



Cheshire and Merseyside

Spell LoS of Wirral patients at WUTH NHS Trust

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About this report

This report presents analysis in relation to **77,509** inpatient hospital spells (excl. patients with a zero LoS) of Wirral CCG patients at Wirral University Hospital NHS FT, for the **Period: 01 April 2021 - 30 June 2023**.

The focus of the report is to explore the factors associated with **longer length of stay in hospital**.

Data source: [SecondaryCare].[Contracting].[tblAdmittedPatientCare]

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Main points

The highest number of admissions was seen from patients admitted as an emergency. LoS of emergency admissions was significantly higher compared to other methods of admission ([more detail here](#)).

Admissions from older patients (65+) account for 48.6% of all admissions & 54.3% of emergency admissions. Generally, as age increases so do the number of admissions. This positive relationship between age and number of admissions is not entirely true for planned admissions as after the age of 74 the number of planned admissions is decreasing (for both male & female patients)

In regards to emergency admissions, the youngest (0-4) and oldest (65+) patients account for nearly 6 out 10 emergency admissions, with patients 85+ being responsible for the highest number of emergency admissions (16% of all emergency admissions) ([more detail here](#)).

The average LoS was 6.3 days (zero LoS spells have been excluded) with a median LoS of 3 days. However, patients admitted as an emergency (generally) stay in hospital for significantly longer periods ([more detail here](#)).

LoS was similar both for female and male patients and patients admitted as an emergency tend to stay longer in hospital. This was true both for female & male patients ([more detail here](#)).

Age was clearly associated with longer LoS as older patients tend to stay longer in hospital. This was particularly the case for patients admitted as an emergency ([more detail here](#)).

Older patients admitted as an emergency were also the group most likely to remain in hospital for over 21 days. Nearly 19% of all female and 17% of all male patients over the age of 85, admitted as an emergency, stayed in hospital for over 21 days. ([more detail here](#)).

The number of admissions varies significantly between specialties and so does their respective LoS. Geriatric medicine had seen the largest number of admissions and had the largest number of patients who stayed in hospital over 21 days. Other specialties who treated significant numbers of patients who stayed over 21 days included: General medicine, T&O, Stroke rehab, Diabetic medicine ([more detail here](#)).

In regards to reasons for admission, some of the themes identified in the data include:

1. Urinary tract infection was the most frequent reason for emergency admission. 2. Respiratory related diagnoses (Lobar pneumonia, Pneumonia unspecified & Covid) were also linked to a high number of emergency admissions.
2. COPD patients are most likely to have multiple admissions.
3. Patients admitted for Fracture of neck of femur (broken hip) stayed in hospital for an average of 14 days (median). ([more detail here](#)).

For patients admitted as an emergency, discharge wards that see predominantly Geriatric medicine patients, such as Ward 21 & 22 & 27, are associated with high number of excess bed-days. The highest level of excess bed-days is observed by patients discharged from Rehab wards like M1. Excess bed-days in patients discharged both from M1 and from Disch Hosp Cent (patients are moved there when they are ready for discharge) are also driven largely by Geriatric medicine patients ([more detail here](#)).

LoS has increased since the last year, and Geriatric medicine and Diabetic medicine were the only specialties that showed a statistically significant change in the overall trend of patient avg LoS overtime (increasing trend). Given the significant number of patients seen in Geriatric & Diabetic medicine, even slight increases in the mean LoS of patients could have a major impact on the overall hospital occupancy / bed availability. ([more detail here](#)).

Method of admission

The highest number of admissions was seen from patients admitted as an **emergency** and as Table 1. shows LoS of emergency admissions is **significantly higher** compared to other methods of admission.

For these reasons, the report is focusing mostly on exploring factors associated with long LoS of patients admitted as an **emergency**.

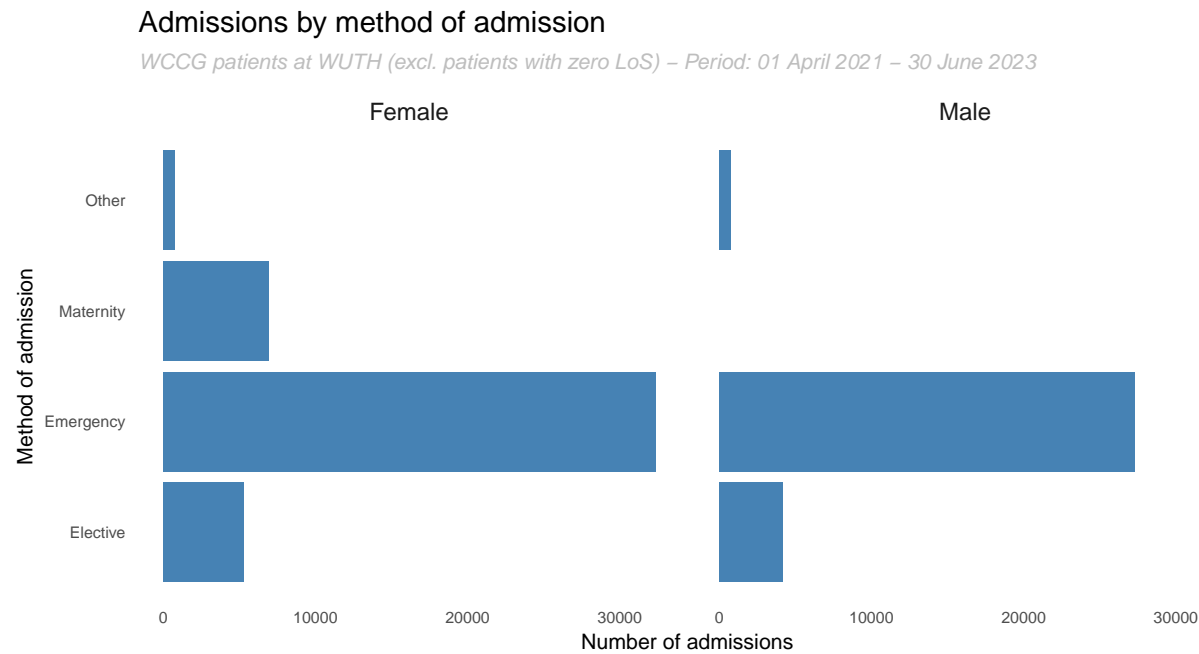


Table 1: Spells by admission method

Admission Type	Mean Los (Days)	Median Los(Days)	Min Los (Days)	Max Los (Days)	Mean age (years)	Spells
Elective	3.8	2	1	187	63	9482
Emergency	8.3	3	1	433	61	59601
Maternity	2.9	2	1	248	30	6909
Other	5.1	2	1	223	6	1517

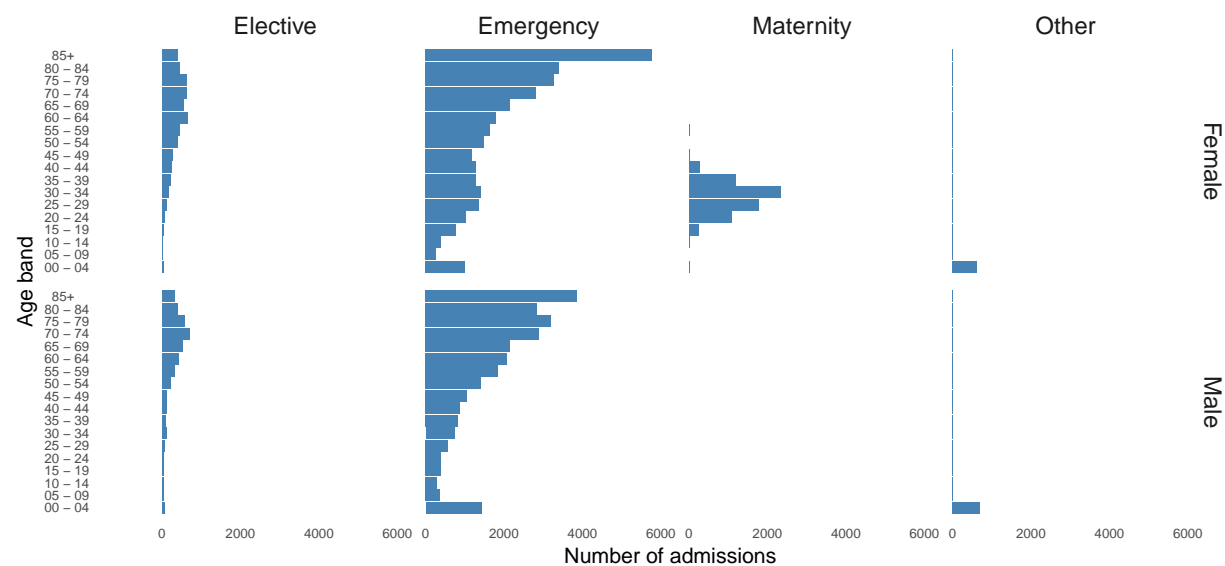
Method of admission and age

Admissions from older patients (65+) account for **48.6%** of **all** admissions & **54.3%** of emergency admissions. Generally, as age increases so do the number of admissions. This positive relationship between age and number of admissions is not entirely true for **planned admissions** as after the age of **74** the number of planned admissions is decreasing (for both male & female patients).

In regards to emergency admissions, we can see below that the youngest (**0-4**) and oldest (**65+**) patients account for nearly **6 out 10 emergency admissions**, with patients **85+** being responsible for the highest number of emergency admissions (**16% of all emergency admissions**).

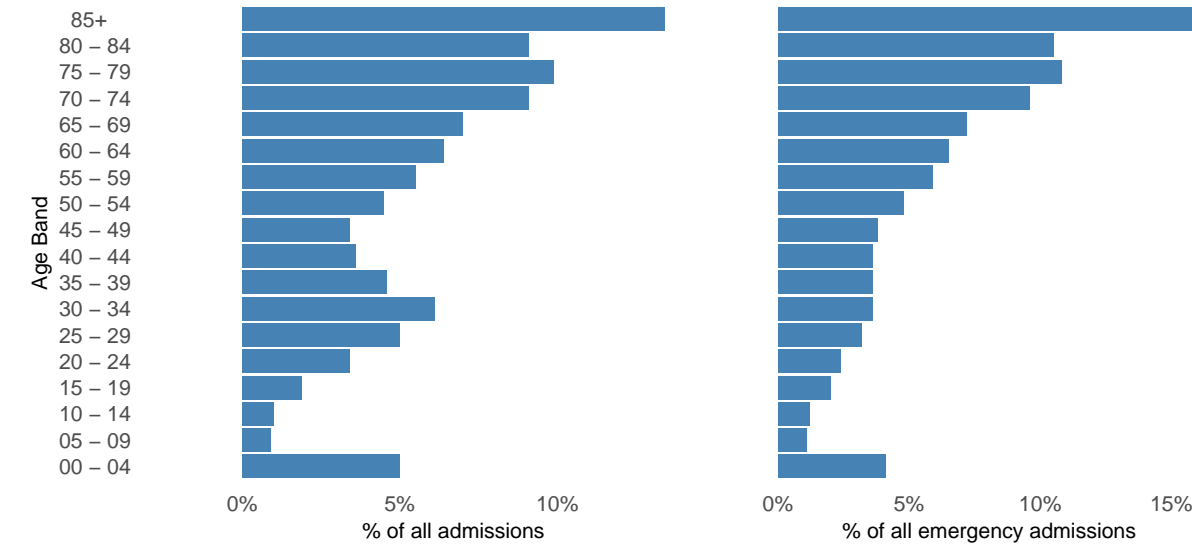
Admissions by method of admission / age band

WCCG patients at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023



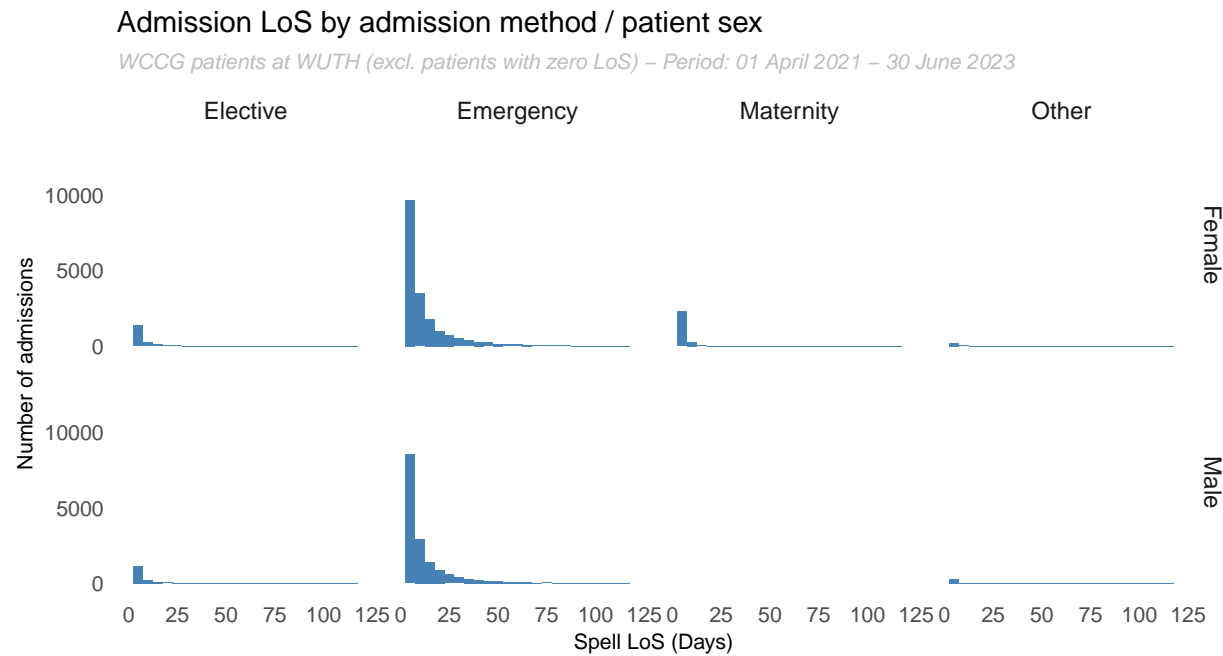
% of admissions by age band

WCCG patients at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023



How long do most patients stay in hospital for?

The average LoS was **7.2** days with a median LoS of **3** days (All admission methods). However, as seen below, many patients admitted as an **emergency** (generally) stay in hospital for significantly longer periods.



Is the sex of the patient a factor associated with longer LoS?

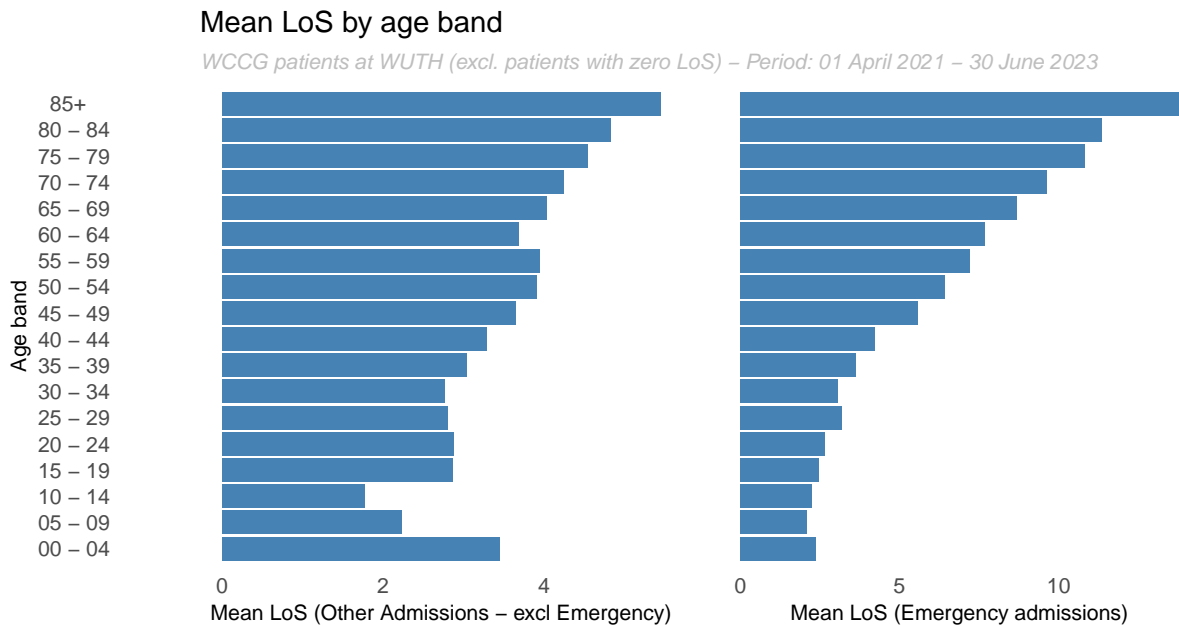
As seen below, LoS is similar both for female and male patients. Both female & male patients **admitted as an emergency** tend to have a longer LoS though.

Table 2: Mean LoS by admission method / sex

Admission Type	Female	Male
Elective	3.8	3.8
Emergency	8.3	8.4
Maternity	2.9	NA
Other	4.4	5.8

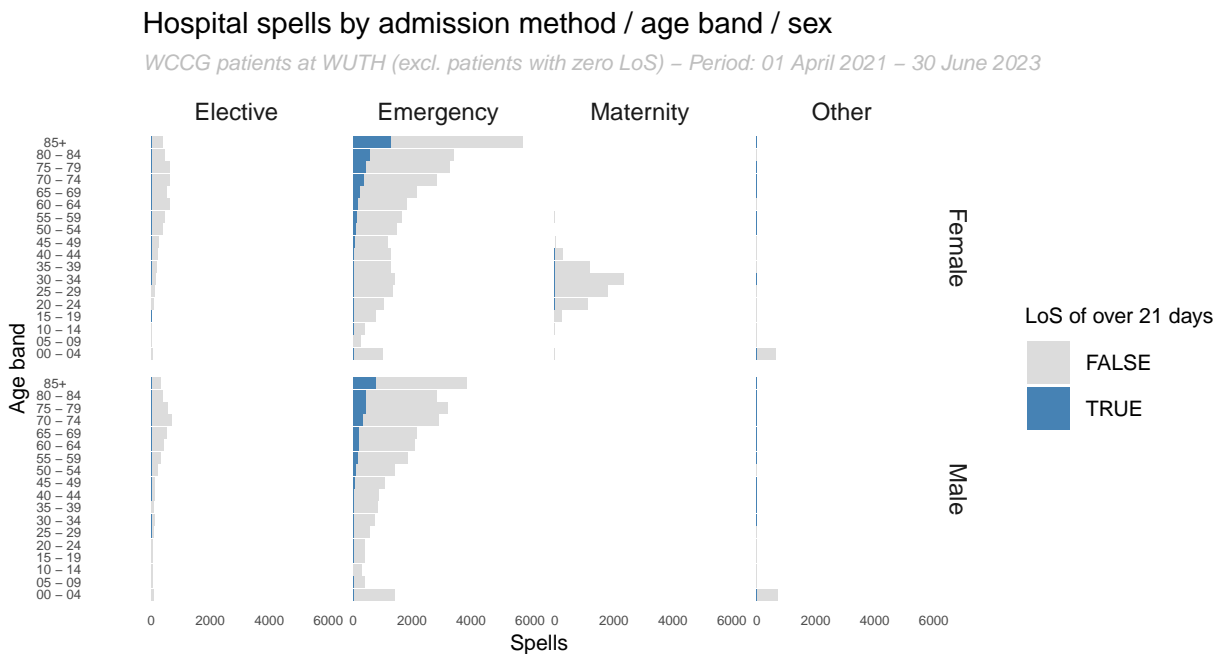
Is age a factor associated with longer LoS?

As seen below, age is clearly associated with **longer LoS in hospital**. This seems to be the case particularly for **emergency admissions**.

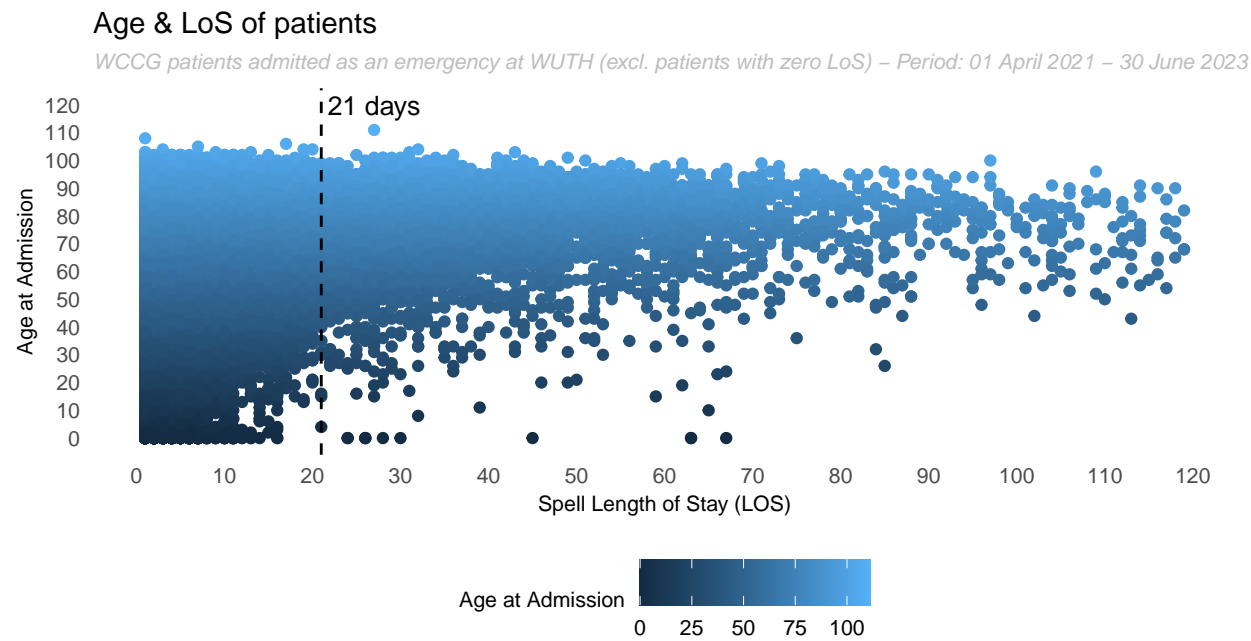


Is age a factor associated with LoS of over 21 days?

Older patients admitted as an emergency is the patient group most likely to remain in hospital for over 21 days.



The relationship between age and LoS of over 21 days is also highlighted below. As seen, younger patients very rarely stay in hospital over 21 days.

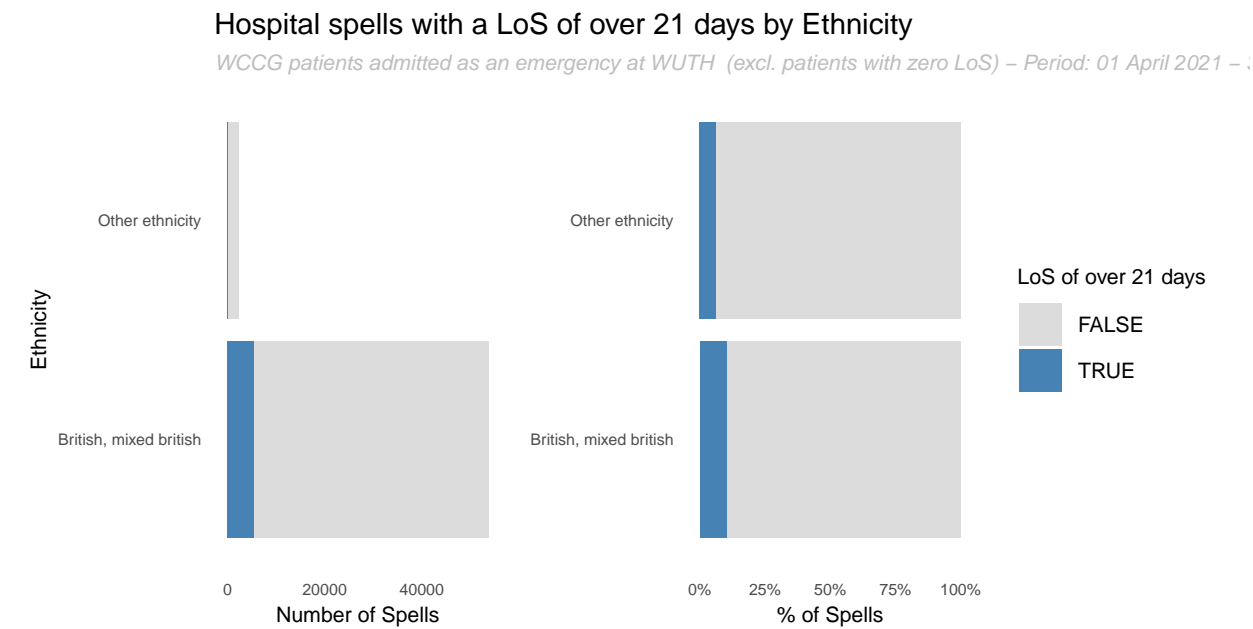


Nearly **19%** of all female and **17%** of all male patients **over the age of 85**, who were admitted as an emergency, stayed in hospital over 21 days.



Is ethnicity a factor associated with LoS over 21 days? (Emergency admissions)

The proportion of British-Mixed British patients who stayed in hospital over 21 days is higher than the proportion of patients from other ethnic backgrounds (Over 21 days - **British 8.9%** & **Other 6.5%**)

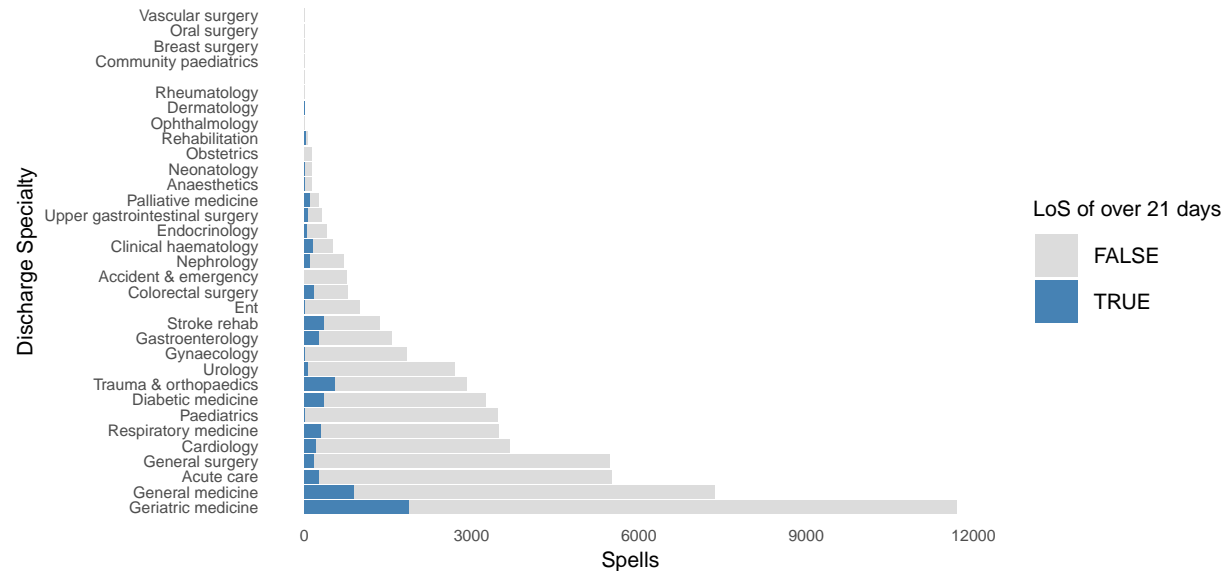


Which specialties are associated with longer LoS? (Emergency admissions)

The number of admissions varies significantly between specialties and so does their respective LoS. **Geriatric medicine** had seen the largest number of admissions **and** had the largest number of patients who stayed in hospital over 21 days. Other specialties who treated significant numbers of patients who stayed over 21 days included: **General medicine, T&O, Stroke rehab, Diabetic medicine**

Hospital spells by discharge specialty

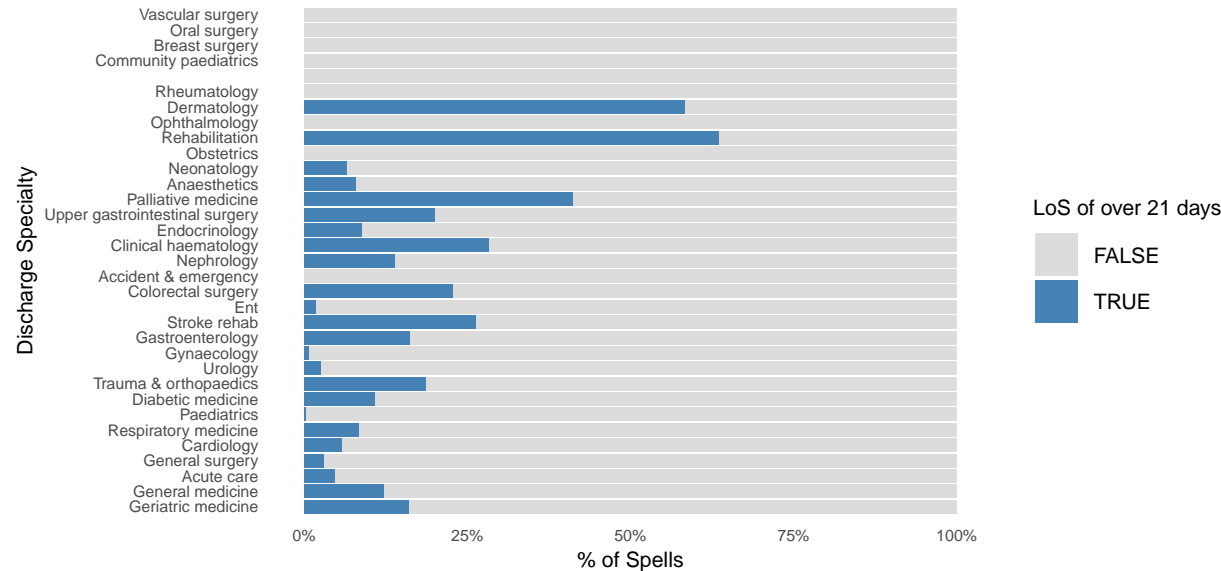
WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 20.



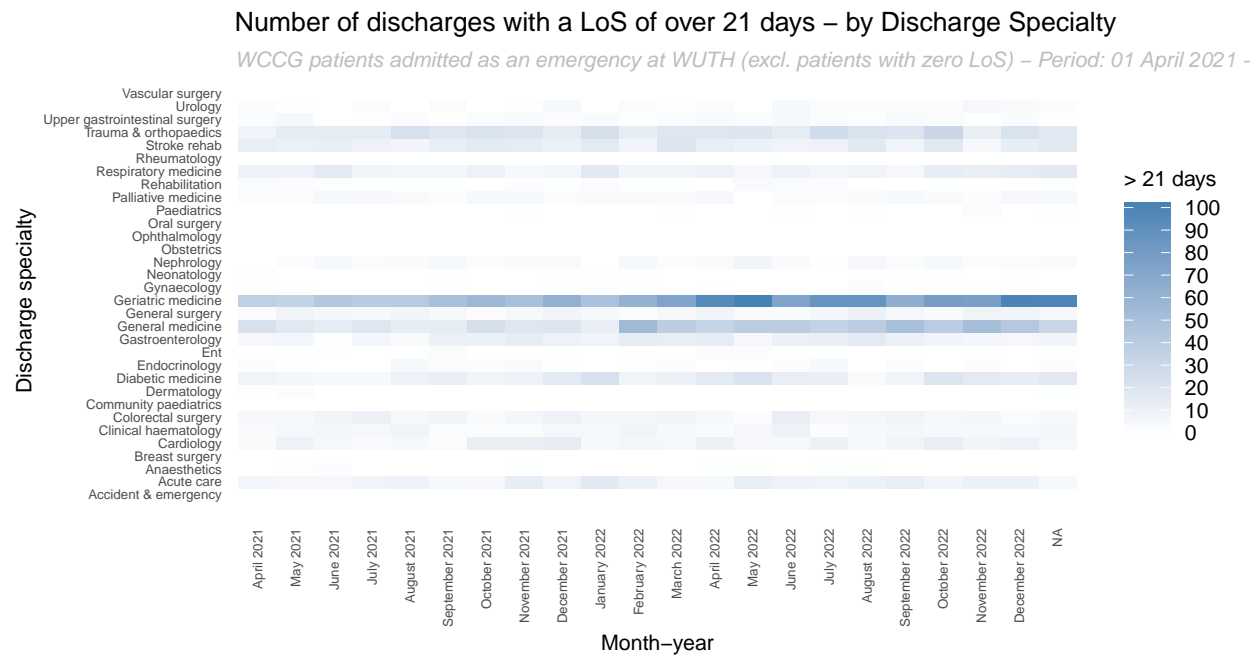
Almost 8 out of 10 patients discharged from “Dermatology” and 7 out of 10 patients discharged from “Rehabilitation” stayed in hospital over 21 days. As seen in the previous graph however, the actual number of spells was relatively small.

% of hospital spells with a LoS of over 21 days

WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 20.



As also seen below, Geriatric medicine, Trauma & Orthopaedics, General medicine, Diabetic medicine are among the specialties with the highest number of patients staying over 21 days.



Which diagnoses are associated with longer LoS? (Emergency admissions)

1. **Urinary tract infection** was the most frequent reason for emergency admission. 2. **Respiratory** related diagnoses (Lobar pneumonia, Pneumonia unspecified & Covid) were also linked to a high number of emergency admissions.
2. **COPD** patients are most likely to have multiple admissions.
3. Patients admitted for **Fracture of neck of femur** (broken hip) stayed in hospital for an average of 14 days (median).

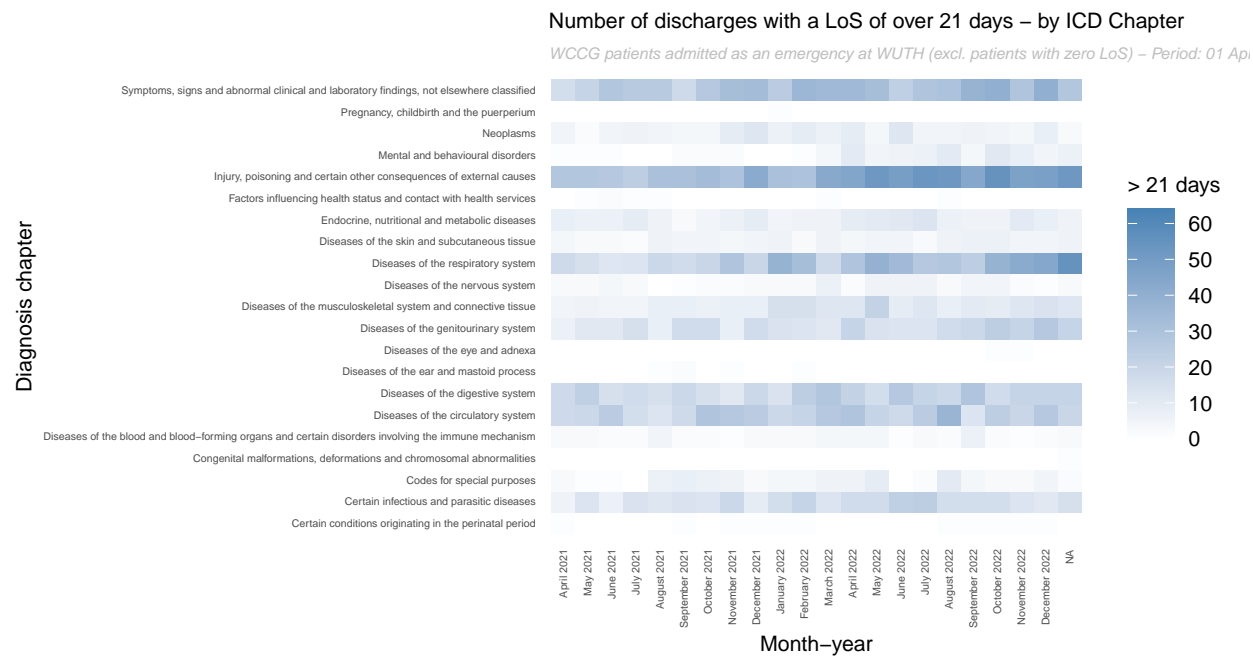
Table 3: Emergency spells by ICD Chapter

ICD Chapter Description	Mean LoS (Days)	Median LoS (Days)	Min LoS (Days)	Max LoS (Days)	Mean age (years)	Spells	Patients	Spells per patient
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	6.9	2	1	159	60	9855	8438	1.2
Diseases of the respiratory system	8.1	4	1	151	62	9601	6971	1.4
Injury, poisoning and certain other consequences of external causes	10.7	4	1	361	63	7362	6306	1.2
Diseases of the digestive system	7.8	4	1	271	59	6039	4900	1.2
Diseases of the circulatory system	9.5	4	1	314	72	5592	4819	1.2
Diseases of the genitourinary system	7.9	3	1	228	61	4645	3933	1.2
Certain infections and parasitic diseases	8.8	4	1	434	52	3925	3356	1.2
Diseases of the musculoskeletal system and connective tissue	8.9	3	1	179	64	2368	2157	1.1
Endocrine, nutritional and metabolic diseases	9.8	4	1	261	66	1741	1439	1.2
Diseases of the skin and subcutaneous tissue	8.0	4	1	102	60	1558	1335	1.2
Pregnancy, childbirth and the puerperium	1.8	1	1	21	29	1113	912	1.2
Codes for special purposes	8.9	5	1	107	61	1091	1049	1.0
Diseases of the nervous system	7.7	2	1	214	53	1024	898	1.1
Neoplasms	11.7	7	1	140	70	970	826	1.2
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	7.0	3	1	74	68	948	817	1.2
Mental and behavioural disorders	10.4	4	1	134	57	862	658	1.2
Certain conditions originating in the perinatal period	4.5	2	1	173	0	293	283	1.0
Diseases of the ear and mastoid process	4.1	2	1	90	50	201	191	1.1
Diseases of the eye and adnexa	5.0	2	1	69	46	171	165	1.0
Factors influencing health status and contact with health services	4.0	1	1	67	39	171	169	1.0
Congenital malformations, deformations and chromosomal abnormalities	4.0	1	1	81	25	56	53	1.1
NA	13.0	14	1	34	70	15	15	1.0

Note: Codes for special purposes (ICD: Emergency use of U07.1) is used for Covid19 related admissions

Table 4: Emergency spells by ICD Chapter / Primary Diagnosis - Top 30 (by number of Spells)

ICD Chapter Description	ICD Description	Mean LoS (Days)	Median LoS (Days)	Min LoS (Days)	Max LoS (Days)	Mean age (years)	Spells	Patients	Mean excess bed-days	Spells per patient
Diseases of the respiratory system	Lobar pneumonia, unspecified	11.2	7	1	131	73	2141	1907	1	1.1
Diseases of the genitourinary system	Urinary tract infection, site not specified	10.5	4	1	180	67	1981	1761	1	1.1
Diseases of the respiratory system	Pneumonia, unspecified	9.2	6	1	101	74	1448	1321	1	1.1
Diseases of the respiratory system	Chronic obstructive pulmonary disease with acute lower respiratory infection	8.0	5	1	148	71	1250	893	1	1.4
Certain infections and parasitic diseases	Sepsis, unspecified	12.2	6	1	161	70	1205	1090	1	1.1
Codes for special purposes	Emergency use of U07.1	8.9	5	1	107	61	1089	1047	1	1.0
Diseases of the respiratory system	Unspecified acute lower respiratory infection	6.5	3	1	143	57	1055	982	1	1.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Syncope and collapse	7.0	3	1	119	70	898	850	1	1.1
Diseases of the skin and subcutaneous tissue	Cellulitis of other parts of limb	9.0	3	1	88	68	842	729	1	1.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Pain localised to other parts of lower abdomen	3.0	1	1	64	42	827	782	0	1.0
Diseases of the genitourinary system	Acute renal failure, unspecified	11.3	7	1	119	74	792	738	1	1.1
Certain infections and parasitic diseases	Gastroenteritis and colitis of unspecified origin	7.3	3	1	209	60	747	696	0	1.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Tendency to fall, not elsewhere classified	16.8	10	1	159	74	744	680	0	1.1
Diseases of the circulatory system	Atrial fibrillation and atrial flutter, unspecified	6.2	3	1	140	73	687	617	1	1.1
Certain infections and parasitic diseases	Viral infection, unspecified	1.7	1	1	54	6	658	489	1	1.3
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Headache	3.6	1	1	75	49	628	605	0	1.0
Injury, poisoning and certain other consequences of external causes	Fracture of neck of femur	20.4	13	1	190	80	600	594	0	1.0
Diseases of the digestive system	Constipation	7.0	2	1	305	61	581	524	1	1.1
Diseases of the circulatory system	Congestive heart failure	12.6	8	1	71	80	532	480	0	1.1
Mental and behavioural disorders	Mental and behavioural disorders due to use of alcohol	6.0	3	1	134	50	528	341	0	1.2
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Pain localised to upper abdomen	5.0	2	1	130	52	495	468	0	1.1
Diseases of the respiratory system	Chronic obstructive pulmonary disease with acute exacerbation, unspecified	7.0	4	1	87	70	478	351	0	1.4
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Precordial pain	4.4	2	1	88	62	453	429	0	1.1
Injury, poisoning and certain other consequences of external causes	Poisoning: 4-Aminophenol derivatives	3.0	2	1	51	30	452	390	0	1.2
Diseases of the digestive system	Gastrointestinal haemorrhage, unspecified	7.3	4	1	96	70	442	420	1	1.1
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Nausea and vomiting	6.9	3	1	71	51	424	370	0	1.1
Diseases of the circulatory system	Acute subendocardial myocardial infarction	6.3	4	1	128	71	408	398	0	1.0
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Dyspnoea	5.7	3	1	82	65	404	390	0	1.0
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	Other chest pain	3.4	1	1	64	59	400	391	0	1.0
Diseases of the respiratory system	Pneumonitis due to food and vomit	13.0	7	1	137	75	399	359	0	1.1



Long stay by discharge location (Emergency admissions)

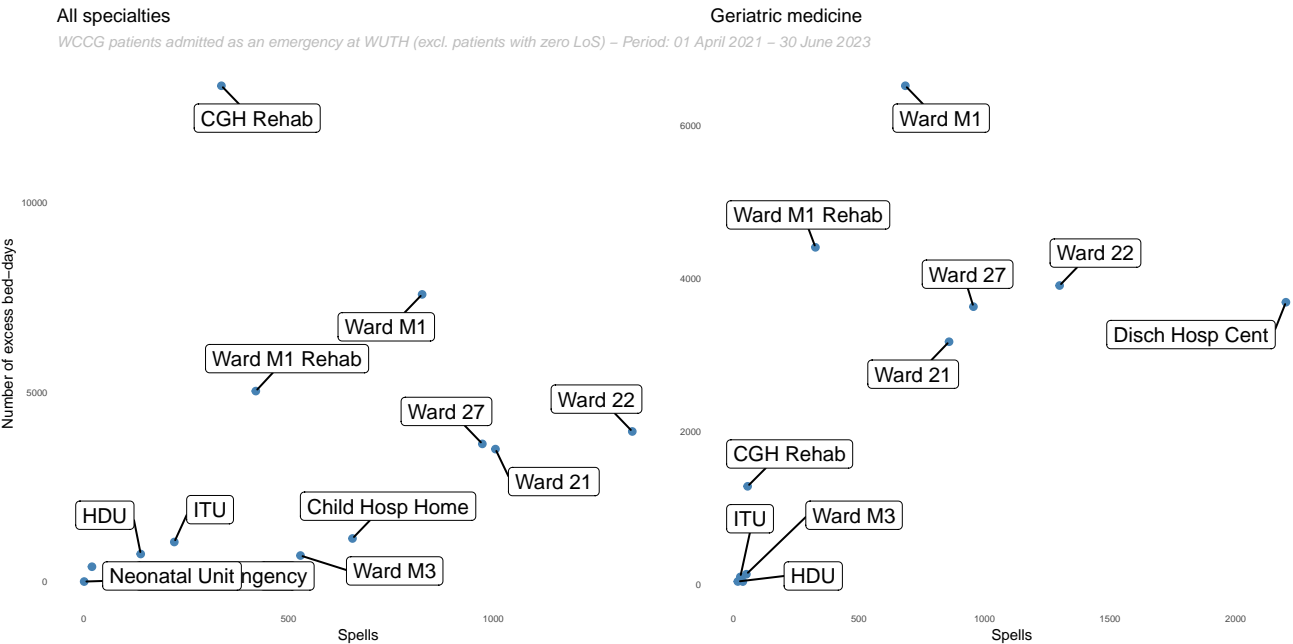
The graph below highlights the **discharge location** of spells which had a high number of excess bed-days.

Note: The following graph only shows discharge locations where the **average spell excess bed-days were higher than 1 days**.

Association of wards with high level of excess bed-days does not assume that discharge delays occur after a patient is moved there. Delays may occur at various different points during the patient journey and for a number of different reasons.

As seen in the following graph and in Table 5, discharge wards that see predominantly **Geriatric medicine patients**, such as **Ward 21 & 22 & 27**, are associated with high number of excess bed-days.

The highest level of excess bed-days is observed by patients discharged from **Rehab wards** like **M1**. As evident from the graph below, excess bed-days in patients discharged both from **M1** and from **Disch Hosp Cent** (patients are moved there when they are ready for discharge) are also driven largely by **Geriatric medicine patients**.



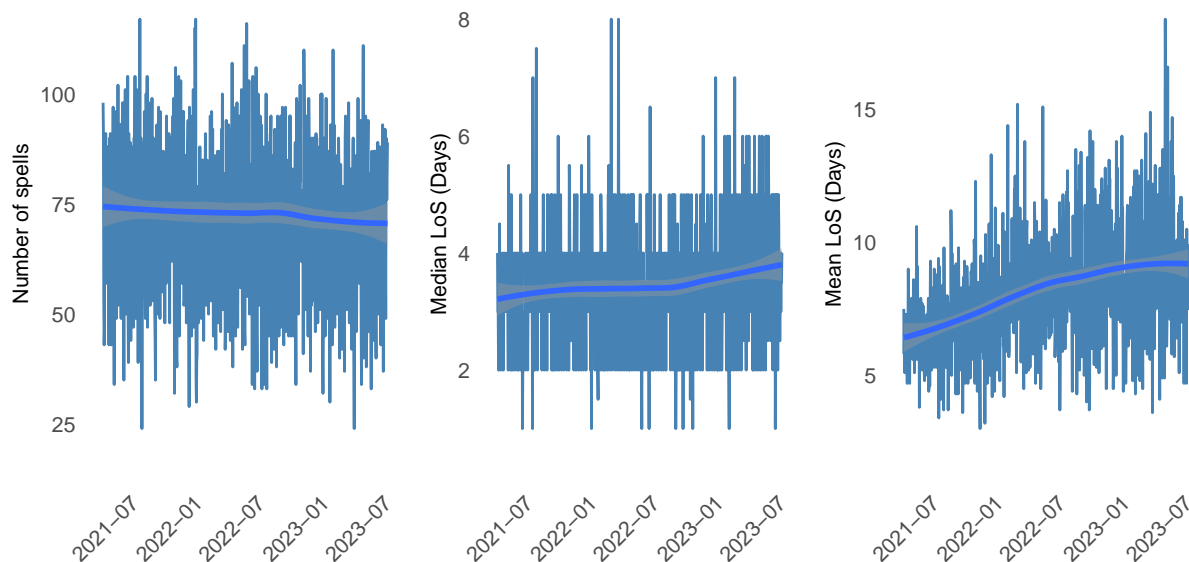
Staying in hospital for longer than required can have adverse outcomes for patients. In addition, it can have a negative impact on hospital flow and excess bed-days can also be very costly too. As seen below, the average number of excess beddays in Rehab, Neonatal unit and Geriatric patients (Ward M1) was relatively high.

Is hospital LoS increasing? (Emergency admissions)

As seen below, LoS has increased since last year. The average LoS has increased from **6.5** days (April 2021) to **8.5** days (July 2022).

Hospital discharges & their median & mean LoS

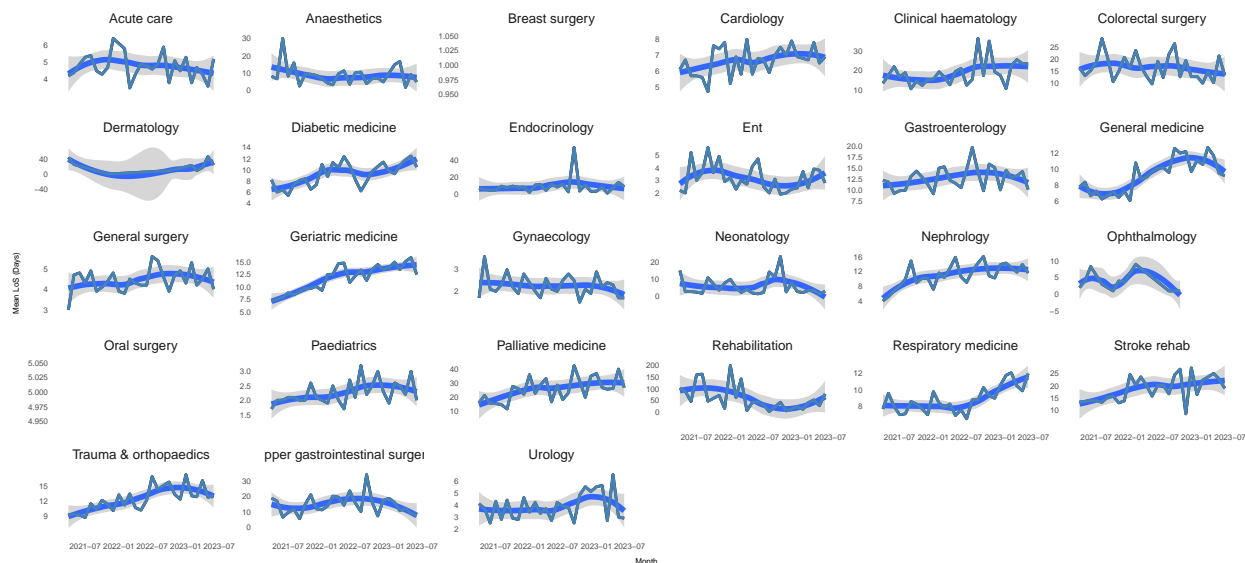
WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023



Geriatric medicine and **Diabetic medicine** were the only specialties that showed a statistically significant change in the overall trend of patient avg LoS overtime (increasing trend) ($p = 0.0001$). Given the significant number of patients seen in Geriatric & Diabetic medicine, even slight increases in the mean LoS of patients could have a major impact on the overall hospital occupancy / bed availability.

Mean LoS of patients discharged by Specialty / month

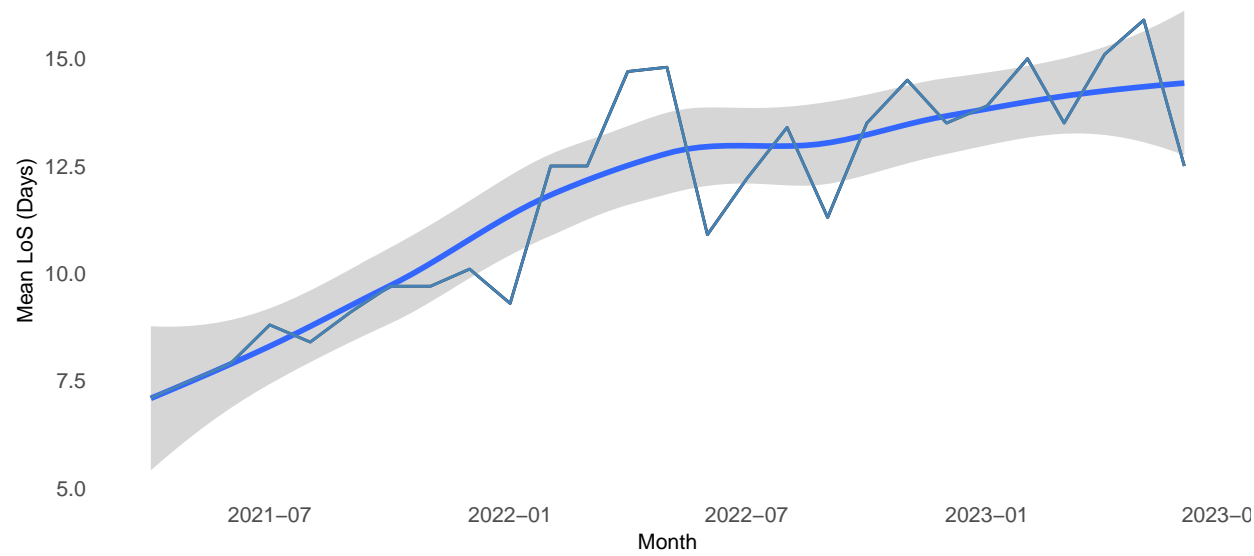
WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023



As seen below, LoS in Geriatric medicine has increased since last year. The average LoS has increased from **7.1 days** (April 2021) to **12 days** (July 2022).

Mean LoS of patients discharged by month – Geriatric medicine

WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023



As seen below, there was a significant increase in the mean LoS of Diabetic medicine patients but since May 2022 the average LoS of Diabetic medicine patients has started to decrease.

Mean LoS of patients discharged by month – Diabetic medicine

WCCG patients admitted as an emergency at WUTH (excl. patients with zero LoS) – Period: 01 April 2021 – 30 June 2023

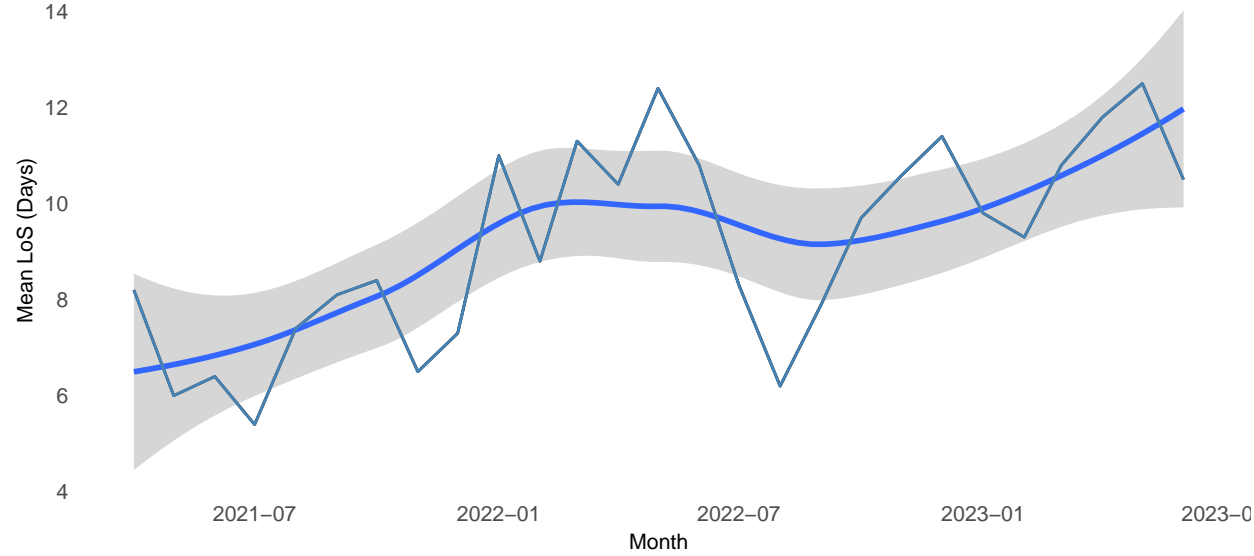


Table 5: Spells by discharge location (Emergency admissions)

Discharge Location Code	Mean Los (Days)	Median Los(Days)	Min Los (Days)	Max Los (Days)	Mean age (years)	Spells	Mean excess bed-days	Total excess bed-days
CGH Rehab	57.8	43.5	3	361	73	336	39.0	13100
Neonatal Unit	21.3	15.0	2	67	2	20	19.8	395
Ward M1 Rehab	29.0	23.0	2	190	84	420	12.0	5035
Ward M1	38.4	32.0	2	228	84	826	9.2	7589
HDU	9.0	6.0	1	48	51	139	5.3	731
ITU	7.2	4.0	1	62	57	221	4.7	1048
Ward 27	15.9	10.0	1	261	84	973	3.7	3640
Ward 21	16.9	10.0	1	180	84	1005	3.5	3502
10	30.0	30.0	30	30	70	1	3.0	3
Ward 22	13.2	8.0	1	176	84	1339	3.0	3968
Child Hosp Home	2.9	2.0	1	65	3	656	1.7	1141
Ward M3	37.0	31.0	2	159	80	529	1.3	691
HDU Contingency	9.3	4.0	1	151	62	65	1.2	76
Ward M2 Surg	1.0	1.0	1	1	39	1	1.0	1
Disch Hosp Cent	10.8	6.0	1	214	76	6199	0.7	4210
Ward 31	9.2	5.0	1	61	69	82	0.4	33
	8.0	3.0	1	151	62	215	0.2	47
CCU	3.5	2.0	1	67	67	668	0.2	127
Colorectal Unit	12.9	7.0	1	144	64	608	0.2	124
Ward 12	9.8	6.0	1	55	67	132	0.2	25
Ward 14	12.8	7.0	1	271	62	597	0.2	146
Ward 25	7.1	4.0	1	145	64	1607	0.2	280
Ward 30	17.7	11.0	1	158	67	906	0.2	184
Ward 33	11.0	7.0	1	117	65	1206	0.2	199
Ward 38	9.4	6.0	1	210	65	2347	0.2	535
APH Day Unit	11.5	6.0	1	433	69	328	0.1	24
LSU	6.2	4.0	1	44	60	54	0.1	8
Ward 18	7.4	4.0	1	140	61	2494	0.1	188
Ward 20	9.8	6.0	1	147	65	1830	0.1	134
Ward 24	10.6	7.0	1	190	70	1080	0.1	135
Ward 26	9.4	5.0	1	134	63	1866	0.1	271
Ward 32	6.8	4.0	1	86	69	2696	0.1	175
Ward 36	12.1	7.0	1	165	61	1840	0.1	263
Ward 44	12.7	8.0	1	77	72	88	0.1	10
03	9.0	9.0	9	9	78	1	0.0	0
06	5.0	5.0	5	5	89	1	0.0	0
11	3.0	3.0	3	3	88	1	0.0	0
12	3.0	3.0	3	3	77	1	0.0	0
13	10.0	10.0	10	10	79	1	0.0	0
15	6.0	6.0	6	6	22	1	0.0	0
3	2.0	2.0	2	2	80	1	0.0	0
30	14.0	14.0	14	14	77	1	0.0	0
AMU	2.1	1.0	1	23	62	2658	0.0	0
APH Main Theatres	1.4	1.0	1	3	48	5	0.0	0
APH Ophth Thtr	2.0	2.0	2	2	70	1	0.0	0
APH Outlie Recovery	1.5	1.0	1	3	52	4	0.0	0
APH Outlie Theatre	2.0	2.0	2	2	48	1	0.0	0
APH Phase 2 Rec	1.5	1.0	1	3	63	8	0.0	0
APH Recovery	2.3	1.0	1	6	68	6	0.0	0
APh Phase 3 Rec	1.2	1.0	1	2	45	26	0.0	0
CDU	1.5	1.0	1	18	53	1898	0.0	0
Cath Suite	1.0	1.0	1	1	60	3	0.0	0
Childrens Wd	2.1	1.0	1	173	6	3054	0.0	109
Delivery Suite	2.0	1.5	1	4	33	4	0.0	0
Disch Physio Gym	7.0	5.5	1	16	79	6	0.0	0
Elective Orthopaedic Unit	4.7	4.0	4	6	61	3	0.0	0
Endoscopy	1.0	1.0	1	1	56	2	0.0	0
Frailty ACU	2.3	1.0	1	7	79	18	0.0	0
GAU	1.6	1.0	1	130	33	1112	0.0	0
Gynae Daycase	2.6	2.0	1	8	37	27	0.0	0
Gynae Wd	3.3	2.0	1	46	41	347	0.0	12
Home Birth	1.0	1.0	1	1	30	2	0.0	0
Home Wd	17.7	25.0	2	26	70	3	0.0	0
MSSW	2.6	2.0	1	40	60	1682	0.0	4
Maternity Wd	2.7	2.0	1	21	6	251	0.0	3
OPAU	4.8	4.0	1	48	84	1451	0.0	3
Paed Asmt Wd	1.7	1.0	1	13	5	110	0.0	0
RRU	2.9	2.0	1	20	60	39	0.0	0
SEU	1.9	1.0	1	46	53	4379	0.0	0
Seal	1.0	1.0	1	1	29	1	0.0	0
UMAC	1.0	1.0	1	45	54	2300	0.0	0
WAFFU	5.8	5.0	1	51	70	191	0.0	3
Ward 10	9.0	5.0	1	143	63	1302	0.0	26
Ward 11	13.2	6.0	1	135	63	1038	0.0	26
Ward 12a	2.0	2.0	2	2	28	1	0.0	0
Ward 23	8.8	3.0	1	109	76	1596	0.0	64
Ward 37	5.8	4.0	1	43	60	956	0.0	5
Ward 43	2.2	1.0	1	29	65	279	0.0	0
Ward 54	5.2	3.0	1	205	45	1330	0.0	16
Ward 56	4.4	3.0	1	33	47	112	0.0	0
Ward 11	24.9	24.0	10	47	59	9	0.0	0
Ward 12	12.5	12.5	5	20	76	2	0.0	0