

BACCN
British Association of Critical
Care Nurses

Conference 2009

Monday, 14th September 2009

Impact Of A
Critical Care Outreach Team
On
Adult Cardiac Arrest Calls

**Roodt, Susanne (RGN, BScH); Watson, Judith (RGN);
Welch, John (RGN, Nurse Consultant)**

Critical Care Unit T3

University College London Hospitals NHS Foundation Trust

London NW1 2BU

Introduction

- The incidence of in-hospital cardiac arrest is reported to range between 1 and 5 per 1000 admissions in Western countries (Sandroni et al 2007).
- In the UK, Gwinnutt et al (2000) found that only 17.6% of in-patients that arrested survived to discharge.
- Critical Care Outreach services are designed to support staff caring for at-risk and deteriorating patients outside designated critical care areas by offering expertise in resuscitation and critical care treatments (Department of Health 2003). The NICE guideline 'Acutely ill patients in hospital' stresses the need for immediate response to the patient at risk of deterioration (NICE 2007).
- Several studies have shown a reduction in cardiac arrest rates after the introduction of critical care outreach services.
(Goldhill et al 1999; Buist et al 2002; Bellomo et al 2003)

Aims of this Audit

- To evaluate one aspect of the impact of a nurse-led critical care outreach service (“Patient Emergency Response Team” PERT at UCL Hospitals) by analysis of cardiac arrest call rates before and after the introduction of this service, and again after the service moved from working 12 hours/day to 24 hours/day.
- To examine the characteristics of the cardiac arrest calls and genuine cardiac arrests in the financial year 2007/08.

Methods

- Cardiac arrest calls from 01/04/2007 to 31/03/2008 were analysed using and cross-checking data from the hospital switchboard log, audit forms returned to the resuscitation team, and critical care outreach records.
- The findings were compared with previous audits using similar methods in 2000 (before the introduction of outreach) and 2001 (when the service began - working 12 hours/day).

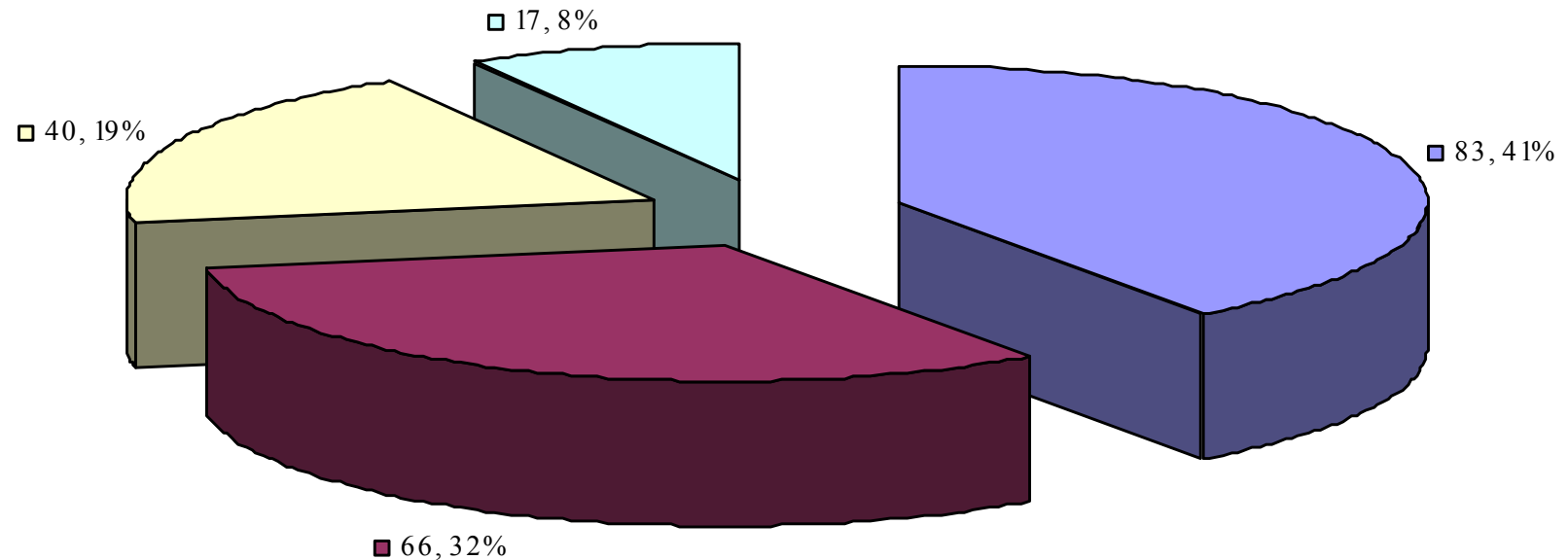
Results

Table 1: details of cardiac arrest calls on two hospital sites in 2000 and 2001 and on one merged site in 2007-08 in relation to the pattern of PERT working.

	January-December 2000: two hospital sites	January-December 2001: two hospital sites	April 2007-March 2008: one merged hospital
Characteristic of Critical Care Outreach	12 hours/day, 7 days/week, one full month only, one site only (site A)	12 hours/day, 7 days/week, for whole year, one site only (site A)	24 hours/day, 7 days/week, for whole year, across whole site
Number of admissions	site A: 25,041 site B: 7,131 total: 32,172	site A: 22,721 site B: 7,040 total: 29,761	total: 30,084
Cardiac arrest calls (calls/1000 admissions)	site A: 107 (4.3) site B: 197 (27.6) total: 304 (9.4)	site A: 87 (3.8) site B: 199 (28.3) total: 286 (9.6)	total: 206 (6.8)
Genuine arrests (arrests/1000 admissions)	No data	6.4	2.1

Fig 1: Differentiation of Cardiac Arrest Calls (2007-8)

Note: 32% of calls were genuine cardiac arrests



■ Arrest Call ■ Genuine Arrest ■ Peri Arrest ■ no data

Fig 2: Weekday of Cardiac Arrest Calls and Genuine Cardiac Arrests (2007-8)

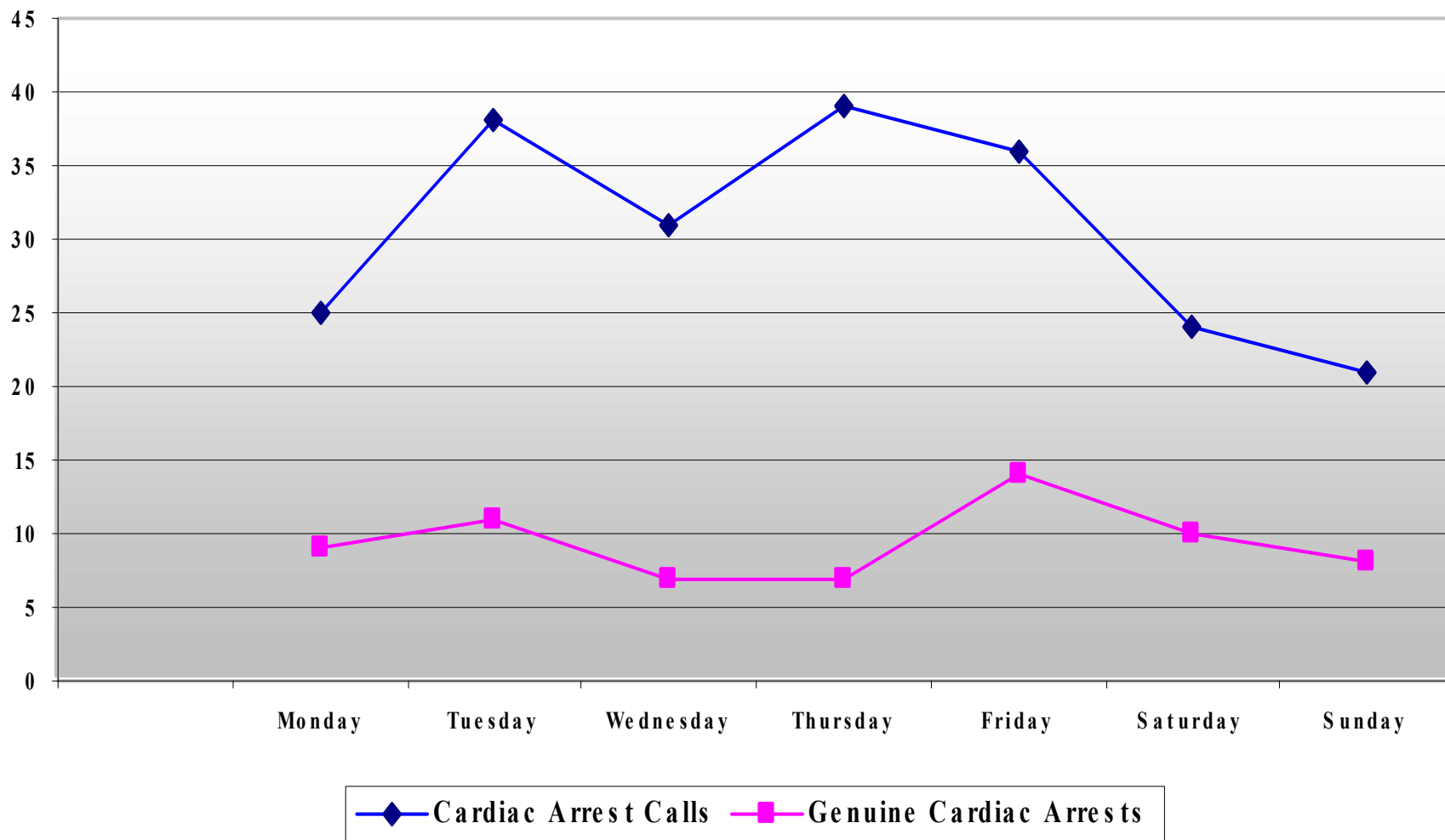


Fig 3: Times of Cardiac Arrest Calls and Genuine Cardiac Arrests (2007-8)

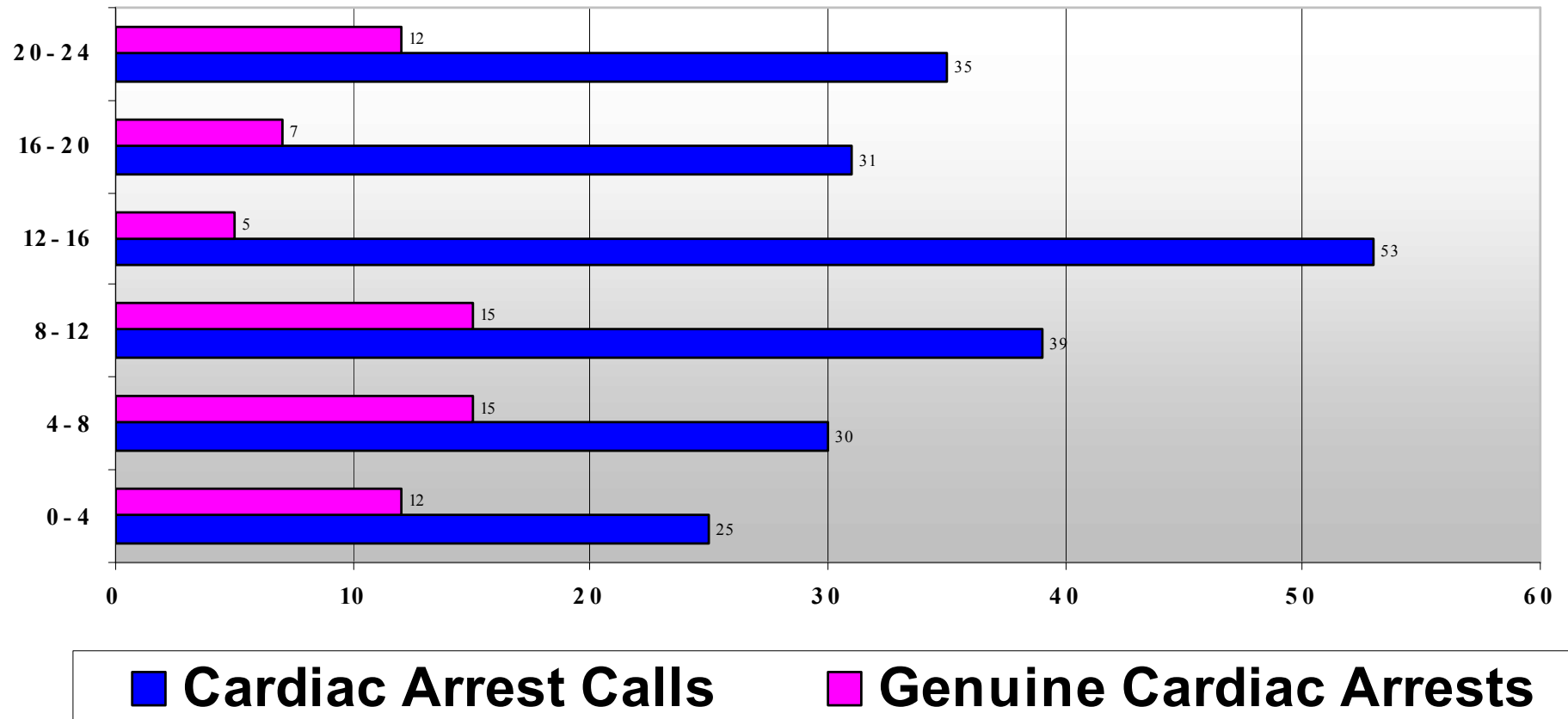
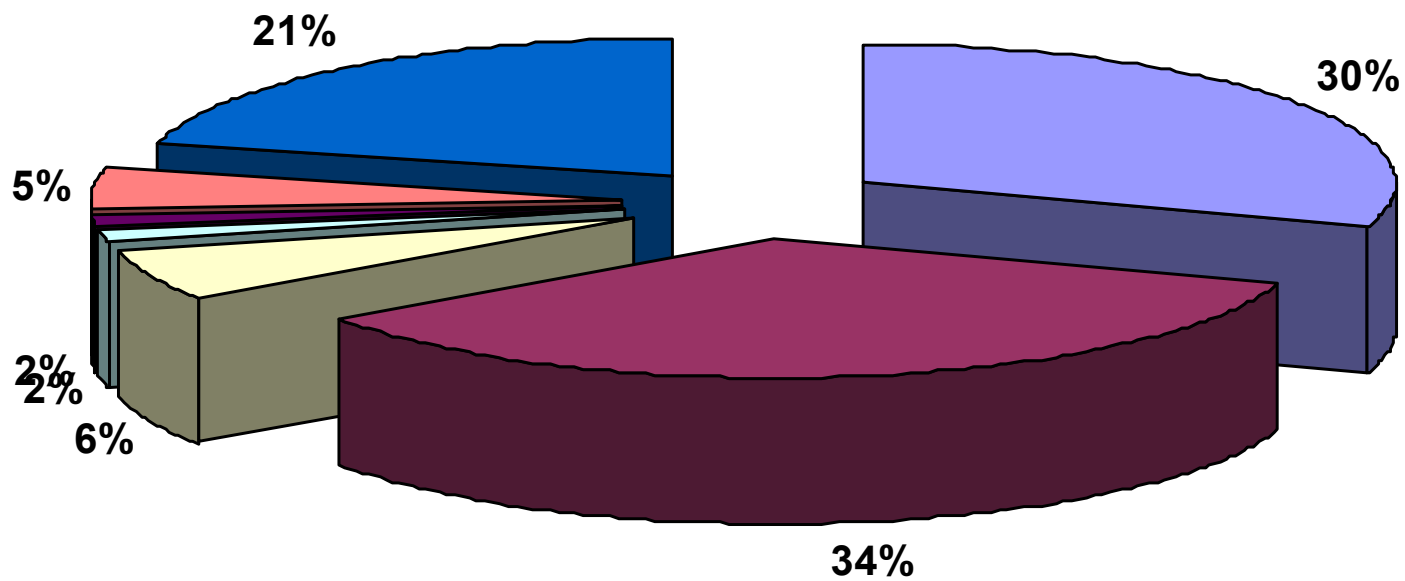
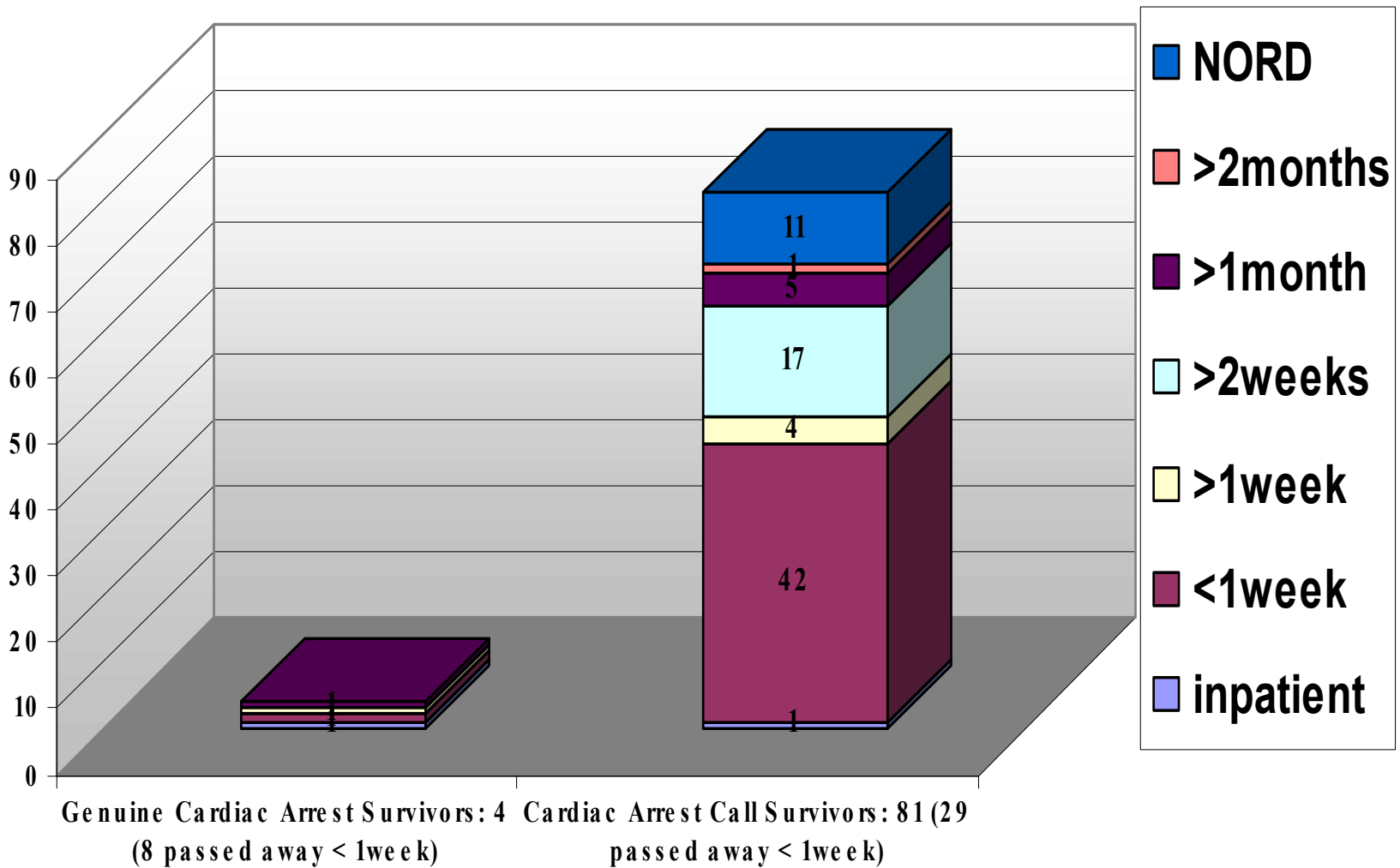


Fig 4: Heart Rhythm in the 66 Genuine Cardiac Arrests



■ Asystole ■ PEA □ VF □ VT ■ Sinus Tachycardia ■ Bradycardia ■ Unknown

Fig 5: % of Patients Discharged Home (2007-8)



Interpretation of Fig 5: % of Patients Discharged Home (2007-8)

- Post Cardiac Arrest Call: **47%**
- Post Genuine Cardiac Arrest: **4.5%**
- Note: Initial Survival of > 24hrs is **18%** in 66 Genuine Cardiac Arrests

Interpretation of Findings I

Since the introduction of a critical care outreach service (PERT) at UCLH at the end of 2000:

- Cardiac arrest calls have reduced by 29% to 6.8/1000 admissions.
- Genuine cardiac arrests have reduced by 67% to 2.1/1000 admissions.
- The differences in reductions may be due to ward staff calling and receiving assistance at an earlier stage of patient deterioration, thereby averting genuine arrests.

Interpretation of Findings II

- Initial survival post genuine cardiac arrest is 18%, but only 4.8% of these patients were discharged home.
- Details of the characteristics of cardiac arrest calls in 2007-8 stand alone as previous audits did not analyse these issues.
- There are markedly fewer cardiac arrest calls at weekends although the incidence of genuine arrests is not significantly different.
- In-hospital cardiac arrest rhythms are usually PEA or asystole and rarely VF/VT.

Summary

- The introduction of PERT (outreach) at first one site and then in a merged hospital has correlated with significant reductions in cardiac arrest call rates and genuine arrests over the last eight years.
- It cannot be asserted that all patient characteristics were equivalent before and after the introduction of the PERT, but it is known that generally there has been faster throughput, more emergency cases and a higher proportion of older patients during this time span (Hospital Episode Statistics).
- These improvements fit with the findings of the recent national evaluation of critical care outreach that concluded that such services were associated with a significant decrease in cardio-pulmonary arrests in patients admitted to critical care units (NHS SDO 2008).

Clinical Implications

- NICE (2007) recommends that ward staff make an urgent call to the team with primary medical responsibility in cases of acute deterioration, with a simultaneous call to personnel with core competencies for acute illness. The UCLH PERT has shown that a nurse-led outreach service can effectively perform this key supportive role.
- NICE has recently published a rehabilitation pathway detailing the very necessary but potentially demanding work of optimising the care of patients recovering from critical illness (NICE 2009). At UCLH, the PERT meets these requirements by following-up patients discharged from critical care, and by sharing skills with ward staff.

References I

- Department of Health 2003. The National Outreach Report 2003. Department of Health, London.
- Bellomo R et al 2003. A prospective before-and-after trial of a medical emergency team. Medical Journal of Australia 179, 283-287.
- Buist M et al 2002. Effects of a medical emergency team on reduction of incidence of and Mortality from unexpected cardiac arrests in hospitals: preliminary study. BMJ 324, 387-390.
- Goldhill DR et al 1999. The patient-at-risk-team: identifying and managing seriously ill ward patients. Anaesthesia 54, 853-860.
- Gwinnutt CL et al 2000. Outcome after cardiac arrest in adults in UK hospitals: effect of the 1997 guidelines. Resuscitation 47 125-35.

References II

- National Institute of Health and Clinical Excellence 2007. Acutely ill patients in hospital. NICE, London.
- National Institute of Health and Clinical Excellence 2009. Rehabilitation after critical illness. NICE, London
- NHS SDO Project SDO/74/2004 2008. Evaluation of outreach services in critical care. Intensive Care National Audit & Research Centre, London.
- Sandroni C et al 2007. In-hospital cardiac arrest: incidence, prognosis and possible measure to improve survival. Intensive Care Medicine 33, 237-245.

Thank You!

Any Questions?