

Proceeding Paper

# Supporting Timely IV to Oral Antibiotic Switch through Development of Accessible Clinical Decision Tools †

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**Abstract:** The timely and appropriate IV to Oral Switch (IVOS) of antibiotics is beneficial to patient care and AMR strategies. However, a lack of prescriber confidence in deciding to switch often prolongs IV antibiotic use. The creation of a bite-size educational video and a smartphone application clinical decision tool, has brought the learning process closer to everyday practice, in an easy to access and understandable manner. Both have been very well received and shared with many acute NHS Trusts. The implementation was correlated with an improvement in audit findings. The multidisciplinary and collaborative approach in developing these tools has been the key to success.

**Keywords:** antibiotic; antimicrobial; intravenous; clinical decision tool; IVOS; oral switch

## 1. Project Overview

The IV to Oral Switch (IVOS) of antibiotics is often unnecessarily delayed due to lack of confidence and knowledge around when it is appropriate to initiate it. This impacts antimicrobial resistance, patient outcomes, bed flow in hospitals, and the utilisation of nursing skill in acute NHS Trusts. Junior doctors are usually tasked with IVOS but are hesitant to push or challenge the hierarchy in clinical teams towards this, without robust support. This is also fuelled by senior decision makers being critical of whether sufficient rationale and logic have been applied. This lends to a ‘just-in-case’ approach of continuing IV antibiotics for longer than needed.

The parameters to apply for safe and effective IVOS are covered in antibiotic policy and guidelines within United Lincolnshire Hospitals Trust, but these are not easy to access or recall in daily practice, causing this aspect of stewardship to be difficult to implement [1].

A redesign of IVOS snapshot audits undertaken in the Trust revealed that use of IV antibiotics was appropriate in 84% of the audited cases. More interestingly, the auditors (a mix of doctors, nurses, and pharmacists) provided positive feedback on the educational and interventional value of the new audit tool, even for non-prescribers, due to the logical order in which questions were presented and the specifying of parameters on the form itself.

The feedback from this audit highlighted the potential to raise awareness, knowledge, and application of IVOS, in a way that is more accessible and easy to absorb in clinical practice.

## 2. Outcomes and Impact

The PGMEC’s success with publishing antibiotic teaching sessions to their ULHT YouTube channel during the pandemic, prompted creation of a video on IVOS. This video presents the questions, explanation, and logical order of the audit form, which allows for direct application to clinical cases by staff. The video was sent out in various communications



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across the Trust to all staff groups, with additional direct PGMEC emails to all prescribers and pharmacists. For further accessibility, a QR code linked to the video was added to mandatory antibiotic posters, displayed on all clinical areas throughout the Trust.

To further enhance the accessibility and application of IVOS considerations at the patient bedside, a clinical decision tool was developed for use via the smartphone app MicroGuide ®(Induction Healthcare Group PLC, London, UK). Despite some limitations on how the information is presented, tests confirmed the validity of output.

The positive qualitative feedback received from a wide variety of staff members and their perspectives included: highly educational, easy to use, clear, and concise. The ability to support nurses' competency levels, improve documentation, and ease workforce pressure via confident clinical decisions has potential to improve bed flow through hospitals. Both the tool and video have been shared regionally and nationally, with over 30 acute NHS Trusts.

The audit data on the appropriateness of IV antibiotic prescriptions over 72 hours showed an improvement to 100% (Table S1). This was following an intense awareness campaign with the IVOS video and launch of the MicroGuide ®IVOS clinical decision tool, alongside direct presentations to multidisciplinary staff of all levels.

### 3. Future Development

The tool will be further developed based on feedback. Plans are underway to explore the incorporation of our tool into patient's medical notes once digitalisation occurs at ULHT. Regular awareness campaigns will be needed to tie in with junior doctor's annual changeovers and to capture new members of staff, including agency staff. This should cover multidisciplinary support, with junior and senior medical and nursing staff, bed managers, and non-clinical colleagues keen to utilise the tools for confident, prompt, and timely decisions. The collaborative approach to the promotion and utilisation of these tools has and will be the key to success.

Using audit or surveillance to capture the effect on the reduction in the consumption of broad-spectrum antimicrobials, reduction in IV line infections, reduction in the length of antibiotic course, and reduction in the length of stay in hospital would be a challenge, but would also be valuable if accomplished. Such insight would further drive support to embed IVOS into prescribing practice.

**Supplementary Materials:** The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/msf2022015006/s1>.

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## Reference

1. Antimicrobial Intravenous-to-oral Switch: Criteria for Early Switch. Available online: <https://www.gov.uk/government/publications/antimicrobial-intravenous-to-oral-switch-criteria-for-early-switch> (accessed on 16 December 2022).

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