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It’s time to put a hard stop to antibiotic overprescribing in hospitals

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Improvements in primary care antibiotic use have not been matched in secondary care. [1,2] Although hospitals account for a minority of human antibiotic use, they are where most broad-spectrum antibiotics are prescribed. [1]

A government report published 20 years ago in the UK highlighted the need to address antibiotic overprescribing. [3] Ten years ago, the Government placed statutory responsibility on National Health Service (NHS) hospitals to ensure appropriate antimicrobial use. [4] Three years ago, financial incentives to reduce hospital antibiotic overuse were introduced. [5] In 2018, hospital dispensing of antibiotics, corrected for clinical activity had increased by 7% since 2013. [1]

Reducing hospital antibiotic use is challenging because there is usually diagnostic uncertainty when antibiotics are started. Typically, patients are acutely unwell and when clinically significant bacterial infection may be present clinicians prioritise the anticipated benefits of starting empiric antibiotic therapy over the risks of antibiotic exposure.

Controlling overuse in hospitals depends on reviewing and revising antibiotic prescriptions after approximately 48-72 hours. Strategies such as “Start Smart then Focus” in the UK and “Antibiotic Timeouts” in the US depend on antibiotic prescription review. However, knowledge, system, and behavioural barriers make it very hard for doctors to stop antibiotics, especially if started by someone else. [6-8] At most NHS hospitals in England less than 10% of antibiotic prescriptions are discontinued at 48-72 hour review. [9]

Solutions include time-limiting initial antibiotic prescriptions. The term “soft stop” is used when the chart or e-prescribing system prompts prescribers to review and revise antibiotics. [10] However, clinicians complain of “prompt fatigue” and there is no evidence that soft stops are effective at limiting antibiotic overuse. In contrast, “hard stops” instigate antibiotic review and reduce inappropriate antibiotic use without causing harm, by discontinuing an empiric initial antibiotic prescription automatically after a pre-specified duration. [11,12]

With hard stops clinicians must review the need for antibiotics within this time and decide what agent, route, and duration of treatment is indicated, or stop treatment.

As recommended treatment durations for common indications—such as community acquired pneumonia and pyelonephritis—get shorter, hard stops need to be set at 72 or fewer hours if this approach is to impact on antibiotic overuse.

In September 2018, the UK's chief medical officer Dame Sally Davies said, *"I want the hospital to flag to the relevant clinician: "This patient has been on an antibiotic for 24 or 48 hours and we are stopping it. You restart once you have been to the lab or rung the lab and got the right result, because the patient either does not need it or needs a different one.""* [13]

There may be concerns that it is safer to leave patients on antibiotics than have treatment discontinued without clinical review, especially during weekends and public holidays when there is low staffing. However, it is difficult to justify this as (until an indication for antibiotic treatment is finalised, based on investigations and clinical monitoring) a patient on empiric antibiotic therapy is receiving potentially unnecessary treatment with risk to themselves and others from transmission of drug-resistant organisms.

Scheduled review of clinically unstable patients with diagnoses such as cardiac failure and diabetic ketoacidosis is standard of care. No clinician deems it acceptable to leave a patient on a nitrate or insulin infusion over the weekend without ensuring appropriate clinical review. The harms of antibiotics are less immediate and obvious than those of an insulin infusion but they are not less real. Furthermore, a patient who has made a good clinical response by 72 hours is at minimal risk from treatment being stopped, given the growing evidence for short-course therapy in acute bacterial infections. [14] A patient who has not responded warrants clinical review irrespective of whether they are on antibiotics.

The NHS seeks to "*provide 100% of the population with access to the same level of consultant assessment and review, diagnostic tests, and consultant-led interventions every day of the week by 2020.*" [15] This also needs to apply to patients on empiric antibiotic therapy.

Time-limiting initial antibiotic therapy for hospitalised patients is a powerful incentive for active decision making. However, this approach requires a new mindset in which we stop regarding antibiotics as cheap and safe "cover."

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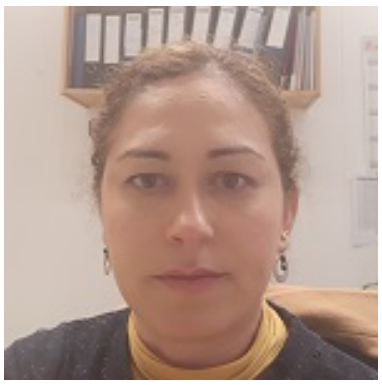

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