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Real-World Evidence Study on the Resource Impact of Subcutaneous vs. Intravenous Atezolizumab in an NHS Cancer Center

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BACKGROUND

- Lung cancer is the third most commonly diagnosed cancer in England with almost 37,750 diagnoses in 2023.[1] Increasing demands for treatment are putting pressure on cancer services and staff, resulting in a shortfall between demand and capacity, delaying patient access to treatments.[1,2]
- At Clatterbridge Cancer Centre (CCC), a large tertiary referral cancer centre in NW England, the number of systemic anti-cancer therapy (SACT) cycles administered to lung cancer patients increased by 102% from 4813 in 2017 to 9734 in 2024.[3]
- Previous subcutaneous (SC) formulations launched in oncology and haematology differ from their original IV forms with shorter administration times and simplified preparation requirements, enabling service capacity gains, reduced staff workloads, and reductions in pharmacy waste and expenditure.[4]
- Atezolizumab–an immunotherapy drug licensed for treatment of select lung, bladder, liver & breast cancers–was launched in the UK as a SC formulation in 2023[5]; however, evidence of its real-world impact on NHS cancer services has been limited.
- The CCC transitioned to use of SC atezolizumab in Dec 2023, initiating new eligible patients and transitioning existing IV patients, with the ambition of expanding capacity and improving the patient experience.

OBJECTIVE

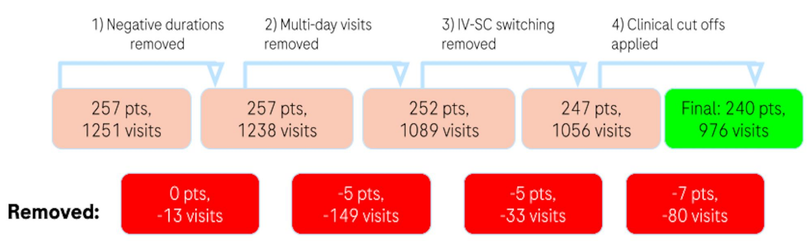
To determine whether the implementation of SC atezolizumab monotherapy would reduce the treatment time patients spend in a hospital setting versus those receiving IV atezolizumab, and reduce pharmacy drug wastage levels due to the differing storage and preparation requirements.

METHODS

Service Impact

- **Chemotherapy Treatment Unit (CTU) data:** Retrospective anonymised outpatient data from CCC's MEDITECH EPR system.
- **Patient population:** Adults diagnosed with non small cell lung cancer (NSCLC) or urothelial carcinoma (UC), receiving monotherapy atezolizumab via either the IV or SC during the study period
- **Time Period:** December 2022–December 2024 (SC was introduced at CCC in Dec 2023).
- **Data Cleaning:** We applied a four-step approach to data cleaning to ensure high-quality data suitable for robust statistical comparison of SC vs. IV treatment durations (Figure 1):

Figure 1: Four-step approach to data cleaning



Wastage (prescription dispensing & SACT wastage data)

- **SACT wastage** data underwent systematic assurance including temporal validation, formulation classification (SC: *'atezolizumab TECENTRIQ 1,875 MG/15ML VIAL'*; IV: all other formulations), and quantitative validation with outlier detection.
- **Quantification of waste** was calculated as (monthly waste / monthly prescribed) x 100, controlling for prescription activity (Figure 4).

RESULTS

Service Impact: Length of Stay (LoS) distribution analysis

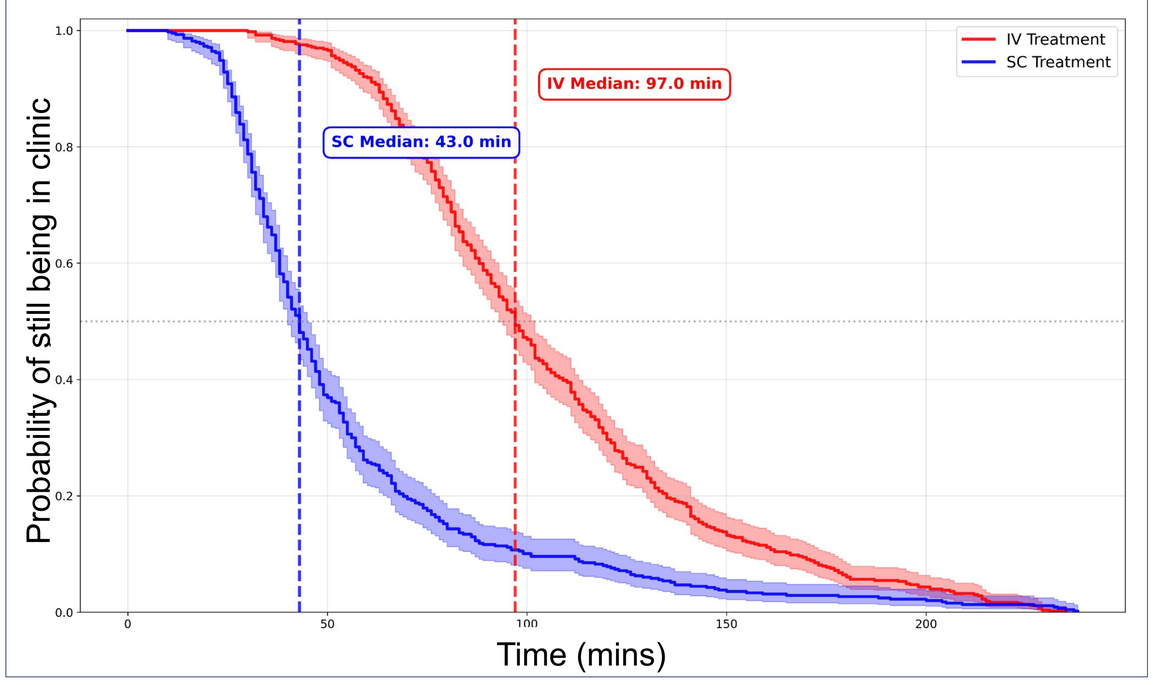
Analysis of CTU LoS durations revealed distinct patterns between treatment routes (Figure 2). **IV treatment** demonstrated a wider distribution of CTU LoS with a **median of 97 minutes (n=529)** and exhibited considerable variability, with durations ranging from approximately 50 to over 200 minutes. In contrast, **SC treatment** showed a more concentrated distribution around shorter CTU LoS, with a **median of 43 minutes (n=447)**, and displayed more uniform distribution, with the majority of CTU visits clustering between 30-80 minutes.

Figure 2: Visit duration distribution by treatment type (with median indicators)

Service Impact: Kaplan-Meier survival

- Median CTU LoS was **97 minutes for IV visits (IQR: 77-127)**, compared with **43 minutes for SC visits (IQR: 32-63)**, representing a 54-minute difference (55.7% reduction) (Figure 3).
- Log-rank testing confirmed significantly different survival curves (X^2 = 261.26, p<.001), indicating that **patients receiving SC atezolizumab were discharged substantially faster than IV patients**.
- The substantial magnitude of difference indicates a large clinical effect size (Cohen's d = 1.25).
- Hazard ratios from the survival analysis showed SC patients had a **2.3-fold** higher rate of discharge compared to IV patients (95% CI: 2.0 - 2.7, p<0.001).

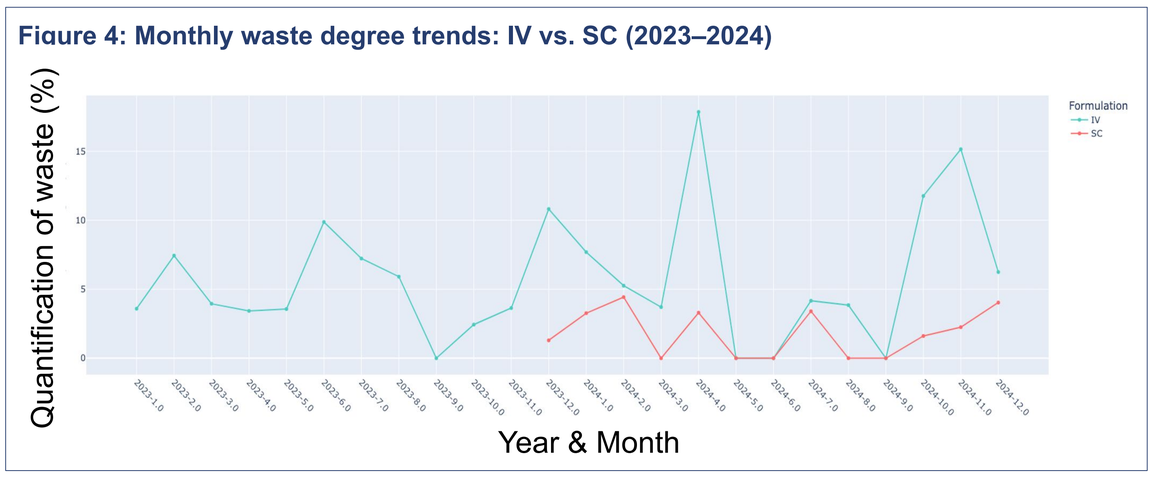
Figure 3: Kaplan-Meier survival curves with 95% confidence intervals



Waste degree

- In 2023–2024, 51 waste records and 4701 prescriptions were reported.
- As predicted, after controlling for prescription levels in 2024, Figure 4 shows that there was **more wastage for IV** administration compared to SC.

Figure 4: Monthly waste degree trends: IV vs. SC (2023–2024)



- On aggregate, IV wastage was **2.4 times greater** than SC wastage (4.71% vs. 1.93%, respectively). Analysis of drug wastage patterns per month revealed significantly lower SC waste compared with IV administration (U: 33.50, p=0.01 (one-tailed)), representing a **large clinical effect** size (Cohen's d = -1.02).

STUDY LIMITATIONS

- Tertiary, single-centre design limits generalisability to wider healthcare settings with different SACT delivery models, resources and patient populations.
- The atezolizumab monotherapy focus in NSCLC and UC reflects CCC's clinical practice, but may not capture the impacts of other SC medicines or combination therapies.
- As a result of data anonymisation, it was not possible to assess the potential influence of patient demographics, tumor type or treatment plans on CTU LoS

CONCLUSIONS

- This study highlights significant operational savings for CCC as a result of the atezolizumab SC transition, shortening patient appointment times in CTU by a median of 54 min versus IV, with a more uniform distribution of appointment durations for SC.
- The SC transition also reduced pharmacy drug waste wastage 2.4-fold, with the majority of remaining SC wastage due to pharmacy policy preventing return of dispensed products.
- Wider adoption of SC therapies in place of IV, where available, could enable significant financial savings from reduced drug wastage costs.
- Releasing CTU capacity has the potential to reduce SACT treatment delays, leading to reductions in delays for treatment, improving patient outcomes, and overall quality of care. Future research should seek to quantify these potential impacts further.
- These operational and financial advantages have significant potential for NHS cancer services to optimise capacity to deliver SACT treatments to an increasing number of patients, and reduce unnecessary expenditure on wasted drug.
- A broader strategic shift towards provision of SC versus IV therapies, where available, could help address current and future capacity challenges within healthcare. Continuing to implement initiatives that ensure sustainability of these services will be vital, to maintain quality and accessible healthcare for patients.

DISCLOSURES

This study was sponsored & funded by Roche Products Ltd. Medical writing and data analysis was provided by Roche Products Ltd

REFERENCES

1. National Lung Cancer Audit (NLCA). State of the Nation 2025; Version 2: May 2025 https://www.lungcanceraudit.org.uk/wp-content/uploads/2025/05/NLCA-State-of-the-Nation-Report-2025_V2.0.pdf Accessed September 2025.
2. The Royal College of Radiologists. Clinical Oncology Workforce Consensus 2024. https://www.rcr.ac.uk/news-policy/policy-reports-initiatives/clinical-oncology-census-reports/ Accessed August 2025
3. Internal Data, Clatterbridge Cancer Centre NHS Trust. Accessed August 2025.
4. George S, Bourlon MT, Overman MJ et al. Systematic literature review of intravenous versus subcutaneous administration of oncology therapies: A clinical, economic and patient perspective. Cancer Treatment Reviews. 2025;139 doi:10.1016/j.ctrv.2025.102974 Accessed August 2025
5. NHS England. News: NHS world first rollout of cancer jab that cuts treatment time by up to 75%. 29th August 2023. https://www.england.nhs.uk/2023/08/nhs-world-first-rollout-of-cancer-jab-that-cuts-treatment-time-by-up-to-75/ . Accessed September 2025