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Spatial Analysis of Referrals from Secondary Care and to Aftercare in a Tertiary Care University Hospital in Japan

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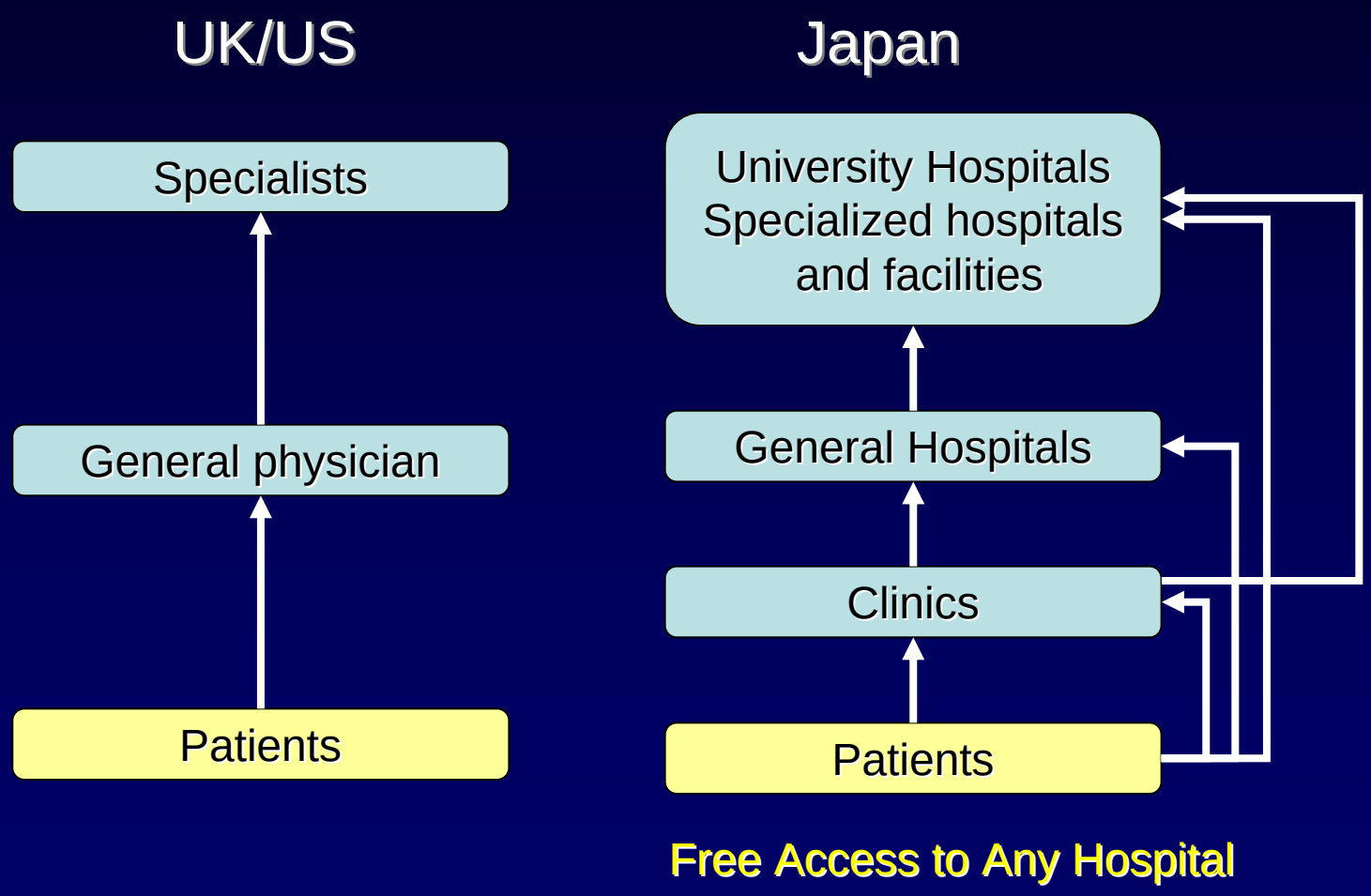
Background #1: Free access to hospitals in Japan leads to undifferentiated functions of university hospitals



Background #2: Policies to facilitate functional differentiation of university hospital in Japan

- Outpatient Consultation Fees (1988)
- Extra charges for patients without referrals from primary care physicians (1996)
- Inclusive payment system for acute inpatient care in university hospitals: higher payment to hospitals with more advanced functions (2003)

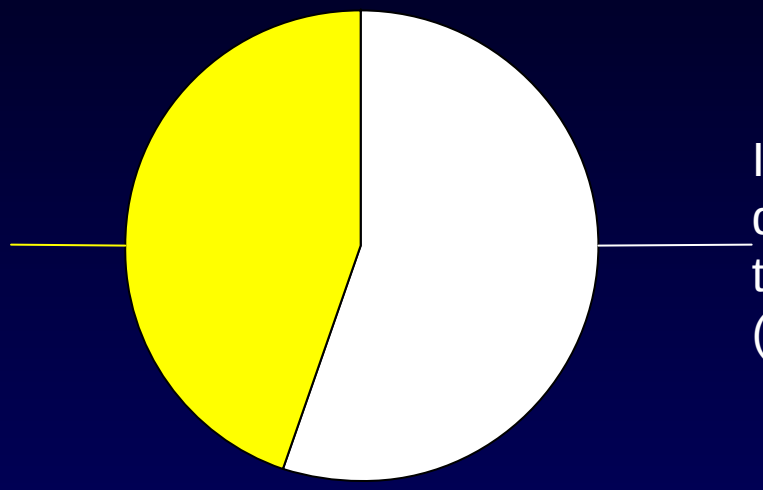
Objectives

- To study actual condition of referrals from secondary care hospitals to university hospital in Japan
- To study actual condition of referrals to aftercare from university hospital in Japan
- To study spatial difference in trends of the referrals using geographic information system (GIS)

Methods

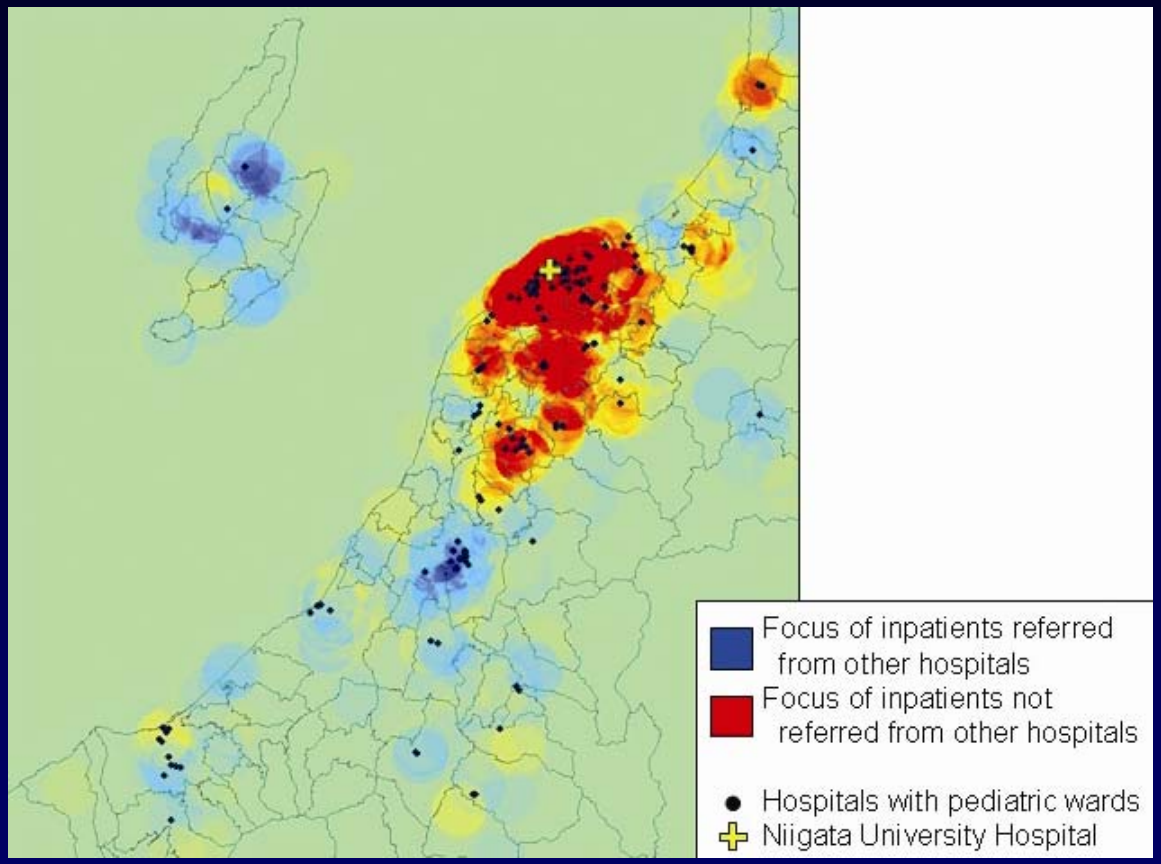
- All patients who received inpatient care in Niigata University Hospital from April 2004 to March 2005
- Data on age, gender, residential address, route of referrals, diagnosis (Japanese case mix classification)
- Spatial analysis
  - Geocoding of all patients
  - Empirical Bayesian Estimates for rate of inpatients
  - Medical service area for secondary and tertiary care
  - Spatial difference in trend of referrals: kernel density method, ordinary Kriging

Referrals from other hospitals



- The rate of inpatients who directly admitted to the hospital differed by disease (major diagnostic category) from 38.8% to 63.0% (median 55.7%)

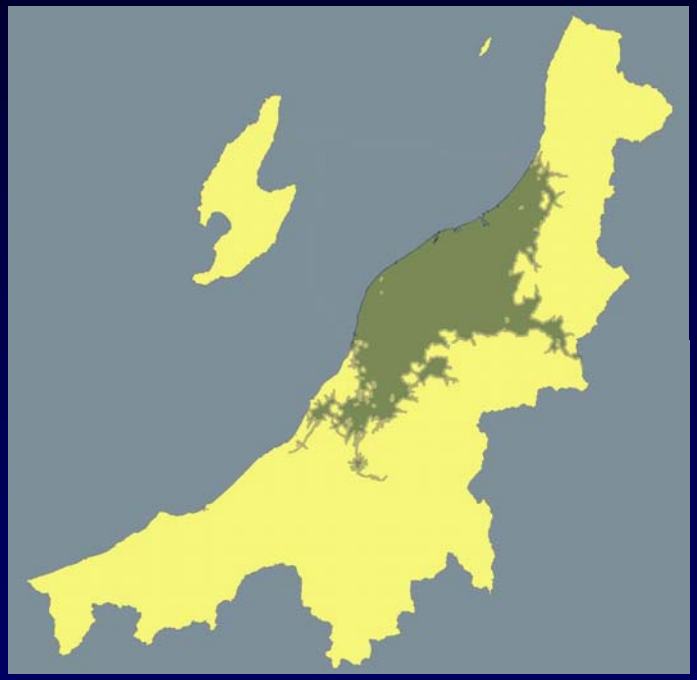
Spatial distribution of inpatients who referred from other hospitals



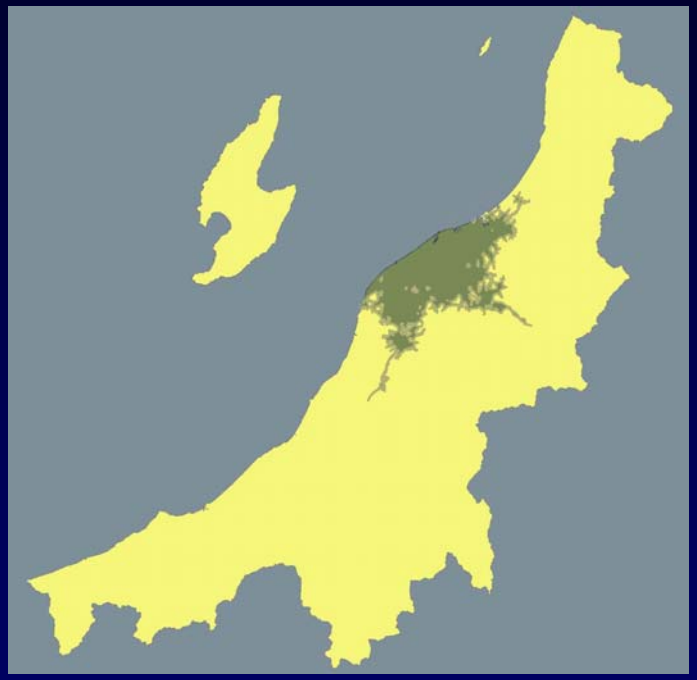
Patients who lived near the hospital have tendency to directly admit to the university hospital

University Hospital has two different kinds of medical service area

For tertiary care

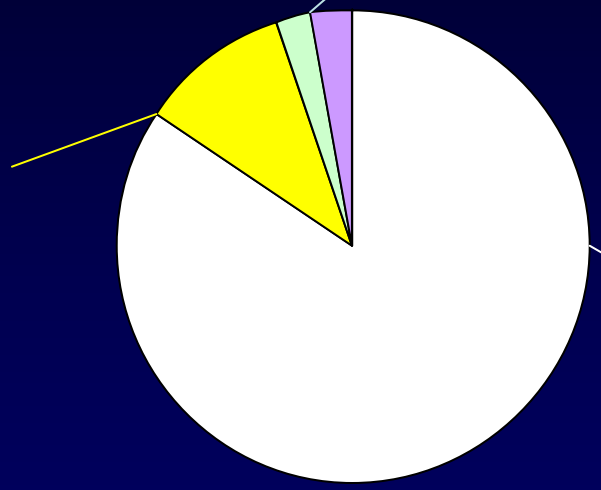


For secondary care



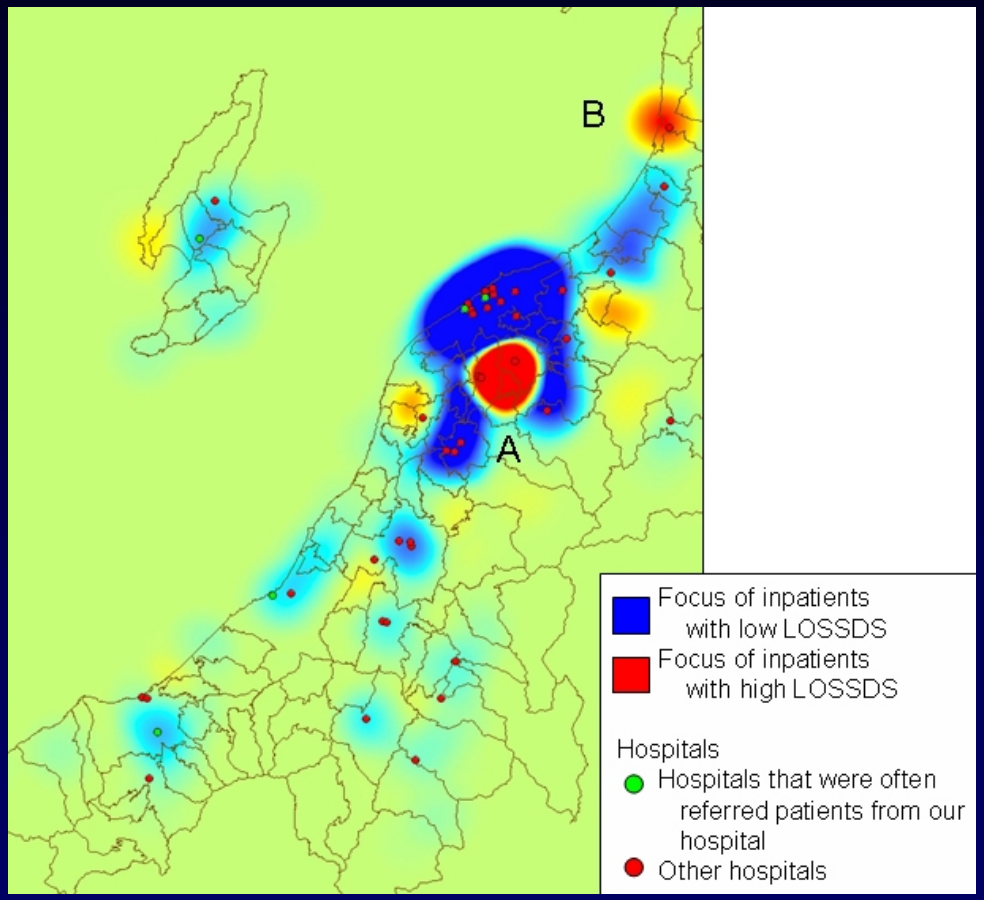
- Medical service areas covering 80% of inpatients belonging to the case-mixes with or without complicated clinical courses (coma, surgical operation, invasive treatment and complications)

Referrals to aftercare



- 89.1% of the patients who referred to aftercare received care in the outpatient department of the university hospital

Spatial focus of inpatients with long and short length of stay



There are barriers to referrals to aftercare in focus A and B. In these foci, there are hardly any hospitals which have good cooperation with the university hospital.

Summary

- 55% of inpatients admitted to the university hospital without referrals from other hospitals
- The university hospital is in competition with neighborhood general hospitals to acquire inpatients
- The university hospital has two types of medical service areas for secondary and tertiary care
- 89% of inpatients who referred to aftercare received care in the outpatient department of the university hospital
- There were several foci of inpatients with prolonged length of stay, which originated from lack of hospital-to-hospital cooperation

References and Contact Details

- Toyabe S, Kouhei A. Referral from secondary care and to aftercare in a tertiary care university hospital in Japan. BMC Health Serv Res. 2006 Feb 17;6:11.

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