

Evaluation of Antimicrobial Pharmacist Integration into, and Prescribing Project within Western Health and Social Care Trust (WHSCT) Rapid Response Team

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BACKGROUND

The Western Health and Social Care Trust (WHSCT) delivers a nurse-led Outpatient Parenteral Antimicrobial therapy (OPAT) service. Patients remain under the care of the referring consultant physician with review occurring in response to clinical need. In early 2015 a pilot project was established where an independent pharmacist prescriber was integrated into the OPAT multidisciplinary team.

OBJECTIVE

The aim of this pilot was to:

1. Ensure antimicrobial review for new service referrals.
2. Provide ongoing review of recently discharged patients receiving prolonged intravenous antimicrobial courses in the community setting.
3. Establish the potential cost savings resulting from appropriate antimicrobial prescribing and reduced secondary healthcare resource usage.

METHODS

The OPAT pharmacist's service consisted of the prescriber performing a holistic review of the patient to include response to therapy and ongoing appropriateness of antimicrobial treatment. For patients receiving prolonged therapy the pharmacist reviewed the patient's inflammatory markers, electrolyte profile and liver function tests every week. The pharmacist maintained a database of patients and their clinical interventions. These were Eadon graded, a scale from one to six where a score of ≥ 4 represents an improvement in quality of patient care. The patients' Healthcare Resource Group (HRG) was identified with their expected length of hospital stay compared to actual length of hospital stay and duration of treatment in community. Nursing time saved due to reduced frequency of administration or IV to oral switching was calculated. Drug cost savings were calculated with referral to pharmacy contract costs.

RESULTS

Data was collected for 118 patients who were reviewed by the antimicrobial pharmacist over a nine-month period (July 2015 – March 2016); nine did not require intervention. Twenty-nine patients had infection exacerbation of bronchiectasis, 19 had osteomyelitis and 16 had bacteraemia (Table 1). Net drug costs increased by £4352 (Table 2). However nursing time saved equated to £7867 (Table 3). Casemix analysis demonstrated that 1238 hospital bed days were saved with potential savings ranging £465,087 to £490,107.

CLINICAL INTERVENTIONS AND GRADING

- A total of 191 clinical interventions were made by the antimicrobial pharmacist (an average of 1.8 interventions per patient). (Table 4)
- 92.7% being self-graded as Eadon Grade 4 or above (Grade 4 represents a significant intervention with resultant improvements in the standard of patient care). (Table 5)
- Thirty-Seven interventions were graded as a 5 with none being graded at level 6.
- The interventions graded by the Antimicrobial Pharmacist were independently graded by a clinical pharmacist not participating in the project to check for consistency of agreement.

Figure 1: The model for antimicrobial pharmacist case management of patients receiving IV antimicrobials in the WHSCT

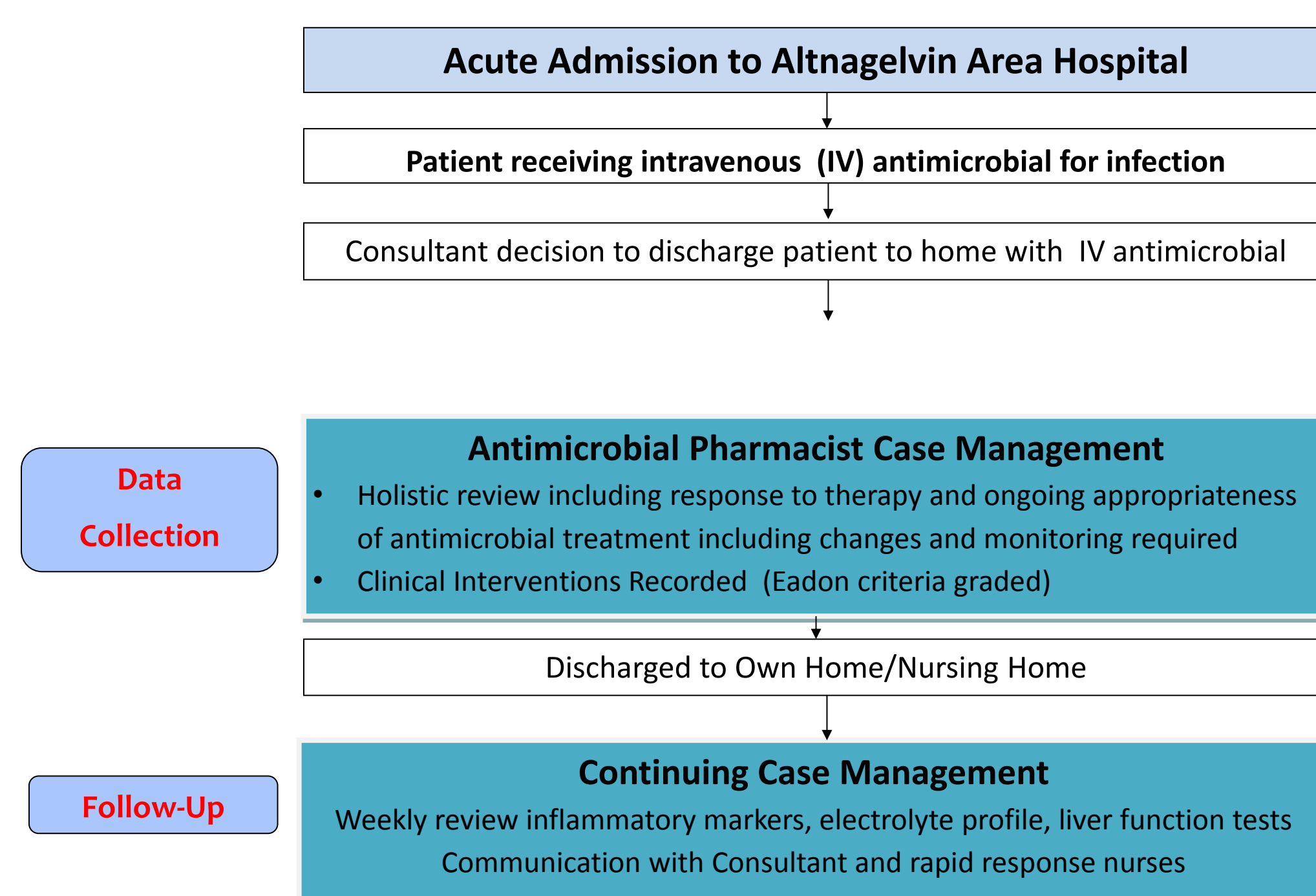


Table 1: HRG code, HRG definition, number of patients reviewed and number of Bed-days saved

HRG Code	HRG Definition	Average Minimum Bed day Cost (£)	Average Maximum Bed day Cost (£)	Number of Patients	Bed Days Saved
AA25A-B	Cerebral Degenerations or Miscellaneous Disorders of Nervous System with or without CC	389	394	1	.*
DZ12A	Bronchiectasis with or without CC	372	383	29	254
DZ21H-K	Chronic Obstructive Pulmonary Disease or Bronchitis without NIV without Intubation with Major CC, with CC and without CC	346	377	5	45
DZ22A-C	Unspecified Acute Lower Respiratory Infection with Major CC, with CC and without CC	359	367	8	67
GC15B-D	Non-Malignant Liver Disorders with Severe CCs, with Major CC and Without CC	366	391	1	8
HD25	Infections of Bones or Joints with Major CC	371	390	19	462
JD03-05	Intermediate Skin disorders category 2 with Major CC, with CC and without CC	370	403	14	98**
KB03	Diabetes with Lower Limb Complications with Major CC	348	406	3	40
LA04E	Kidney or Urinary Tract Infections with length of stay 2 days or more with Intermediate CC	438	438	15	115
LA04G	Kidney or Urinary Tract Infections with length of stay less 1 day or less	365	365	2	14
LB20A	Infection and Mechanical Problems Related to Genito-Urinary Prostheses, Implants and Grafts with CC	392	454	2	4
PA17A	Intermediate Infections with CC	569	569	1	2
WA03	Septicaemia with Major CC	392	423	16	77



Table 2: Summary of Medication Costings

Additional Medication	£8406
Discontinued Medication	-£4054
Net overall additional Medication Cost	£4352

Table 3: Summary of Nursing time saved and the cost of Nursing time

Total nursing time saved	447 hours
Total cost nursing time saved based on band 5 nurse pay	£7867

Table 4: Summary of Pharmacist Reviews July 2015- March 2016

	Pharmacist Interventions
Monitoring	71
Dose alterations	23
Drug alterations	24
Therapeutic Drug Monitoring	16
IV to oral	15
Withholding / stop medication	10
Administration / timing/ rate	15
Duration	5
Restart medications	4
Kardex	3
Review with other teams	2
Catheter Change	2
Microbiology Sample	1
Total number of Interventions	191

Table 5: Eadon Criteria, Grade and Number of Interventions

Eadon Criteria	Grade	Number of Interventions
Intervention which is detrimental to the patient's well-being	1	-
Intervention is of no significance to patient care	2	-
Intervention is significant but does not lead to an improvement in patient care	3	14
Intervention is significant and results in an improvement in the standard of care	4	140
Intervention is very significant and prevents major organ failure or adverse reaction of similar importance	5	37
Intervention is potentially life-saving	6	-

SUMMARY

The project demonstrated that a pharmacist integrated into the OPAT team at the primary/secondary care interface can enhance the quality of seamless patient care with associated savings in secondary care healthcare resource usage. Guideline-informed antimicrobials were prescribed with continual review of the patients' response to treatment allowing some patients an earlier IV to oral switch or reduced dosage frequency resulting in improved patient acceptability and the ability to potentially increase capacity of the service.

ADDITIONAL ACTIVITIES CARRIED OUT BY THE PHARMACIST

- Education sessions with the nurses delivering the antimicrobials.
- Ready reckoner for nurses including the frequency, duration over which the drug needs to be administered and monitoring required.

NURSE TESTIMONIAL

Input has been invaluable both for Rapid Response Team (RRT) and the discharging wards. Referrals for intravenous antibiotics which, on your advice and guidance, have been switched to oral antibiotics and therefore freed space on our team for other referrals. Your ability to write extended scripts/kardexes has proved time effective as it saves RRT pursuing medics and secretaries at AAH which was extremely time consuming. Your guidance and supervision on antimicrobial medications prior to patients being discharged ensures the patient is on the correct treatment for the correct length of time. Overall I feel our practice is safer for having your input."

REFERENCES

1. Compton J. Transforming Your Care. A Review of Health and Social Care in Northern Ireland. DHSSPSNI, 2011. <http://www.dhsspsni.gov.uk/transforming-your-care-review-of-hsc-ni-final-report.pdf>
2. Eadon H. Assessing the quality of ward pharmacists' interventions. Int J Pharm Prac 1992; 1: 145-47.