

Introduction

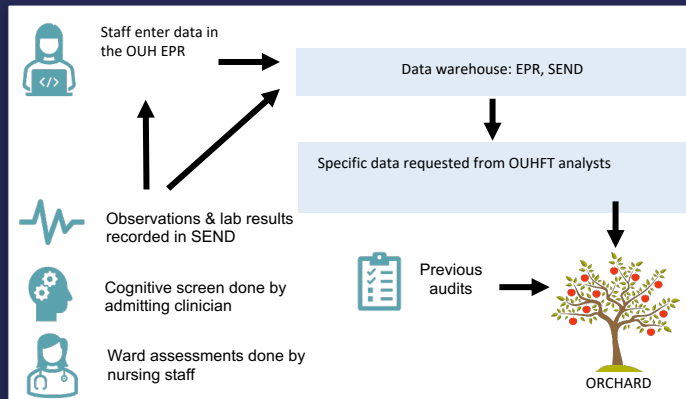
- Guidelines recommend that all older hospital patients be screened for cognitive comorbidity (i.e. dementia, delirium) and frailty to inform care and target multidisciplinary team resources.¹⁻⁴
- There are few hospital-wide studies on frailty and all-cause cognitive comorbidity, but these data are needed to inform guidance and service design and delivery.
- We therefore set up the Oxford Cognitive Comorbidity and Ageing Research Database (ORCHARD) using hospital-wide data from non-elective admissions to inform future guidance and service delivery and design.

Methods

- ORCHARD includes pseudonymised electronic patient record data with ongoing data collection:
- Eligibility:** All patients ≥ 65 years or with a cognitive screen from four general hospitals (Oxford University Hospitals-NHS Foundation Trust-OUHFT) covering a population of $\sim 660,000$;
- Data:** Routinely acquired electronic patient record (EPR) data including:
 - OUHFT Cognitive screen:** Comprising dementia diagnosis, delirium (Confusion Assessment Method-CAM), 10-point Abbreviated Mental Test (mandated if ≥ 70 or < 70 years with brain at-risk);
 - Nursing assessments:** Falls risk (> 10 items), pressure sore risk (Braden scale), malnutrition (Malnutrition Universal Screening Tool—MUST).
 - Other:** Frailty, diagnoses, comorbidities (Charlson index), observations, illness acuity, laboratory tests.
- Summary statistics were calculated for these measures.

References

- (1) Royal College of Physicians. Acute care toolkit 3: Acute care for older people living with frailty, 2020. (2) Carpenter C, Banerjee J, Conroy S. Holistic assessment of older people. In: Buurman B, Martin F, Conroy S, eds. Silver Book: British Geriatric Society; 2021. (3) Hoogendijk EO, Afila J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty: implications for clinical practice and public health. Lancet 2019; 394(10206): 1365-75. (4) Department of Health. Using the Commissioning for Quality and Innovation (CQUIN) payment framework. Leeds, UK: Department of Health; April 2012.



Results

- ORCHARD (2017-2019) contains data from 99,147 admissions
 - 32% day cases
 - 68% inpatient
- Most admissions (55%) are to General Medicine
- Admissions data are linked to 48,333 unique individuals
- Hospital Frailty Risk Score was associated with inpatient admission – crude odd ratios
 - Mod: 2.5 (95%CI 2.4-2.6)
 - High: 8.2 (95%CI 7.6-8.9)
- Cognitive data are available for 76% of inpatient admissions (> 1 day) in people ≥ 70 years
 - Cognitive screen: 71%
 - ICD-10 codes: 22%

Characteristic	Overall, N = 99,147 ¹	Ambulatory, N = 31,562 ¹	Inpatient, N = 67,585 ¹
Demographics			
Age (years)	80 (72, 86)	79 (72, 86)	80 (73, 87)
Female	49,761 (51%)	16,085 (51%)	33,676 (50%)
Index of Multiple Deprivation	8.0 (6.0, 9.0)	8.0 (6.0, 9.0)	8.0 (6.0, 9.0)
Care home resident	17,310 (17%)	4,744 (15%)	12,566 (19%)
Clinical characteristics			
Completed cognitive screen or ICD-10 codes	50,903 (51.3%)	7,913 (25.1%)*	42,990 (64.6%)*
Hospital Frailty Risk Score	4.2 (1.5, 8.8)	2.3 (0.7, 5.3)	5.4 (2.1, 10.3)
Braden Score	18.0 (16.0, 21.0)
Malnutrition risk	1,078 (2.7%)*
Fall history	21,441 (38%)	1,271 (55%)	20,170 (38%)*
Low National Early Warning Score (NEWS)	72,926 (79%)	24,332 (91%)	48,594 (74%)
Treatment function			
Emergency Medicine	12,691 (13%)	10,797 (34%)	1,894 (2.8%)
General Medicine	54,649 (55%)	12,882 (41%)	41,767 (62%)
Specialty Medicine	10,683 (11%)	2,472 (7.8%)	8,211 (12%)
General Surgery	7,215 (7.3%)	2,406 (7.6%)	4,809 (7.1%)
Specialty Surgery	13,882 (14%)	3,002 (9.5%)	10,880 (16%)
Other or allied health	27 ($< 0.1\%$)	2 ($< 0.1\%$)	24 ($< 0.1\%$)

¹Median (IQR); n (%) * $> 20\%$ missing data

Future Objectives

- Determine the prevalence, and outcomes of dementia, delirium and objective cognitive deficits;
- Determine the prevalence of frailty using established measures (e.g. Clinical Frailty Scale and Hospital Frailty Risk Score) and physical frailty markers from nursing assessments;
- Develop a pragmatic tool to identify frailty using routinely-acquired electronic patient record data;
- Provide a rich resource for future studies (e.g. health economics, time trends), neuroimaging, risk factors for cognitive frailty, development/validation of risk prediction tools).

Conclusions

- ORCHARD is a large and rich, real-world data resource enabling studies on the burden and impact of cognitive and physical frailty in-hospital.
- ORCHARD will inform the design and delivery of clinical services across acute hospital services, understanding of resource use and future guidelines