.1			y	transfer
53	1	fg	finger laceration	710602.1	wrist laceration	710602.1	y	home
54	1	fg	head laceration	110602.1			n	home
55	4	fg	eye	240602.1			n	home
56	6	fg	arm laceration	710602.1	knee laceration	810602.1	y	home
57	6	fg	head laceration	110602.1			y	home
58	7	fg	leg laceration	810602.1	thigh laceration	810602.1	n	home
59	11	fg	head laceration	110602.1			n	home
60	12	fg	eye	240602.1			n	home
61	12	fg	eye	240602.1			y	home
62	12	fg	facial laceration	210602.1			y	home
63	12	fg	finger laceration	710602.1			y	home
64	12	fg	leg laceration	810602.1			y	operation
65	13	fg	thigh laceration	810602.1	calf laceration	810602.1	y	home
66	14	fg	arm laceration	710602.1			y	home
67	14	fg	eye	240602.1			n	home
68	14	fg	hand laceration	710602.1	thumb laceration	710602.1	y	home
69	14	fg	head laceration	110602.1	hand laceration	710602.1	y	home
70	14	fg	knee laceration	810602.1	hand laceration	710602.1	y	home
71	14	fg	thumb laceration	710602.1			y	home
72	15	fg	eye	240602.1			n	home
73	15	fg	foot laceration	810602.1			n	home
74	16	fg	back laceration	410602.1	finger laceration	710602.1	y	home
75	16	fg	leg laceration	810602.1	arm laceration	710602.1	y	home
76	17	fg	calf laceration	810602.1			y	home
77	17	fg	head laceration	110602.1			y	home
78	18	fg	arm laceration	710802.1			y	home
79	18	fg	finger laceration	710602.1			n	home
80	19	fg	hand laceration	710602.1			y	operation
81	19	fg	head laceration	110602.1			y	home
82	19	fg	head laceration	110602.1			y	home
83	20	fg	arm laceration	710602.1			y	home
84	20	fg	back laceration	410602.1			n	home
85	20	fg	eye	240602.1			n	home
86	20	fg	head laceration	110602.1			n	home
87	20	fg	thumb laceration	710602.1	finger laceration	710602.1	y	home
88	20	fg	unknown				n	dnw
89	21	fg	back laceration	410602.1			n	home
90	21	fg	head laceration	110602.1			y	admitted
91	22	fg	hand laceration	710602.1			y	home
92	22	fg	head laceration	110604.2			y	admitted
93	22	fg	leg laceration	810602.1			n	home
94	22	fg	leg laceration	810602.1	hand laceration	710602.1	y	operation
95	22	fg	leg laceration	810602.1			y	operation
96	22	fg	thumb laceration	710602.1			y	home
97	23	fg	ankle laceration	810602.1			y	home
98	23	fg	back laceration	410602.1			n	home
99	23	fg	facial laceration	210602.1			y	operation
100	23	fg	hand laceration	710602.1			y	home
101	23	fg	leg laceration	810600.1			y	home
102	23	fg	shoulder laceration	710600.1			y	home
103	24	fg	arm laceration	710602.1	thigh laceration	810602.1	n	home

	Age	MOI	Injury 1	AIS code 1	Injury 2	AIS code 2	X ray	Disposal
104	24	fg	head laceration	110602.1	facial laceration	210602.1	n	home
105	24	fg	multiple lacerations	910600.1			n	home
106	24	fg	shoulder laceration	710602.1			y	home
107	25	fg	arm laceration	710602.1			n	home
108	25	fg	facial laceration	210602.1	ear avulsion	210800.1	y	home
109	25	fg	facial laceration	210604.2			y	admitted
110	25	fg	head laceration	110602.1	back laceration	410602.1	y	admitted
111	25	fg	head laceration	110602.1			y	home
112	25	fg	leg laceration	810600.1			y	home
113	25	fg	leg laceration	810602.1	shoulder laceration	710602.1	n	home
114	25	fg	neck laceration	310602.1	thigh laceration	810602.1	n	home
115	26	fg	arm laceration	710600.1			y	home
116	26	fg	arm laceration	710602.1	hand laceration	710602.1	y	home
117	26	fg	back laceration	410602.1	hand laceration	710602.1	y	home
118	26	fg	finger laceration	710602.1	elbow laceration	710602.1	y	home
119	26	fg	head laceration	110602.1	arm laceration	710602.1	y	admitted
120	26	fg	head laceration	110602.1	head contusion	110402.1	n	home
121	26	fg	leg laceration	810602.1			y	home
122	26	fg	thigh laceration	810602.1	arm laceration	710602.1	y	home
123	27	fg	arm laceration	710602.1	leg laceration	810602.1	y	home
124	27	fg	finger laceration	710602.1	head laceration	110602.1	y	home
125	27	fg	finger laceration	710602.1	ankle laceration	810602.1	n	home
126	27	fg	head laceration	110602.1			y	home
127	27	fg	head laceration	110602.1	finger laceration	710602.1	y	home
128	28	fg	head laceration	110602.1			y	home
129	29	fg	head laceration	110602.1	back laceration	410602.1	n	home
130	29	fg	leg laceration	810602.1			n	home
131	29	fg	tendon laceration, leg	840200.2			y	operation
132	30	fg	back laceration	410602.1	finger fracture	752404.1	y	home
133	31	fg	head laceration	110602.1	arm laceration	710602.1	n	home
134	32	fg	foot laceration	810602.1			y	home
135	32	fg	head laceration	110600.1	hand laceration	710600.1	n	home
136	32	fg	leg laceration	810602.1			n	home
137	32	fg	wrist laceration	710602.1	knee laceration	810602.1	y	home
138	33	fg	ankle laceration	810602.1			y	home
139	34	fg	ankle laceration	810602.1			n	home
140	34	fg	hand laceration	710602.1			y	home
141	35	fg	ankle laceration	810602.1			y	home
142	35	fg	arm laceration	710602.1	thumb laceration	710602.1	y	home
143	36	fg	back laceration	410602.1			n	home
144	36	fg	facial laceration	210602.1	thigh laceration	810602.1	y	home
145	36	fg	thigh laceration	810602.1	calf laceration	810602.1	y	home
146	37	fg	calf laceration	810602.1	thigh laceration	810602.1	y	home
147	40	fg	back laceration	410602.1			y	home
148	42	fg	face degloving	210804.2	hand tendon	740200.1	y	operation
149	42	fg	leg laceration	810600.1			y	home
150	42	fg	leg laceration	810600.1			y	home
151	42	fg	leg laceration	810600.1			y	home
152	43	fg	facial laceration	210602.1			n	home
153	43	fg	head laceration	110602.1	facial laceration	210602.1	n	home
154	44	fg	leg laceration	810602.1	head laceration	110602.1	n	home
155	45	fg	facial laceration	210602.1			n	home
156	46	fg	back laceration	410602.1			y	home
157	46	fg	elbow laceration	710602.1			y	home
158	46	fg	head laceration	110602.1			y	home
159	48	fg	head laceration	110602.1	back laceration	410602.1	y	home
160	49	fg	digital nerve	730299.1	finger laceration	710602.1	y	home
161	54	fg	leg laceration	810602.1	arm laceration	710602.1	n	home
162	56	fg	head laceration	110602.1			n	home
163	59	fg	head laceration	110602.1	abdo laceration	510602.1	n	home
164	60	fg	head laceration	110602.1			n	home
165	63	fg	hand laceration	710602.1			n	home
166	64	fg	head laceration	110602.1	ankle laceration	810602.1	y	home
167	68	fg	hand laceration	710602.1			y	home
168	69	fg	facial laceration	210602.1	facial laceration	210602.1	n	home
169	70	fg	arm laceration	710602.1	head contusion	110402.1	n	home
170	70	fg	hand laceration	710602.1	head laceration	110602.1	y	home
171	71	fg	arm laceration	710602.1	wrist laceration	710602.1	y	home
172	74	fg	leg laceration	810602.1			n	home
173		na	angina				n	admitted
174		na	asthma				n	home
175		na	diabetic				n	home
176		na	emotional distress				n	home
177		na	emotional distress				n	home
178		na	emotional distress				n	home
179		na	emotional distress				n	home
180		na	emotional distress				n	home
181		na	emotional distress				n	home
182		na	emotional distress				n	home
183		na	emotional distress				n	home
184		na	emotional distress				n	home
185		na	headache				n	home
186	14	na	emotional distress				n	home
187	17	na	? labour				n	admitted
188	17	na	emotional distress				n	dnw
189	18	na	emotional distress				n	home
190	18	na	emotional distress				n	home
191	18	na	emotional distress				n	home
192	20	na	emotional distress				n	home
193	21	na	faint				n	home
194	23	na	diabetic				n	home

	Age	MOI	Injury 1	AIS code 1	Injury 2	AIS code 2	X ray	Disposal
195	23	na	emotional distress				n	home
196	24	na	emotional distress				n	home
197	25	na	asthmatic				n	home
198	26	na	diabetic				n	home
199	26	na	emotional distress				n	home
200	28	na	emotional distress				n	home
201	29	na	emotional distress				n	home
202	34	na	epilepsy				n	home
203	43	na	angina				n	admitted
204	47	na	emotional distress				n	home
205	52	na	emotional distress				n	home
206	56	na	angina				y	admitted
207	58	na	asthma				n	home
208	74	na	emotional distress				n	home

y,yes; n,no; MOI,mechanism of injury; fg,flying glass; blunt,blunt trauma; dnw,did not wait; na,not applicable.

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## British Association of Plastic Surgeons Advanced course in plastic surgery 6:2

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