Controlled observational study and economic evaluation of the effect of city-centre night-time Alcohol Intoxication Management Services on the emergency care system compared to usual care

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Abstract

Background

Alcohol Intoxication Management Services (AIMS) provide an alternative care pathway for alcohol-intoxicated adults otherwise requiring emergency department (ED) services and at times of high incidence. We estimate the effectiveness and cost-effectiveness of AIMS on ED attendance rates with ED and ambulance service performance indicators as secondary outcomes.

Methods

A controlled longitudinal retrospective observational study in English and Welsh towns, six with AIMS and six without. Control and intervention cities were matched by socio-demographic characteristics. The primary outcome was ED attendance rate per night, secondary analyses explored hospital admission rates and ambulance response times. Interrupted time series analyses compared control and matched intervention sites pre- and post-AIMS. Cost-effectiveness analyses compared the component costs of AIMS to usual care before with results presented from the NHS and social care prospective. The number of diversions away from ED required for a service to be cost-neutral was determined.

Results

Analyses found considerable variation across sites, only one service was associated with a significant reduction in ED attendances (-4.89, $p < 0.01$). The services offered by AIMS varied. On average AIMS had 7.57 (mean minimum = 1.33, SD = 1.37 to mean maximum = 24.66, SD = 12.58) in attendance per session, below the 11.02 diversions away from ED at which services would be expected to be cost-neutral.

Conclusions

AIMS have variable effects on the emergency care system, reflecting variable structures and processes, but may be associated with modest reductions in the burden upon ED and ambulance services. The more expensive model, supported by the ED, was the only configuration likely to divert patients away from ED. AIMS should be regarded as fledgling services that require further work to realise benefit.

Registration

http://www.isrctn.com/ISRCTN63096364

Introduction

Alcohol-related calls and attendances create an unnecessary burden on all frontline emergency services, including hospital emergency departments (EDs). [1] Up to 70% of patients attending EDs on Friday and Saturday evenings will have consumed alcohol, [2 3] 8% to 15% at other times. [2 4 5] Approximately 40% of all alcohol-related attendances arrive by ambulance. [6] In response, a number of jurisdictions have developed Alcohol Intoxication Management Services (AIMS, "drunk tanks" in lay terminology), both in the UK and elsewhere, as a safe and less resource intensive option for managing these patients. [7 8]

AIMS are fixed or mobile facilities typically located in city centres and close to areas of alcohol consumption and are open during times of high incidence of alcohol intoxication, weekend or bank holiday nights. They are staffed by health care professionals or volunteers and are intended to provide an environment for, and as an alternative to, ED attendance and for people with either uncomplicated intoxication or intoxication associated with minor injury or ailment. AIMS have attracted interest from policy makers based on their potential to divert people to more appropriate facilities. NHS England is currently considering whether AIMS should be routinely used to reduce pressure on EDs and ambulance services at times of high demand. [9 10] However, there is a paucity of evidence on the effectiveness and cost effectiveness of AIMS. [1 11]

The EDARA study (Evaluating the Diversion of Alcohol-Related Attendances) was undertaken to evaluate the acceptability, effectiveness and cost-effectiveness of AIMS in providing an alternative to ED attendance for acute alcohol intoxication. [7] Qualitative interviews and an observational survey of AIMS users across different types of AIMS found high levels of satisfaction, a positive experience of care, and a preference for treatment in AIMS over ED. An ethnographic component found the facilities were popular with frontline staff across healthcare, ambulance and police services. [12 13] We report findings evaluating the effect of AIMS upon ED attendances and ambulance key performance indicators and the cost-effectiveness in terms of costs per ED attendance avoided.

Methods

Design

We undertook a natural controlled experiment comparing areas in which AIMS were established (intervention sites) to matched areas without AIMS (control sites). The study received approval from the NHS Research Ethics Committee (REC 3, Health and Care Research Support Centre, Castlebridge 4, 15-19 Cowbridge Road East, Cardiff, CF11 9AB) (REC Reference: 16/WA/0065; Protocol Number: v4.6 SPON1472-15; IRAS Project ID: 192273).

Intervention

AIMS were mostly realised as a partnership between ambulance and police services, one was led by the local ED and involved local ED nurse practitioners, and one was volunteer led. Services received referrals from the ambulance service, police service and third sector volunteer services operating in the night-time environment, other than the volunteer led AIMS that did not receive patients from the local ambulance service. Capacity varied, with mobile sites only able to manage a smaller number of patients, fixed sites had greater capacity (table 1). All were open evenings and early mornings and all, apart from one, were open Friday and Saturday evenings, the other was open Wednesday and Saturday. Only the nurse practitioner led service collected critical incident data and made this available to ED for root cause analysis of critical incidents. The clinical facilities available in AIMS varied (table 1). Of note, not all AIMS routinely tested patients' blood glucose levels to rule out hypoglycaemia. The motivation for services varied, none were initially commissioned, most were in response to perceived frontline need and one was in response the death of three young people socialising and consuming alcohol in the local night-time environment.

Sampling

The intention was to opportunistically sample sites to maximise variation between AIMS, from clinically- to volunteer-led services, and across mobile (e.g. a bespoke ambulance) and fixed sites with premises (Appendix 1, provides AIMS descriptions). AIMS were eligible if they were routinely operational and received those exhibiting Acute Alcohol Intoxication (AAI) as an alternative care pathway. We matched six intervention and control site pairs, without AIMS, using population characteristics. [14] These population characteristics group UK cities into similar families and a requirement for intervention sites was that they could be matched with a control city in the same family. Because two intervention sites were unable to participate in other aspects of the evaluation (table 2) this was increased to eight intervention and six matched control sites, with control sites matched to more than one intervention site in paired analyses.

Study population

The evaluation involved a controlled before-after analysis of ED attendances and key performance indicators using routine health and ambulance service data. AAI-specific routine data was not available. The local ED into which AAI would typically be referred from the local night-time environment (NTE) for both control and intervention sites was identified. The study population was those aged 14 years and older who sought emergency care between 16th November 2010 to 31st March 2016 from providers within the catchment area of the acute trust covering the location of the AIMS or a comparable location in a control city or town (i.e. the main area of activity for the night time economy). The population was restricted to those attending during the hours of AIMS activity at the intervention sites, or equivalent hours at the paired control sites. Data were collected before and after implementation of the AIMS (provided data sources were available before AIMS implementation) so that analysis could estimate the effect of AIMS while adjusting for baseline differences between AIMS and control sites and changes in emergency care use over time. Data were accessed from NHS Digital (England) or NHS Wales Informatics Service. Ambulance service response time data were requested from ambulance services covering intervention and control sites. Ambulance services cover large geographical areas, often including more than one study site. We therefore requested data from calls originating within the administrative post codes of the respective city so that ambulance data related to a specific study site.

Outcomes

The primary outcome from the routine data was the count of ED attendances during times of AIMS activity (i.e. the number of attendances per night). Secondary outcomes included the proportion of ED attendances achieving the 4-hour target for total time in the ED, the proportion of high priority ambulance calls achieving the 8-minute and 19-minute targets for ambulance response and costs per ED attendance avoided for cost-effectiveness analysis.

Analysis

For single (intervention only) city, and paired (control and intervention city) analyses, Interrupted Time Series Analysis (ITSA) [15] was used to identify the effect on outcomes at the time of AIMS implementation and any post-implementation trend. To determine the overall effect of AIMS on ambulance response times and ED discharge times, data were realised as a panel and a random-intercept fixed-slope multilevel difference-in-difference (DiD) model as a logit for binary target-specific outcomes (call responded to within 19 minutes or not, discharged from ED within four hours). The predicted change across AIMS implementation was estimated. A linear time component was included to account for changes in demand over time. Stata v15 was used for all analysis. [16] Further details of the effectiveness analysis are provided in Appendix 2.

Cost-Effectiveness Analysis

The cost-effectiveness analysis was undertaken according to the Consolidated Health Economic Evaluation Reporting Standards. The component costs of AIMS were compared to usual care before an AIMS was introduced, and results are presented from the NHS and social care prospective. AIMS set up and running costs were examined by a standardised costing exercise (e.g. staffing levels, training, consumables, overheads including building rental, heating and lighting) and from commissioning documents. We used single city time series analysis (described above) to examine ED attendance data and Department of Health Reference Costs were applied to the cost ED services. [17] We present primary analysis as cost per ED attendance avoided with resource variables explored including AIMS attendances and ED attendances. This analysis explains the effect of AIMS on NHS resources. Ninety-five percent confidence limits for incremental cost effectiveness of each AIMS were estimated based on the upper and low CI for the measure of effectiveness in each centre. Further details for the cost-effectiveness calculations are provided in Appendix 3. A sensitivity analysis (SA) included ambulance costs (table 2, SA1) and in-patient admission costs for those patients who went on to have an alcohol related admission (table 2, SA2). Ambulance costs were obtained from Department of Health reference costs and in-patient costs were obtained from HRG codes using two alternative methods – these methods are detailed in Appendix 3. Results are presented over a one-year time horizon, discounting was not applied.

Patient and Public Involvement

Patient and Public Involvement (PPI) was extensive, and given the subject area, recruited those with experience of alcohol and other drug use. [18] Individuals were recruited from the Health and Care Research Wales public involvement community, The Sheffield Emergency Care Forum and Sheffield Addiction Recovery Research Panel. PPI members reviewed research questions, methods and the design of research materials, recruitment processes, participated in the Study Steering Committee, and assisted with data interpretation. They advised on participant recruitment but did not advise on the burden of the intervention. They assisted in the development of dissemination strategies, including which groups might be targeted.

Results

-=Insert Table 1 about here=-

-=Insert Table 2 about here=-

Population

One Ambulance Service was unable to provide data so results for sites E and G (and the matched sites) are missing from analysis of ambulance response times targets. Furthermore, there was a change in call categorisation during the study period at the Welsh Ambulance Service. This meant that Welsh and English site data were no longer comparable. We were therefore unable to undertake a pooled analysis of ambulance data across all sites but instead limited pooled analysis to English sites. Site D ceased operation before the end of the follow-up period and was dropped.

Outcomes

Descriptive statistics for individual sites are presented in table 2. Data from 2,762 AIMS sessions were available and comparable time periods in associated EDs and matched control EDs. Across implementation, intervention site ED attendances increased from an average of 78.78 to 80.07, whereas control sites increased from 74.36 to 79.50 (excluding site H). ITSA analyses pre- post- AIMS implementation and across intervention cities individually (table S4) highlighted considerable variability, consistent with the variability in service configuration (table 1). Only one site (A; figure 1; see figure S1, appendix 2, for plots of all sites included in analyses) yielded a significant initial reduction in ED attendances after Bonferroni adjustment (-4.89, $p < 0.01$), and a post-implementation trend suggesting a bedding in period with attendances falling further up to the end of the evaluation period (trend = -0.014, $p < 0.01$). This effect was replicated in ITSA analyses comparing control and intervention sites pre- to post-implementation (table S5 & S6, initial reduction -6.34, $p < 0.01$; trend = -0.018, $p < 0.001$). As ITSA is potentially biased when control and intervention levels are discrepant at baseline, [15] the more conservative uncontrolled ITSA analyses were used in cost-effectiveness modelling, taking into account any post-implementation trend.

AIMS attendance was low, 7.57 patients on average per session. This is notable as it has previously been estimated that up to 70% of patients attending EDs will have consumed alcohol. [2 3] Even if all AIMS attendances were diversions from ED, which is unlikely, [12] the majority of patients in ED who have consumed alcohol require specialist treatment and are therefore not suitable for AIMS, patients suitable for AIMS are not being appropriately diverted to AIMS, or a mixture of both.

In respect of the ED targets, intervention sites saw a reduction in the percentage of patients being seen within four hours, from 84.33% to 75.94% and control sites a reduction from 85.97% to 71.07%. For the ambulance 8-minute response threshold, intervention sites saw a reduction in the percent of calls responded to within eight minutes (from 58.16% to 48.42%) and 19 minutes (from 94.58% to 90.02%) a similar trend was observed in controls sites for the 8 minute threshold (from 57.02% to 47.28%) and 19 minute threshold (from 94.10% to 90.52%). Referring to tables 1 and 2, AIMS varied considerably according to the clinical services provided, capacity, attendance, and other key features. This reduces the opportunity to evaluate these services as a uniform service.

-= Insert Figure 1 about here=-

No overall effect in DiD models for AIMS on the change in proportion of patients discharged from ED within the four-hour target across AIMS implementation was observed (95% CI -0.039 to 0.069, p = 0.58). For ambulance response times, DiD models were not implemented due to inconsistencies between English and Welsh Ambulance Service data. For English sites only no effect on the proportion of calls reached within eight-minutes was observed (95% CI -0.010 to 0.016, p = 0.63) but there was for the nineteen-minute target (change = 0.023, 95% CI 0.018 to 0.029, p < 0.001), suggesting that 2.3% more 19-minute targets were met when AIMS were operational.

Cost-effectiveness analyses (table 2) estimated the threshold at which AIMS would be cost-neutral, all estimates of diversion account for any post implementation trend. In most cases the number of diversions away from ED to make AIMS cost-effective is greater than the number of patients seen on a typical session. This threshold reduces as ambulance conveyance and hospital admissions avoided are included. Only Site A approaches a cost-neutral service.

Discussion

While the impact of AAI on health services has been documented, enquiry into the management of AAI in night-time environments has not and this study represents the first formal evaluation of AIMS. We found no evidence of a consistent effect of AIMS on ED attendances across the various service configurations, within only the more expensive service, led by nurse practitioners and with the support of ED, yielding a consistent effect. There were overall effects on ambulance response times, with calls more likely to achieve the 19-minute threshold. Attendance into AIMS was low. While estimates suggest up to 70% of patients attending ED on Friday and Saturday evenings will have consumed alcohol, [2 3 6] AIMS attendance was approximately 10% of ED attendances at times when AIMS were operational. This, coupled with the observation that few patients were diverted from ED, suggests that AIMS attract previously unmet need beyond that which is captured in routine ambulance and ED data. [12] The threshold at which services would be expected to become cost-neutral was only approached by the ED nurse practitioner led service.

The study has several strengths. The use of routine data and the controlled design allowed us to evaluate over a long period of time and across a range of settings. We were able to evaluate a range of different models of AIMS in a variety of typical health service settings. However, this variability is also a limitation as it deprecated the intention of evaluating a defined service, limiting our ability to draw general conclusions. Assessing statistical effectiveness of interventions, such as AIMS, is problematic. [19] While the results from one AIMS appears to be robust, due to the heterogeneity in the data we cannot go further and support a more generalised effect of AIMS. Further limitations include variation in call coding between English and Welsh ambulance services and the lack of any realistic means of identifying alcohol-related activity in routine data. While AAI can be responsible for over 20% of emergency hospital admissions, admissions are typically due to complications associated with alcohol use. [20] The likelihood that a diversionary service can reduce AAI admissions is unclear and therefore cost-effectiveness estimates using these estimates are open to interpretation. Furthermore, the true cost of AAI is not known and are likely to be wider than those considered here. Notably, we were unable to ascertain the benefit of AIMS, if any, to the police service. There will also be costs to the community, such as aggression and violence to both the public and health service staff, and risks to individuals who become vulnerable because of their alcohol use but do not necessarily require ED treatment that we have been unable to measure in this study.

UK legislation on drunkenness places AAI within the remit of the Criminal Justice System, but it is mostly managed in partnerships spanning police, ambulance and the emergency care system with healthcare often taking the lead. This, coupled with data systems that fail to identify the effect of AAI on ambulance, police and healthcare resources, preclude opportunities for appropriate nationally agreed resourcing strategies and agreed standards on the management of AAI. Instead, innovation has been motivated locally, resulting in a diversification of strategy. Ostensibly, AIMS push aspects of ED triage into the night-time environment. It is therefore notable that the only service with a reliable effect on ED attendances was the one supported by the local ED, staffed by nurse practitioners with experience of triage, and undertook critical case analysis. Clinicians and policymakers should consider the inclusion of volunteers in the patient pathway. Given the relatively limited research on how AAI is best managed in night-time environments there is a reasonable expectation that processes should be in place to ensure activities meet prescribed objectives and that activities are monitored so that service delivery can be assessed against benchmarks.

AIMS are unlikely to be cost-effective if there is no mechanism through which EDs can capitalise and reduce costs. However, external financial support could offset costs and increase the likelihood that AIMS achieve cost-neutrality. Licensed premises compete for profit from the sale of alcohol to customers and this activity imposes damages on society in the form of alcohol-related harms, but they are externalities as the costs of harm are not borne by those who supply alcohol. [21 22] Legislation is available to impose a charge on businesses in night-time environments in the form of a Late-Night Levy. The Late-Night Levy affords localities options to offset police costs associated with night-time environments by placing an annual charge on businesses operating between midnight and 6am. Such a funding model would bring the costs of AAI into the operating costs of those who gain from the sale of alcohol and potentially incentivise the responsible sale of alcohol. [23]

AIMS vary considerably in configuration and there is uncertainty across the distributed networks of those involved in managing AAI in night-time environments, where the risk profile in this context could be differentially affected by the early inclusion of nurse practitioners or volunteers in patient pathways. Work to agree the minimum requirements for the best management of AAI and contribute to agreed AIMS standard operating procedures would be beneficial. Furthermore, the routine data available to characterise the impact of AAI on services, including sexual, verbal and physical assaults on frontline staff, and therefore inform strategies to counter the cause of AAI-related costs are lacking. Methodological innovation, together with improvements to routine data capture, could work towards a more complete picture, including previously unmet need. Research could also explore how different models of AIMS provision address different health and socials needs, and specifically whether models that focus explicitly on diverting ED attendances (e.g. by mandating emergency ambulance diversion and providing more clinical input) have a greater effect than that identified in our study.

In conclusion, AIMS may have a positive effect on the emergency care system, but effects vary markedly between different service configurations. There is some evidence that facilities supported by the local emergency department and led by experienced nurse practitioners may reduce demand on the emergency healthcare system, however definitive statements on effectiveness and cost-effectiveness are limited by the poor ascertainment of alcohol-related activity across frontline services and by a high degree of variability across services. There is a need to better understand the impact of alcohol and to assess whether the nurse practitioner model can be replicated in other cities where there is an evidenced need for AIMS-like services.

Key Messages

What is already known on this subject

Alcohol intoxication creates a substantial burden for emergency departments and ambulance services at times of peak consumption (typically weekend nights). Until strategies to prevent excessive alcohol use become effective there will be a need to manage those who become vulnerable or are at risk.

Alcohol Intoxication Management Services (also known as “Drunk Tanks” or “Sobering Centres”), established in areas characterised by a high density of premises licensed for the sale and onsite consumption of alcohol, have been proposed to reduce the burden of alcohol intoxication on the emergency care system.

What this study adds

In this controlled pre- post-implementation evaluation, we found that AIMS are fledgling services that have variable and inconsistent effects on emergency care system key performance indicators. AIMS may relieve some of the burden on ED and ambulance services, but reliably achieving these benefits incurs a greater cost.

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Contributors

SCM was project lead, interpreted the data, and contributed to manuscript. TY undertook the data analysis, effectiveness modelling, and contributed to the manuscript. AI was project manager, undertook data collection and interpretation. SG led the effectiveness modelling and interpretation and contributed to the manuscript. AB led the cost-effectiveness modelling and contributed to the manuscript. YA undertook additional data analysis and contributed to the manuscript.

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Competing interests

All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and S Goodacre declares he is Chair of the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) Programme Clinical Evaluation and Trials Board and a member of the HTA Funding Boards Policy Group. Otherwise, all authors declare no financial relationships with any organisations that might have an interest in the submitted work in the previous three years; no other relationships or activities that could appear to have influenced the submitted work.

Ethical Approval

The study received approval from the NHS Research Ethics Committee (REC 3, Health and Care Research Support Centre, Castlebridge 4, 15-19 Cowbridge Road East, Cardiff, CF11 9AB) (REC Reference: 16/WA/0065; Protocol Number: v4.6 SPON1472-15; IRAS Project ID: 192273).

Data Sharing

The data used in the analyses presented here were accessed under license through NHS Digital (England) or NHS Wales Informatics Service. Ambulance service response time data were requested from ambulance services covering intervention and control sites. There are restrictions prohibiting the provision of these data. Interested parties can apply for data from the data owners. By accessing data from the data controllers readers will be obtaining them in the same manner as we did.

The lead author (the manuscript's guarantor) affirms that the manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned and registered have been explained.

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TABLES AND FIGURES

FIGURE 1

Fig 1 | Count of ED attendances during times when the ED nurse-led AIMS was operational for the AIMS site (black) and control site (grey), the vertical line indicates the date of AIMS implementation.

TABLES

TABLE 1

Table 1 | Facilities offered by AIMS

Site	A	B	C	F	G	H
Clinical Lead	ED Nurse Practitioner	Paramedic	Nurse	Paramedic, Police officer	Volunteer	Paramedic
Funding	Health Board, Police service, Ambulance Service	Police & Crime Commissioner, Home Office, Health Board	Local Government	Police & Crime Commissioner, Health Board	Police & Crime Commissioner, Church, Local Government, Charity	Local business, Private individuals, Clinical Commissioning Group
Constitution	Fixed	Fixed	Fixed	Mobile	Fixed	Mobile
Capacity	7 recumbent 18 seated	3 recumbent 5 seated	10 recumbent 10 seated	3 recumbent 8 seated	5 recumbent 5 seated	2 recumbent 3 seated
Place to recover	Yes	Yes	Yes		Yes	
Bandages/plasters	Yes	Yes	Yes	Yes	Yes	Yes
O2 level test	Yes	Yes		Yes	Yes	Yes
Blood pressure	Yes	Yes		Yes		Yes
Prescribe medication	Yes	Yes		Yes		Yes
Blood glucose test	Yes	Yes		Yes		Yes
Cardiopulmonary resuscitation	Yes	Yes	Yes	Yes	Yes	Yes
Intravenous saline	Yes	Yes				Yes
Sutures	Yes	Yes				Yes
Endotracheal intubation	Yes	Yes		Yes		Yes

TABLE 2

Table 2 | Descriptive statistics for the AIMS, with mean (SD) number of patients attending an AIMS per session, number of patients attending ED and percent of patients discharged within the four-hour target, during times when the AIMS was operational, before and after AIMS implementation and for intervention and control sites.

Site			A	B	C [a]	D	E [b]	F	G	H [c]
Mean AIMS attendance (95% CI)			11.83 (11.29 to 12.38)	9.24 (8.82 to 10.26)	6.80	2.54 (1.80 to 3.29)		8.12 (7.36 to 8.88)	2.69 (2.26 to 3.13)	5.39 (5.05 to 5.44)
ED Attendance count, mean (95% CI)										
	Intervention	Before	87.94 (64.66 to 111.22)	57.15 (37.79 to 76.51)	75.57 (53.11 to 98.03)	116.72 (81.64 to 151.80)	112.33 (86.46 to 138.20)	70.74 (47.46 to 94.02)	31.04 (17.91 to 44.17)	
		After	79.22 (58.03 to 100.41)	57.54 (39.17 to 75.91)	73.16 (49.91 to 96.41)	120.96 (93.58 to 148.34)	119.6 (87.08 to 152.12)	77.24 (54.25 to 100.23)	32.79 (20.38 to 45.20)	66.81 (44.23 to 89.39)
	Control	Before	47.91 (29.86 to 65.96)	54.48 (37.37 to 71.59)	61.85 (41.74 to 81.96)	117.06 (88.64 to 145.48)	69.24 (48.39 to 90.09)	91.34 (67.64 to 115.04)	78.65 (58.36 to 98.94)	
		After	60.06 (40.24 to 79.88)	50.55 (35.26 to 65.84)	66.37 (48.26 to 84.48)	127.38 (102.94 to 151.82)	76.82 (55.85 to 97.79)	94.41 (70.36 to 118.46)	80.91 (56.61 to 105.21)	113.01 (83.32 to 142.70)
ED 4-hour target, percent										
	Intervention	Before	71.7	61.8	91.6	89.2	92.9	95.7	87.4	
		After	70.8	45.4	86.9	86.1	88.8	88.9	64.7	87.6
	Control	Before	86.5	64.4	90.9	86.6	94.0	89.0	90.4	
		After	80.8	49.0	86.5	78.3	82.0	62.9	58.0	85.1
Ambulance calls – 8 minutes, percent										
	Intervention	Before	48.3	50.3	63.6	62.3		66.3		
		After	39.8	44.1	51.7	54.7		51.8		56.2
	Control	Before	68.0	42.5	61.7	58.0		54.9		
		After	49.8	40.2	53.0	45.7		47.7		55.0
Ambulance calls – 19 minutes, percent										
	Intervention	Before	89.6	90.9	97.8	96.1		98.5		
		After	83.4	86.2	94.5	90.8		95.2		90.5
	Control	Before	95.4	85.8	98.3	95.1		95.9		
		After	89.2	82.1	95.7	90.7		94.9		94.0
Estimated ED attendances avoided, mean (95% CI) [d]			-6.39 (-6.40 to -6.37)	-1.75 (-1.96 to -1.54)	0.00 (-1.22 to 1.22)			3.93 (3.59 to 4.28)	-1.05 (-1.26 to -0.84)	-1.05 (-1.26 to -0.84)
AIMS cost per annum			£253,643	£158,654	£165,279			£109,650	£61,389	£126,820
Threshold (ED)			-15.27	-9.72	-9.95			-7.25	-10.61	-8.14
Mean incremental cost per ED attendance avoided			£206	£676	N/A			-£422	£1,351	£1,002
Percent ambulance conveyed			45.90	51.75	43.60			51.41	46.92	48.08
SA1 Threshold (ED, ambulance)			-8.65	-5.22	-5.96			-3.90	-5.96	-4.52

SA1: Mean incremental cost per ED attendance avoided	£92.95	£547.82	N/A	-£548.74	£1,233.37	£882.26
Percent admitted alcohol	19.72	17.72	15.05	24.14	24.27	26.70
SA2 Method 1: Threshold (ED, ambulance, admission)	-5.4	-3.31	-3.28	-1.79	-2.53	-2.13
SA2 Method 1: Mean incremental cost per ED attendance avoided	£64.54	-£388.82	N/A	£874.27	-£876.23	-£581.53
SA2 Method 2: Threshold (ED, ambulance, admission)	-6.18	-3.59	-3.4	-2.08	-2.72	-2.27
SA2 Method 2: Mean incremental cost per ED attendance avoided	£11.59	-£422.02	N/A	£790.59	-£918.88	-£616.89

Notes: [a] unable to provide opening dates and numbers attending, estimates are from monthly count data; [b] unable to provide attendance data; [c] this AIMS began before the analytic period began; [d] negative value indicates a reduction