RESPONSE TO MEDICAL EMERGENCIES – THE CASE FOR THE CREATION OF COMMUNITY FIRST RESPONDER GROUPS

INTRODUCTION

1. Emergency ambulance services are provided to transport people suffering from acute medical emergencies from their home or the community to hospitals where emergency treatment can be provided. Non-acute emergency patients are required to either contact their Doctor or make their own way to hospital.

2. An acute medical emergency is one which may threaten the life of a Patient, e.g. serious trauma, respiratory or cardiac arrest, or unconsciousness or fitting, or one, which causes acute pain.

3. Whilst many acute emergencies are easily identifiable to a patient or relatives and friends, some may not, e.g. chest pains may be as a result of a heart attack and require urgent treatment or simply a result of indigestion or stomach upset.

4. It is therefore important that patients or their relatives or carers can obtain rapid advice, about any sudden medical condition or deterioration of a known medical condition, to ascertain the best course of action to take.

5. Traditionally, the first course of action in any medical emergency in the home was to contact the General Practitioner. Such action is increasingly difficult to achieve, particularly if outside normal working hours or if a fast response is required. The result is that more people are contacting the emergency ambulance service and being transported to Hospital for assessment and treatment, resulting in a 3 to 5% annual rise in emergency calls received by ambulance services.

AIM

6. To outline the requirement for Community First Response to medical emergencies.

CLINICAL NEED FOR RAPID RESPONSE

7. The optimum response to medical emergencies is one that provides skilled assistance that can respond with sufficient speed to identify and start to treat the condition, so that threat to life is reduced and the patient can be moved to the appropriate hospital where definitive treatment can be provided.

8. In some conditions, e.g. cardiac and respiratory arrest, choking, haemorrhage; speed of response and immediate treatment is essential to survival. In others, e.g. serious trauma, the speed of transfer to surgery, is of principal importance. In most cases the provision of appropriate and immediate first aid and reassurance are essential in reducing pain, reducing the severity of the condition, reducing shock and alleviating worry and distress.

9. For people faced with a medical emergency, the response can never be quick enough. Few individuals have the training or experience to deal with such emergencies confidently and therefore require urgent assistance from someone able to take responsibility for the patient.

10. **Although there may be an immediate requirement to rescue the patient from a dangerous environment, e.g. in** a **fire, electric shock, drowning etc., the need for an immediate medical response to save life is, thankfully, rare. (Ambulance Services attend an average of 2 deaths/cardiac arrests per thousand people per year.)**

11. It is accepted that speed of response or provision of first aid is essential in the following conditions:

a. **Cardiac Arrest** - when the heart stops beating or is beating irregularly (fibrillation).

b. **Respiratory Arrest** - when a patient is unable or has stopped breathing e.g. due to an obstructed airway, choking, drowning or electric shock, cardiac arrest, chemical poisoning, allergic reaction (anaphylactic shock), opiate overdose.

c. **Serious Trauma** - especially where there is a major blood loss, spinal damage or severe pain and shock.

12. The most common serious medical emergencies faced in UK are sudden cardiac and respiratory arrest and serious trauma. There are some 3,000 sudden deaths per year per million population or approximately 60 per week. Serious trauma in accounts for 4 or 5 cases per million-population per week.

13. The international accepted standards of response are:

a. ***Within 2 to 3 minutes***. Start resuscitation in cases where cardiac or respiratory arrest has occurred.

b. ***Within 4 minutes***. First defibrillator shock where cardiac arrest has occurred.

c. ***Within 8 minutes*****.** Provision of advanced life support by a paramedic or trained Doctor.

d. ***Within One Hour (The Golden Hour)***:

(1) Serious trauma patients and those with internal haemorrhage receive definitive surgery.

(2) Clot busting drugs administered to heart attack and stroke patients.

14. Studies have shown that where systems operate which provide early CPR and defibrillation within 4 minutes, (basic life support (BLS)) backed by paramedic (advanced life support (ALS)) response with 8 minutes and good hospital cardiac intensive care facilities with cooling, survival rates from cardiac arrest are above 20% or 1: 5. The current survival rate in UK is 2% or 1: 50.

15. Publicly acceptable standards of response differ widely and are chiefly dependent on where people live. In towns and cities an emergency ambulance response is expected with 5 to 10 minutes, whilst in isolated rural areas a delay of 20 minutes may be acceptable. However, the response can never be too early and wherever the emergency occurs, in town or village, the clinical need for fast response remains unaltered.

CURRENT SYSTEMS AND STANDARDS OF RESPONSE

16.The NHS provides the following emergency medical facilities:

a. **NHS 111** is a free-to-call single non-emergency number medical helpline operating in England and Scotland. The service is part of each country's National Health Service and has replaced the telephone triage and advice services provided by NHS Direct, NHS24 and local GP out-of-hours services. The transition was completed in England during February 2014 with Scotland following during April 2014. The service is available 24 hours a day, every day of the year and is intended for 'urgent but not life-threatening' health issues and complements the long-established 999 emergency telephone number for more serious matters, although 111 operators are able to dispatch ambulances when appropriate using

the NHS Pathways triage system. **NHS Direct Wales** continues to operate via 0845 4647, but it is intended the 111 service will be offered from some point in 2015.

b. **General Practitioners** who are required to respond to medical emergencies in the home within 2 to 3 hours of receiving a request during the hours of 08:00 to 18:00 on weekdays only although there is an intention to move to 7 day availability. Outside these hours GP services are provided through contracts agreed by Clinical Commissioning Groups with a GP Out of Hours provider. Such Providers usually operate from emergency medical centres and therefore require patients to make their own way to such Centres wherever possible. Visits to patient's homes are kept to a minimum.

c. **Emergency ambulance services** which are contacted by means of a "999" emergency call. The use of this emergency system is open to all members of the public who alone decide want constitutes a medical emergency. Emergency ambulance services are expected to respond to 75% of such calls in 8 minutes to life threatening (RED 1) calls and 9 minutes for all other serious emergencies. Emergency ambulances are not available to transport patients to their GP. Patients are expected to be taken to a Hospital that is appropriate for their condition. Ambulance Services are allowed, following triage, to transfer emergency calls made by the public to NHS 111 for advice and possible further referral to a GP Service.

d. **Walk In centres/Minor Injury clinics/urgent care centres** are normally provided, by Clinical Commissioning Groups, in those parts of large towns and cities where GP Out of Hours clinics or Hospital A&E departments are not easily accessible. They are open outside normal office hours and are staffed by Nurses who can treat minor illnesses and injuries or refer patients for further examination or treatment.

e. **Hospital accident and emergency departments** receive all patients brought in by emergency ambulance and patients who self refer. All patients are triaged on arrival and non-acute emergency patients may wait 2 to 4 hours to see a Doctor I depending on the acute emergency activity being experienced by the department.

RESPONSE STANDARDS IN THE NHS

17. There were no universal emergency response standards for NHS Ambulance Services until the mid 1970s when a study called Operational Response Consultants (ORCON) recommended that there should a response in 8 minutes to 50% of all emergency calls and within 14 minutes, in urban areas and 19 minutes, in rural areas, in 95% of all occasions. The Department of Health carried out a review of such ORCON standards of emergency ambulance response, for England, during 1995/6 and made the following recommendations for introducing, for the first time, the requirement to triage calls and to allocate a response classification to emergency calls as follows:

a. Providing an 8-minute response principally to life threatening emergencies, to be classified as Category A and improving the standard to ensure that 90% of such emergencies received a response within 8 minutes in both urban and rural areas.

b. Introducing a "first response" capability whereby a trained responder rather than an emergency ambulance crew met the requirement for the 8-minute response to life threatening emergencies. (It was accepted that the principal life threatening emergencies would be cardiac arrest and that such first responders must be equipped and capable of operating a defibrillator.)

c. Maintaining a 50% response by emergency ambulance crews to all other emergency calls, classified as Category B, which were not life threatening and a 95% response in 14 minutes in urban and 19 minutes in rural areas.

18. The cost of introducing such improvement to response standards, despite the fact that they were expected to result, once achieved, in a saving of 3,000 lives in England annually from cardiac arrest alone,

resulted in adjustment of standards of response to life threatening emergencies of 75% in eight minutes. These new standards did not come into force in England until 2001. It was considered that a faster response could be achieved by triage of emergency calls and placing the emphasis of responding on life threatening calls.

19. Following awareness that most ambulance services were only achieving the new standards by delaying the starting of the "clock" by an average of 2.5 minutes the Department of Health published a report "Taking Healthcare to the Patient" which required all response times in England to start from when the 999 call was received by the Ambulance Service. Ambulance Service were allowed, following triage of emergency calls, to classify calls that did not require an immediate response or could be better transferred elsewhere to be classified as Category C. Again, it was argued that reducing the total number of emergency calls that a Service had to respond to would result in a faster response to emergency calls. That was not proved to be the case in practice. In June 2011 Category A life threatening emergency calls were further divided into two categories – RED 1, probably life threatening, which had to be responded to in 8 minutes and RED 2, possibly life threatening, which also had to be responded to in 8 minutes except that starting the clock for such emergencies could be delayed by one minute thus this 8 minutes was 9 minutes! Remainder of the calls were classified as Green and could receive responses of 20 minutes to one hour. This further reduction was again based on the myth that the fewer calls that had to be responded to in 8 minutes the higher would be the percentage of such 8-minute calls that received the target response. Unsurprisingly, this has not been proved to be the case

20. Fast response is generally easier to achieve in urban areas where population density is high. Rural areas which have a lower population density usually suffer from much poorer emergency ambulance response performance although the response time targets are exactly the same for urban areas.

MEETING THE REQUIREMENT FOR FAST RESPONSE

27. Whilst emergency ambulance response can be improved by the provision of additional ambulance crews or first responders it is not always the practical solution. The cost of maintaining one emergency ambulance per annum is in excess of £500,000 with the cost of a rapid response car being £250,000. Generally, one emergency ambulance is provided, on a 24/7 basis, per 40,000 people.

28. Emergency ambulance services have to accept that whilst they should easily be able to meet standards for responses to life threatening emergencies of 75% in 8 minutes across their total area of coverage, they cannot, with current levels of funding, meet the clinical requirement for CPR within 2 to 3 minutes and defibrillation within 4 minutes.

29. Such necessary fast response requirements can only be met by a public trained in the provision of CPR and greater public access to defibrillation.

30. Training and maintaining the skills of CPR of the public would be a major and expensive measure even on a voluntary basis and are probably only practical:

a. In Schools

b. Workplaces with support of employers

c. To relatives of persons at risk of cardiac or respiratory arrest.

31. Greater public access to defibrillation has been attempted by siting automated external defibrillators in locked cabinets in key locations. This measure has been proven to be effective in public areas with high footfall e.g. international airport hubs. They are likely to be less effective when sited in rural locations

where they rely on an additional person, to the one providing CPR, to be on hand to ring the Ambulance Control, note the access code, retrieve the AED and administer the first shock all within 4 minutes of the cardiac arrest.

32. For the Ambulance Service, the presence of a defibrillator, allows the clock to response time target clock to be stopped ***no matter what the nature of the emergency is considered to be!***

33. The majority of cardiac arrests, some 80%, occur in the home where there is not likely to be a person trained in CPR and rarely, if ever, access to defibrillation within 4 minutes. The incidence of cardiac arrest, where rapid CPR and defibrillation is likely to be successful, is unlikely to be higher than 500 cases per 1,000,000 populations per year. Thus in a rural Parish of some 1,000 residents there is a likelihood of only one out of hospital cardiac arrest every 2 years and only 20% of these, i.e. one every 2.5 years is likely to be suitable for defibrillation.

34. Although the incidence of cardiac arrest is low and thus life threatening RED One emergency calls average only 2.4 per 1,000 population a year there are an average of 100 emergency ambulance journeys a year per 1,000 population (2 per week).

35. Despite the publicity given to inappropriate 999 calls, the incidence of such calls is, thankfully, quite small and is often more common in urban areas or with individuals with mental or social problems. For the vast majority of individuals, the making of a 999 call is a major decision, not taken without serious concern and perceived justification. Such callers are often confused and in shock and need someone alongside them who can provide clear thinking and medical support for the patient until the arrival of advanced life support from the Ambulance Service. This need is present in all emergency medical situations and not only those where life is clearly at imminent risk.

36. The aim should be to reduce, to a minimum the threat of cardiac arrest occurring, due to a cardiac emergency – heart attack, stroke, or other embolism, loss of blood, shock, respiratory arrest and also to provide reassurance to the patient and their families as well as providing further vital information to the responding Ambulance Service.

37. Thus the proven requirement, for over 15 years, for a voluntary organisation, for every community, which can provide a trained person who can respond within 2 to 4 minutes of the onset of any medical emergency to provide support and clinical care and prevent, wherever possible loss of life or the deterioration of a patient.

38. Such a system, first implemented in the Parish of Thornecome, West Dorset in 1998 and the in Alstonfields and Wetton in Staffordshire in 1999, is generally known as a "community first response scheme'.

39. Volunteers receive training to provide emergency life support, are contacted rapidly by the emergency ambulance service when a call is received in their area, and they respond immediately.

CONCLUSIONS

40. There is a clinical need for fast response, within 2 to 4 minutes, in order to save life as a result of cardiac or respiratory arrest or serious trauma.

41. Achievement of early CPR and defibrillation should result in a tenfold increase in lives saved from cardiac arrest alone.

42. Generally, it is more costly and difficult to provide a fast response to rural areas. Isolated houses and villages in rural areas are unlikely to obtain an emergency medical response in less than 10 to 15 minutes.

43. Emergency ambulance services, whilst they can improve their response within 8 minutes, cannot, in most cases, meet the requirement for early CPR or defibrillation, particularly in rural areas.

44. Whilst training more of the public in CPR and making defibrillation more accessible in public and workplaces will improve response, it will not address the majority of cases that occur in the home. Preventing unnecessary cardiac arrest as a result of cardiac emergencies, serious trauma, respiratory arrest and shock is of prime importance and likely to be a more common occurrence than attempting the resuscitation of a patient in cardiac arrest where the incidence is much lower.

45. There is a need for a "community first response scheme" comprised of trained volunteers who are prepared to react rapidly to medical emergencies and who are capable of providing resuscitation of patients in cardiac arrest.

RECOMMENDATIONS

46. The National Association of Community First Responders (NACFR) have been formed to increase the numbers of community first responder schemes throughout the UK and, in particular to:

a. Encourage the establishment of Community First Response Schemes, capable of providing emergency life support and defibrillation and based on Parish Councils, throughout the rural areas of the Country.

b. Encourage the provision of defibrillators capable of operation by suitably trained laypersons in all areas where a large number of people congregate - shopping centres, sport and leisure complexes, and large businesses.

c. Encourage the public to learn first aid and cardio-pulmonary resuscitation (CPR).

d. Teach first aid to all Schoolchildren.

e. Encourage the provision of defibrillators on all non-emergency Ambulances and Police and Fire Service emergency vehicles and to maintain a mobile phone application, based on a database of the location of all Automated External Defibrillators available for public use, which individuals can use to access an AED in the event of a cardiac arrest.

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