

Promoting timely IV to Oral antibiotic switching at a Secondary Care Hospital Site. A Quality Improvement Project.



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Introduction

NHS Wales has committed to achieving net-zero carbon emissions by 2030¹, placing sustainability as a core priority. Medication is a significant contributor to the NHS carbon footprint and within antimicrobial prescribing, the use of intravenous (IV) antibiotics has a substantially higher carbon and resource footprint compared to oral (PO) antibiotics².

IV to PO switch (IVOS) is a proven method of antimicrobial stewardship with additional benefits of improved patient satisfaction, reduced risk of line-related complications, reduced risk of healthcare associated infections (HCAIs) such as *Clostridioides difficile* (C. diff) in addition to major time and resource savings for staff. Optimising clinically appropriate, timely IVOS will assist with reducing carbon emissions, plastic waste and energy consumption, while minimising avoidable additional hospital days.

Acutely unwell patients admitted to secondary care are often initiated on IV antibiotics. However, continuation beyond the point where a switch to PO therapy would be both clinically safe and effective is common. Embedding sustainability into daily practice through IVOS can help develop a greener, more sustainable NHS both locally and nationally.

Aim: To reduce total usage of intravenous antibiotics in target ward (acute medical unit) by 5% between May 2025 and December 2026.

Methods

- 1 Stakeholder analysis and meeting for key individuals for initial project discussions.
- 2 Baseline data collection to evaluate need for quality improvement project. Quantitative data collected utilising; HEPMA, Welsh Clinical Portal and observation charts. Patients assessed against UK Health Security Agency IVOS decision aid².
- 3 Scoping exercises carried out to identify target areas for PDSA cycle implementation. Achieving behaviour change plan designed.
- 4 Data collection for each PDSA cycle carried out three times weekly. Electronic dashboard with data feeding from HEPMA used to review percentage of IV usage.
- 5 Stakeholders engaged throughout with monthly meetings to discuss and assess progress.
- 6 Ethical approval was not required.

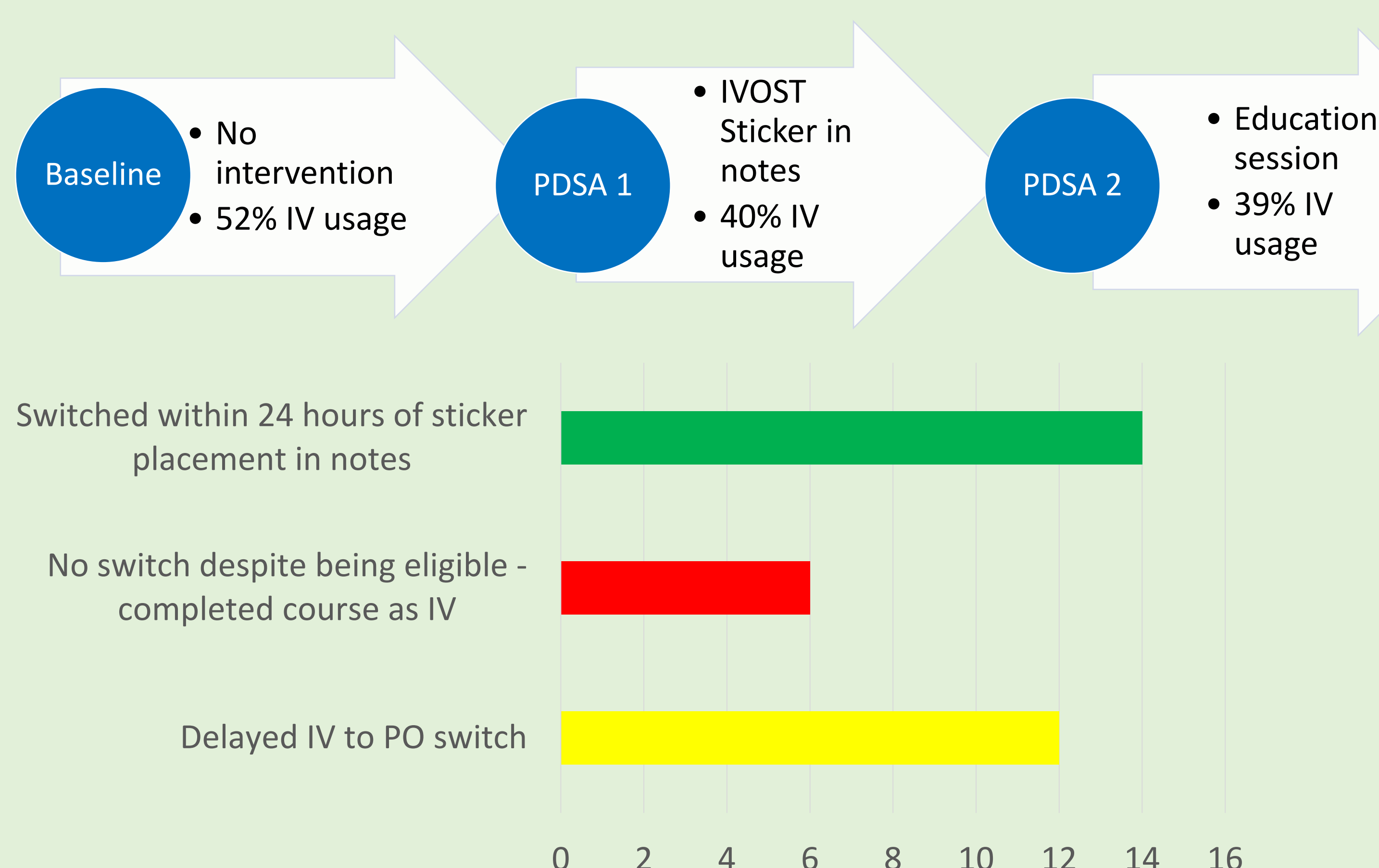


Figure 1: A bar graph to show clinical outcome of antibiotic prescriptions following PDSA 1.

Results

Run chart to show percentage IV antibiotic usage on AMU Assessment with median line

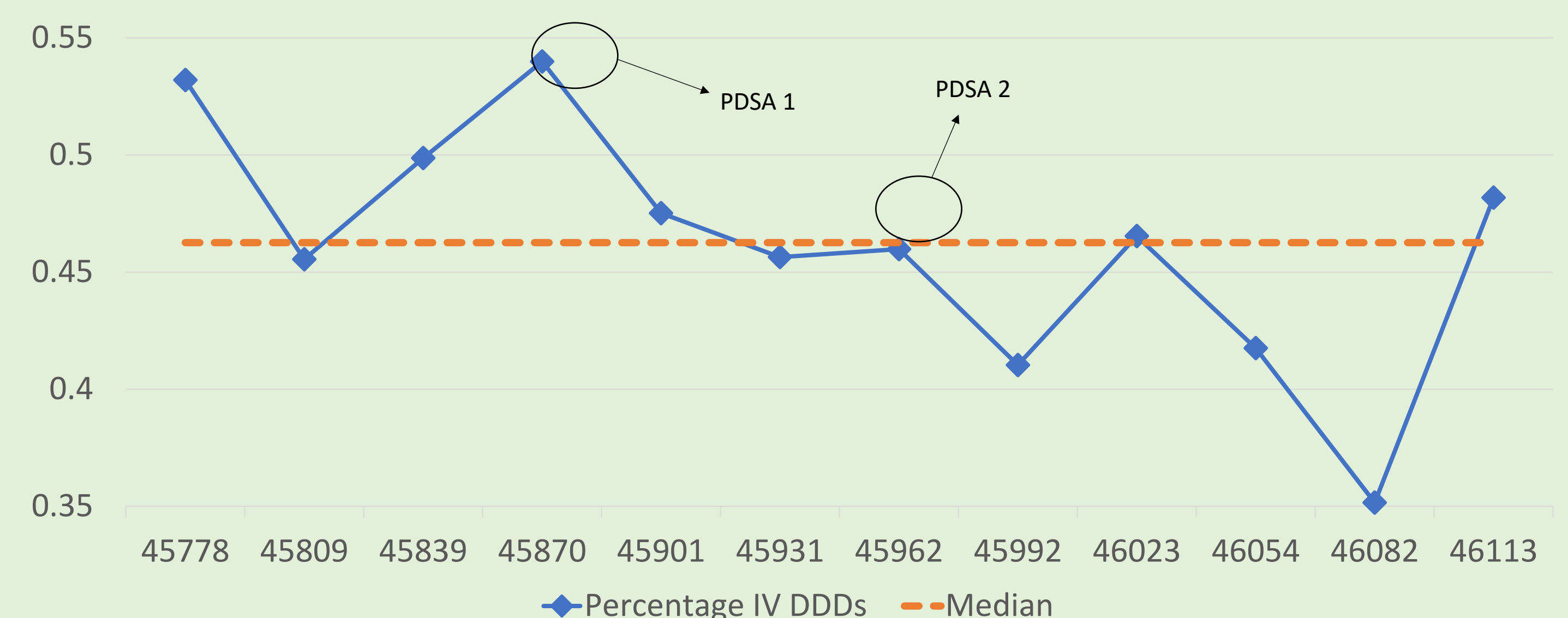


Figure 2: A run chart to show monthly percentage of IV antibiotics usage (IV DDDs) on AMU Assessment from May 2025 to April 2026. The orange dashed line represents the median.

Run chart to show percentage of IV antibiotic use on AMU SS with median line

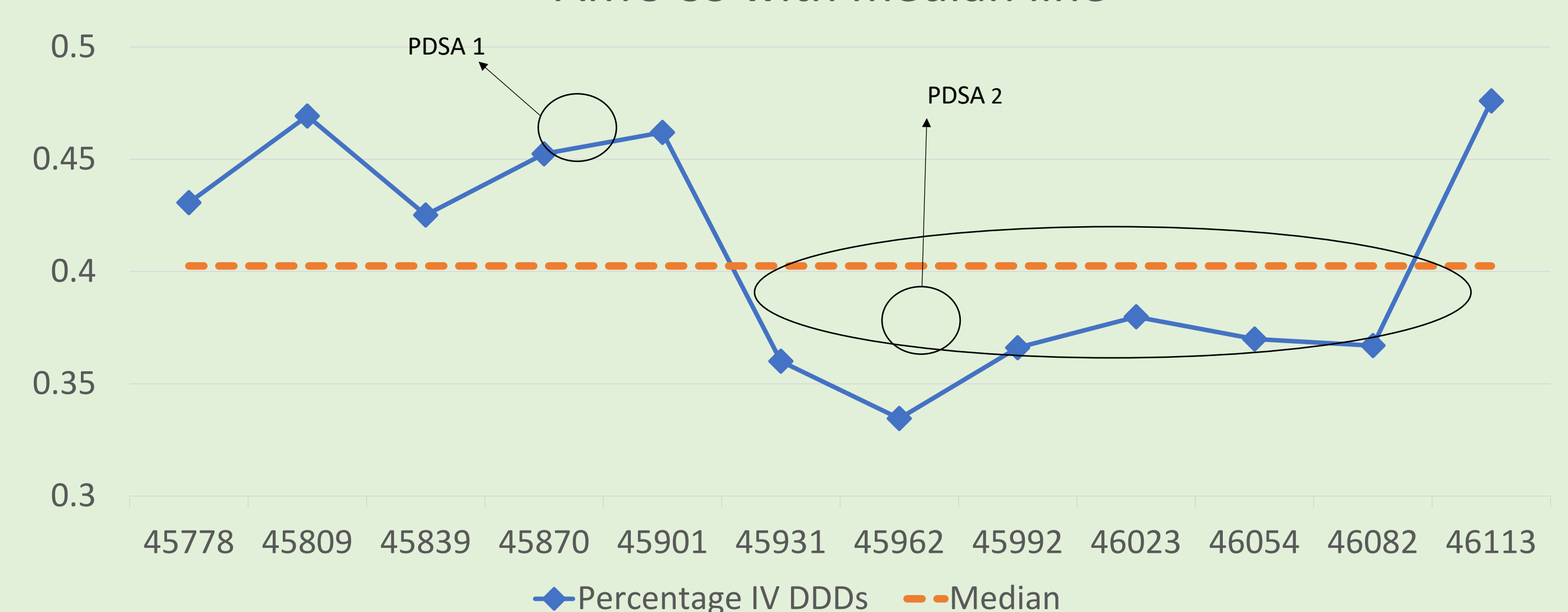


Figure 3: A run chart to show monthly percentage of IV antibiotics usage (IV DDDs) on AMU Short Stay (SS) from May 2025 to April 2026. The orange dashed line represents the median. A shift of six consecutive data points can be seen from October 2025 to March 2026.

Discussion

- ✓ Scoping tools and stakeholder involvement was vital throughout this project for identification of barriers and PDSA cycles.
- ✓ Behaviour change plan was challenging to implement given such a large, high acuity unit with ongoing pressures.
- ✓ IVOS interventions can reduce IV antibiotic usage
- ✓ Aim was achieved with an 8% reduction across both AMU Assessment and AMU SS.
- ✓ Limitations:
 - ✓ Rotations and shift patterns of medical and nursing team.
 - ✓ Small numbers during PDSA implementation given resource constraints.
 - ✓ Multiple quality improvement projects running adjacently.

Conclusion

- ✓ Aim was achieved following two PDSA cycles. Shift seen in AMU SS data but no STAR rules achieved with AMU Assessment run chart.
- ✓ Awareness of IVOS has increased although work still required on embedding IVOS into daily practice.
- ✓ Handing over project, challenging given staffing constraints.

Next Steps

- ✓ Feedback to key stakeholders and AMU MDT on results of project.
- ✓ Pivot learning from AMU to second clinical ward area and restart quality improvement process to test QI methodology with the intention of spread and scale to achieve net-zero.

References

1. Welsh Government. NHS Wales decarbonisation strategic delivery plan 2025 to 2030. 2025. Available from: [NHS Wales decarbonisation strategic delivery plan 2025 to 2030 | GOV.WALES](#)
2. Eii M N, Walpole S, Aldridge C. Sustainable practice: Prescribing oral over intravenous medications. *BMJ*. 2023; 383:e075297. doi: 10.1136/bmj-2023-075297