Dear Editor

We read with interest the recent paper "Improving tuberculosis management in prisons: Impact of a rapid molecular point-of-care test" [1] and wanted to share our approach to improving tuberculosis (TB) management among patients with social risk factors.

In the UK, TB is concentrated in metropolitan areas [2] and in certain groups, including the homeless, alcohol and drug misusers and those with a prison history. Studies have documented that treatment for TB in these groups is associated with worse adherence, increased loss-to-follow-up (LTFU) and reduced anti-TB therapy (ATT) treatment completion. [3,4]

In recognition of the significant social care needs of some TB patients, services across the North Central London TB Network (NCLTBN) were re-configured to include a social care team (SCT). This enabled the provision of dedicated specialist support, which had previously been an additional responsibility for the TB nurses or external services and thus dependent on skills and resources available. Since its inception, the SCT has responded to the evolving complexity of TB caseloads against a background of cuts to public services, increased homelessness and the ongoing impact of COVID-19.

Although the published literature recommends integrating social care and TB services, [5,6] the most recent reports of what has been done are 10 years old. [7,8] Here, our up-to-date account of social care provision within a TB service in a low TB incidence setting, demonstrates improved treatment completion in patients who receive it.

Retrospective data analysis of the NCLTBN social care database from 2017 to 2019 was conducted, and rates of ATT treatment completion determined. Patients who were (n=170) and were not (n=734) referred to the SCT were compared using a logistic regression model, controlling for possible confounders. A data analysis cut-off of 31/07/2020 was utilised, such that all patients notified within the sample had a minimum of 6 months' treatment. Patients who did not receive treatment were excluded from analysis.

Using the Royal College of Nursing case management risk assessment, patients with SRF for non-adherence to ATT are identified and a referral made to the SCT. [9] The referral indicates why social care input is needed, and can be made at any time during treatment.

The SCT aims to support patient engagement with care and facilitate treatment adherence by providing intensive casework support for homelessness, housing, benefits, employment, immigration and financial issues such as debt. This extends to referrals to other services including drug and alcohol and mental health. The SCT case worker uses specialist knowledge to tailor individualised support and develop a specific plan for the patient in line with their needs. This can include regular phone calls, administrative support, and accompanying patients to appointments (for example with the Job Centre, Council, Citizens Advice Bureau, solicitors, or for GP registration) during their treatment for TB.

From 2017 to 2019, 170 patients were referred to the SCT (18.8% of patients in the TB service). The majority (84.7%) referred had more than 1 SRF indicated. The most common reasons for referral were 'housing and homelessness' (67.6%) and 'benefits' (49.4%) (Table 1).

The proportion of patients receiving directly observed therapy (DOT) or video observed therapy (VOT) was 47.6% (n=81) in the social care patients versus 11.9% (n=87) in the comparison cohort (p<0.001). DOT and VOT are combined due to low numbers of patients receiving VOT.

Over the study period, 5.3% of social care patients were transferred out to other services, 3.5% were LTFU, 0.6% died and, at the time of analysis, 2.4% were still on treatment. Patients referred to the SCT were significantly more likely to complete their planned ATT than those without reason to be referred (88.2% versus 77.7% respectively, p=0.003). This remained the case when stratifying by receipt of DOT/VOT and adjusting for age, gender, ethnicity and pulmonary disease, in a logistic regression model. This association was stronger in those patients who did not also receive DOT/VOT (Table 2).

This paper demonstrates important evidence for the positive impact of a dedicated SCT within a TB service. Patients who received social care support were more likely to complete treatment than those who did not (irrespective of the use of DOT/VOT). Yet, these patients had been identified through an initial risk assessment as having social needs that could negatively impact their ability to complete ATT.

We believe that our results may be explained by the good social care outcomes that arise from SCT input, such as being rehoused, receiving benefits or support for issues including debt or eviction, helping to ensure that patients' living environments and financial situations minimally affect their ability to adhere to a full course of ATT.

The lower rate of treatment completion in patients not referred to social care suggests that there are additional factors within the TB patient population that impact on treatment adherence and are not recognised by current risk assessments. New interventions that better identify these factors would enable TB services to offer additional social care and DOT/VOT support to patients who are currently missed, and who would benefit from them to complete treatment successfully. [10]

Our study is retrospective, which limits its power, and also means that we cannot investigate the relationship between the frequency of SCT input and treatment outcome. Furthermore, information on patient quality of life before and after social support has not been collected. It will be important to use these measures to further understand the impact of the SCT.

Across England the proportion of TB patients with SRF and complex needs is increasing. [2] Given the improved treatment outcomes seen here, our data provide a strong argument for the development of similar SCTs, in addition to planned or existing DOT, within other UK TB services and in similar low TB incidence health care settings. Furthermore, TB cases are expected to rise due to COVID-19's impact on wider health services. This will undoubtedly affect underserved members of society to a greater extent; whilst the negative economic impact of the pandemic will increase the proportion of patients with SRFs. Now is the time, therefore, to scale-up social care within TB services and so ensure better long-term outcomes for patients.

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Table 1: Social risk factors leading to referral to the Social Care Team, and outcomes associated with the most common reasons.

Reason for Referral n (%)			2017	2018	2019	Overall (%)
Total Patients Referred			59	42	69	170
Referred with 2 indications			32 (54.2)	26 (61.9)	42 (60.9)	100 (58.8)
Referred with 3 indications			12 (20.3)	11 (26.2)	21 (30.4)	44 (25.9)
Housing and Homelessness			36 (61.0)	26 (62.0)	53 (76.8)	115 (67.6)
	Homelessness*[1]		23 (39.0)	13 (31.0)	20 (29.0)	56 (48.7)
	Outcome	Rehoused				37 (66.1)
		Received specialist advice				9 (16.1)
		No Recourse to Public Funds Application				4 (7.1)
		Referred to other services				2 (3.6)
		Unknown Outcome				2 (3.6)
		Declined Help				2 (3.6)
	Other housing-related issues*[2]		13 (22.0)	13 (31.0)	33 (47.8)	59 (51.3)
	Outcome	Received specialist advice				39 (66.1)
		Rehoused				8 (13.6)
		Referred to other services				5 (8.5)
		Declined help				4 (6.8)
		Unknown Outcome				2 (3.4)
		No Recourse to Public Funds Application				1 (1.7)
Benefits			34 (57.6)	22 (52.4)	28 (40.6)	84 (49.4)
	Outcome	Supported to begin receiving benefits				47 (56.0)
		Received specialist advice				23 (27.4)
		Unknown Outcome				6 (7.1)
		Declined help				5 (6.0)
		Referred to other services				3 (3.6)
Immigration			9 (15.3)	7 (16.7)	16 (23.2)	32 (18.8)
Finance (e.g. debt)			4 (6.8)	8 (19.1)	19 (27.5)	31 (18.2)
Treatment Support			8 (13.6)	11 (26.2)	10 (14.5)	29 (17.1)
No Recourse to Public Funds			5 (8.5)	5 (11.9)	3 (4.4)	12 (7.1)
Drugs & Alcohol			5 (8.5)	0 (0.0)	3 (4.4)	8 (4.7)
Advocacy/safeguarding			1 (1.7)	0 (0.0)	1 (1.5)	2 (1.18)

[1]*Referrals for 'homelessness' include patients who are at risk of becoming/ are currently street homeless.
[2]*Referrals for 'other housing related issues' would include, for example, support with rent arrears, overcrowding or inappropriate accommodation.

Table 2: Odds of treatment completion in TB patients referred to social care team (SCT) compared to those not referred, stratified by receipt of Directly Observed Therapy (DOT)/Video Observed Therapy (VOT).

	Completed treatment n (%)		Unadjusted Odds Ratio (95% CI)	p-value	Adjusted Odds Ratio* (95% CI)	P
	SCT	Comparator				
Overall	150/170 (88.2)	570/734 (77.7)	2.16 (1.31, 3.55)	0.0025	2.35 (1.41, 3.91)	0.001
Received DOT/VOT	67/81 (82.7)	60/87 (69.0)	2.15 (1.03, 4.49)	0.040	2.18 (1.04, 4.57)	0.04
Did not receive DOT/VOT	83/89 (93.3)	510/647 (78.8)	3.72 (1.59, 8.69)	0.0025	4.04 (1.71, 9.52)	0.001

*Adjusted Odds Ratios from logistic regression, adjusted for age, gender, ethnicity and pulmonary disease.

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