Cost of Chimeric Antigen Receptor (CAR) T- Cell Therapy Related Toxicities

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BACKGROUND: The most common adverse effects (AE) of CAR T-cell therapy include cytokine release syndrome, neurologic events, neutropenia and anaemia. Although most adverse events can be managed, they can be serious and life threatening. Furthermore, the occurrence of mild or severe adverse effects during hospitalisation requires additional treatment and prolonged hospital length of stay, significantly increasing costs to the NHS.

AIM: Assess the cost associated with intensive care unit (ICU) admission from CAR T-cell related toxicities in patients with blood cancers.

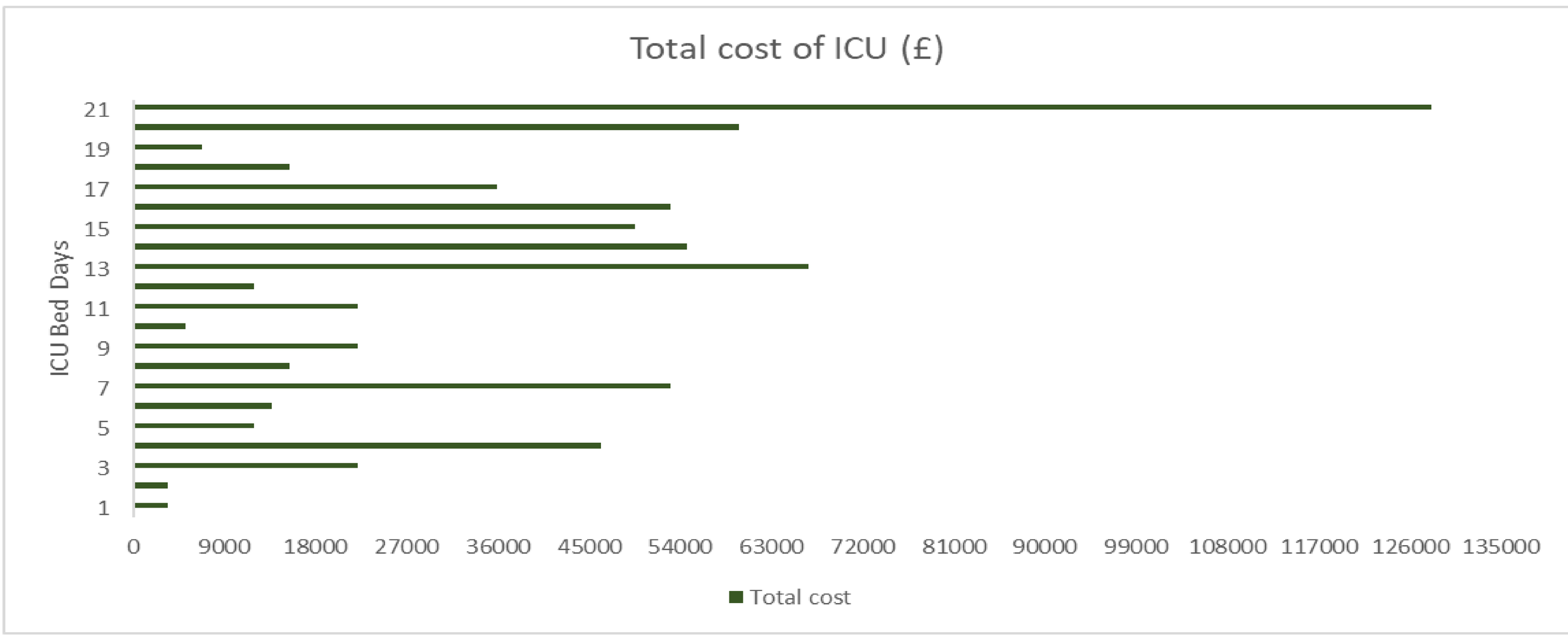
METHODS: Data from a UK multi-centre Phase I clinical trial of CAR T-cell therapy in 33 adults (>16) was used to identify the cost of ICU admission associated with CAR T-cell therapy. Using the national reference cost schedule (2021-2022), ICU admission was calculated. Data was used to estimate the additional burden to NHS. Resource use was collected prospectively and calculated by multiplying the quantity of resource use with the unit cost.

RESULTS: The annual cost (GBP £) of ICU bed days was £700,768 (410 ICU bed days). The mean cost per patient was £33,370 across 20 days.
Neurological toxicity was most frequent in this patient population and accounted for 8/33 patients.

TOXICITIES

- Neurologic
- Renal
- Hematologic
- Constitutional
- Cardiovascular
- Gastrointestinal
- Pulmonary

Toxicity	Frequency
Neurological toxicity	8
Hematologic toxicity	2
Constitutional	2
Cardiovascular toxicity	3
Gastrointestinal	2
Renal toxicity	2
Pulmonary	2



CONCLUSION: This research adds to knowledge by identifying estimated the cost of ICU bed days for CAR T-cell related toxicities in the UK context.

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