Gloucestershire Hospitals
NHS Foundation Trust

Gloucestershire Safety and Quality Improvement Academy 2025

Outlier Standardised Hospital Mortality Index - a Care Problem or a Data Quality Problem?

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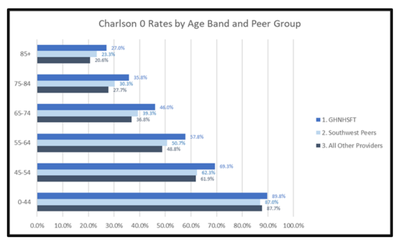
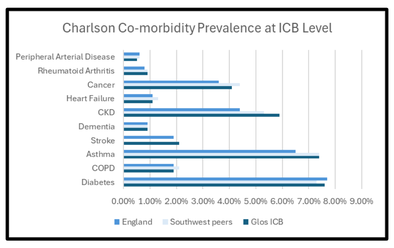
Background

- GHNHSFT's Standardised Hospital Mortality Index (SHMI) is a national outlier. This means there are more deaths than expected.
- SHMI is determined by several factors including a Charlson score.
- The Charlson score is calculated from a patient's co-morbidities.
- Patients with no co-morbidities are given a Charlson score of 0.
- Baseline data showed GHNHSFT's Charlson 0 rate was 30% higher than regional peers, yet primary care data was 10% lower than peers.
- Charlson scores contribute to HRG codes which determine trust income.





HRG Code	Income
AA22G Cerebrovascular accident with CC score 0-3	£1266
AA22F Cerebrovascular accident with CC score 4-6	£2052
AA22E Cerebrovascular accident with CC score 7-9	£3099
AA22D Cerebrovascular accident with CC score 10-12	£4553
AA22D Cerebrovascular accident with CC score 13-15	£6795
AA22C Cerebrovascular accident with CC score 16+	£11732

Aim

To improve the accuracy of our Charlson 0 rate to be in line with regional averages within 6 months, with evidence of sustained change at 12 months.
It is unclear if this is a care problem or data quality problem. If it is a data quality problem, SHMI should normalise if the aim is achieved.

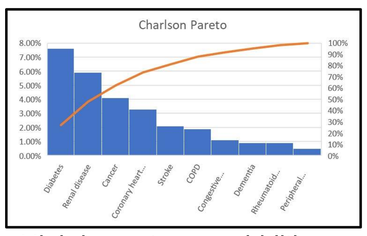
Measures

Primary Process Measure:
- Charlson 0 rate

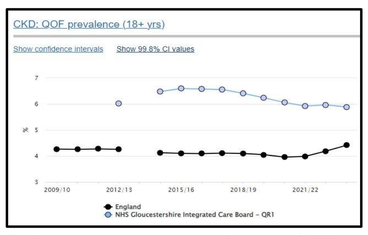
Process Measures:
- Charlson 0 rate by age group
- Charlson 0 rate by speciality

Outcome Measures:
- Trust SHMI, Trust expected deaths (Both reported on 5 month lag)
- HRG income changes

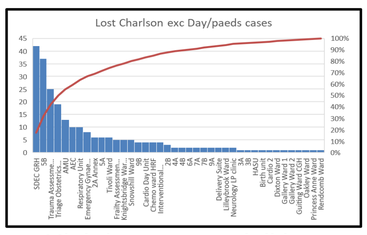
Understanding the Problem



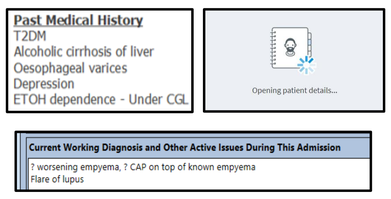
High impact co-morbidities



Primary care prevalence falling



High impact specialities



Electronic Patient Record issues

Total Records	Extra Expected Deaths	Average of risk_change	Age band age start
6	0.37	6.20%	91
7	0.21	2.94%	85
15	0.61	4.08%	80
21	0.78	3.72%	75
13	0.30	2.27%	70
12	0.14	1.19%	65
14	0.12	0.87%	60
11	0.05	0.43%	55
7	0.03	0.47%	50
10	0.01	0.09%	45
2	0.00	0.20%	41
7	0.04	0.64%	35
3	0.01	0.40%	31
2	0.00	0.06%	25
4	0.00	0.02%	23
134	2.68	2.00%	23

Row Labels	Total Records	Extra Expected Deaths	Average of risk_change
2 - Septicaemia (except in labour), Shock	1	0.18	17.62%
89 - Intestinal obstruction without hernia	1	0.11	11.16%
1 - Tuberculosis	1	0.11	11.07%
8 - Cancer of oesophagus	1	0.07	7.41%
95 - Pancreatic disorders (not diabetes)	1	0.07	6.95%
52 - Ear and sense organ disorders (excluding TB/STD)	3	0.00	0.06%
107 - Skin and subcutaneous tissue infections	2	0.00	0.05%
102 - Diseases of kidneys and ureters, bladder and urethra	1	0.00	0.04%
103 - Genitourinary symptoms and ill-defined conditions	1	0.00	0.02%
86 - Disorders of stomach and duodenum	1	0.00	0.01%

High impact age bands & primary diagnoses for remediation coding

Addressing the Problem

Cycle 1: Education
- Quickest to implement
- Raises awareness
- Least effective

Cycle 2: EPR/IT changes
- Automates solutions
- Very slow to implement

Cycle 3: Remedial Coding
- Very effective
- Doesn't address underlying problem
- Duplication of work

Cycle 4: Prospective Coding
- Best practice
- Competes with more clinically urgent tasks

Cycle 5: ICB Engagement
- Best for patients
- Limited resources

Driver Diagram	
Remediation Coding	Lost Charlson
	High Impact Diagnoses
	By Age Band
Education	Resident/PA/AP Teaching
	Trust Co-morbidity Reference Guide
	Consultant Engagement
	Speciality Specific Education Programs: COTE, Onc, AIM, Stroke, Surgery
IT/EPR Optimisation	Renaming PMx in Clerking Document
	Splitting PMX into Active and Inactive Problems
	JUYI Update With Increased Functionality
	Stop Diagnosis Auto Population
Co-Morbidities	Co-morbidity Specific QI Work (CKD, diabetes, MI)
	Coding Rates in Primary Care
Clinician- Coder Collaboration	Re-integrate Coders on Wards
	Dept Contacts for Coding Teams

PDSA Cycles	
1a. Resident/PA/AP Education Programme	Sept 2024
3a. Lost Charlson Remediation Coding	Oct 2024
3b. Sepsis/CAP Remediation Coding	Dec 2024
3c. >80s Remediation Coding	
2. JUYI 2 Update	Jan 2024
3d. >75 Remediation Coding	
3e. >65 Remediation Coding	Feb 2025
4a. AMU Prospective Coding	
1.b Medical Grand Round	March 2025
3f. >65 Remediation Coding +	
5a. ICB CKD Diagnoses	In Progress
4.b Oncology Prospective Coding	
5.B ICB Circulatory Diagnoses	Planned
6. EPR PMx Box Changes	
7. Consultant Responsibility for Remediation Coding	

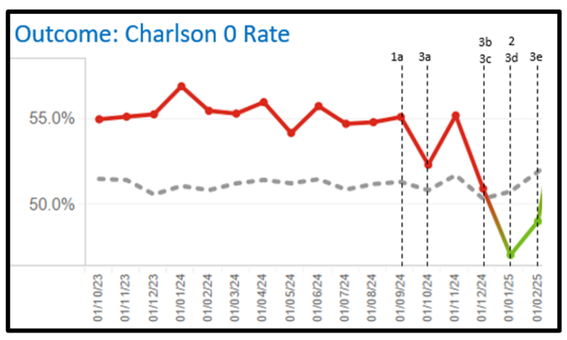
Challenges

- Clinician engagement
- Frequent rotation of stakeholders
- Competing priorities in EPR/IT optimisation
- Data quality 'someone else's problem'
- 5 month lag in SHMI data reporting

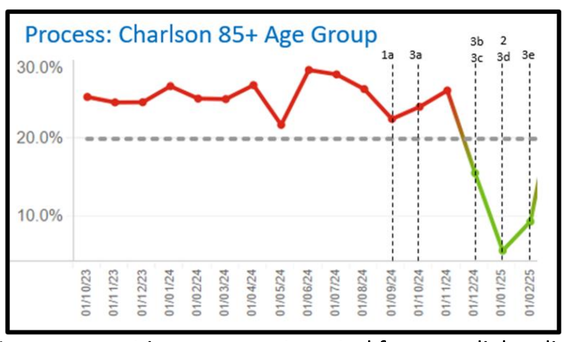
Outcomes

- Increased trust income by ~£1.8m/year
- SHMI now back within 'expected range'
- New areas identified for QI work

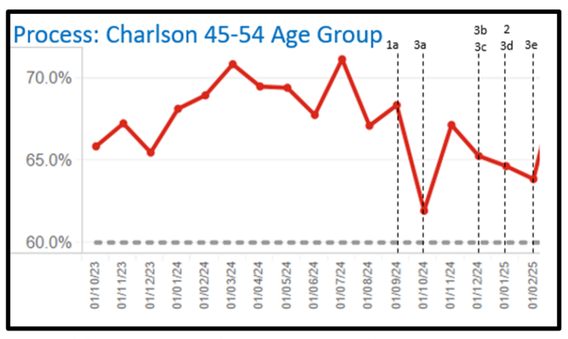
Results



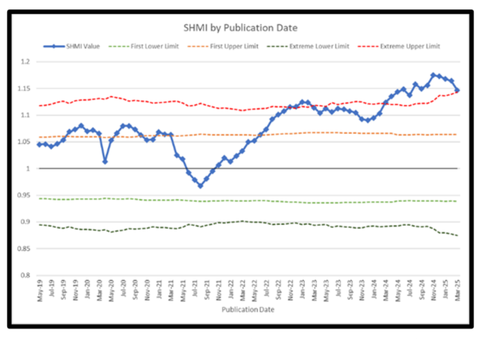
Improvement in primary process measure.



Improvement in age group targeted for remedial coding.



More gradual improvement in age group unaffected by remedial coding other than 3a.



SHMI returned to 'expected range'.

Conclusions

- Data quality problem confirmed. There may also be care quality problems. With more accurate data we will be able to better identify and address them.
- Changes to HRG codes resulted in extra income of ~£150K/month or £400 for every record reviewed.

Next Steps

- Continue remedial coding and check changes to outcome measure are sustained.
- 11,000 undiagnosed Chronic Kidney Disease patients in Gloucestershire. We are working with the ICB to identify and treat these patients.
- Better understanding of financial gains and how to mobilise these to improve the long-term sustainability of the project.

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