Experience and outcomes from a Citywide adult community IV service

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BACKGROUND

Manchester Citywide IV (MCR-IV) is a community-based adult service providing IV and complex oral antimicrobial treatment in a domiciliary setting. Patients may be treated via 2 pathways: either following hospital discharge to continue treatment at their place of residence (Step down), or by initiating community-based treatment for the purposes of admission avoidance (Step up).

The service is delivered by 3 locality IV teams, each operating under a consultant-led MDT with pharmacist antimicrobial stewardship support and oversight.

A bespoke clinical database was created to capture patient demographics, infection indications, antimicrobial use and clinical outcomes for the purposes of service evaluation, clinical governance and antimicrobial stewardship.

METHOD

A prospective clinical patient database of infection referrals to MCR-IV was reviewed. 6-month cumulative data from April to September 2021 were extracted and analysed. Treatment aims and clinical outcomes were defined according to those proposed in the 2019 Updated Good Practice Recommendations for OPAT in the UK[1].

ACKNOWLEDGEMENTS & FURTHER INFORMATION

We thank all MCR-IV nursing and administrative staff for data collection and patient database management.

Further information & supplementary data available at https://drive.google.com/file/d/16kkytntoDa5PETztmW9OVTJdaLV78rrl/view?usp=sharing

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RESULTS

A total of 698 patient episodes were referred for anti-infective treatment. **375** of these were accepted for treatment (212 community step-ups; 163 hospital discharges), representing **5481 treatment days**. Conditions by primary infection diagnosis, average duration of treatment and average time prior to oral step down therapy are summarised in Table 1.

Indication category	Patient episodes (n = 375)	Mean DoT, IV +/- PO (days)		Mean time-to-IVOST (days)	
		Step up	Step down	Step up	Step down
SSTI (includes DFI without OM)	143 (38.1%)	**7.7**		**3**	
		7.3	9.1	2.8	3.4
Bone & Joint	69 (18.4%)	**30.5**		**12**	
		26	34.9	3.7	16.2
Cardiovascular (includes VGEI)	28 (7.5%)	**27.6**		**26**	
		N/A	27.6	N/A	26
Respiratory	49 (13%)	**9.6**		**3.3**	
		8.5	13.7	3.3	N/A
Urinary	33 (8.8%)	**7.4**		**5.7**	
		8.2	6.7	5	6
GI / Intra-abdominal	19 (5.1%)	**21.1**		**10**	
		9	21.8	1	11.5
CNS	6 (1.6%)	**17.5**		**N/A**	
		N/A	17.5	N/A	N/A
Miscellaneous	28 (7.5%)	**12**		**11.7**	
		8.1	12.8	N/A	11.7
Overall		**14.6**		**7.7**	
		10.5	19.9	3	12.3

Table 1. Primary infection category, average total duration of anti-infective treatment and time to IVOST (where applicable)

Intravenous administration was the initial route of antimicrobial therapy in **72.5% of cases**. Ceftriaxone, ertapenem and teicoplanin were the most frequently used parenteral antimicrobials, similar to contemporary OPAT studies. Mean antimicrobial course length across all patients was **14.6 days**

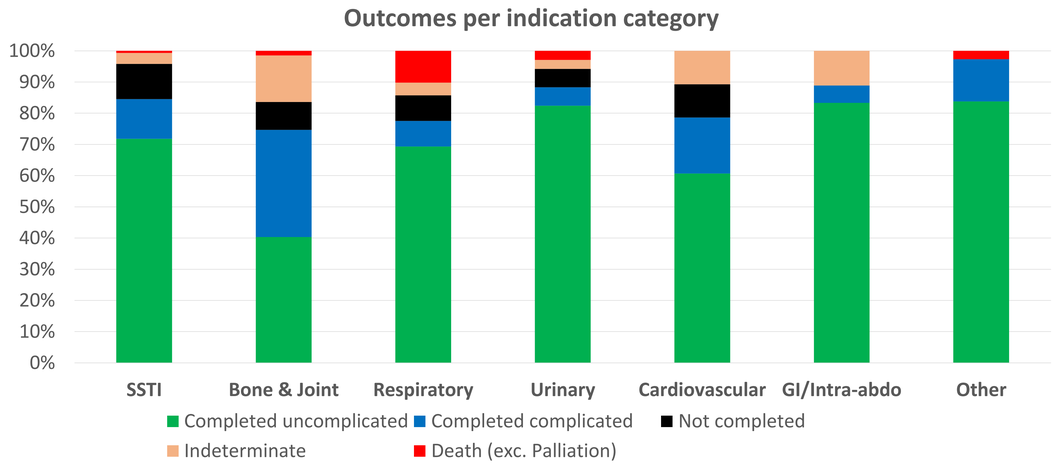

Fig.1 Clinical outcomes per primary infection category

Clinical outcome breakdown according to infection category is shown in fig.1. Successful outcome was achieved in **83.2%** of patient episodes overall. Failure to complete was mostly due to hospital admission for unrelated reasons or complex infections requiring surgical management. Non-palliative mortality was 2.4%, largely attributed to severely unwell community patients refusing hospitalisation; 28 day all-cause mortality was **2.9%**. 70 adverse events were recorded (**12.8 / 1000 treatment days**), higher than some published studies[2,3] but possibly explained by lack of standardised reporting methodology. Vascular device-related adverse events occurred at **1.1 per 1000 treatment days**. 2 episodes of HCAI (*C. difficile* infection) occurred.

RESULTS cont.

	No. adverse events
Line complication	**6**
Drug allergy	**1**
Drug intolerance	**3**
Diarrhoea (non-infective)	**12**
Nausea or vomiting	**12**
CNS effects	**0**
Rash, skin reaction	**1**
FBC derangement	**11**
Liver dysfunction	**3**
AKI	**15**
Electrolyte derangement	**10**
HCAI	**2 (CDI)**
Other	**2**
TOTAL	***78***

Table 2. Adverse events: line -related, drug-related and healthcare-associated infection (HCAI)

CONCLUSIONS

This is the first evaluation of our MCR-IV service using a bespoke data collection tool, enabling comprehensive analysis of treatments, clinical outcomes and AMS indicators. This is essential to monitor service performance, clinical effectiveness and inform clinical governance.

Key findings:

- SSTI, BJI and respiratory infections represented almost 70% of treatment episodes
- Successful outcomes achieved in >80% of cases
- Significant % of unsuccessful outcomes & re-admissions were for surgical intervention – importance of patient selection, robust MDT management with parent teams
- Drug AEs more common than contemporary studies but no standardised reporting methodology; Large % of AEs observed in COpAT and/or highly comorbid patients
- > 25% treatment episodes received initial oral antimicrobials – reflects consensus IV therapy not always necessary for some serious infections
- AMS indicators – average durations of treatment and time-to-IVOST were reassuring; We recommend incorporating key AMS metrics into all OPAT registries
- Prevalence of very unwell / community sepsis patients refusing admission may increase post-COVID – OPAT and IV services should consider how best to meet this need