



Analysis of organisational networks in intermediate care

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The aim of the DoH, with respect to intermediate care, is to provide

integrated services to:

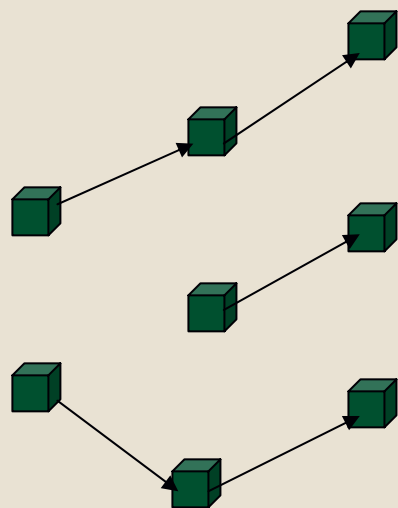
- promote faster recovery from illness
- prevent unnecessary acute hospital admissions
- support timely discharge
- maximise independent living



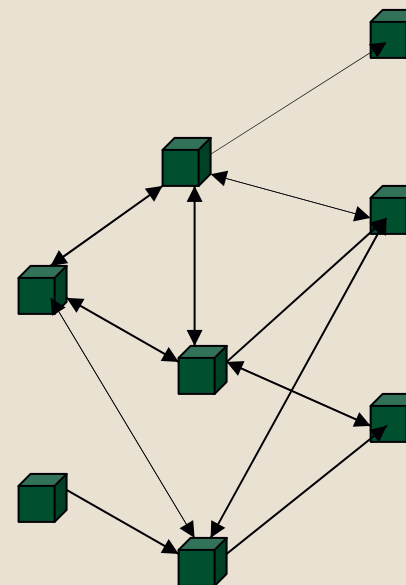
Do services appear integrated?



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Flow as in a planned individual **patient pathway**



A **network of services** with patients flowing around the network

Recent policy debate regarding the NHS has included terms such as:

- ‘joined-up government’
- ‘whole-system working’
- ‘**collaborative networks**’.

Intermediate care was explicitly intended to **dissolve the boundaries between health and social care services**, especially for those who experienced an acute health crisis but did not require hospitalisation.

Rather than focus upon the attributes of a single service, examine the ties between them.

Explore how they function as a network.

In the following:

- **services** will be the **nodes** of the network
- **ties** will be **referrals** from one to another.

Note that ties are **directional** and have a **strength** determined by the number of referrals.

Five sites will be compared.

For a month, as many **intermediate-care users** as possible were tracked through the network of services offered by each of the five sites

Many patients used only a single intermediate care service but **one third used more than one**

Service types are mapped

Origins and destinations of home and hospital are also shown

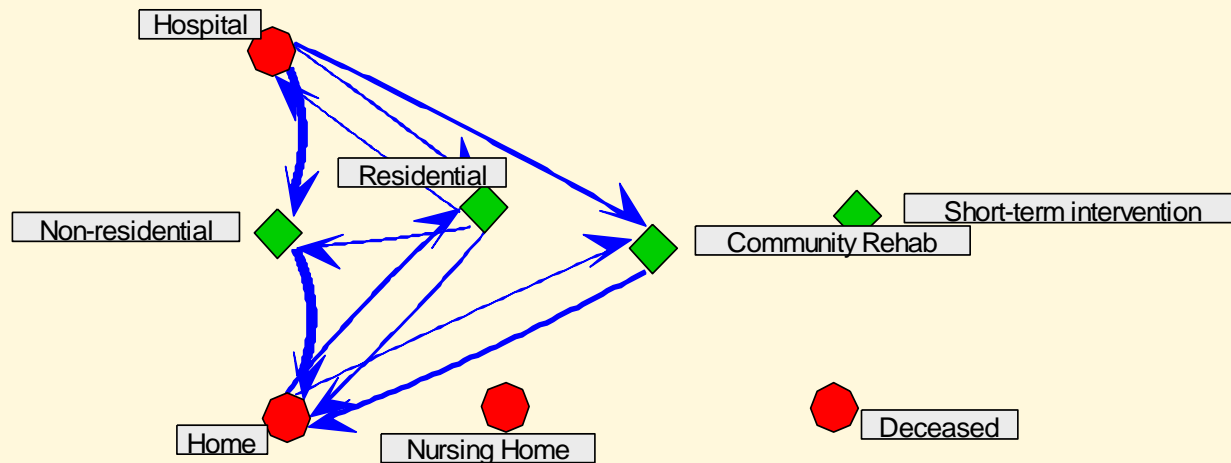
The layout used for mapping is the same in all five networks with intermediate-care service types forming the 'middle layer' shown by **green diamonds**

Mapping 1

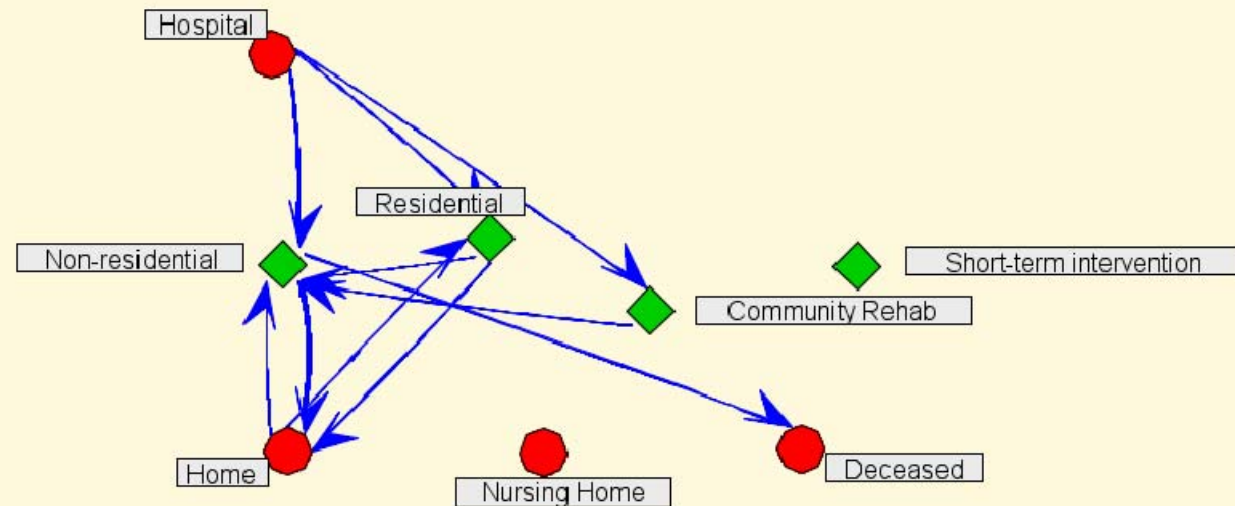


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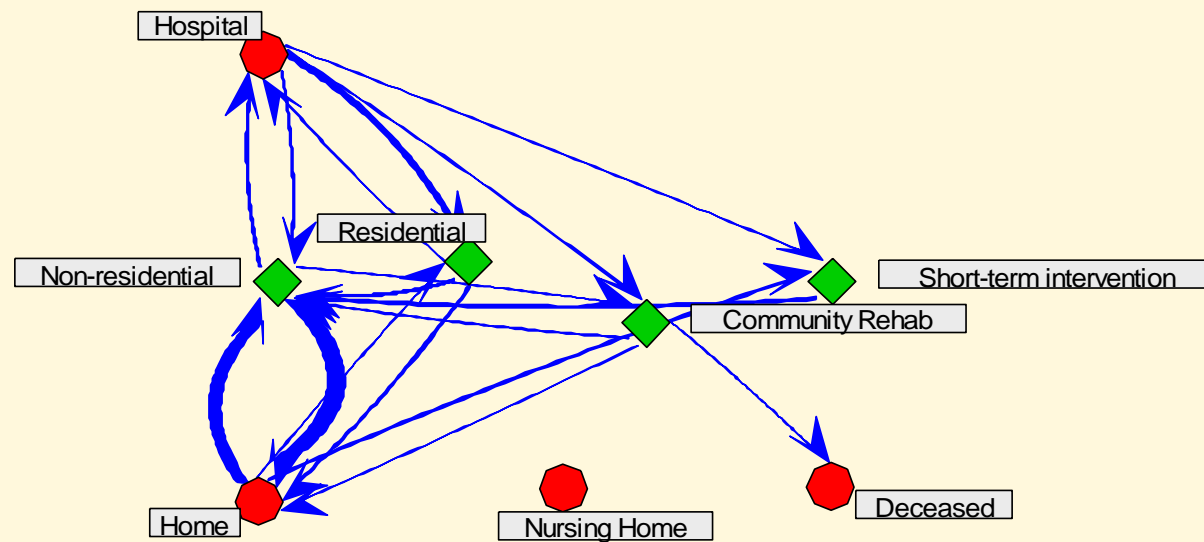
Calderdale



Craven and Harrogate



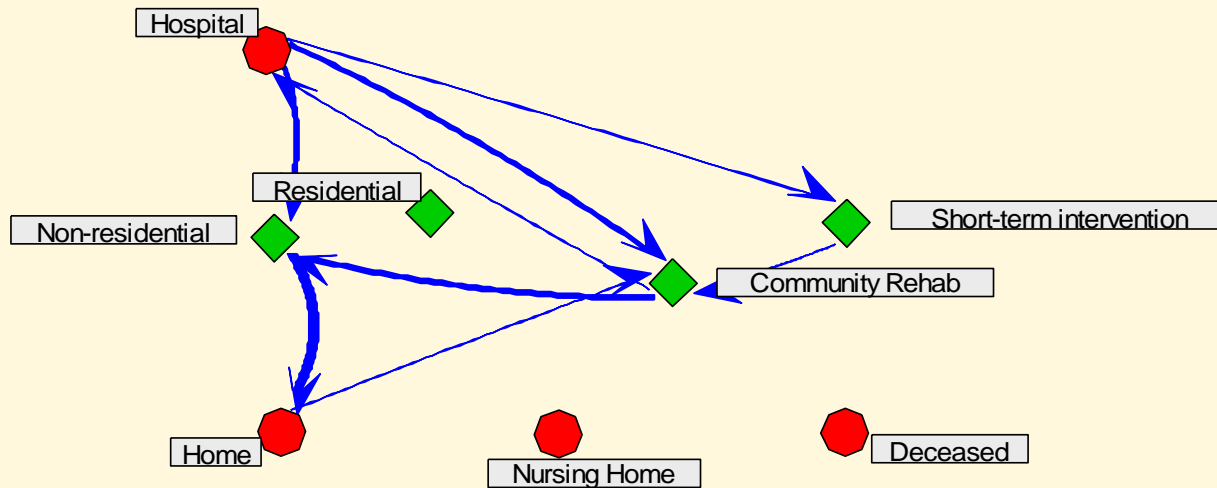
Hammersmith



Mapping 4



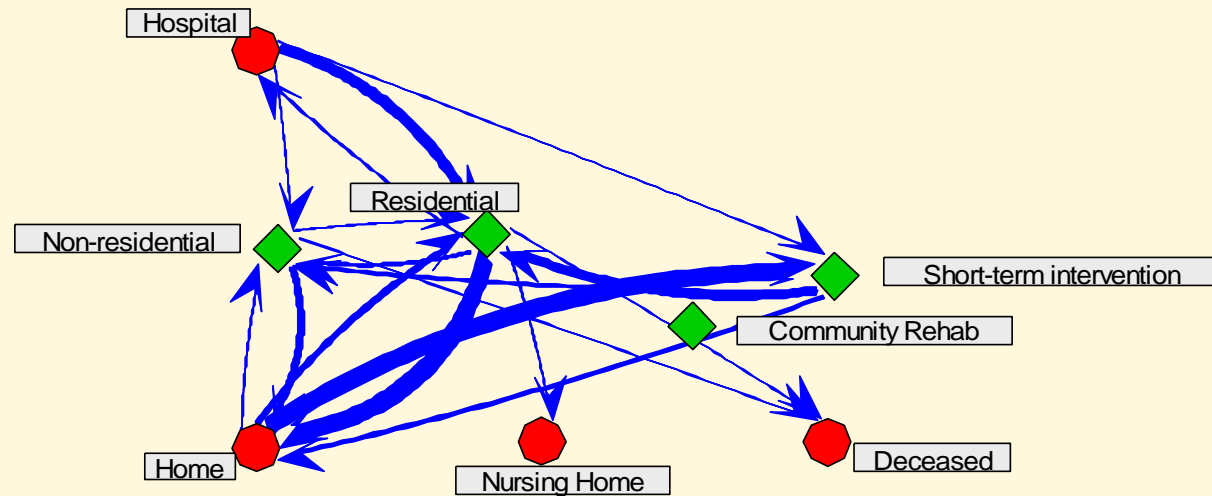
Hounslow



Mapping 5



Liverpool



All graphics show **networks** rather than disconnected pathways. All sites have connections between intermediate care service types.

Networks were consistent with service user movements determined by the **needs of the user** and not along predefined routes through the services

There are relatively small arrows directed to hospital, so that the majority of intermediate-care users are **avoiding hospital admission** or re-admission.

The diagrams show that intermediate care differs in **detail** between sites.

Mapping the separate networks enables some differences between them to be quickly identified

Appropriate quantification of **network attributes** can reveal other details

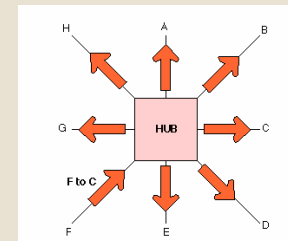
Care is needed as the networks are assessed with different numbers of patients and patient referrals

The networks themselves are **not complete networks**: all patients are recruited from intermediate care services and so pathway into through and out of intermediate care only is shown. There is no direct connection between home and hospital. Here compare 'like with like'.

	Home	Nursing home	Hospital	Deceased	Non-residential	Residential	CRU	Short-term
Craven	12	0	8	2	18	6	4	0
Calderdale	30	0	20	0	30	12	12	0
Hounslow	17	0	17	0	32	0	18	2
Hammersmith	61	0	21	1	70	20	7	10
Liverpool	86	2	22	2	26	82	0	54

A node within a network with a high **degree** (here a large number of referrals to and from other services) is regarded as a **hub**. For all sites except Liverpool this is **non-residential services**, for Liverpool residential.

The intermediate-care research team are aware of differences at the Liverpool site.



	Home	Nursing home	Hospital	Deceased	Non-residential	Residential	CRU	Short-term
Craven	2	0	0	0	6	5	2	0
Calderdale	11	0	0	0	0	8	0	0
Hounslow	3	0	3	0	3	0	8	1
Hammersmith	7	0	20	0	9	13	11	3
Liverpool	5	0	8	0	12	11	0	5

High-stress services act as **bridges** in the networks: high-stress services lie on a large number of shortest paths between other services . For two sites the bridges are non-residential, for two others residential, and for Hounslow the important bridge is CRU.

From network mapping, it is seen that Hounslow differs from other sites in that no residential service was tracked there.



Bonacich power



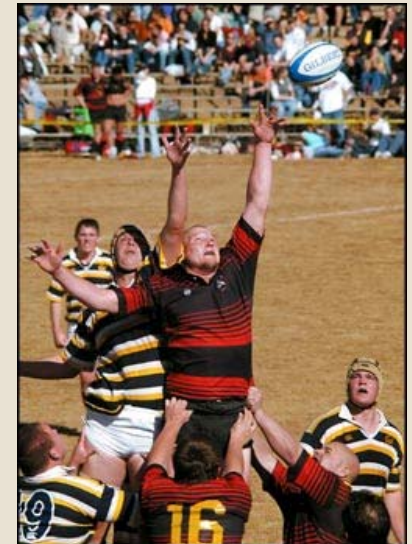
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	Home	Nursing home	Hospital	Dec'd	Non-residential	Residential	CRU	Short-term
Craven	-1.04	0	-2.07	0	-1.04	-1.04	-0.69	0
Calderdale	-1.16	0	-1.60	0	-1.36	-1.40	-0.54	0
Hounslow	-0.51	0	-2.53	0	-0.35	0	-0.99	-0.51
Hammersmith	-1.03	0	-1.52	0	-1.11	-1.58	0.76	-0.54
Liverpool	-1.41	0	-1.33	0	-0.98	-1.31	0	-1.25

Consider Bonacich power. Negative values imply that there is '**competition**' between services.

Residential services win at most sites although in Hounslow CRU has the highest competitive power.

Within Hammersmith, CRU has a **positive** power indicating that increasing the throughput to CRU increases the throughput in other services.



Viewed the implementation of intermediate care at five different sites

Looked at **networks** rather than individual services

Networks defined by **service types** as nodes and referrals as ties

Mapping was a useful descriptive tool

Tabulation of specific **network attributes** enabled more detailed comparison and in particular highlight differences of service provision.