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Urban VS Rural STEMI patients; is there a difference?

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Introduction

Delays in ST elevation MI reperfusion result in higher death rates.[1]

This study aimed to

- **describe reperfusion therapy in NHS Highland.**
- **compare rural vs. urban patients.**

Methods

All patients with STEMI between March 2014 and April 2015 were included. Patients were described as rural if >90min from Raigmore. Patient care followed one of 13 clinical pathways. (Table 1). Optimal reperfusion Therapy (ORT) was defined as the treatment which would achieve quickest reperfusion.

Driving times	Patient% (n)
≤ 30 min	37.0 (49)
30-60 min	19.0 (25)
60-90 min	6.00 (8)
90-120 min	8.00 (10)
≥ 120 min	30.0 (39)

Table 1: patients' driving time to Raigmore (N=131)

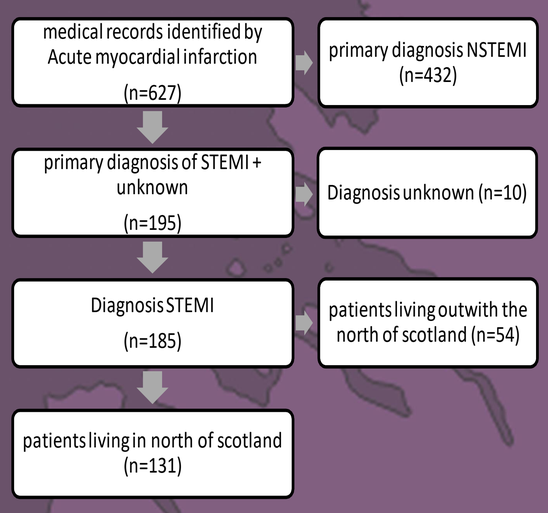

Figure 1: patients' flow diagram
STEMI: ST-elevation myocardial infarction.
NSTEMI: non ST-elevation myocardial infarction

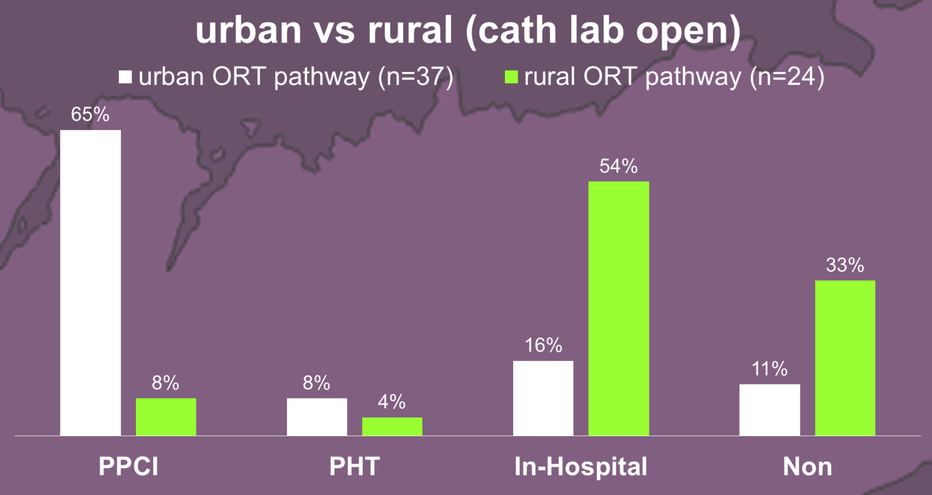

Figure 2 (a): urban vs. rural in Cath lab hours

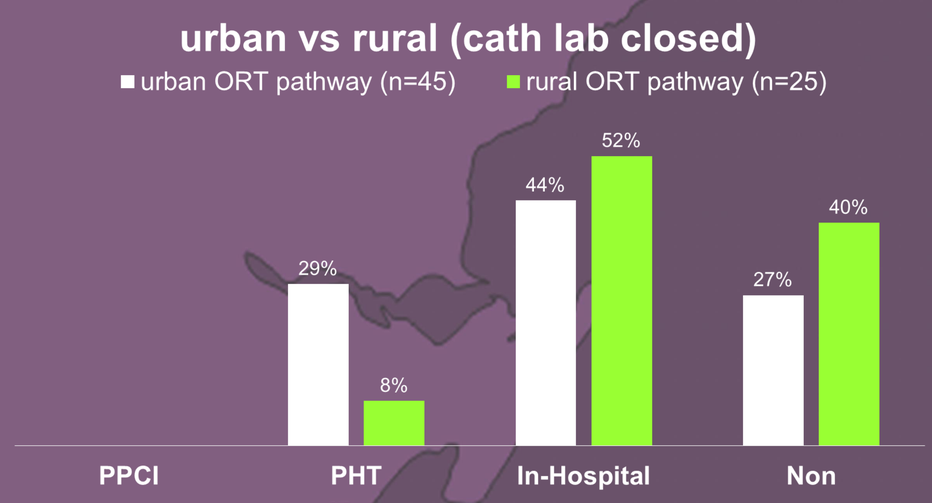

Figure 2 (b): urban vs. rural off Cath lab hours

Results

One hundred and thirty one patients were identified.
In terms of initial therapy: 20% received primary percutaneous coronary intervention (PPCI) , 15% received pre-hospital thrombolysis (PHT), 40% received in-hospital thrombolysis while 26% didn't receive any treatment. Overall 90% of patients received an invasive angiogram.

Pathway	Thrombolysis	Outcome of thrombolysis	PCI	Patients n(%)
1	None	N/A	PPCI	26 (20)
2	PHT	Reperfused	Convalescent	8 (6)
3	PHT	Reperfused	None	3 (2)
4	PHT	Not Reperfused	Rescue	6 (5)
5	PHT	Not Reperfused	Convalescent	2 (2)
6	PHT	Not Reperfused	None	0 (0)
7	Hospital	Reperfused	Convalescent	35 (27)
8	Hospital	Reperfused	None	3 (2)
9	Hospital	Not Reperfused	Rescue	12 (9)
10	Hospital	Not Reperfused	Convalescent	1 (1)
11	Hospital	Not Reperfused	None	1 (1)
12	None	N/A	Convalescent	26 (20)
13	None	N/A	None	8 (6)

Table 2: Reperfusion Therapy Pathway.
PPCI: primary percutaneous coronary intervention. Convalescent: non-urgent PCI
PHT: pre-hospital thrombolysis Rescue: PCI after failed thrombolysis

Conclusion

The majority of urban patients received PPCI during working hours.

Rural patients were less likely to receive prehospital thrombolysis.

A high number of patients continue to receive thrombolysis in hospital.

There would appear to remain opportunities to improve STEMI care.

Potential barriers to optimal reperfusion therapy include:

- **Patient factors (e.g. rural patients were more reluctant to call for help and present late despite on-going pain).**
- **Inter-hospital communication (poor communication may explain ongoing use of in hours hospital thrombolysis).**
- **Staffing issues (e.g. Lack of paramedic crews in remote area may explain relative under use of prehospital thrombolysis).**

Funding and conflict of interest

No funding was obtained for this project.

The Authors have no conflict of interest.

References:

1. Rawls J M. Quantification of the benefit of earlier thrombolytic therapy: five-year results of the Grampian region early anistreplase trial (GREAT). Am J Coll Cardiol 1997; 30: 1181– 6.