

An Audit of the Use of Antibiotics in End of Life Care

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Background

Antibiotic prescribing in end of life (EOL) care is common, with frequent use in the days, and even hours, before death¹.

Perceived benefits of antimicrobial therapy in EOL (such as symptom relief and prolonging life) must be balanced against the risk of side effects and potential harm to the patient.

Antibiotics are often prescribed in the absence of a documented infectious diagnosis towards the EOL. A US study found that 27% of patients received antibiotics in the last seven days of life in the hospice setting, just 15% of whom had a documented infectious diagnosis².

A lack of national or international guidelines, prompting the Scottish Antimicrobial Prescribing Group (SAPG) to publish their Good Practice Recommendations, which can be summarised as follows¹:

- 1. Make shared decisions about future care** – involve the patient and family in decisions about antibiotic prescribing towards EOL
- 2. Agree clear goals and limits of therapy** – consider the purpose of antibiotics, do not treat an infection simply because it is treatable, and do not treat all microbiology results in the absence of symptoms, consider the risks of antibiotics and if prescribing, and consider alternative approaches to symptom control where suitable
- 3. Review all antibiotic prescribing decisions regularly** – consider stopping antibiotics in cases where it emerges that a patient is approaching EOL, or where an antibiotic is not helping or is causing side effects

Aims

To describe the use of antibiotics in patients approaching EOL in an Irish Model 2 hospital, comparing our practice against the Good Practice Recommendations as outlined by the Scottish Antimicrobial Prescribing Group¹.

Methods

A retrospective chart review was carried out on patients who had died in hospital during the year 2022 under the care of the general medical services. Data regarding antimicrobial use, indication for use, microbiologist advice, and EOL planning was gathered from the Kardex and medical notes. Permission was obtained from the local Clinical Audit Committee.

Results: Table 1	Total number (28)
Gender	<ul style="list-style-type: none">Female - 16 (57%)Male - 12 (43%)
Age	<ul style="list-style-type: none">Mean 87 years of ageRange 71 - 100 years
Diagnosis on admission	<ul style="list-style-type: none">Confusion - 8 (28%)General decline - 6 (21%)Fall - 4 (14%)Musculoskeletal pain - 3 (11%)Malaise / weakness - 2 (7%)Diarrhoea - 2 (7%)Respiratory tract infection - 2 (7%)Post-operative rehabilitation - 1 (4%)
Use of antibiotics in last four weeks of life (excluding prior to admission)	<ul style="list-style-type: none">Yes - 23 (82%), of whom 21 received intravenous antimicrobial therapyNo - 5 (18%)
How soon before patient death was the last dose of antimicrobial therapy administered?	<ul style="list-style-type: none">0 days - 31 day - 82 days - 43-5 days - 4>5 days - 4

Results

28 patients were included (57% female), with an average age of 87 years. The median length of stay was 24 days. The most common presenting complaint was confusion (28%).

23 patients (82%) received antibiotics in their last four weeks of life (excluding pre-hospitalisation). Of these, 15 received two or more courses during their final weeks of life. Antimicrobial therapy was escalated in 12 cases (52%). All but two patients received intravenous antibiotics. 11/23 (48%) received antibiotics to within one day of their death.

Specialist microbiology review of antibiotics occurred in 16 cases, and in ten of these cases (63%) the antibiotic was deemed inappropriate (either wrong choice, inappropriate duration, or inappropriate indication for the antibiotic).

Clear ceilings of care were established in 21/28 cases, but plans regarding future antibiotic prescribing were documented in only 12 cases.

Results: Table 2	
Number of courses of antibiotics in last 4 weeks of life	<ul style="list-style-type: none">0 → 5 (18%)1 → 8 (28%)2 → 12 (43%)3 → 2 (7%)4 → 1 (4%)
Documented indication for antibiotics	<ul style="list-style-type: none">Pneumonia - 8Urinary tract infection - 4High C-reactive protein - 2Cellulitis - 2Covid - 1Sepsis - 1Spike in temperature - 1None - 4
Among those treated with antibiotics, was there documented evidence of infection (clinical, radiological, or microbiological)?	<ul style="list-style-type: none">Yes - 16 (70%)No - 7 (30%)
Was there documented discussion regarding current or future antibiotic prescribing?	<ul style="list-style-type: none">Yes - 12 (43%)No - 16 (57%)
Was input into patient care provided from a microbiology specialist?	<ul style="list-style-type: none">Yes - 16 (including one of the five patients who did not receive antibiotics)No - 12 (28%) (including four of the five patients who did not receive antibiotics)
What was the specialist microbiologist impression / advice regarding antimicrobial prescribing (N = 16)	<ul style="list-style-type: none">Appropriate - 6No indication - 2Wrong choice - 4Inappropriate duration - 2Not recorded - 2
Was there specialist palliative care input during last four weeks of life?	<ul style="list-style-type: none">Yes - 20 (72%)No - 8 (28%)
Did palliative care team provide advice regarding antibiotic therapy (N = 20), and if so, what was the advice?	<ul style="list-style-type: none">No - 16Yes; commence antibiotics - 2Yes; establish ceiling of care regarding antibiotic prescribing - 2

Discussion

Rates of antibiotic use were high among patients approaching EOL care, often without clear evidence of infection, and were often deemed inappropriate following specialist review. Furthermore, though documentation of ceilings of care (regarding resuscitation status) and general goals of care was often clear, only a minority of cases had documentation regarding current and future antibiotic prescribing plans.

A systematic review of antibiotic use in a palliative care setting (including hospice care) found that prevalence of antimicrobial use in palliative care patients ranged from 4% - 97.5% in a hospital setting, compared to 8.6% - 37% in a hospice setting³. Improvement in patient symptoms or condition varied from 21.4% - 56.7% of cases. The reported symptom response for specific infection sites was highest with urinary tract infections³, but evidence was weak and lacked a control group.

Irish data regarding antibiotic use in EOL care is lacking. One audit in an Irish hospital found that, among those receiving antibiotics when approaching EOL, 42% were continued on antibiotics despite EOL being recognised, with 28% receiving antibiotics until they died⁴. This compared with 48% in our audit receiving antibiotics to within one day of death. Though high, this compares favourably with certain international studies. In an Australian study, 63% of patients received antibiotics at end of life care⁴.

Where palliative care input was sought, they rarely gave guidance on antimicrobial use. This might suggest a wish to avoid recommending on an area that typically falls under the remit of other specialties (such as clinical microbiology and infectious diseases). We believe that this highlights the need for closer communication between infection and palliative care specialists to address the challenges of antimicrobial misuse in EOL care.

Limitations of this study include the small number, and that it was conducted in a single centre Model 2 hospital. Furthermore, not all patients were anticipated to reach EOL care and many were undergoing active management until shortly before their death.

Learning points

1. Antibiotic prescribing in EOL care should carefully weigh up the goals of treatment vs the potential harmful side effects, and the wider risk of antimicrobial resistance
2. Clear goals of therapy should be established with the patient and their family/carers, and should be regularly reviewed
3. There is a lack of data regarding antimicrobial use in patients approaching end of life in Ireland, which needs to be addressed
4. Closer communication is needed between palliative care and infectious diseases / microbiology specialists regarding this area of antimicrobial prescribing

References

1. Scottish Antimicrobial Prescribing Group. Good Practice Recommendations for use of Antibiotics Towards the End of Life. Oct 2020.
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4. Lannon C, Reilly L, Kennedy G, Fleming C, Walkdron D. Antimicrobial Stewardship in End of Life Care. BMJ SPC Blog. June 2023.