Polypharmacy and Medication Changes are Frequent in Patients with Decompensated Cirrhosis

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BACKGROUND

Decompensated cirrhosis (DC) requires complex medical care and prescription of multiple medications. Hospital admissions for recurrence or development of new complications – ascites, hepatic encephalopathy, variceal bleeding – are common,[1] and result in increased medication prescription or alteration of the existing regimen. [1,2] These changes are made to relieve symptoms or manage decompensation events. However, frequent changes to patients' medications can contribute to medication errors and medication-related harm.[3,4]

We hypothesised that medication regimen alterations would be more common in people with more severe liver disease due to the unstable nature of their condition.

AIMS

To investigate in a cohort of patients with DC:

(i) The scope of medications taken,
(ii) The frequency of medication regimen changes made, and;
(iii) Associations with severity of liver disease.

METHODS

Participant Recruitment

Patients with clinical and/or biochemical DC were invited to participate in a randomised-controlled trial of a pharmacist-driven medication education intervention when they attended their routine review at the General Hepatology clinic at the Princess Alexandra Hospital. The study protocol has been published elsewhere.[5]

Data Collection

Patients randomised to the intervention arm were actively interviewed by a clinical pharmacist on four occasions (t0, t1, t2 and t3) over a six-month period. Active interviews included medication reconciliation and targeted education about their medications and liver disease. Medication 'changes' between time points were defined as a new or restarted medicine, dose/frequency changes, cessation of medicines by a medical practitioner (including completion of a treatment course) and cessation by the patient (non-adherence). Demographics and clinical information were obtained from medical records, patient interviews and correspondence letters. Liver disease severity was determined using the Child-Pugh Score.

Data Analysis

Results have been updated to reflect completion of patient follow-up since abstract submission. Data are presented as mean ± standard deviation and analysed using Fisher's Exact Test or Pearson's correlation. Two-sided p-values are reported.

REFERENCES

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RESULTS

Participant Demographics

Baseline interviews (t0) were completed for 57 intervention participants. Data is available for 51 patients at t1, 44 patients at t2 and 38 patients at t3. Mean time from t0 to follow-up contact at t1, t2 and t3 was 5.7±1.6, 14.7±2.0 and 29.8±5.3 weeks respectively.

At recruitment, participants were aged 58.1±10.0 years, 68.4% were male and primary liver disease aetiology was alcoholic liver disease in 38.6%, hepatitis C in 36.8%, fatty liver disease in 14.0% and 'other' in 10.5%. Eight patients had Child-Pugh A (14.0%), 37 patients (64.9%) had Child-Pugh B and 12 patients (21.1%) had Child-Pugh C cirrhosis.

Medications

Patients were prescribed an average of 9.6±3.9 medications at recruitment (range 3 to 20 medications per patient. Figure 1 depicts the scope and clustering of medications taken by patients. Vitamins (n=49 patients), diuretics (n=44) and proton-pump inhibitors (n=38) were the most common. Patients with more medical comorbidities were taking a greater number of medicines (Pearson's r=0.576, p=0.00). People with more severe disease took more liver-related medicines (p<0.01), as shown in Table 1.

		Child-Pugh Score			p-value
		A	B	C	
Number of liver medications	**0-1**	8 (14.0%)	2 (3.5%)	0 (0.0%)	< 0.01
	≥2	0 (0.0%)	35 (61.4%)	12 (21.1%)	

Table 1 . Number of patients with Child-Pugh A, B and C cirrhosis who took liver disease medications at recruitment.

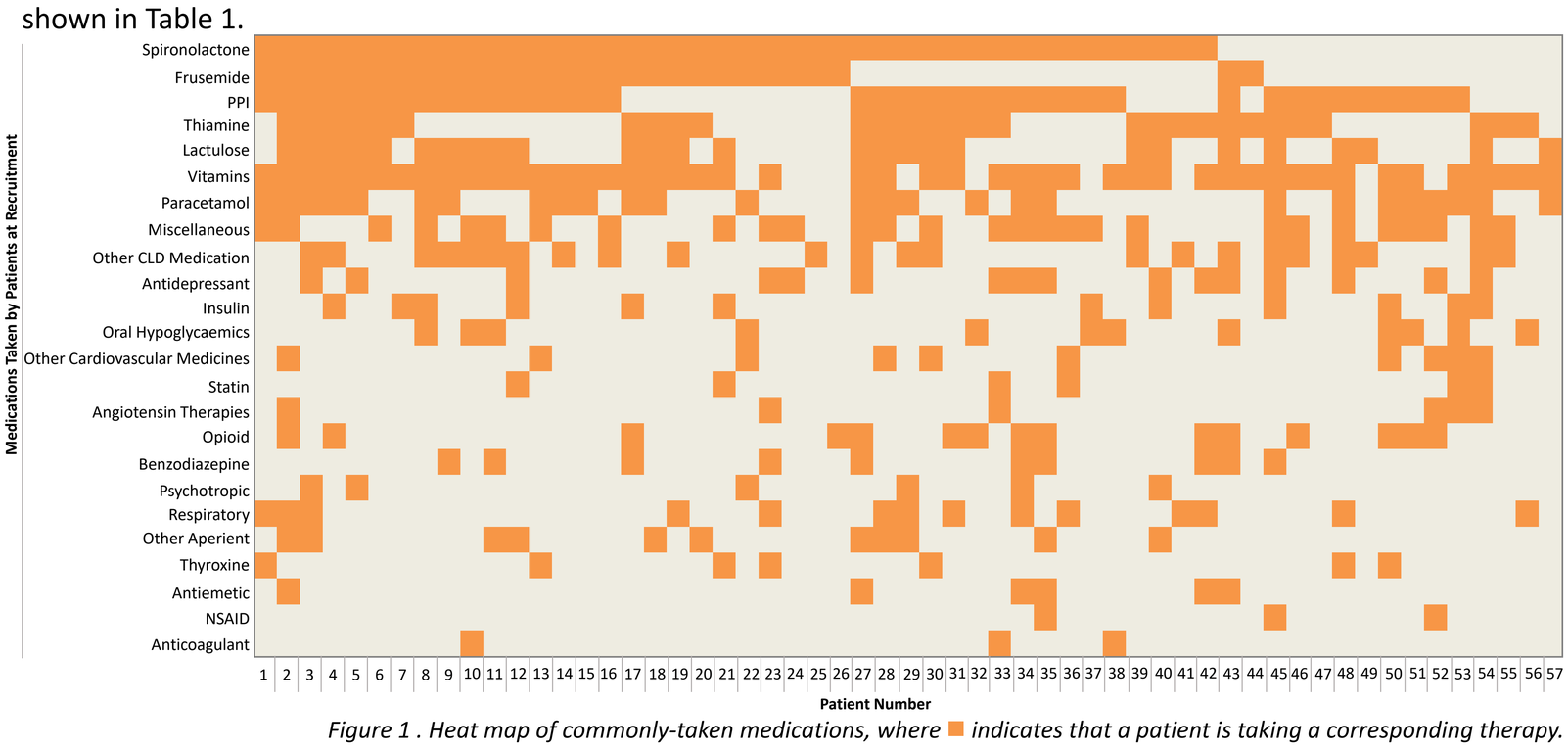

Figure 1 . Heat map of commonly-taken medications, where ■ indicates that a patient is taking a corresponding therapy.

Medication Regimen Changes

Mediation regimen changes between time points are presented in Table 2. Over 70% of patients had ≥1 change to their regimen and over 20% had ≥5 changes between each time-point.

People who were prescribed more medications had more changes to their regimen over the study period (Figure 2, Pearson's r=0.393, p=0.04). Changes to liver disease medicines were also prevalent, and associated with increasing liver disease severity (Pearson's r=0.428, p=0.03).

Medication Changes	t0 – t1	t1 – t2	t2 –t3
New (count, %)	55 (35.0%)	44 (31.7%)	54 (37.5%)
Dose Change (count, %)	54 (34.4%)	31 (22.3%)	38 (26.4%)
Ceased (count, %)	47 (29.9%)	61 (43.9%)	48 (33.3%)
Other (count, %)	1 (0.6%)	3 (2.1%)	4 (2.8%)
Medication Changes per Patient	3.08 ± 3.21	3.16 ± 2.82	3.79 ± 2.90
Patients with ≥1 change	72.5%	86.4%	94.7%
Patients with ≥5 changes	31.3%	22.7%	23.7%

Table 2. Number of changes and proportion of patients who experienced change to their medication regimen between intervention contact timepoints.

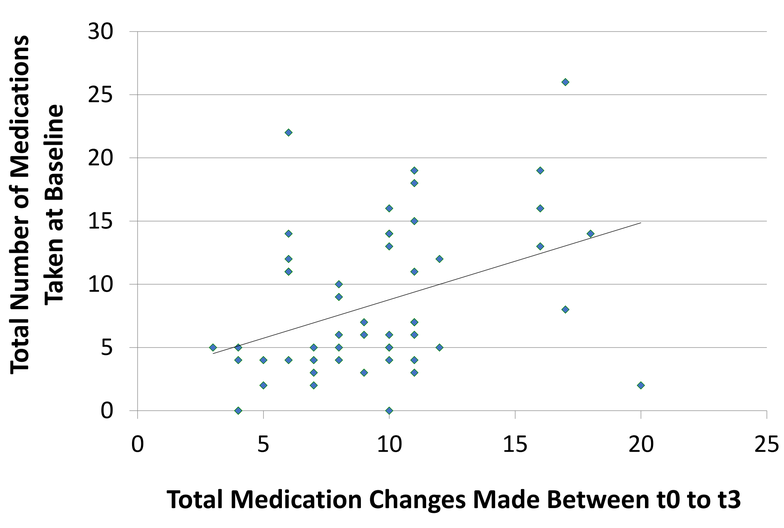

Figure 2. Correlation between number of medications taken at baseline and total medication changes during follow-up in patients with at least 1 subsequent contact.

CONCLUSION

Polypharmacy is typical in patients with DC, with many patients taking potentially-contraindicated medicines such as opioids, benzodiazepines, anticoagulants and nonsteroidal anti-inflammatory drugs. People with more severe liver disease were taking more liver-related medications and were more likely to experience changes to these therapies, supporting our hypothesis. Further exploration of patients' ability to manage frequent and intricate changes to their medication regimen may highlight barriers to medication adherence, which is essential for disease management.