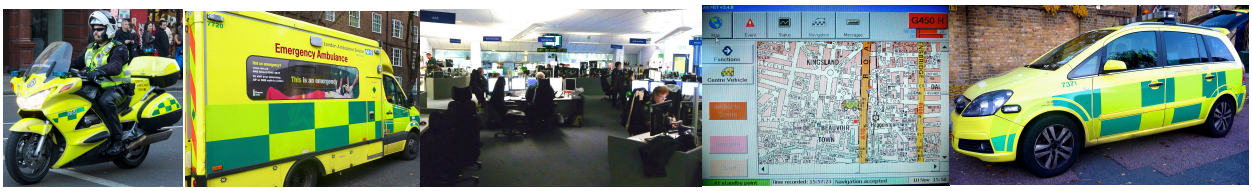

Demand Management

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1.0 Introduction

Ambulance services across the world continue to experience a consistent and sustained increase in demand for its services. The subsequent challenge is to understand the key drivers of this increase in demand, and to develop strategies to meet this demand whilst still successfully delivering on its performance targets as agreed with the relevant government body. Demand Management has progressively become a strategic theme for most ambulance services as a result of the experienced increase in demand.

Overall demand increase can have the following effects;

- Overloaded communications systems
- Increased numbers of emergency calls unable to be resourced within appropriate timeframes
- Decreased ability to maintain response performance targets
- Overall drain on available resources
- Staff fatigue and welfare issues
- Potential negative health impacts on patients
- Negative media coverage resulting in a lack of public confidence

Ambulance service workload is expected to increase well into the future due to various influences such as;

- Increased population
- Ageing population and longer life expectancies
- Unplanned large scale health and infrastructure emergencies
- Increased public expectations regarding the use of health care and ambulance systems
- Decreased availability of other health services such as GP clinics, especially after hours
- Increased number of large, planned public events and mass gatherings
- Greater media exposure to public health risks

The London and the West Midlands Ambulance Services both recognized some years ago that this continued growth in workload was having a negative impact on their ability to service the community. Consequently, both services have developed various strategies and altered the way they plan their service operations in order to meet their increasing demand.

The Emergency Services Foundation scholarship application was drafted and submitted in January 2011. In this application, the topic of “Demand Management” was the general theme of the anticipated study tour. Associated with that topic was the issue of Motorcycle Response Paramedics. This addition was quite appropriate and timely. Not only are Motorcycle Response Paramedics a Demand Management strategy in themselves, they were also quite topical at the time in Melbourne, Victoria. There had been much discussion around their possible implementation in Melbourne, but at the time of the scholarship application, nothing definite had been set. Therefore there was appropriate scope in this project to look at what Motorcycle Response Paramedic programs were already in place and what the models actually looked like. The learning’s from this could then be applied to a model that Ambulance Victoria may

implement in the future. After the scholarship was approved, it was officially announced some months later that Motorcycle Paramedics would commence operation in Melbourne on November 28th, 2011. Their introduction had to move forward regardless of this study tour. Unfortunately, the learning's from this part of the study tour would not be in time for the launch of the Melbourne model, however the information gained could be applied to the expansion of the unit in July 2012.

The aim of the tour was to conduct an international benchmarking study into ambulance service Demand Management strategies. Specifically, the objectives were;

- Understand the Demand Management strategies in place within the London and the West Midlands Ambulance Services
- Understand the scope of the strategies
- Understand their effectiveness in addressing ambulance demand
- Determine any staff welfare issues
- Examine existing Motorcycle Response Paramedic Unit models in London, Birmingham and Singapore

The study tour commenced in late October 2011, initially with the London Ambulance Service prior to moving on to West Midlands Ambulance Service, St John Ambulance UK (London) and Singapore Civil Defense, placement was organised for the following areas of the organisations;

- Clinical Audit and Research Unit
- Cycle Response Unit
- Clinical Support Desk
- Emergency Preparedness Unit
- Public Education Unit
- Performance Improvement Department
- Emergency Operations Centre (emergency call taking and dispatch)
- Clinical Telephone Advice Department
- Motorcycle Response Unit
- Corporate Communications Department
- Clinical Observer Shifts (Waterloo and Shoreditch)
- Managerial Observer Shift (Duty Station Officer and Incident Support Officer)
- Planning Cell
- Strategic Operations Cell
- Hospital Management Desk
- Resourcing Department

The following report is the result of the learning's gained from the above placements and encompasses all organisations visited.

2.0 Organisational Overview

2.1 London Ambulance Service (LAS)

The LAS is the busiest ambulance service in the UK. With over 5000 staff and 70 separate ambulance stations, the LAS services a population of more than 7 million people and responds to approximately 3,500 emergency calls each day. The LAS covers an area of 620 square miles (998 square kilometers).

2.2 West Midlands Ambulance Service (WMAS)

The WMAS operates two Emergency Operations Centre's across the trust. With a staff of approximately 4000, the WMAS responds to in excess of 2,600, '999' calls each day that come from a population of 5.36 million people in a 5000 square mile area (8047 square kilometers).

2.3 UK Response Performance Targets

Response Performance Targets for all UK ambulance services have been standardised and are very much focused towards the overall delivery of patient care rather than simply how quick an ambulance resource can arrive at the patient's side.

All '999' calls are prioritised and categorised into one of two categories;

- Category A calls – **ambulance must be in attendance within 8 minutes at the 75%ile and 19 minutes at the 95%ile**
- Category C calls – not formally reported but closely monitored

Category A calls are the equivalent to Ambulance Victoria's "Priority Zero" calls (eg: cardiac arrest or short of breath in an altered conscious state).

Effective April 2011, all UK ambulance services will be reporting against 11 set clinical quality indicators. Those being;

1. Outcome from acute ST elevation myocardial infarction (STEMI)
2. Outcome from cardiac arrest – return of spontaneous circulation (ROSC)
3. Outcome from cardiac arrest – survival to discharge
4. Outcome following stroke for ambulance patients
5. Proportion of calls closed with telephone advice or managed without transport to A&E (where clinically appropriate)
6. Re-contact rate following discharge of care (eg: closure with telephone advice or treatment at the scene)
7. Call abandonment rate
8. Time to answer calls
9. Service experience
10. Category A 8 minute response time
11. Time to treatment by an ambulance-dispatched health professional

2.4 Ambulance Resource Dispatch

Response performance across LAS and WMAS is assisted by the method in which ambulance resources are dispatched. Many ambulance response vehicles when not tasked to a case are available for dispatch at what are known as "standby points". These are specified locations within the community, away from the ambulance station location, in areas recognized as being beneficial for response performance. Standby points are primarily used during the busier times of a shift. It has been identified that ambulances mobilize quicker (up to a minute quicker) when they are already out as opposed to standing by in a station. This results in the ambulance arriving to the scene in a shorter time frame.

The LAS operates what's known as a "dispatch on address" system. This means that ambulance resources are dispatched as soon as the address that the ambulance is needed is known. This reduces time to dispatch when compared to the system of waiting to identify what the clinical problem is before dispatching clinically matched resources.

Once a '999' call is received in the Emergency Operations Centre, the address that the ambulance is required at is quickly entered into the system. Even before the type of case or patient complaint is identified, the closest ambulance resource (may be an ambulance, a single responder, a motorcycle or bicycle paramedic) is immediately identified and dispatched. As the case type is not known at this early stage, the allocated ambulance resource commences its journey to the destination travelling under normal road traffic conditions awaiting the update as to what the case type is. If the case is one of low acuity not requiring that particular resource to attend, then the resource is cancelled and returned to its standby point. If it is identified during the call taking process that it is appropriate to send that particular resource, then the case type and further information will appear on the Mobile Data Terminal (MDT) and the resource will continue. If the case is one of high acuity (Category A), then the resource will activate its warning devices and continue to the address.

Figure 1: MDT and navigation unit in an LAS Paramedic Fast Response Unit (car)

When the case is initially dispatched to a resource, the following occurs;

- MDT and radio audibly alarms and the address appears on the MDT (larger screen below)
- Paramedic acknowledges the receipt of the case by activating a button on the MDT
- Address automatically uploads into the vehicle navigation device displaying route with audible directions to destination (smaller screen above)
- Once known, the case type and further details are updated and appear on the MDT
- Depending on the case, the resource is either cancelled or continues to the address in the appropriate (directed) manner as per the case coding

NB: There is no routine voice contact between the Emergency Operations Centre and the Paramedic. The information is displayed on the MDT and the Paramedic acknowledges this

information by activating a button on the MDT screen. Voice contact between either party can be initiated if required. The Paramedic can activate a “request to talk” button where the Allocator / Dispatcher will then open the channel and speak solely with that unit. No other party can hear that discussion. Alternatively, if the Allocator / Dispatcher wishes to speak with the Paramedic, the Paramedic’s radio will alarm whereby they will then answer. The Allocator / Dispatcher may wish to initiate voice contact to convey extra case details, safety information or if the Paramedic hasn’t acknowledged receipt of the case via the MDT.

The advantage of no routine voice contact for dispatch processes means that multiple cases can be dispatched within an incredibly short space of time (seconds) rather than allowing cases to back up as each require voice contact with the Paramedics before the unit mobilizes. This process of dispatch contributes to quicker, more efficient response performance.

In the event that an urgent life threatening ‘999’ call is received, and there are no nearby available resources to dispatch, the Allocator will then open the channel to all units and announce that there is a Red Cat 1 call waiting in a particular suburb and ask for any appropriate crew to become available for that case.

3.0 Managing Demand – Daily Operations

Ambulance services for some years have been experiencing a continued and sustained increase in their daily workload. Placing extra operational ambulance resources in isolation is often inefficient and does not directly address the issue. Subsequently, many services have undergone considerable change with regards to their own business practices and how they meet this increase in demand.

The LAS and WMAS have introduced various processes, plans, procedures and initiatives over the years in an attempt to directly address the issue of growing demand. The following is a description of the various initiatives in place that contribute towards managing the demand on ambulance.

3.1 Resourcing Escalatory Action Plan (REAP)

The LAS Resourcing Escalatory Action Plan (REAP) is operating at all times. It is a specific predictive, forecasting workload tool designed to prepare the organisation for that workload, and subsequent anticipated capacity issues. REAP is part of a weekly planning process that can identify upcoming potential impacts to response performance. In general, it will operate at REAP level one, when the service is operating at a steady state.

It is accepted that ambulance "over capacity" can occur at any time of the year, influenced by a number of factors. REAP has a series of triggers that are linked to increased demand and / or reduced capacity of the ambulance service. REAP has six varying levels that reflect increasing pressure on the service. Each level is triggered by intelligence from both inside the service, and from external influences such as extreme weather forecasts or known planned major events;

REAP Level 6	Potential Service Failure
REAP Level 5	Critical
REAP Level 4	Severe Pressure
REAP Level 3	Moderate Pressure
REAP Level 2	Concern
REAP Level 1	Normal Service

Figure 2: Chart displaying the 6 levels of REAP

Each week, senior Operations Managers meet to determine the appropriate level of REAP that the organisation should sit at based on both forecasting and analysing recent performance. Issues to consider when determining REAP levels include;

- Adverse weather events
- Electronic systems failures
- Notifiable diseases
- Major fleet issues
- Major incidents or planned events
- Catastrophic incidents or failures

- National infrastructure issues
- Known planned hospital capacity / closures / delays / diverts
- Shortfall in available / rostered staff
- Supply chain disruption
- Security threats

The triggers are supported by a series of actions that are associated with each of the above levels of pressure described within the plan. Each level of REAP has a set of actions which are designed to address a number of functions;

- release operational staff into frontline service roles therefore targeting the increased demand or reduced capacity of the service
- manage incoming demand at the point of call for lower acuity cases

REAP Level	Performance	Factors Affecting Performance				
		Demand	Abstractions	Control Room Issues	External Influences	NHS Internal Influences
6	Cat A < 60% Cat B < 65%	EMS Activations > 15% above norm	Abstractions within EMS have increased by > 15% over normal seasonal levels.	Abstractions within Control have increased by >20% over normal seasonal levels. Call abandoned rate > 40% 50% calls answered within 5 seconds	Supply chain difficulties mean trust supplies are at a critical level	Hospital turnaround times extended by average 20 minutes Major critical infrastructure issues have been experienced for a period of 24hours and are expected to continue for an unspecified time.
5	Cat A 60%-65% Cat B < 70%	EMS Activations 10% -15% above norm	Abstractions within EMS have increased by 10%-15% over normal seasonal levels.	Abstractions within Control have increased by 15% over normal seasonal levels. Call abandoned rate > 30% 60% calls answered within 5 seconds	Supply chain difficulties mean trust supplies are at a critical level	Hospital turnaround times extended by average 15 minutes Major critical infrastructure issues have been experienced for a period of 24hours and are expected to continue for an unspecified time.
4	Cat A 65%-70% Cat B < 80%	EMS Activations 8% -10% above norm	Abstractions within EMS have increased by 8-10% over normal seasonal levels.	Abstractions within Control have increased by 10% over normal seasonal levels. Call abandoned rate < 20% 70% calls answered within 5 seconds	Supply chain difficulties are not manageable	Hospital turnaround times extended by average 10 minutes Major critical infrastructure issues have been experienced for a period of up to 24hours and are expected to continue for a specified time of no more than 24 hours.
3	Cat A 70%-72% Cat B < 85%	EMS Activations 5% - 8% above norm	Abstractions within EMS have increased by 5%-8% over normal seasonal levels.	Abstractions within Control have increased by 5% over normal seasonal levels. Call abandoned rate >15% 80% calls answered within 5 seconds	Supply chain difficulties are manageable Severe events are having a wide spread impact in a region	Hospital turnaround times extended by average 5 minutes Critical infrastructure issues have been experienced for a period of 12hours and are expected to continue for a specified time of no more than 6 hours.
2	Cat A 72%-74% Cat B < 90%	EMS Activations 2%-5% above norm	Abstractions within EMS have increased by 2%-5% over normal seasonal levels.	Abstractions within Control have increased by 2% over normal seasonal levels Call abandoned rate 10% 90% calls answered within 5 seconds	Supply chain difficulties are short lived. Severe events are having a limited local impact on activity.	Hospital turnaround times extended by average 3 minutes Critical infrastructure issues have been experienced for a period of 6 hours and are not expected to reoccur.
1	All National performance indicators achieved	EMS Activations < 2% above norm	Abstractions within EMS are within normal seasonal levels.	Abstractions within Control are within normal seasonal levels. Call abandoned rate < 5% 95% calls answered within 5 seconds	No reported supply chain difficulties No severe events are a threat to activity	No hospital delays over 20 minutes No critical infrastructure issues

Figure 3: Factors Effecting Performance

REAP and its various levels apply to the entire organisation.

Changes to the REAP pressure level are communicated via email, internal intranet and visible signage (status board) at major ambulance service buildings. Rationale behind REAP level change are included in the emails and on the intranet. The REAP level changes are widely publicised within the service.

REAP LEVEL 1 – ROUTINE	ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDING
	Ensure staff absent are contacted regularly and on return	ROUTINE	AOM	HIGH PREVENTATIVE ACTIONS TO SUSTAIN PERFORMANCE AND PATIENT CARE	ROUTINE THROUGH WEEKLY TEAM BRIEFINGS AND MONTHLY BUSINESS MEETINGS	ROUTINE	ROUTINE NO ADDITIONAL FUNDING REQUIRED
	Monitor and manage sickness		AOM				
	Compliance with AAC and TAC Agreements		AOM				
	Actively engage local Union Representatives		AOM				
	Monitor and manage leave with RC		AOM				
	Monitor and manage mobilisation times		AOM				
	Monitor and manage job cycle times		AOM				
	Monitor and manage hospital turn around times		AOM				
	Monitor and manage hours produced		AOM				
	Ensure provision of management cover at vulnerable timings (morning/evening changeover)		AOM				
	Ensure routine mobile management presence at hospitals		AOM				
	Look at predicted single staff and pair up in advance. Focus resources on areas of greatest need		RC MGR				
	Manage rest breaks within guidelines		AOM				
	Monitor and manage all abstractions		AOM/RC MGR				
	Monitor and manage predicted staffing		AOM/RC MGR				
	Ensure proportionate cover of AEU/FRU		AOM/RC MGR				
	Ensure proportionate and necessary cover between front-line Operations and Control Services in accordance with prevailing circumstances		DDO				
	Monitor and manage activation times		EOC AOM				

Figure 4: REAP Level 1 Actions

REAP LEVEL 2 – CONCERN	ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDING
	ALL LEVEL 1 ACTIONS PLUS:						
	Review abstractions	ADO	AOM	Low	Weekly	All Depts	No
	Daily monitoring to ensure that all rostered Team Leaders are pre-planned for shifts	ADO	AOM / RC MGR	Med	Daily		No
	Grant no more short notice leave (under 48 hours)	ADO	AOM / RC MGR	Low	Daily		No
	Review all non critical meetings	ADO	AOM			Resource Centre	No
	Review predicted FRU cover and fill all gaps. Use singles off complex as necessary	ADO	AOM / RC MGR	High	Daily		No
	Increase local monitoring at Area level to ensure efficiency	ADO	PIM	Med	Weekly / Daily		No
	Contact VAS and PTS for additional vehicles and deploy systematically	DEP DIR OPS	CS PIM	Med	Daily	Head of PTS	Additional OT
	Increase focus on maximising utilisation of UCS resources	ADO CS	CS PIM	Med	Weekly		No
	Review CTA staffing	ADO CS	RC MGR CS	Med	Daily		Additional OT
	Compile list of potential stock shortfalls in readiness for increasing pressure	DDO	HEAD OF OPS SUPPORT	Low	Weekly		No
	Resource Centres to text overtime opportunities to staff and bank staff robustly	ADO	RC MGR	Med	Daily		No

Figure 5: REAP Level 2 Actions

REAP LEVEL 3 – MODERATE PRESSURE

ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDING
ALL LEVEL 1 AND 2 ACTIONS PLUS:						
HR Managers to manage abstraction	DIR OPS	DEP DIR HR	Med	Daily		
Team Leaders deployed to cover front-line operational hours only	DEP DIR OPS	ADO / RC MGR	High	Weekly		No
Critically review abstractions and recall where appropriate	DIR OPS	ADO	Low	Weekly		Additional overtime
CTA ring backs extended to 60 minute and consider additional Cat B calls for CTA	MED DIR	ADO CS	Med	Weekly		
Offer overtime to staff that have not received a rest break	DEP DIR OPS	ADO CS	Med	Weekly		Yes
Review calls to NHSD and increase volume	MED DIR	ADO CS	Med	Weekly	Medical Directorate	
All officers in uniform to provide and maintain visible operational management	DEP DIR OPS	ADO	Low	Weekly		
Increase the use of VAS and PTS resources to support A&E operations	DEP DIR OPS	HEAD OF PTS	Med	Weekly		Additional overtime
Consider treatment centres at weekends in town centres	DEP DIR OPS	ADOS	Med	Weekly		
Commence media campaign with appropriate demand management messaging	DEP DIR OPS	HEAD OF COMMS	High	Weekly		
Commence stock-piling of essential items in accordance with the list developed	DEP DIR OPS	HEAD OF OPS SUPPORT	High	Weekly		
Extended hours of Fleet Support Services:16 hours x 7 days	DIR OPS	HEAD OF OPS SUPPORT	Low	Weekly		Yes
Station Management Teams to 'cold call' staff to encourage extra overtime	ADO	AOM	Med	Weekly		No
Staff additional FRUs against demand	DEP DIR OPS	RC MGR	Med	Weekly		Yes
DSOs visit busy hospitals at peak times and ensure availability on stations to deal with VOR issues at shift change times	ADO	AOM	Med	Weekly		No
Cancel non-essential ECP study days, for operational cover and return to operation duties	ADO	AOM	Med	Weekly		No
Cancel non-essential meetings (ie meetings without a focus on improving performance)	ADO	SMG	Low	Weekly		No
Review planned stadia cover and minimise where appropriate	DEP DIR OPS	HEAD OF EPU	Low	Weekly	EPU	No
Additional Complex Responses to be provided at peak call volume times and manned by DSOs and CTOs	DEP DIR OPS	AOM	High	Daily	VRC	No
Review all training commitments and reschedule as appropriate	ADO	HEAD OF DED	Med	Weekly		

Figure 6: REAP Level 3 Actions

REAP LEVEL 4 – SEVERE PRESSURE

ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDING
ALL LEVEL 1 – 3 ACTIONS PLUS:						
Chief Officer to issue bulletin to staff outlining demand and capacity pressures	CEO	CEO	High	N/A	Communications	No
Establish a Gold level team to manage recovery 24/7	DIR OPS	DEP DIR OPS	High	Daily	IM&T	Yes
Place ALOs at busy hospitals to improve turn-around utilising non-operational managers wherever possible	DIR OPS	SMG	Med	Weekly	All Depts	Additional overtime
All clinically trained staff to return to covering vehicles by default, except CTA, CSD and HEMS	DIR OPS	SMG	Med	Weekly	All Depts	
Redeploy all Support Services staff trained in Control Services systems to call-taking	DIR OPS	SMG	Med	Weekly	All Depts	No
Consider implementing the Extreme Over-Capacity Plan at appropriate stage if not already implemented	DEP DIR OPS	ON-CALL GOLD	High	Hourly		No
Defer all training for existing staff and Training Officers to be deployed on front-line resources	DEP DIR OPS	HEAD OF DED	High	Weekly		No
Announce arrangements to reschedule leave and enhance front-line hours produced	DIR OPS	DEP DIR OPS	High	Weekly	Finance	Yes
Liaise with PCTs to explore options for additional support	GOLD	ADO / AOM	Low	Weekly		Yes
Consider deploying VAS control staff to EOC	DEP DIR OPS	ADO CS	Med	Weekly	Resource Centre	Yes
Cancel all non-REAP related meetings	DIR OPS	ALL	Med	Weekly		No
All non-essential vehicle maintenance/repairs to be rescheduled and out-source wherever possible	HEAD OF OP SP	FLEET	Med	Weekly	Fleet	No
Make Ready to provide drivers outside of normal hours to move vehicles as required	HEAD OF OP SP	VRC	Med	Weekly	Operational Support	Yes
Messages to media about pressures and using the Service wisely	HEAD OF COMMS	COMMS	High	N/A		No
Inform SHA	CEO	CEO	Low	N/A		No
Stop all non contractual PTS work and redeploy to Cat C work	DIR OPS	HEAD OF PTS	Med	Weekly	Medical Directorate	
Participate in a daily national conference call	DIR OPS	ON CALL GOLD	Med	Weekly		
UCS to reschedule/delay non-urgent work and respond to amber calls	DIR OPS / MED DIR	ADO CS	Med	Daily		No

Figure 7: REAP Level 4 Actions

REAP LEVEL 5 - CRITICAL	ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDED
	ALL LEVEL 1 – 4 ACTIONS PLUS:						
	Declare internal Major Incident. Advise SHA & Trust Board	CEO	DIR OPS	Med	Daily	All Depts.	Yes
	Increase use of No Send Policy	MED DIR	ADO	High	Daily		No
	Implement the Extreme Over-Capacity Plan at appropriate stage if not already implemented and commence the gradual restricting of responses: • stop attending Cat C calls • triage a subset of Cat B calls before responding to them • respond only to Cat A calls and remaining Cat B calls	DEP DIR OPS & MED DIR	ON-CALL GOLD	High	Hourly		No
	Request national mutual aid if appropriate	DIR OPS	ADO	Med	Daily		Yes
	High profile media campaign to discourage inappropriate use	DEP CE	DEP DIR OPS	High	Daily	Comms. Dept	Yes
	Paramedics/ECPs/EMT4 to be authorised to refuse conveyance after assessment	DIR OPS/ MED DIR	MED DIR	High	Daily	DED	No
	Suspend rest breaks (in accordance with Major Incident Plan)	DIR OPS	DIR HR	High	Weekly		
	Source accommodation for key individuals close-by to LAS premises	DIR OPS	HEAD OF OPS SUPPORT	Low	Weekly		Yes
	Provide operational feeding to front-line staff	DEP DIR OPS	ADO	Low	Daily	Ops Support	Yes
	Review attendance of nursing homes without prior GP approval	MED DIR	ADO CS	Med	Daily		No
	GP admissions to be extended for 4 hours for all patients	MED DIR	ADO CS	High	Daily		No

Figure 8: REAP Level 5 Actions

REAP LEVEL 6 – POTENTIAL SERVICE FAILURE	ACTION	DECISION	RESPONSIBLE	IMPACT	REVIEW	SUPPORT DEPTS.	FUNDED
	ALL LEVEL 1 – 5 ACTIONS PLUS:						
	Utilise private agency staff in the control room	DIR OPS	ADO CS	High	Daily	HR	Yes
	Request GP assistance in control rooms	DIR OPS	ADO CS	High	Daily	Med Directorate	Yes
	Implement the Extreme Over-Capacity Plan at appropriate stage and continue the gradual restricting of responses: • respond to Cat A calls only • triage all Cat B calls	DIR OPS & MED DIR	ON-CALL GOLD	High	Daily	Med Directorate	No
	Negotiate to cancel annual leave	DIR OPS	DIR HR	High	Daily	HR	Yes
	Review HART / HEMS deployment	DIR OPS	DEP DIR OPS	High	Daily		Yes
	Increased use of non-ambulance medical responders (eg CFRs)	DIR OPS	MED DIR	High	Daily	Med Directorate	Yes
	Stop all PTS work and redeploy crews to assist EOC	DIR OPS	HEAD OF PTS	High	Daily	CS	Yes
	Release sufficient funding to fulfil REAP 6	DEP CEO	DIR FINANCE	High	Daily		Yes
	Consider Military Aid to the Civil Power	DEP CEO	HEAD OF EP	High	Daily	CS	No
	All Trust staff to support control and operations as required	DEP CEO	HEAD OF HR	High	Daily		
	Use private and VAS to cover for Cat A calls	DIR OPS	MED DIR	High	Daily	CS	Yes
	Increase use of clinical triage systems to appropriately divert patients to other providers	DIR OPS	MED DIR	High	Daily		
	Significantly increase use of NHSD to deal with high category calls	DIR OPS	MED DIR	High	Daily		

Figure 9: REAP Level 6 Actions

3.2 Demand Management Plan (DMP)

Whilst REAP is used as a predictive and planning tool, the Demand Management Plan (DMP) is a reactive tool used in response to the acute escalation in demand and subsequent drain on ambulance resources in real time. It provides the LAS with a method of addressing risk in times where demand pressure outweighs the capacity of the LAS.

REAP sits separately to the DMP. REAP predicts and determines adjustments to the daily business activities of the ambulance service in preparation for a predicted challenge to its capacity. Escalating to the various appropriate levels of REAP may be sufficient in dealing with the predicted increase in demand if and when it does arise. The DMP in this instance may not need to be used. If however despite adequate planning and use of REAP, the DMP would be implemented to provide a more reactive and immediate response to the increased demand pressures that result in ambulance capacity issues.

The action items associated with the various stages of REAP are essentially aimed at the broader width of the organisation. The action items associated with the DMP are targeted specifically at the key areas of operation within the ambulance service. Specifically;

- The Emergency Operations Centre
- The Clinical Telephone Advice Department
- The Clinical Support Desk

There are various trigger points that are associated with implementing the DMP. It is not possible to provide an exhaustive list of triggers as the cause of the pressure on demand may come from many different directions. With this in mind, the following table identifies a number of non-clinical triggers that may be considered when implementing the DMP.

	Area	Measure
DEMAND	Call Answering	95% within 5 seconds of call connect Call volume
	Category A	75% within 8 minutes of call connect Call volume
	Category B	95% within 19 minutes of call connect Call volume
	Category C	90% within 60 minutes of call connect Call volume
	Calls Holding	Number of Category A, B, C and AS/3 calls holding awaiting activation
CAPACITY	Resourcing	Operational and Control Services staffing levels (according to ORH plan)
	Fleet	Vehicle availability and % VoR
	Hospital Turnaround	Average hospital turnaround time and hospitals subject to closure or redirection
	Incident Impact	Any Major Incident or Significant Incidents Numbers of protracted incidents

Figure 10: DMP Non-clinical Trigger Points

There are also a number of clinical or response performance trigger points to take into consideration when implementing / escalating the DMP. These are as follows;

Red Calls Being Held
Any Red 1 calls held > 10 minutes
5 Red 2 calls held > 10 minutes
10 Red 3 calls held > 10 minutes

Ambers being held (i.e.: no Red calls being held)
50 calls held with > 50% of these being amber calls which have been held for > 30 minutes
30 calls being held with > 40% of these being amber calls which have been held > 30 minutes
30 calls being held with > 25% of these being amber calls which have been held > 45 minutes

Figure 11: DMP Clinical / Response Performance Trigger Points

The DMP, like REAP has a number of stages that it can be escalated or de-escalated to. Once demand pressures are experienced, the plan can move between Stage A to G. The various actions contained within each stage are centred around ensuring that prioritisation is given to clinical support and deployment of operational resources to a particular area or sector of the service.

STAGE A – The plan operates at all times with "Business as Usual" philosophy at Stage A. Here, there is a state of normality and all areas and sectors perform their standard daily functions as per operational procedures.

STAGE B – This stage of the plan identifies four strategies that may all be implemented, or individually implemented depending upon which area of the service is primarily effected at that time.

- Urgent disconnect (where no extra questions or pre-ambulance arrival instructions are given by the call taker) will occur when any of the following have been met
    - Call handling performance has been significantly below call answering target levels (95% of calls answered in 5 seconds for at least 2 consecutive hours)
    - Number of calls waiting to be answered is greater than 10 where call patterns suggest they are not linked to a single particular incident
    - There are any number of calls holding persistently each minute for at least 10 minutes
    - Call handling staff are required for redeployment to support dispatch and call handling performance may be compromised without urgent disconnect

- Cases waiting for dispatch of an ambulance resource to have callbacks made by appropriate staff (Clinical Support Desk) to ascertain further medical information, provide immediate advice and assist in prioritizing of calls. Other patient care pathways such as NHS Direct, GP Clinics, minor injury units, walk-in centres and urgent care facilities are discussed where appropriate. The Clinical Support Desk also closely monitors requests for inter-hospital transfers, requests from healthcare professionals and Metropolitan Police to ensure that an ambulance is absolutely necessary.
- Clinical Telephone Advice Department (CTA) ring back extended to 60 minutes when '999' calls are holding and the CTA is not meeting its 30 minute call back time target.
- Support may be obtained from volunteer support agencies (e.g.: St John Ambulance) to provide operational coverage to meet patient demand. In this instance, the volunteer support agency would be tasked with low acuity cases.

STAGE C – A conference telephone call with the Gold Medic, Gold Doctor, Operations Managers and Emergency Planning Advisor is to occur at this stage of the plan. Once it is agreed to escalate to this level, the following occurs;

- Green calls for patients aged five to sixty nine years of age receives a "No send" advice at the point of contact.
- Green calls for patients aged less than five or above sixty nine years are referred to the CTA.
- CTA cease to use their standard patient assessment software and encourage the caller to use other appropriate care providers, other forms of transport and cancel any further LAS response.
- CSD to triage requests from Metropolitan Police and inter-hospital transfer requests, and provide call backs to calls that are still on hold.
- Abandoned '999' calls to continue to be managed as per Operating Procedures.

STAGE D – Once all appropriate actions have been taken, the plan may be escalated to this stage. It may be appropriate to immediately escalate straight to Stage D depending on the level of demand that has occurred. Once again, a conference call is to take place prior to Stage D escalation.

- Green calls for patients aged five to sixty nine years of age receives a "No send" advice at the point of contact.
- The Clinical Support Desk to open a sector for call routing for further clinical assessment.
- Green calls where the patient is aged less than five or above sixty nine years of age and all Amber calls are referred to the CTA.
- Amber calls passed to the opened sector on the Clinical Support Desk for review. The sector is essentially the clinical 'gatekeeper' deciding which calls can be transferred to the CTA.
- The CTA ring back time for Amber calls is extended to two hours.
- The CTA cease using their standard patient assessment software and discuss the use of appropriate care providers, other means of transport and cancel an ambulance response.
- CSD to triage requests from Metropolitan Police and inter-hospital transfer requests, and provide call backs to calls that are still on hold.
- Abandoned '999' calls to continue to be managed as per Operating Procedures.

STAGE E – Moving to Stage E of the plan essentially declares an internal major incident. Relevant major incident plans within departments may be invoked where appropriate. As with Stages B to D, all appropriate actions should have taken place at this point and a conference call needs to occur.

- All green calls receive a "No Send" advice at the point of contact.
- Amber calls passed to the opened sector on the Clinical Support Desk for review. The sector is essentially the clinical 'gatekeeper' deciding which calls can be transferred to the CTA.
- The CTA ring back time for Amber calls is extended to two hours.
- The CTA cease using their standard patient assessment software and discuss the use of appropriate care providers, other means of transport and cancel an ambulance response.
- CSD to triage requests from Metropolitan Police and inter-hospital transfer requests, and provide call backs to calls that are still on hold.
- Abandoned '999' calls are subject to "No Send".
- Only critical inter-hospital transfers undertaken.
- Patients being conveyed to hospital may be done travelling under "lights and sirens" conditions, thus reducing 'case time' and improving resource availability.

STAGE F – Again, escalating to this level of the plan by default declares an internal major incident. Stage F of the plan involves the following;

- All Green and Amber 2 calls receive "No Send" advice at the point of contact.

- Amber 1 calls are assessed by the Clinical Support Desk for review and handing over to the CTA where appropriate.
- The CTA ring back time for Amber calls is extended to two hours.
- The CTA cease using their standard patient assessment software and discuss the use of appropriate care providers, other means of transport and cancel an ambulance response.
- CSD to triage requests from Metropolitan Police and inter-hospital transfer requests, and provide call backs to calls that are still on hold.
- Abandoned '999' calls are subject to "No Send".
- Only critical inter-hospital transfers undertaken.
- Patients being conveyed to hospital may be done travelling under "lights and sirens" conditions, thus reducing 'case time' and improving resource availability.

STAGE G – this final stage of the plan has the following actions;

- All Green and Amber calls receive "No Send" advice at the point of contact.
- Same action items as per Stage E and F.
- Amber 1 and Red 3 calls are passed to the Clinical Support Desk sector for review and possible handover to the CTA.

Each time the DMP is escalated to Stage C or above, a debrief is to be conducted at a suitable time with the relevant internal stakeholders. The purpose of the debrief is;

- Understand factors leading to the escalation of the DMP
- Monitor and evaluate the response
- Identify lessons learned
- Establish and shortcomings in ambulance service planning

DMP Stage	No Send at First Contact	→ Clinical Assessment	Authority	Review	Abandoned Calls	Hospital
A	Operating as Normal					
B	None	As Normal	CS AOM = 0-2 hrs then 2-4 hrs post review GX Medic = +4 hrs	No less than every 2 hrs	CSOP applies	Transfers as Normal
C	Green age 5 to 69	Green <5/>69 → CTA	GX Medic	No less than every 4 hrs. May be conducted remotely.	CSOP applies	Transfers as Normal
D	Green age 5 to 69	Green <5/>69 → CTA Amber → CD	GX Medic	No less than every 2 hrs. 1st review conducted remotely. If extended at 1st review, Gold Team will attend HQ.	CSOP applies	Transfers as Normal
E	Green	Amber → CD	GX Medic	No less than every 2 hrs. Gold Team will attend HQ.	No ring backs. No Send on abandoned calls.	Critical transfers only. All journeys to hospital made under emergency conditions
F	Green Amber2	Amber1 → CD	GX Medic	No less than every 2 hrs. Gold Team will attend HQ.	No ring backs. No Send on abandoned calls.	Critical transfers only. All journeys to hospital made under emergency conditions
G	Green Amber	Red3 → CD	GX Medic	No less than every 2 hrs. Gold Team will attend HQ.	No ring backs. No Send on abandoned calls.	Critical transfers only. All journeys to hospital made under emergency conditions

Figure 12: DMP Quick Reference Guide

3.3 The "Booze Bus"

As Londoners venture into the city predominantly on Friday and Saturday nights, many people will have consumed too much alcohol and will have an ambulance called to come and manage their welfare. Sadly, the number of these types of calls has been steadily increasing over the years resulting in an increased demand on the LAS. The service attends in excess of 60,000 alcohol related calls across London each year. In response to this, the LAS has been operating a specific, alternative demand management resource known as the Booze Bus since 2005.

An LAS Booze Bus is simply a modified Clinic Bus / Ambulance vehicle designed to manage five walking patients and one stretcher patient. Staffed with a crew of three Paramedics, the Booze Bus operates a nightshift out of London's Waterloo ambulance station and responds to uncomplicated, isolated alcohol related cases in the city. Once a case is identified in the Emergency Operations Centre as being suitable for the Booze Bus, the case is dispatched to them thus saving an Emergency Ambulance response. The Booze Bus can then travel from case to case as required (as it can carry multiple patients at one time), and then transfer the patients to the appropriate city hospital.

Figure 13: The LAS "Booze Bus" vehicle

The Booze Bus can provide a Paramedic skill set to any patient as required. This includes providing IV therapy and fluid replacement as the case determines. If the Booze Bus attends a patient that is not suitable for transport in their vehicle (eg: head injuries and altered conscious state), another Emergency Ambulance can be requested.

Patients assessed and managed by the Booze Bus include;

- A male, mid twenties found lying in a gutter outside a pub. Found to be intoxicated with no other medical complaint
- A female in her late teens vomiting, stating that her drink has been spiked
- A female in her late forties, has a cardiac history and is generally unwell after drinking all night at a bar
- A male found collapsed in the toilets of a bar covered in his own vomit

The Booze Bus has a 'personal best' record of saving twenty two ambulance journey's in a single shift, thus leaving emergency frontline ambulances available for more seriously ill or injured patients. As well as greatly reducing the number of ambulance callouts per year, there is also a financial benefit to the Booze Bus. It has been calculated that the cost to the LAS per ambulance journey is approximately 165 to 200 pounds. As the Booze Bus can transport multiple people at once and prevent those ambulance dispatches, that results in quite a financial saving each year.

Figure 14: Interior of the Booze Bus

Figure 15: Interior of the Booze Bus

3.4 Alcohol Recovery Centres

Following on from the Booze Bus initiative to manage patients who have simply had too much to drink, the LAS also establishes Alcohol Recovery Centres in December of each year to act as a treatment clinic for intoxicated people whilst also preventing unnecessary admissions to already busy hospital emergency departments. December is the one month of the year whereby more ambulance calls are taken for people who are intoxicated, thus putting an added strain on the LAS and hospital emergency departments.

There are two Alcohol Recovery Centres. The first is a joint initiative between the LAS and the Westminster Council, set up in the west end of London. The second is a joint initiative between LAS and St John Ambulance and is located at the Liverpool Street Station. This centre has been in operation every December since 2007. Originally set up by the LAS, St John have since taken over the running of this centre which operates between 9pm and 3am. St John provide two of their ambulances and eight staff.

Figure 16: Alcohol Recovery Centre (photo reproduced from LAS web site)

In 2010, the west end recovery centre was open for a total of 18 nights. In that time, 286 patients were treated at the centre with only 10 of those requiring secondary transport to a hospital emergency department for further care.

A similar initiative also operates on New Years Eve in The Mall. This centre is located in the middle of the London City New Years Eve festivities. It's a 20-bed unit that can accept admissions from LAS crews including the Booze Bus.

Reducing the numbers of patients transported to hospital also has a positive effect on ambulance availability. Fewer ambulances at a hospital waiting for triage and patient handover means decreased delays in the ambulances becoming available once again. Triage times and patient handover times at these recovery centres are minimal, meaning that the ambulance can quickly become available for another call.

There is also a financial saving associated with these alcohol recovery centres. It has been estimated that treating a patient at one of the centres costs 40 pounds, whereas treatment in a hospital Accident and Emergency (A&E) department would cost approximately 220 pounds.

The Booze Bus also transports its intoxicated patients to these recovery centres, again reducing strain on hospital emergency departments.

3.5 Hospital Management Desk

The WMAS operates what they refer to as their Hospital Management Desk. Located in the WMAS Emergency Operations Centre, the Hospital Management Desk is staffed by non-Paramedic WMAS personnel who continually monitor the "at hospital" times of each ambulance.

The Hospital Management Desk has a Computer Aided Dispatch (CAD) screen whereby they review all cases that are currently at hospital, monitor the times, case types for acuity, review any added notes to the case to explain why a crew may be unavoidably delayed, and the numbers of other ambulances at that hospital. The desk can also add notes of their own to a case to explain any delays experienced.

Paramedics have 15 minutes to handover a patient, and 15 minutes to complete their documentation, restore their vehicle to a state of operational readiness, and become available for dispatch to another case. If the Paramedic crew is delayed beyond the 30-minute timeframe, they are to contact the Hospital Management Desk by radio and report the cause of the delay and the likely timeframe before they are able to become available. If the Hospital Management Desk has not heard from the Paramedic crew and they have been at hospital for greater than 30 minutes, the desk will contact the crew to enquire what the delay is and obtain a status update.

If the crew that is delayed reports that the Emergency Department has no beds available, then the Hospital Management Desk will speak directly with the Bed Manager and ask for a plan from the hospital's perspective. If there is no immediate plan to address the lack of available beds and ambulance crews are continuing to be delayed, then the Hospital Management Desk will refer the issue to the Strategic Operations Cell. (The WMAS Strategic Operations Cell is discussed in the next chapter).

Within LAS, there is a resource manager in the Emergency Operations Centre who monitors at hospital times and how many ambulances are in attendance at each hospital emergency department. Based on the "at hospital" times and the numbers of ambulances waiting, the ambulance manager may elect to start diverting ambulances to other hospitals where clinically appropriate. If in the event of significant and sustained ambulance delays at one particular hospital, the Emergency Operations Centre will dispatch a Duty Station Officer or Operations Manager to that hospital to assist in managing the delay. If delays continue and triggers in the LAS Demand Management Plan are reached, then a teleconference with the hospital executive, NHS and LAS will take place.

The NHS has KPI's for hospitals as well.

- 96% of all patients in the A&E must be seen within 4 hours
- 90% of all ambulance patients must be handed over within 15 minutes

Hospitals in London operate with an "Emergency Department Capacity Management and Closure Policy". Page 5 of this policy states that if there is a delay to handover of 60 minutes or more, the LAS will inform the on-call director of acute trust of patients waiting and that they

will be declared as a "Serious Untoward Incident" necessitating an investigation and response by the hospital to the NHS.

In London, a hospital will only be financially penalized if they call a total ambulance divert. The hospital must speak with the NHS first before calling the divert. Hospitals can only divert after the relevant hospital executive has spoken to the hospital executive of the surrounding hospitals and gained their permission. The ambulance service is then notified accordingly.

The WMAS Hospital Management Desk also works in collaboration with WMAS 'Hospital Ambulance Liaison Officers' (HALO's) where deployed. (This position is discussed later in this report).

The function of the WMAS Hospital Management Desk is a positive initiative. It provides for a consistent and sustained approach to monitoring, reporting and managing hospital delays that impact ambulance response. Some ambulance services already provide a similar function in their emergency operations centres. The difference here being that the WMAS has a dedicated desk and staff members for this function whereas other services allocate this function to staff who have other primary roles. Therefore the total focus of hospital monitoring and management is lost allowing for poor performance on all parts to occur.

3.6 Strategic Operations Cell (SOC)

The WMAS Strategic Operations Cell (SOC) follows on from where the Hospital Management Desk leaves off. The SOC is staffed by a liaison employee who works between the WMAS and the NHS. Their function is to receive unresolved hospital delay issues and escalate them in real time to the next level.

When a hospital delay issue is forwarded on from the Hospital Management Desk, the SOC will then contact the hospital executive of the specific hospital in question. They will firstly alert them to the issue as there is the possibility that the executive will not be aware of any delay issues in their Emergency Department. The executive will then be asked to review the situation and formulate a management plan. That plan with any associated timeframes then needs to be communicated back to the SOC.

Ambulance delays of an hour or more are declared as 'Serious Untoward Incidents" necessitating a subsequent investigation and report back to the NHS.

CAD ONLINE

Hospitals in the West Midlands area have access to an internet based real time ambulance information system named CAD Online. Hospitals can log on to this programme and view a Hospital – Ambulance Status Screen. That screen provides the hospital with the following information;

- Ambulances at their hospital and how long they have been there
- Any cases booked by GP's that the ambulance service will be transporting to them at any stage of the day

- Ambulances that are mobile to their hospital and their estimated time of arrival and their current location
- Average ambulance turn around times for that hospital
- Maximum turn around time for that hospital
- CAD details of the case and patient that is being transported
- The ability for hospitals to enter the triage / handover time for each case

The CAD Online system provides a clear indication if any delays at hospital can be attributed to the hospital or to Paramedic behavior.

The provision of the SOC appears to be an effective strategy to assist in managing hospital delay issues for ambulance. The Hospital Management Desk is centred more around identifying hospital delays and remotely supervising Paramedic crews at hospital to ensure that the 30 minute turn around time is adhered to. The SOC supports that strategy and provides for a high level reporting function to the hospital and the NHS, holding hospitals more accountable for their performance.

3.7 Hospital Ambulance Liaison Officers (HALO's)

The WMAS has a management position known as Hospital Ambulance Liaison Officer (HALO). Introduced in 2010 as a strategy to assist in managing hospital delays, there are now 16 HALO's which are located at all the major hospitals in the West Midlands. Their job is to assist both hospitals and ambulance crews in maintaining ambulance turn around times. Their job specifically involves

- working directly with bed managers to find solutions to any issues that may arise
- act as a general liaison between the hospital and the WMAS
- ensure crew turn around times
- assist crews to return their vehicles to an operational status after transporting a patient
- assist in patient allocation
- directly oversee multiple patients awaiting triage in the event that the crew can be released
- attend regular Emergency Department meetings
- represent the ambulance service when reporting issues to hospital executive

The HALO works a varied roster which is based around the known peak periods for ambulance arrivals at that hospital. As well as providing the above functions, the HALO also provides regular status updates to the Hospital Management Desk via email every two hours.

The Hospital Management Desk will not routinely contact Paramedic crews at hospital if there is a HALO in attendance.

There is some evidence to indicate that the HALO is having a positive impact in reducing ambulance turn around times at hospitals. This is also supported by other Paramedics and hospital staff who provided positive comment regarding the role and its effectiveness in working closely with hospital staff, assisting with the patient flow and reducing times that patients spend when they arrive at the Emergency Department. The implementation of such a

position in Melbourne would also free Group Managers from their after hours responsibility of hospital management.

3.8 Public Education

An ambulance Public Education Unit or Corporate Communications Department can play a vital role in providing the community a greater understanding of when it is appropriate, and equally as important, when it's not appropriate to call an emergency ambulance. Each year, ambulance services are invited to attend various community activities and events, thus providing an excellent opportunity to promote key issues that are important to both the ambulance service and public. Examples of work undertaken by both the LAS and WMAS Public Education and Communications Departments include;

- Adoption and tailoring of the NHS "Choose Well" campaign to produce messaging and materials to promote alternative patient care alternatives and the correct use of the emergency '999' telephone number
- Development of staff to assist in public education
- Visible signage on the side of emergency ambulances
- Publications to GP's regarding the appropriate use of ambulance services
- Information published on the ambulance services web site – '999 Demand on LAS'
- Video presentations regarding ambulance demand published on social media (e.g.: Youtube)
- Development of printed materials / handouts regarding the inappropriate use of emergency ambulances
- Education initiatives aimed at young people (eg: knife crime education strategy)
- Support of the "Community Involvement Officer"

COMMUNITY INVOLVEMENT OFFICER

Community Involvement Officers were introduced to improve all facets public education within the local community. The Community Involvement Officer can manage or be involved with issues such as;

- Local referral pathways
- Public education visits to community groups
- Contact point for NHS professionals and support staff with regard to appropriate care pathways
- Building relationships with stakeholders
- Community liaison
- Creating partnerships with groups who work alongside ambulance
- Have a responsibility for the development of Appropriate Care Pathways as alternatives to hospital Emergency Department admissions

The Community Involvement Officer is a vital link into the community providing education regarding how the ambulance service operates, what happens when '999' is called, how an ambulance may not always be responded to the call, and what are the most appropriate patient care options in the community other than just ambulance.

"CHOOSE WELL" CAMPAIGN

The Choose Well campaign is a large scale NHS initiative designed to provide advice to the community regarding their health, especially during the winter periods, and also to provide advice on what NHS services to call upon if someone becomes ill or injured. This ensures that the patient receives the most appropriate care and reduces unnecessary demand on other NHS services, specifically ambulance and the hospital A&E.

Using a colour coded thermometer as its logo, the Choose Well campaign aims to reduce the burden on NHS services by helping people to associate with the severity of their symptoms with a particular NHS service.

The LAS has produced a number of pamphlets regarding the Choose Well campaign specifically aimed at the winter and summer seasonal illnesses. As well as providing advice on looking after your own wellbeing and what to do in the event of illness, the pamphlet also outlines what will happen when an ambulance is called, and what the respective ambulance service might send in response to the call. These pamphlets have been distributed by ambulance Community Involvement Officers, at various community events where an ambulance has had a public display, and when performing various talks and presentations to community groups. People are encouraged to keep the pamphlet by the phone and to refer to it first when calling for help.

Figure 17: Colour coded thermometer from the Choose Well campaign

Figure 18: Choose Well campaign colour coded chart

There are also specific Choose Well campaign posters aimed at select target audiences. One poster is titled "What to do if you feel unwell or have an accident in Tower Hamlets". Inside is displayed a list of appropriate patient care services and provide examples of what type of patient complaint is best suited to each service. The patient care pathways include;

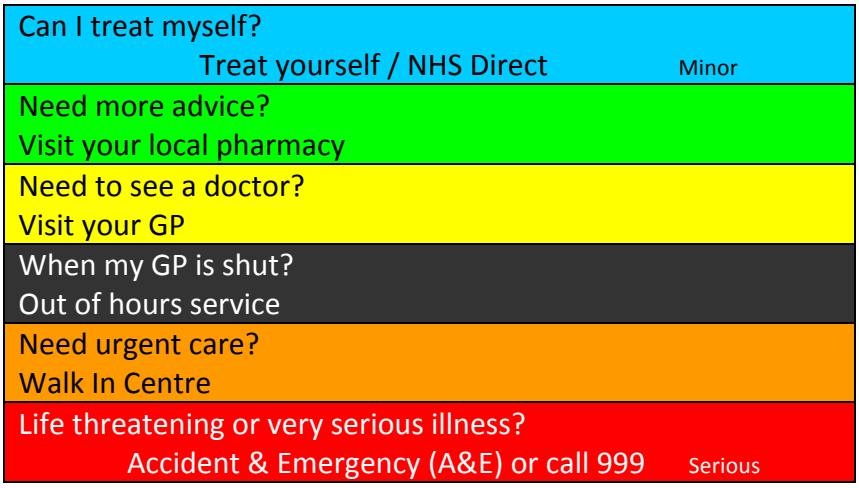


Figure 19: Choose Well campaign colour coded chart

These posters are distributed amongst the residence of Tower Hamlets and are also on prominent public display. They also include the locations of the various appropriate health services plotted on a map.

OTHER PROMOTIONAL MATERIAL

The LAS has also produced a number of other leaflets and handouts aimed at various demographics within the community. Some examples of these include;

- "Norman tells you about the Ambulance Service" (for children)
- "Where to get help if you are hurt or feeling ill"
- "Norman's Activity Pack" (for children)
- Alcohol abuse awareness pamphlets
- "Patient Advice and Liaison Service"
- Knife crime material
- "Feeling unwell? – how to get the right NHS treatment"
- "Use Your Ambulance Service Wisely" posters

Each of these publications has the intent to educate the public on the correct use of NHS services, selecting which patient care pathway is most suited to their health complaint, how to find the specific NHS service, and what happens if an ambulance is called (an ambulance may not necessarily always arrive).

AMBULANCE SIGNAGE

Whilst it is absolutely imperative to never discourage people who genuinely need an ambulance to not call one, it is almost as equally important to emphasise that emergency ambulances are intended just for that – emergencies. Consequently, a number of ambulance services in the UK have various images and signage applied to the sides clearly demonstrating what the correct use of an ambulance is. Some of the signage follows the theme of the NHS Choose Well campaign. The following are some examples of ambulance signage within the LAS and the WMAS.

Figure 20: signage on an LAS ambulance

Figure 21: signage on an LAS ambulance

Figure 22: signage on a WMAS ambulance

Figure 23: signage on a WMAS ambulance

Figure 24: signage on a WMAS ambulance

Figure 25: signage on a WMAS ambulance

The total effectiveness is of this education campaign is not fully known. However considering that the ambulance is the perfect mobile billboard to display this type of information, it does reinforce the message each time the ambulance is seen.

3.9 Frequent Callers

It is not uncommon for Paramedics to report patients that persistently (and often) inappropriately call for an ambulance. This is a source of frustration for the Paramedic and often places extra strain on ambulance demand. In response to this, the LAS has a dedicated department, the "Patient Centred Action Team" who oversees and manages this issue in consultation with other health care professionals. It is important to recognise that often, these frequent callers can have complex and ongoing clinical problems.

The LAS defines a frequent caller as someone who calls for an ambulance at least 10 times in a month. Once identified to the team, the objective is to achieve better care arrangements and alternative care pathways for these patients rather than respond an ambulance resource each time they call. The alternative care pathway is dependent on the individual patient's needs and existing conditions.

Any member of staff or other health care professional can make a referral to the Patient Centred Action Team. The referral is made on a specific LAS template document (Frequent Caller Referral Form). Once the referral is received, the team will review the number and type of calls that have been made over a 12 month period and attempt to identify any call patterns, peak times, etc.

Once it is determined that the patient is a frequent caller, the team will write to the patient and advise that they have been identified as a frequent caller. The letter will also include appropriate use of other NHS medical services as an alternative to calling '999'.

The team will also contact the patient's GP. This will often lead to a multi-agency meeting of appropriate and existing health care providers. Simple consultation with the GP alone may be enough to manage the frequency of calls. The GP may elect to commence a new treatment regime to address the specific problem, e.g.: home oxygen for a patient with regular episodes of known shortness of breath, a dietary or medication review for diabetic patients, admission to a rehabilitation ward or commencement of care from a District Nursing Service or Social Services. The implementation of these strategies may be enough to reduce or stop the number of '999' calls.

Depending on the outcome, a number of action plans may be implemented as a result. These include,

- GP may request an ambulance not be sent
- GP may request that they be called when the patient calls '999'
- Referral to another NHS alternative care pathway (e.g.: Community Social Worker)
- Ambulance Clinical Support Desk to contact patient prior to ambulance dispatch

In situations when the action plan has a 'no send' element, this will require approval from the LAS Medical Director.

Once all stakeholders have agreed to the plan, the relevant information will be included against the locality information field in the ambulance dispatch system. Once the action plan is in place, the Patient Centred Action Team will continue to monitor calls received from the patient as part of the ongoing management and review process.

There is no doubt that strategies to manage frequent callers are of significant benefit to any ambulance service. The LAS has many examples of frequent callers. One patient calling 99 times in 5 months, another calling 51 times in 3 months, and another calling 238 times in 2 months. This can very easily place extra strain on the organsiation's capacity to respond to emergency calls. Addressing these patient's needs and reducing the number of ambulance dispatches increases capacity and availability. This is a function that all ambulance services should adopt.

3.10 Data Analysis

Ambulance services can be vulnerable in certain geographic sections of their response area at certain times, being too frequently unable to provide a response for potentially extended periods. Historical analysis of its performance data can highlight these times and locations giving a clear indication of where improvements need to be made.

The WMAS analyses and uses much of its historic data to determine future workload, demand for its service and subsequent resource implementation. If you know your activity profile for the year, you should be able to plan your resource needs for the year. This includes consideration of staff leave planning, meal break allocations, 'out of service' time and potential 'stand by' points.

As an example, ambulance services in major cities plan its response and resource needs for New Years Eve celebrations based on what has happened in previous years. They consider the numbers of cases, the case types, locations and distances to hospital, etc. This analysis gives a clear snapshot of what resources will be required where, and what shifts the Paramedics will be rostered to work. The WMAS plans everyday of the year in a similar fashion. This assists in determining their resource needs for 24-hour coverage, 365 days a year which will ultimately better meet ambulance demand and ensure ambulance capacity to meet that demand.

To perform the data analysis function, the WMAS has a dedicated Performance Cell. Their analysis includes 28 and 91 day trends. They also examine travel times to the calls to indicate if the resources are located in the most efficient place.

At the commencement of each day, the WMAS has a clear indication of what their demand will be based on data from the Performance Cell. Live reports are continually displayed on large screen televisions in the Performance Cell, the Emergency Operations Centre and to senior managers across the organisation. These live reports display the actual workload against the planned workload in real time.

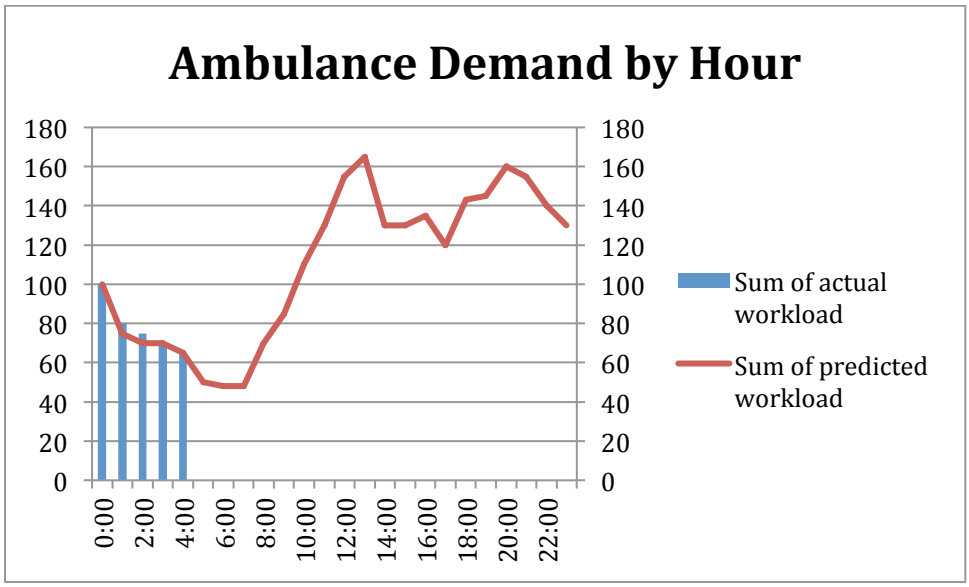


Figure 26: representation of predicted v actual workload at 0500hrs

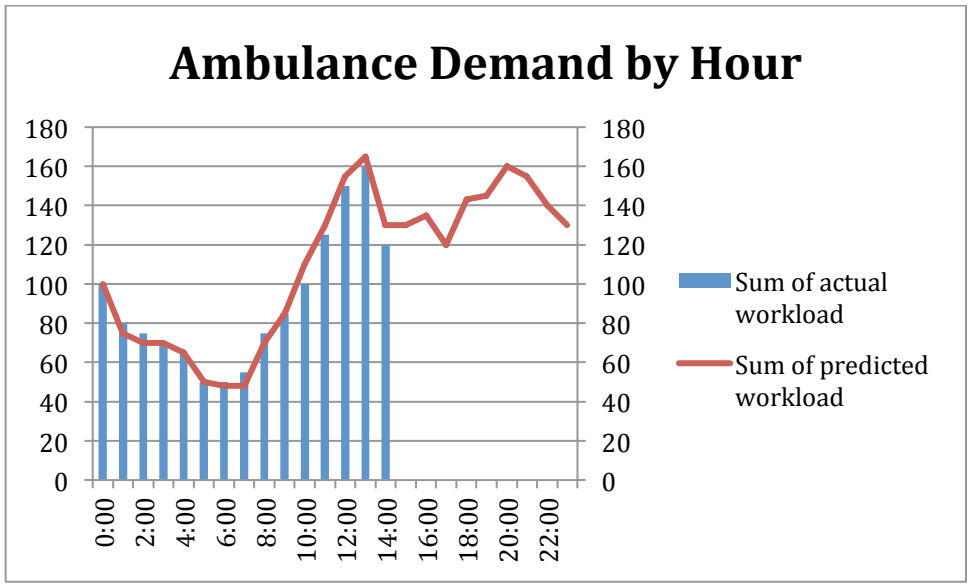


Figure 27: representation of predicted v actual workload at 1500hrs

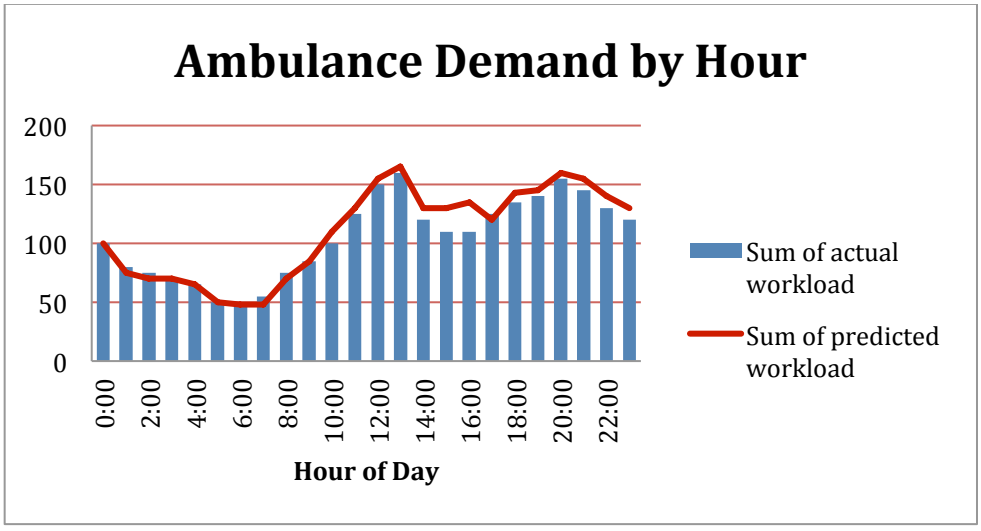


Figure 28: representation of predicted v actual workload at midnight

These three tables depict what is displayed each day on the large flat screen televisions at three separate times of the day. The expected workload is represented by the line graph, and as '999' calls come in each hour, the bar graph for that hour grows.

Understanding the organisations demand on their services for the coming 12 months and beyond also assists in roster planning. The data clearly highlights peaks when more staff are needed, and troughs where fewer staff are needed. More staff during the day, and less at night, more during the winter, and less in the summer. The Planning Cell predicts the coming workload based on this data analysis, factoring in an annual workload increase. The Planning Cell then informs the Scheduling Department how many Paramedics will be required on each shift for each day. The Scheduling Department then works to roster staff accordingly.

Data analysis performed by the WMAS is not limited for use just within ambulance. The Performance Cell can also predict hospital A&E Department workload. Based on historical data, the Performance Cell provides hospitals with an indication of when ambulance arrivals will be most likely. The hospital can then manage their own rosters based on this information and have a better awareness of what their activity profile from the ambulance service will look like.

Knowing your trends in demand and having the ability to plan around those demands is a crucial element in maintaining operational efficiencies. Many ambulance services have specific departments designed to analyse current workload and plan for future workload. It is recommended that ambulance services continue to analyse their workload profile, use that analysis to better plan their resources, and share appropriate data with hospital Emergency Departments so that both organisations can work together collaboratively.

3.11 Resource Planning

The planning of ambulance resources whether it be on a day-to-day basis, or more on a strategic level can be seen as a demand management strategy. Having the right resource in the right location at the right time will ultimately address demand and provide capacity to meet that demand. Resource planning is similar to budget planning. You have to make sure you've got enough each month to cover every bill.

The LAS every two years employs the consultancy services of "ORH Limited". ORH is a private company commissioned by the Government that works with emergency services to analyse their 'core business' and provide specialty operational planning strategies so that the service in question can better plan their resource needs and implement them accordingly. This results in a more efficient and effective response to the community.

During the bi-annual LAS review, ORH Limited examine the LAS workload within their response area. They assess and analyse for the entire trust the types and location of the calls, the times of day that the calls occur and other external influences that may impact ambulance response performance. From that, a clear snapshot can be gained regarding demand on the LAS. This information gained provides a clearer picture of what resources are needed, where and when. However, establishing a station location does not necessarily translate to establishing just one 24 hour a day resource in that station.

A geographical analysis is then done. The LAS area of response can be separated into geographical areas for the purposes of planning. One particular area may be proven from the analysis to need twelve ambulance vehicles to meet the demand of that area. The next point to consider is where best to locate those twelve ambulances. Station locations can then be set depending on where the calls come from. For example, an area may have it determined that it needs four ambulance stations to cater for those twelve ambulances. Rather than placing four ambulances in each of the three stations, it may be found that one station requires two, one station requires four and two stations require three ambulances. It all depends on the demand in the area and the time of that demand which ultimately gives the service its capacity.

The ORH Limited review matches workload to the implementation of available ambulance resources. It provides the organisation to recreate its response model every two years, and modify its design based on where and when the workload is. This particular strategy is extremely valuable in ensuring that the LAS is better prepared to meet its demand as it changes due to various influences. Such an analysis every two years should be undertaken by all emergency services worldwide.

ROSTERS

Now that the resource numbers and locations have been established, the next consideration is roster planning. Whilst in a perfect world the ultimate position would be to have every available ambulance staffed 24 hours a day, the reality is that this is not necessary. Ambulance demand fluctuates by the day and by the hour. Data analysis has shown that ambulance demand is less in the early hours of the morning for example, therefore it is unnecessary to have maximum numbers of ambulance on shift at that time. Some geographical locations may have shown from the analysis that a nightshift crew may not even be needed at one particular station on a Monday or Tuesday night with the mild, infrequent workload being adequately catered for by adjacent stations.

The workload analysis may also indicate the opportunity to implement rosters of varying lengths. Shifts may be 8, 9, 10 or 12 hours duration depending on demand. The roster needs to reflect demand, when the public needs an ambulance response.

Performing such a detailed workload analysis and planning resources and rosters accordingly to meet the demand in the area provides for;

- more efficient use of staff and resources
- more efficient and effective response to the community
- maintained capacity of the ambulance service to meet demand
- decreased risk to the patient and the ambulance service
- better rosters for staff providing for increased staff satisfaction
- the ability to implement a published long term roster (including annual leave) to a particular roster line at the station
- potential for staggered rosters thus providing the opportunity for crew rest / meal breaks

The LAS have many staggered shift start times. These include 0600hrs, 0630hrs, 0700hrs, 0730hrs, 0800hrs, 0830hrs and 0900hrs.

Some of the other more unusual, non-traditional shift times designed to meet ambulance demand for the station include;

- ✓ 1500hrs – 0300hrs
- ✓ 1800hrs – 0300hrs
- ✓ 1800hrs – 0600hrs
- ✓ 1830hrs – 0630hrs
- ✓ 2100hrs – 0300hrs
- ✓ 1300hrs – 0100hrs
- ✓ 2300hrs – 0700hrs
- ✓ 0645hrs – 1645hrs
- ✓ 1900hrs – 0700hrs

The shift times are all determined by the demand pattern as opposed to simply allocating a day or nightshift to a resource on the day.

COMPLEXES

In the LAS, a group of three or four station locations is known as a 'complex'. There is the potential for staff to work rosters at different stations within a complex.

Each complex is managed by a Duty Station Officer (DSO).

RURAL AREAS

The WMAS operates in more remote locations within England as well as within larger urban cities. Subsequently, they have assessed an alternative response profile, different to placing an ambulance in each small township. In Hereford for example, is an ambulance 'hub' housing multiple ambulance stretcher vehicles through each shift. In the smaller outer lying townships, there are ambulance single responders. The model assessed looks similar to this.

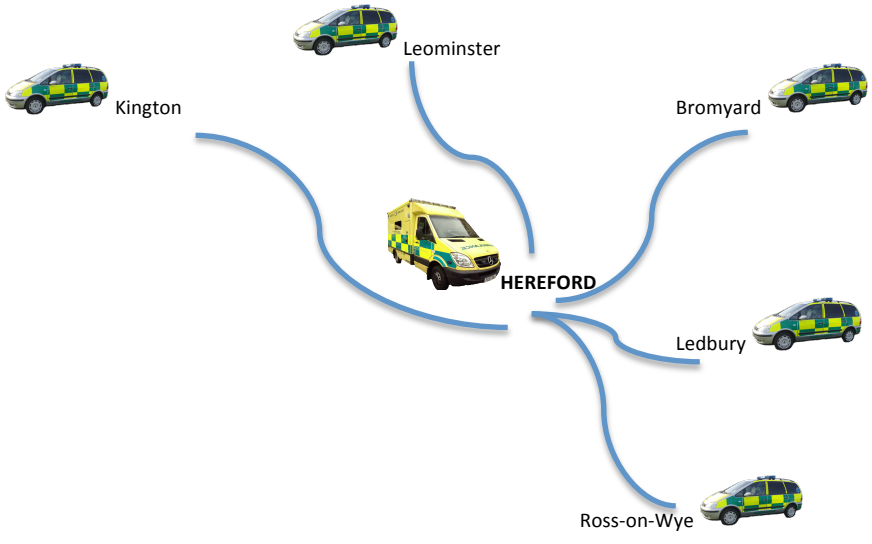


Figure 29: Representation of rural resource allocations

Once an ambulance call is received in one of the smaller townships, the single responder is dispatched from that township. Concurrently, an ambulance stretcher vehicle is dispatched from the main town centre to support the single responder. The ambulance service response time is kept to a minimum as the single responder arrives first. The single responder can then either cancel the ambulance that is still on its way allowing it to be available for another call, or await its arrival and handover the patient accordingly.

If the stretcher ambulance is required to transport, the single responder can then clear the scene and become available once again for the next call. Then if another '999' ambulance call is received in that same township, the single responder can once again respond, and another separate ambulance is dispatched from the city hub.

Under the alternative system of spreading stretcher resources and locating stretcher ambulances in the smaller towns, response times could be jeopardised if the second call is received to the minor township whilst the town's ambulance is still transporting the patient. Another ambulance resource would have to be dispatched from another location to come into that township, thus prolonging the response time and potential patient outcome.

The model depicted above also has potential benefits in terms of low acuity calls. A '999' ambulance call may come in from one of the smaller townships. That call may be one of low acuity that may not require immediate transport of the patient to hospital. Subsequently, the single responder can be sent to assess and manage that call without a stretcher ambulance being dispatched at the same time. The advantage there being that ambulance activity is potentially reduced as the single responder may cancel the stretcher ambulance. It also allows for the stretcher ambulance to maintain its availability for the higher acuity call.

This model of locating single responders into the smaller communities and centralizing ambulance stretcher vehicles into the larger township is a shift in traditional resource allocations and has response performance advantages as outlined above. It also provides a potentially more efficient and cost effective service by decreasing the numbers of staff required on the vehicles whilst maintaining its response to the community. It is recommended that this model be assessed by ambulance services in Australia who cover a rural sector.

3.12Trolley Bed Vehicle

On occasions, ambulance services are faced with the fact that there are queues of ambulances waiting at busy hospital emergency departments to handover their patients. This significantly impacts ambulance availability in the community in terms of not being able to free up those emergency vehicles to attend the next call. In response to this, the LAS has introduced what it calls a Trolley Bed Vehicle.

The Trolley Bed Vehicle is simply a large van that contains eight to ten ambulance stretchers, extra ambulance equipment and kits. In situations where multiple ambulances are waiting for prolonged periods of time at hospital emergency departments, the Trolley Bed Vehicle can be mobilized to the hospital in question. Crewed at the time of need by a Clinician and an Ambulance Manager, the Trolley Bed Vehicle will attend the hospital and deliver the ten ambulance stretchers to the ambulance crews that are waiting. The Clinician on the vehicle will take a handover from each of the waiting ambulance crews and will assume responsibility for the care of those patients until handover is completed. The waiting ambulance crews can then take their newly delivered stretchers and replacement equipment or kits and leave the hospital, becoming available for the next call.

3.13 NHS Pathways

Each UK ambulance service is progressively moving towards a system called NHS Pathways, which will gradually replace the current Advanced Medical Priority Dispatch System (AMPDS). Developed by a variety of Clinicians, NHS Pathways is a clinically robust and consistent telephone assessment and triage system. It ensures that all types of calls received on the '999' emergency number; be they major health issues, minor complaints, social welfare issues, etc. can all be triaged consistently and appropriately. It is supported by a large real time database of what alternative care services are available in the community at that time. The system ensures that the patient receives the most appropriate response to them at that time, which could be responding an emergency ambulance, being referred to a GP clinic or walk in centre, or receiving self care advice.

NHS Pathways is a standardised assessment tool that can be used when a patient telephones any level of medical service (e.g.: ambulance, GP out-of-hours, NHS 111 or any other Single Point of Access number in place). Like AMPDS, the caller is progressed through a set of questions relating to the patient's complaint. Each answer then determines the next question to be asked which finally leads to the pre-determined level of care, based on the information that has been provided on the phone. The patient then gets appropriately matched to the level of care that is required. If an emergency ambulance is not required, an automatic search is carried out on the integrated Directory of Services to locate an appropriate service in the patient's local area which offers the specific clinical skills needed within the time frame required.

A practical example would be a patient who calls requesting an ambulance for a laceration to their leg. The caller goes through the standard NHS Pathways questioning on the telephone. It is determined that the wound is not bleeding heavily and that the wound is not located on a dangerous part of the body. Essentially, the patient requires the wound to be stitched and

dressed within the next two hours. AMPDS as used by ambulance services, determines the acuity of the case and how quickly the ambulance should be responded. AMPDS does not support the call taker to determine whether an ambulance is actually required to attend or not. Under AMPDS, this call would be classified as low acuity and the ambulance service would respond accordingly depending on each particular service's operating policies and procedures. Under NHS Pathways, the caller is presented with a list of appropriate medical services in their area that are open at that time, and can provide that service to the patient. An ambulance is not responded.

NHS Pathways is an integrated system. Each service can link into each other by use of the system. For example, if a patient telephones NHS Direct to ask advice on how to manage this first episode of crushing chest pain and clamminess that they are experiencing, they will be asked the associated questions as per NHS Pathways. It would then be determined that this patient requires an emergency ambulance attendance as a matter of urgency. Under the old system, the caller would then be referred to the ambulance service to once again have him provide his personal details and be re-triaged before an ambulance can be dispatched. As NHS Pathways is an integrated system, the request for an ambulance can be passed direct into the ambulance CAD system and an ambulance can commence its journey to the patient without taking them through the triage process. All the information that the ambulance service requires has already been entered into the system.

As new medical services to the community are established (eg: GP's, District Nursing Services, Walk In Centres, etc), these are entered into the NHS Pathways database and can then be seen by all medical providers who utilise NHS Pathways. This ensures that the database for referrals is up to date.

NHS Pathways is a robust system that ensures the patient receives the right medical response in the right timeframe every time. From an ambulance perspective, as well as being entirely patient focused, it has shown itself to be an effective demand management strategy. The North East Ambulance Service reports that they are saving approximately 2000 ambulance journey's each month as a result of using NHS Pathways. The WMAS ceased using AMPDS in August 2011 and commenced using NHS Pathways. Since then, they have experienced a 20 to 25% reduction in patients being conveyed by ambulance to hospital.

Other benefits of the system include:

- patient has an improved experienced
- assists people to use the right service first time including self care
- patient is not waiting on a call back for low acuity calls
- appropriate care is accessed quicker
- hospital admissions to A&E are reduced
- decreases / eliminates the need for a secondary telephone assessment (Clinical Advisory Desk) thus reducing costs
- frontline ambulances are more available for patients who genuinely require urgent Paramedic attendance by reducing non-emergency ambulance dispatches

It is highly recommended that all ambulances services closely assess the NHS Pathways system with a view to implement it as their main ambulance telephone triage and assessment tool.

NHS Pathways has proved beneficial for both the patient and the ambulance service and is an effective demand management strategy for ambulance services.

3.14 Clinical Support Desk

The LAS has a Clinical Support Desk located in its Emergency Operations Centre. This area has two main functions,

1. To provide clinical support and advice to LAS and volunteer crews as required.
2. To scan all the calls entered into CAD that have not had a resource dispatched as yet. If after examining the detail contained in a particular case, the Clinical Support Desk Clinician feels that this case does not need an ambulance responded, then the Clinician can contact the patient or caller direct and discuss the situation. Often it is confirmed from that secondary call that an ambulance is not required. The Clinician will discuss alternative arrangements and finally ask, “do you wish to cancel the ambulance”? Asking this question is an important facet of the phone call for legal reasons.

As an example of the impact that the Clinical Support Desk can have on demand, in October 2011, the Clinicians cancelled 401 ambulance dispatches.

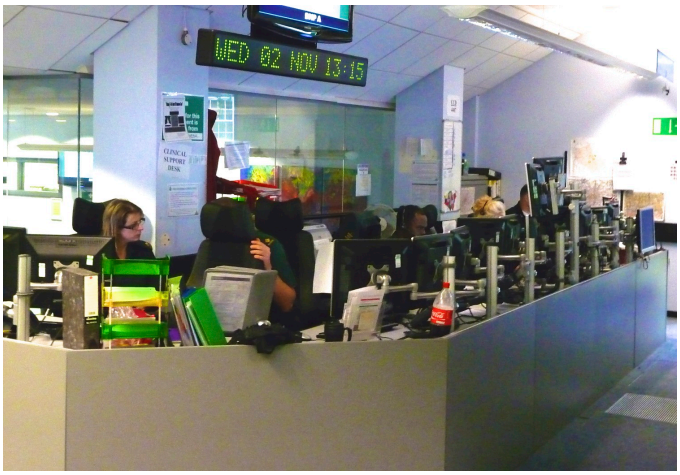


Figure 30: Clinical Support Desk in the LAS Emergency Operations Centre

Figure 31: The LAS Clinical Support Desk console

3.15 Clinical Telephone Advice (CTA)

The LAS Clinical Telephone Advice Department (CTA) is located at the Waterloo Headquarters complex and is staffed 24 hours a day to provide telephone advice and determine alternative patient care pathways for low acuity calls. The CTA has 10 Clinical Advisors on shift with 2 Supervisors, and save approximately 40 ambulance journeys each day.

The CTA receives Category 3 and Category 4 calls directed from the Emergency Operations Centre.

Category 3 – The CTA has 30 minutes to call these patients back. If this timeframe is not met, the call will be returned back to the Emergency Operations Centre for ambulance dispatch. There are some Category 3 calls that don't get sent to the CTA based on the information received during the call taking process (e.g.: a patient who has fallen and is still on the floor).

Category 4 – The CTA has 60 minutes to call these patients back. The CTA can however elect not to call certain types of these cases back again based on the case information. These calls can be forwarded straight on to NHS Direct with no further ambulance contact (e.g.: patient complaining of sore feet).

Category 3 and 4 calls will not be passed onto the CTA is the patient has already been assessed by a health care professional and an ambulance is being requested (eg: Doctor requesting ambulance for a patient with calf pain – possible deep vein thrombosis).

Call back times for Category 3 and 4 calls are extended when the Demand Management Plan is implemented as discussed earlier in section 3.2 "Demand Management Plan".

The CTA utilizes a specialized computer software tool designed to ensure that the patient receives the most appropriate response to their particular needs at that time, with the majority of calls aimed at preventing unnecessary ambulance responses, and subsequent unnecessary patient presentations to hospital Emergency Departments.

Once a call is managed by the CTA, the following is a list of outcomes that may occur;

- patient to consult with GP (LAS can organize if necessary)
- patient to attend a "walk in centre"
- patient to attend a "minor injury unit"
- patient to attend a Dentist
- patient to consult with Midwife
- patient to consult a Social Worker
- patient to consult a Crisis Team
- self care advice provided to the patient
- a District Nurse is organized to attend the patient
- a taxi is arranged at LAS expense to transfer the

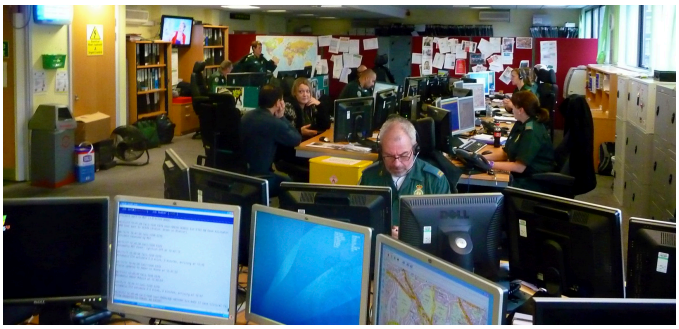


Figure 32: The LAS CTA Department

patient to an appropriate facility
- patient is assessed to be suitable to be transported by an A&E Support crew to hospital
- the call is upgraded and an emergency ambulance response is generated

Many ambulance services already have some form of a department designed to manage the low acuity caller that doesn't require an immediate ambulance response. As the number of low acuity calls continues to increase, it is vital that ambulance services have the ability to be able to provide some form of response to those calls. That response should not always equate to dispatching an ambulance as this is not always the most appropriate health care response for the patient at that time, and also places greater capacity issues on the service. The LAS CTA saves approximately 40 ambulance journeys a day, and therefore is an excellent demand management strategy that has proven benefits.

3.16 A&E Support / Urgent Care Vehicles

Not every patient attended to by ambulance crews requires an immediate response or urgent life saving care. Consequently the LAS services the community with a variety of vehicles and skill sets, matched to the type of call that the service receives. One level of skill set is that known as an A&E Support Unit. These are also referred to as Urgent Care Vehicles.

The A&E Support vehicle is reserved to attend the low acuity calls (not serious or life threatening) received on '999'. Providing this skill set in an operational ambulance and allocating it low acuity cases keeps the Emergency Ambulance Paramedic units free to attend the high acuity, more serious cases.

Types of calls that an A&E Support vehicle would attend include;

- minor injuries
- minor falls
- generally unwell patients
- ongoing abdominal complaints
- back pain
- low acuity inter-hospital transfers

A&E Support crews can be sent to back up a single responder Paramedic, can be sent to cases assessed by the Clinical Support Desk in the Emergency Operations Centre, and to cases assessed by the Clinical Telephone Advice (CTA) Department once they have spoken with the patient and determined the patient has a low acuity complaint. A&E Support crews can also be sent to higher acuity cases (Red 1) as one of two or three responders to the high acuity event where they are the nearest or additional resource.

A&E Support Exclusion Criteria

A&E Support should not be sent to certain types of calls. These are;

- Major trauma – including critical inter-hospital transfers where no escort is provided
- Any stabbing or shooting

- Chest pain, Anaphylaxis or Breathing Problems cases with an initial AMPDS code of Red or C1
- Critical transfers of STEMI or NSTEMI patients where there is no escort
- Maternities that have been through the maternity algorithm and are assessed as Red or requiring a response within 30 minutes (other than where there is a midwife on scene who is traveling with the patient)
- Children under 5 years of age
- Elderly fallers (over 70 years of age)
- Road traffic collisions
- Falls from height
- Hyperglycemia when associated with other symptoms eg: dizziness, collapse, chest pain
- Combative diabetic patients
- GP referrals for cardiac problems
- GP referrals within an hours for respiratory problems
- Violent psychiatric patients
- Drug overdose where cardiac monitoring is required
- Fitting – active
- Fitting – no longer fitting (unless there is a clear history of single fits and this is a typical fit)
- Trackside – any call adjacent to or on a railway track in an area that the public are not normally permitted

A&E Support crews undertake an eight week training programme and cover all basic areas of patient assessments, patient care and use of ambulance equipment. A&E Support crews are supported by the Clinical Support Desk in the Emergency Operations Centre, providing a source for consultation for clinical decisions.

3.17 Use of Volunteer Agencies

The LAS is supported operationally by St John Ambulance. St John own a large number of ambulance type vehicles and utilise these vehicles to provide support to NHS ambulance services throughout England. Working under the exact same dispatch criteria as an LAS A&E Support Unit, St John provide volunteers and ambulance vehicles at various times each week according to volunteer availability.

Figure 33: St John Ambulance "Crusader" vehicle used for LAS operational support

The clinical and operational standard of the St John volunteer is set by St John's Chief Ambulance Paramedic for the UK. St John staff cannot refer patients to alternative pathways and cannot leave patients at home.

Given the low level of acuity patients that St John are dispatched to, often the LAS Emergency Operations Centre will hold specific low acuity calls for these St John units when they commence shift.

St John crews are clinically supported by the Clinical Support Desk. If the crew are uncertain about a particular case or need to consult with a Clinician for any reason, they can contact the Clinical Support Desk and gain that advice or direction.

The LAS pays St John a nominal agreed fee for use of their services. This fee essentially covers the vehicle running costs for the shift and the consumable stores used.

In the event of a major incident, St John also support the LAS by responding to other calls whilst the LAS concentrates on managing the incident. St John also provide a treatment centre at the incident site for the welfare of the rescuers.

Earlier in 2011, a large hospital fire occurred in London placing the LAS under demand pressures. St John provided the LAS with 15 extra ambulances with crews to provide assistance to the LAS core operations within the community. St John also placed a liaison officer to the LAS Emergency Operations Centre to receive and dispatch cases as they are handed over by the LAS.

Within a planned event such as the Notting Hill Carnival, St John will have a significant presence as part of their community service. They work closely with LAS and partner together one LAS Paramedic with their response crews. Calls that come through on '999' to areas in and around the event are immediately handed over the St John to respond to. This prevents unnecessary ambulance dispatches to an area already well resourced for the event, and ensures that both a St John crew and an LAS Paramedic attend. If transport to hospital is required, the St John Ambulance vehicle can do this with the LAS Paramedic escorting.

The system of St John volunteers providing support to ambulance services in the UK clearly has a measurable benefit. As a demand management tool, St John prevent a variable number of ambulance journey's to low acuity events, and from planned public gatherings thus keeping emergency frontline ambulances available for higher acuity events. As successful as it is however, it would be a difficult strategy to implement amongst Australian ambulance services. There would be significant capital outlay involved (e.g.: vehicles, equipment, radios, etc.), a specific training course would be required to be delivered to suitable applicants, legislation would need to be reviewed and potentially changed, and the state ambulance service would need to make budget provisions for the payment of St John resources. Not withstanding this however, there may be scope for existing private ambulance contractors to provide this same low acuity support. As the low acuity case types make up the larger amount of ambulance workload, it is recommended that this strategy of expanding the use of private ambulance companies be further assessed.

3.18 Alternative Patient Care Pathways

The NHS in the UK provides what are known as Alternative Patient Care Pathways. Put simply, these are alternative services that a patient may seek or be referred to rather than have an ambulance attend and then be transported to a hospital emergency department.

Alternative patient care pathways include;

- **GP Clinics** – providing general GP services
- **Urgent Care Centres** – often based with or next to a hospital A&E. (Trials in the UK have demonstrated that these centres are not as effective when located away from hospital A&E Departments).
- **Walk In Centres** – for minor illness or injury. Patients must be able to physically walk in themselves.
- **Primary Care Centres** – staffed with doctors, these centres have pathology and radiology services.
- **NHS Rapid Response Teams** – depending on the case in question, these teams are staffed by a Nurse, Physiotherapist, and Occupational Therapist and can do home assessments.
- **Minor Injury Units** – providing care for minor injuries.
- **Dental Clinics** – providing acute dental care.
- **Mental Health Crisis and early intervention teams**
- **Falls Teams** – can attend a patient at home and provide an assessment as long as the patient has not received injury from the fall, and the patient can stand, ambulate and sit without assistance.
- **Royal District Nursing Service** – providing general nursing care in the home.
- **Pharmacy** – providing pharmaceutical and self care advice.
- **Self-help** – can be provided to a patient to avoid unnecessary journeys to medical facilities.
- **NHS Direct** – a 24-hour a day telephone advice service operated by the NHS.
- **NHS 111** – replacing NHS Direct. The community is advised to call "111" when they need fast medical attention, but it isn't a '999' emergency. Trained advisors will ask questions and assess symptoms regarding the particular medical problem and will direct the patient to the right local medical service. NHS 111 will provide consistent clinical assessment at the initial point of contact, in order to direct people to the right service, first time. It is staffed by a team of fully trained advisors supported by nurses / clinicians, who are on hand to assess callers' needs and ensure they receive the right services as quickly as possible. Patients who need to speak to a nurse / clinician will do so by way of a 'warm transfer' from the 111 call handler. Those who need to speak to a doctor will be directed accordingly. If an ambulance is required, one will be dispatched without the need for the patient to repeat any information as NHS 111 uses the NHS Pathways integrated system.

Figure 34: 'NHS 111' advertising logo

These services can be accessed direct by the patient, can be recommended to the patient from ambulance or other health care providers, or an ambulance can often transport patients to some of these facilities where clinically and operationally appropriate.

One of the keys in reducing ambulance demand is to provide the community with other 24-hour a day healthcare options and promote them appropriately. The above list of alternative care pathways has provided immense medical support to the community, given alternatives to patients who would have ultimately called for an ambulance, and consequently reduced demand on the ambulance services and hospital emergency departments.

3.19 Documentation

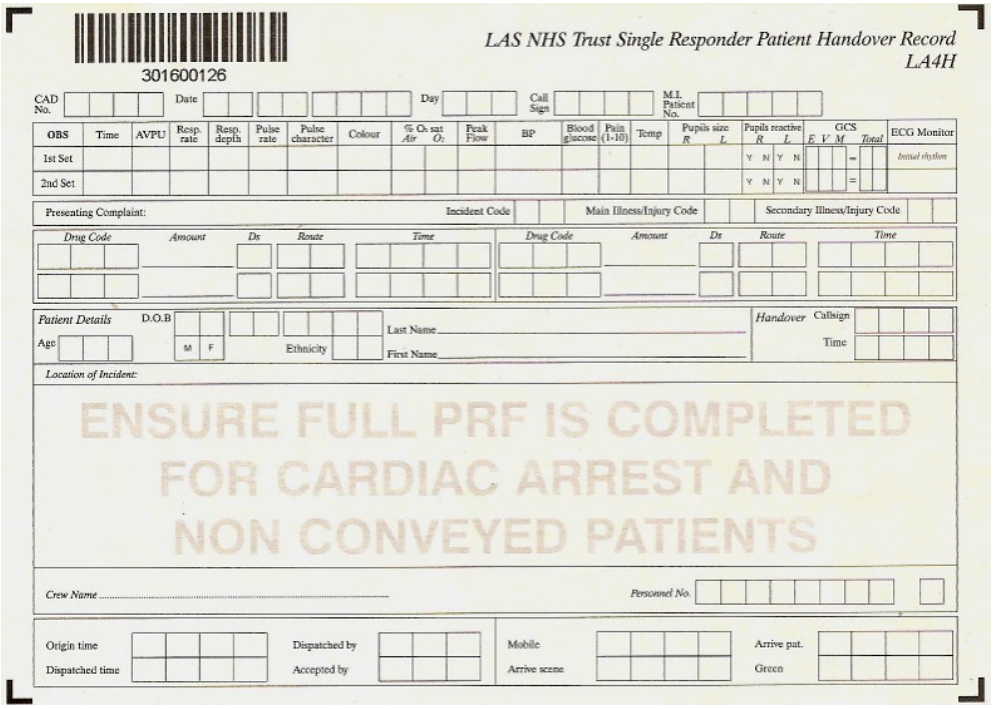
Ambulance services within England are progressively moving towards electronic Patient Report Forms (PRF). Similar to Australia, the introduction of electronic PRF's will create a paperless database that identifies types of cases that ambulance attend, patient presentations, treatments and the effect that the treatment has had. The data can then be used for audit purposes and for secondary analysis and research. Electronic PRF's also reduce administrative costs when compared to a paper system.

The UK have the advantage of learning from Australian ambulance services who have been using an electronic system for some years now. It has been discovered that the software and interface used in Australia has led in many instances to increased "at hospital" times simply due to the time it can take to thoroughly complete an electronic PRF. This is particularly evident in high acuity patient's, or patient's who have had multiple treatment procedures carried out by Paramedics. A backlog of ambulances at hospitals writing up comprehensive electronic PRF's has a negative impact on ambulance availability, and subsequently the ability of the ambulance service to manage its demand. Subsequently, the NHS is in the process of developing an interface that is simple, user friendly and does not contribute to prolonged "at hospital" times. Currently, the LAS and WMAS continue to use paper PRF's until the electronic version is ready for rollout.

The type of paper PRF completed by a Paramedic single responder in most cases is different to that completed by a 2-person Paramedic ambulance crew. A single responder PRF is much smaller and requires far fewer fields to be entered, capturing only the most relevant information. The theory behind this being that a single responder will hand over their patient to a 2-person ambulance crew who will convey that patient to hospital and will record a complete PRF covering all necessary detail including any assessments or interventions completed by the single responder. There is no need to double up the documentation to the same comprehensive degree. The single responder can then complete a simple, condensed version at scene, allowing them to quickly become available and respond to the next emergency call. A single responder will only complete a full, comprehensive PRF if the call is for a cardiac arrest, or if the patient is not conveyed to hospital.

Having single responders complete a condensed PRF is clearly a benefit to the ambulance service and ultimately to the public. It allows relevant notes to be made at the time and facilitates the single responder to become available once again in a short timeframe. The key is having the resource available as soon as possible to be able to respond to the next event.

This new electronic interface can in itself be seen as a demand management strategy. Whilst it is yet to be introduced across the country, the intended system that supports Paramedics to provide adequate patient care documentation whilst not contributing to increasing "at hospital" times should be considered and closely reviewed by all ambulance services as they attempt to improve response performance within the community.



301600126

LAS NHS Trust Single Responder Patient Handover Record
LA4H

CAD No. | Date | Day | Call Sign | M.I. Patient No.

OBS	Time	AVPU	Resp. rate	Resp. depth	Pulse rate	Pulse character	Colour	% O2 sat Air	% O2 sat O2	Peak Flow	BP	Blood glucose	Pain (1-10)	Temp	Pupils size R	Pupils size L	Pupils reactive R	Pupils reactive L	GCS E	GCS V	GCS M	GCS Total	ECG Monitor
1st Set																	Y N	Y N					Initial rhythm
2nd Set																	Y N	Y N					

Presenting Complaint: | Incident Code | Main Illness/Injury Code | Secondary Illness/Injury Code

Drug Code	Amount	Ds	Route	Time	Drug Code	Amount	Ds	Route	Time

Patient Details | D.O.B | Age | M F | Ethnicity | Last Name | First Name | Handover | Callsign | Time

Location of Incident:

ENSURE FULL PRF IS COMPLETED
FOR CARDIAC ARREST AND
NON CONVEYED PATIENTS

Crew Name ..... | Personnel No.

Origin time | Dispatched time | Dispatched by | Accepted by | Mobile | Arrive scene | Arrive pat. | Green

Figure 35: LAS Patient Report Form used by single responder Paramedics when handing over to another crew

3.20 The "Make Ready" Scheme

The LAS performed a review of their 'Out of Service' times to ascertain the main contributor to rostered ambulances being unavailable to service the community and respond to cases. It was found that vehicle issues such as breakdowns, soiled vehicles, soiled equipment, missing equipment or consumables and vehicle equipment checks by Paramedics accounted for the most time that a crew was unable to respond. The Make Ready Scheme is an initiative that directly addresses those issues as it cuts down on ambulance crew Out of Service time dealing with vehicle and equipment issues.

Figure 36: South East Coast Ambulance Service "Make Ready" hub

The Make Ready Scheme is centred around what's known as a Make Ready Maintenance Hub. The Hub operates 24 hours a day, 7 days a week, and is a warehouse like facility that is home to a large number of ambulance vehicles. The Hub is staffed by a team of Ambulance Fleet Assistants who prepare, service and maintain this fleet of ambulance vehicles when they're not on shift. This ensures that oncoming Paramedic crews can arrive at the Hub, collect their made ready vehicle which is guaranteed to be clean, equipped and fully serviceable thus making them instantly available to depart the Hub, move to their Community

Ambulance Station and respond to '999' calls instantly. There is no need for the oncoming crew to spend time checking the vehicle or its contents.

The Make Ready scheme has benefits both for the patient, the Paramedics and the respective ambulance service. Its main aim is to cut down time that ambulances are unavailable or Out of Service. If fleet availability is maximised, then there are more ambulances available to respond. Other benefits of the scheme include,

- **Deep Cleaning** – ambulances when not on shift are cleaned inside and out. They are also deep cleaned and swabbed for the presence of micro-organisms including MRSA which results in minimising the risk of cross infection.
- **Cost Reductions** – a Make Ready Hub when supported by various Community Ambulance Stations (eg: fire stations, police stations, hospitals, etc) allows for an ambulance service to sell existing ambulance stations and operate the much of the fleet from a Hub. Financial savings are also made from decreased spending on aged and expensive ambulance owned properties.

Figure 38: An ambulance is cleaned whilst off duty at a "Make Ready" hub (reproduced from www.EDP24.co.uk)

- **Change Over Vehicles and Equipment** – in the event that an ambulance or part of its equipment becomes unserviceable during a shift, the Paramedic crew can simply return to the Hub and change over the piece of equipment or ambulance without delay
- **Asset Control** – vehicles and equipment are monitored daily for damage and other defects
- **Waste Reduction** – stock monitoring and rotation reduces waste and drugs going out-of-date
- **Vehicle Reliability** – To reduce the risk of vehicle breakdowns whilst on shift, on-site vehicle maintenance experts are on hand to conduct routine checks and maintenance.

There is no doubt that the Make Ready Scheme has a number of advantages and efficiencies. The Staffordshire Ambulance Service first started using Make Ready approximately 10 years ago. In that time, the Staffordshire Ambulance Service has become one of the most successful ambulance services in the UK with some of the fastest response times in England. If an ambulance service were to consider the implementation of such a scheme, it is important to highlight that it needs to be supported by a network of Community Ambulance Stations. These are smaller non-ambulance owned facilities such as fire stations that provide appropriate crew rest facilities for Paramedics.

4.0 Staff Welfare

REST BREAK POLICY

The ability of providing Paramedic Rest Break's whilst on shift has always been challenging to many ambulance services simply due to the demands placed on the service. The LAS has recognised this and implemented a Rest Break Policy in attempt to address this issue. The aim of the LAS policy is to ensure that all operational staff are afforded an appropriate rest break when working shifts of six hours or greater.

- For shifts greater than 6 hours but less than 10 hours duration, Paramedics are entitled to a 30-minute rest break. The first 20 minutes are unpaid and uninterruptible, however the last 10 minutes are paid and subsequently interruptible.
- For shifts 10 hours or more in duration, Paramedics are allocated a 45-minute rest break. The first 30 minutes are unpaid and uninterruptable, however the last 15 minutes are paid and subsequently interruptible.
- The section of the break that is interruptible will only be done so in the event of a serious, life threatening call (Red Cat 1 determinant) when there is no other suitable resource available to respond.

Compensatory Arrangements

It is anticipated that occurrences of a missed rest break will by exception. Therefore, in such an event that a rest break is either interrupted or missed totally, then the following arrangements will apply.

- Any interruption to the paid section of the rest break will be compensated with a GBP10.00 pound payment.
- In the event on no rest break being allocated within the rest break period, staff will be entitled to compensatory time at the end of their rostered shift. Staff working a shift of less than 10 hours will complete their shift 20 minutes early. Similarly, staff working shifts of 10 hours or more will finish 30 minutes early.

Rest Break Locations

All attempts are made to afford a crew their rest break at their base station, or at another location as requested by the crew. If a crew does request an alternative location, this is to be done well in advance of the rest break time. Any requests made for an alternative location at the actual time of the rest break will be refused.

Rest Break Allocation

Rest breaks will be allocated and completed in the following time periods,

- Shifts greater than 10 hours, the rest break will commence after 4 hours of the shift start time and be completed two hours before the end of that shift

- Shift lengths between 9 hours and 9 hours, 59 minutes will be allocated a break to be completed within the middle 5 hours of the shift
- Shift lengths between 8 hours and 8 hours, 59 minutes will be allocated a break to be completed within the middle 4 hours of the shift
- Shift lengths between 7 hours and 7 hours, 59 minutes will not be allocated a break within the middle 2 hours of the shift and will completed before the last 30 minutes of the shift
- Shift lengths between 6 hours and 6 hours, 59 minutes will not be allocated a break within the first 60 minutes of the shift and will completed before the last 30 minutes of the shift

Staff will not be allocated a rest break outside of these timeframes, however, staff may request to have their rest break after the completion of the rest break period.

The Rest Break policy may be temporarily suspended on authority. Any suspension will be for a short period of time with reinstatement as soon as possible.

Suspension of the Rest Break policy may also occur in situations such as declared major incidents or New Years Eve where demand is extreme.

The key to the provision of rest breaks across such a large and busy service is the implementation of 'staggered start' rosters and the provision of extra rostered shifts on known busy days of the week (e.g.: Friday and Saturday nights).

INCIDENTAL OVERTIME

Despite the fact that a Paramedic may be rostered to a particular shift that ends at a certain time, it's not unusual for the Paramedic to work what's known as 'forced incidental overtime' due to a dispatch to a case that runs past the shift finish time. This has been the source of frustration and fatigue for many due to the prolonged shift length.

The LAS have reviewed this situation and acknowledge that crew welfare is potentially compromised. Subsequently, standard operating procedures dictate that if a crew is working past their shift completion time, then once they clear the case that they were dispatched to, that unit is immediately out of service and not available for any further dispatches until it returns to its station and a crew changeover takes place. This ensures that forced overtime is kept to a minimum, further Paramedic fatigue is prevented, and sick leave is potentially reduced in cases where Paramedics are due to return for their next shift later that day.

5.0 Motorcycle Response Paramedic Units

Both the LAS and the WMAS operate well-established Motorcycle Response Units within their regions. They regularly liaise with and seek advice from the International Fire & EMS Motorcycle Response Unit Association on issues such as training, equipment, uniforms, safety considerations and recommended motorcycles. The association has direct links with most motorcycle response units worldwide and provides extensive advice and support to any ambulance service that requests it.

The LAS and WMAS recognised that one particular safety feature they sought for their units was that of 'road presence'. Given the potential speed and agility that these units will demonstrate in congested areas, it's vital that the bikes can be easily seen under any circumstances. This was a major influence to both services when selecting the bike they were to use. Smaller sized bikes would not afford the road presence and visibility that's desired for such a unit.

The association has experience with a large variety of commercially available bikes. They have thorough understanding as to what is appropriate and why, and recommend accordingly. The association can also advise on what bike not to utilise and why.

Figure 39: logo from the International Fire and EMS Motorcycle Response Unit Association

5.1 London Ambulance Service

Commencing operation in 1991, the LAS Motorcycle Response Paramedics were established under the premise that the Paramedic on a motorcycle could respond to emergency '999' calls in built up areas faster than other resources, can assess patients and administer pre-hospital emergency care whilst an ambulance is still on its way. In the setting of events such as out of hospital cardiac arrest, this can be a life saving initiative. Motorcycle Paramedics also have the advantage of being able to operate in built up, congested areas where an ambulance or a car cannot readily access.

Figure 40: LAS Motorcycle Paramedic

LAS Motorcycle Paramedics operate predominantly around central London where vehicle congestion can be extreme. Responding between the hours of 6.30am and 11.30pm, Motorcycle Response Paramedics are dispatched to any Category A call when they are the closest resource available.

The LAS currently has 21 units, however a Business Case has recently been submitted to increase that number to 30 to cover planned events, training, etc. There are 33 staff on roster with a pool of an extra 12 staff as a back up.

Motorcycle Type – Honda ST1300 Pan European (but with plans to transition across to the Yamaha FJR 1300 as recommended by the International Association).

Dispatch – via an alert tone from the 2-way radio in conjunction with case details appearing via SMS on the unit's mobile phone. The unit polls its location automatically from the portable radio. The Paramedic can log themselves mobile, arrived or clear through pressing the appropriate button on the motorcycle.

Issues

- Initial set up costs are expensive. It is estimated to cost the LAS approx. GBP15,000.00 pounds per unit before the first call is dispatched (incorporates cost of the bike, helmet, equipment, training, etc)
- Motorcycle Paramedics do not operate in snow or ice. The Paramedic has the autonomous ability to remove themselves off a motorcycle and operate their shift on a car (Fast Response Unit) or ambulance if the weather dictates.
- Restricted drugs (eg: Morphine) need to be carried in a secure pouch on the Paramedic's person

The LAS have previously considered a 3-wheel scooter type unit as used by the City of London Police (Piaggio MP3 250cc 3 wheel scooter) but have elected not to introduce them. Police Community Support Officers utilise these scooters to patrol certain routes, perform traffic duties and move from location to location. These units are not authorised for emergency response. The visual warning devices are only used when stationary to protect a scene and to warn other road users. It is not a requirement in the UK to have a motorbike licence to be able to operate one of these bikes.

The BMW has also been assessed for use within the Motorcycle Paramedic Unit. Whilst it was found that the BMW was a quality product, issues surrounding overheating associated with inner city use were discovered. It was also found that whilst the BMW had excellent equipment carrying capacity, the side compartments protruded out past the wing mirrors.

After being successful with an Expression of Interest, prospective Motorcycle Paramedics must,

- Demonstrate they can handle a large motorbike
- Pass a Highway Code examination
- Successfully complete a 'slow assessment' with Duty Station Officer – Motorcycle Paramedics
- Successfully complete an interview

Once successful, Paramedics attend a 3 week standard Police training course which provides them with a 5 year qualification accredited by the Home Office.

Motorcycle Paramedics undergo an annual reassessment. Failure to successfully complete the reassessment results in the Paramedic being removed from motorcycle duties. Recertification is then required.

Figure 41: Equipment and supplies carried on an LAS Motorcycle Response Unit

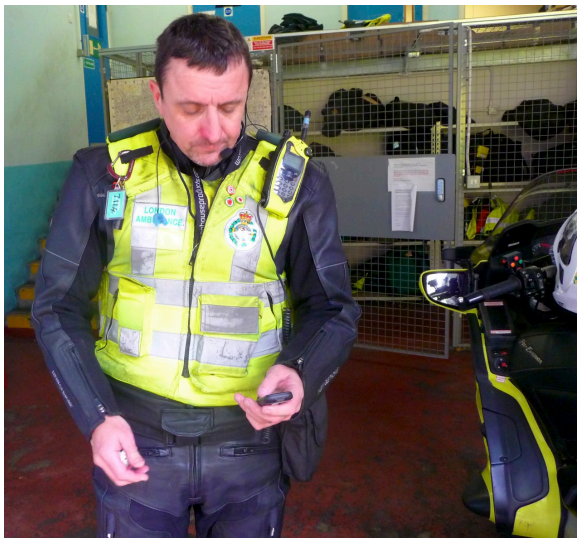


Figure 42: An LAS Motorcycle Response Paramedic is dispatched to a case

Figure 43: Controls on the LAS Motorcycle for the Paramedic to log themselves "Amber to scene", "Arrived at scene" and "Clear of the scene"

LAS MOTORCYCLE RESPONSE UNIT PERFORMANCE DATA

1st April 2011 to 9th November 2011

The following data depicts how often an LAS Motorcycle Response Unit arrived first to a Category A call when compared with a Fast Response Unit (single Paramedic in a car) and a two person stretcher ambulance.

Waterloo

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	1287	80.81%
Motorcycle Response Unit	2028	94.03%
Ambulance	2495	79.20%

Deptford

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	2819	82.69%
Motorcycle Response Unit	114	92.98%
Ambulance	1541	73.00%

Brent Cross (St Johns Wood)

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	3796	79.61%
Motorcycle Response Unit	68	94.12%
Ambulance	2044	72.26%

Whipps Cross

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	5892	79.14%
Motorcycle Response Unit	110	86.36%
Ambulance	2087	65.17%

Hometon (Shoreditch)

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	168	86.90%
Motorcycle Response Unit	1351	86.08%
Ambulance	1219	65.17%

Silvertown (Poplar)

Resource Type	No. of Calls	Percentage 1st on Scene
Fast Response Unit	1781	81.64%
Motorcycle Response Unit	529	91.12%
Ambulance	1894	72.28%

5.2 West Midlands Ambulance Service

The WMAS operates a Motorcycle Response Paramedic unit each day in the centre of Birmingham. This unit commences shift at the main ambulance station in Birmingham, but quickly moves out to its 'stand by' point located in a pedestrian mall in the centre of the city.

Figure 44: A Yamaha FJR 1300 from the WMAS Motorcycle Response Unit

The WMAS motorcycle, unlike the LAS version is fitted with satellite navigation that automatically loads the address upon receipt of a case. This function greatly assists the Paramedic and reduces response times as the Paramedic is not required to examine maps for the address.

When deciding which type of bike the WMAS would use, they considered a number of other issues first;

- What equipment were they going to carry?
- Where would they mainly operate?
- What type of bike do the Paramedics who will be operating these units want?
- What is already known about other bikes with other services?
- What bike is recommended by the International Fire & EMS Motorcycle Response Unit Association?

Motorcycle Type – Yamaha FJR 1300

Dispatch – via an alert tone from the Paramedic's portable radio. Details of the case appear on the LCD display on the portable radio as well as on the data terminal on the motorcycle. The case is acknowledged by the Paramedic activating the "amber to scene" button. The Paramedic can also log themselves arrived or clear in the same fashion.

Issues

- Slightly reduced equipment storage capacity than the LAS design due to the absence of a storage container on the rear of the bike.
- Unable to carry personal protective equipment such as a hard hat.
- The motorcycles are not operated when snow has fallen.
- The bike can be quite 'weighty' with 7kg's per side, 290kg's pre-loaded and over 300kg's loaded.

Figure 45: Equipment from a WMAS Motorcycle Response Unit

Figure 46: Equipment from a WMAS Motorcycle Response Unit

Figure 47: A WMAS Motorcycle Response Paramedic

Figure 48: A WMAS Motorcycle Response Unit displaying the Satellite Navigation, radio controls and remote mobile data terminal control functions

5.3 Singapore Civil Defence Force

The Singapore Civil Defence Force (SCDF) is responsible for the provision of ambulance and fire fighting services in Singapore. Established in 1970, the Motorcycle Response Unit (Fast Response Paramedics - FRP) traditionally have always operated a 2 wheel motorbike, however recently has commenced a transition across to a 3 wheeled scooter, similar to the system developed in Melbourne, November 2011.

Figure 49: A SCDF Motorcycle Response Unit – Honda CB400 (399cc)

There are 10 FRP's across Singapore, all based within fire stations. The FRP's do not have 'stand by' points and work dayshifts only (7am to 3pm).

Motorcycle Type

1. Honda CB400 (399cc)
2. Piaggio 3 wheel scooter (250cc)

Dispatch – FRP's are dual responded with ambulance stretcher vehicles

Issues

- Paramedics can only operate the 3 wheel scooter once they have completed the specific 3 wheel riding course
- As of November 2011, SCDF have only introduced two of the Piaggio 250cc 3 wheel scooters. These units are seen as developmental units. Future units will incorporate suggested changes from the first 2.
- FRP's do not operate in the rain
- Paramedics who work the FRP's do so for a 2-year secondment. After that time, they return to operating standard ambulance stretcher vehicles.

Figure 50: A SCDF Piaggio Paramedic Motorcycle Response Unit

Figure 51: A SCDF Piaggio Paramedic Motorcycle Response Unit

Figure 52: Audible warning devices on the SCDF Piaggio bike

Figure 53: Controls of the SCDF Piaggio bike

Figure 54: Equipment carried inside the Motorcycle Paramedic's backpack

Figure 55: Automatic defibrillator contained within the rear box of the Piaggio

Figure 56: A SCDF Motorcycle Paramedic

6.0 Conclusion

Ambulances around the world are experiencing non-sustainable increases in workload. This study trip identified the many ways that this increase in growth is being handled. WMAS has moved away from AMPDS and is now taking extra time to identify the patient's problem not just assigning a prioritisation code for automatic ambulance response. There are now a suite of options available to help people in community with their perceived medical emergency other than just sending an ambulance.

This was a very interesting and worthwhile study understanding how other ambulance services manage their ever-increasing demand. There are many strategies that other services utilise. Many have proven benefits, however not each strategy would be suitable for every ambulance service worldwide. It would be up to each service to review this information and evaluate its usefulness within their individual ambulance service.

It is recommended that ambulance services understand what is the force or forces driving the increase in ambulance demand. From there, a greater understanding can be gained as to where further efficiencies can be obtained for the organisation.

Reviewing ambulance demand management strategies has highlighted the following discussion points:

- Potentially the biggest and most valuable consideration is the review of alternative triage tools at the point of call. When a member of the public telephones for an ambulance, they are entitled to an ambulance response. But this does not automatically equate to dispatching an emergency ambulance every time to the location. Alternative triage tools can provide alternative ambulance service responses based on the situation at the time, and matches the patient to an appropriate health care service.
- The need for ambulance resources (type, location and times) based on historical data be regularly assessed at least every two years, taking into account the increasing population and the changing demographic profile
- Hospital turnaround times are an issue for the ambulance service, the hospital and the state health authority. Subsequently, all parties should work closer together in a more collaborative fashion to share known information identifying workload peaks and troughs
- Ambulance services should have in place contingency planning functions to both prepare for potentially high levels of demand, and for times when sudden, unexpected periods of high demand outweigh service capacity
- Greater public education with regards to appropriate use of ambulance services
- Improved communication strategies with GP's, hospitals, health / aged care facilities and other health professionals
- Staggered shifts to not only assist in managing demand, but also to assist in Paramedic meal break provisions and more user friendly rostering
- Robust processes for the management of frequent callers
- Alternative arrangements for the transport of low acuity patients by a stretcher vehicle who do not require an emergency ambulance
- Simplified ambulance patient care records

- Alternative patient care pathways to match the patient's condition with the most appropriate service rather than continually providing hospital A&E departments with more patient's leading to further ambulance delay issues
- Reviewing circumstances that account the most for ambulance resources being 'out of service' and unavailable to respond
- The provision of extra ambulance resources alone will not ensure a robust and resilient service

The issue of Staff Welfare is also an important aspect for ambulance services. The common theme being the provision of adequate rest breaks for crews whilst on shift. As demand for ambulance services continues to increase, providing rest breaks will become all the more challenging and therefore crew fatigue is also expected to increase. It appears however that the main strategy that assists in affording crew rest breaks is the fact that other services have many and varied staggered shift times.

Motorcycle Paramedic Units exist in many ambulance services around the world. Many have a different reason for having them. Some services use them as a rapid response unit in areas where vehicles would have difficulty accessing patients. Other services also use them to attend to cases that may not necessarily need an ambulance stretcher vehicle to attend. Whilst Singapore use them along with an ambulance dispatch just in case the ambulance is delayed by heavy traffic. It is important for ambulance services to first understand the rationale behind introducing these units into their own service. What is it that they want them to achieve? From that point, they can then have a better understanding as to where they need to be located, the type of equipment they need to carry and the type of bike that they are to operate. Then once established, the unit can then be assessed to see if it's achieving what it was intended to achieve.

Finally, but most importantly, I'd like to extend my sincere appreciation to the many staff of the London Ambulance Service, St John Ambulance UK, the West Midlands Ambulance Service and the Singapore Civil Defence Force who gave their time and assistance in helping me understand how their respective service's operate and for displaying first hand the various aspects of their organisation. I would have been unable to complete such a report if it wasn't for their valuable cooperation.