

# Chemotherapy dose standardisation

Key therapeutic topic

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[www.nice.org.uk/guidance/ktt22](http://www.nice.org.uk/guidance/ktt22)

## Key points

- Chemotherapy dose standardisation, where hospital trusts move to a system of dose banding, has the potential to offer considerable benefits for patients, providers and commissioners.
- In 2016, NHS England's Medicines Optimisation and Chemotherapy Clinical Reference Groups coordinated a national approach to chemotherapy dose standardisation. Shortly following this, NHS England published a set of [product specifications](#) to support the production and supply of ready-made chemotherapy medicines.
- Cancer features in the [NHS Long Term Plan](#) published in January 2019.
- Options for local implementation:
  - All NHS England commissioned providers of chemotherapy should move to prescribing and supplying a range of intravenous anticancer therapy in accordance with a nationally approved set of dose bands and product specifications.

## Evidence context

Chemotherapy dose standardisation is a system where doses of intravenous anticancer therapy calculated on an individualised basis are rounded up or down to predetermined standard doses.

Historically, intravenous chemotherapy doses have been calculated for individual patients based on weight or body surface area. This has led to a large number of similar, but not identical, products being made as bespoke orders within compounding units. These small product differences significantly increase time and costs of preparation and costs of drug wastage ([CA2 nationally](#)

[standardised dose banding for adult intravenous anticancer therapy – NHS England](#)). There is no robust evidence to suggest that standardised doses affect toxicity or clinical outcomes.

It is estimated that NHS England spends approximately £1.6 billion on the routine commissioning of chemotherapy (personal communication: NHS England 2019), with medicine costs being the largest proportion of this spend (80%). There is also a high rate of annual growth in these costs of approximately 8% per year ([CA2 nationally standardised dose banding for adult intravenous anticancer therapy – NHS England](#)).

Standardisation of chemotherapy doses, where hospital trusts move to a system of dose banding, offers an avenue for achieving improved value in this area and benefits for patients, providers and commissioners. The discrete dose bands lie within 6% of the patient's calculated dose for standard chemotherapy drugs and 10% for biological drugs ([How to use the NHS England dose banding tables](#)). Available products can then be standardised to match the recommended doses.

### *Intended benefits of chemotherapy dose standardisation*

#### **For patients**

- Fewer dose calculation errors.
- Reduced patient waiting times – chemotherapy is ready to give.
- Facilitation of administration of chemotherapy on any chosen day.
- Supports treatment of patients closer to home.

#### **For providers**

- Reduced bespoke pharmacy preparation workload.
- Maximises opportunities for financial efficiency through outsourcing of standardised chemotherapy product.
- Fewer dose calculation errors.
- Reduction in prescription alterations.
- Quicker dispensing through use of pre-prepared doses.

**For commissioners**

- Same doses used across every provider in England.
- Reduced cost through:
  - reduced wastage (by reuse of cancelled doses and avoidance of incomplete vial usage during production)
  - outsourcing of standardised chemotherapy products.

Many hospital trusts in England have been using chemotherapy dose banding for several years. However, when the national approach to dose banding was initiated, there was still considerable variation in both the methods used and the range of drugs that dose banding applied to. An NHS England survey of NHS Providers found that 90% of the 94 trusts who responded were using dose banding for at least 1 intravenous anticancer therapy. But for the 20 most commonly dose-banded drugs, on average just 30% of trusts were dose banding (personal communication: NHS England 2017). In Scotland, where dose banding of intravenous anticancer therapy has been established for a number of years, it has been estimated that 60% to 70% of all intravenous anticancer therapy is administered as dose-banded preparations ([CA2 nationally standardised dose banding for adult intravenous anticancer therapy](#) – NHS England).

Linking closely to the [efficiency and productivity review](#) undertaken by Lord Carter, which recommends elimination of waste through a consistent approach to patient care, there is significant potential for the adoption of a single standardised set of doses for a range of intravenous anticancer therapy across England. NHS England has supported the standardisation of chemotherapy doses through the [chemotherapy dose standardisation initiative](#) developed by the Medicine Optimisation and Chemotherapy clinical reference groups.

The list of chemotherapy drugs and concentrations with approved dose-banding tables can be found within the [national dose banding table drug list](#).

Following the introduction of standardised doses, the next step of the initiative was to standardise chemotherapy products by diluent, volume and labelling. These [product specifications](#) are a precursor to accessing ready to administer chemotherapy from the generic and NHS manufacturers.

The [2019/20 Commissioning for Quality and Innovation \(CQUIN\) scheme](#) includes a [medicines optimisation and stewardship indicator](#) on improving efficiency in the intravenous chemotherapy

pathway. The scheme aims to support a standardised approach to monitoring chemotherapy waste and to promote schemes to minimise waste. The 2017/19 CQUIN scheme included nationally standardised dose banding for adult intravenous anticancer therapy to encourage uptake.

## *Implementation support*

The following implementation support is available from NHS England by emailing your local specialised commissioning hub pharmacist or alternatively [england.booffice\\_speccom@nhs.net](mailto:england.booffice_speccom@nhs.net).

- A patient information leaflet for chemotherapy dose standardisation.
- A FAQ document for the chemotherapy dose standardisation project which provides information on:
  - the overall approach and methodology for developing national dose bands
  - expert involvement and stakeholder engagement
  - delivery and measurement.
- A measurement toolkit, which has been collated to bring together case studies, information and suggestions for measuring the impact of chemotherapy standardisation. This covers the following:
  - guidance on managing the sourcing and supply of ready to administer chemotherapy doses for the NHS; a 'how-to' guide from the Specialist Pharmacy Service endorsed by the British Oncology Pharmacy Association, and a case study
  - impact on regional contracting and the tendering process; learning from the North of England framework
  - benefits of dose standardisation on the pharmacy service and measuring financial savings; a case study
  - benefits from vial sharing; a case study and financial savings report
  - measurement of waste; case studies
  - recommendations for identifying waste points in the chemotherapy process and for calculating waste and the impact of dose standardisation
  - toolkits and recommendations for measuring use of capacity in the administration of

- – intravenous anticancer therapy and the impact of dose standardisation
  - impact on patient experience and staff satisfaction; a case study
  - role of the senior pharmacy technician; a case study.

NICE's [position statement](#) supporting chemotherapy dose standardisation outlines how NICE is working with NHS England to support the project, and to ensure that NICE processes, tools and resources are suitably aligned.

### *Practice examples and shared learning*

The NICE shared learning case study on [chemotherapy production: reducing patient waiting times and increasing efficiency](#) describes how one trust identified and addressed service inefficiencies. Implementation of changes including dose banding and use of outsourced pre-filled bags reduced the daily waiting times of people attending clinics for injected chemotherapy.

### **Prescribing data, metrics or supporting resources**

At this point, the following metrics or supporting resources have been identified to support this topic.

As outlined under [implementation support](#), a measurement toolkit has been developed by the NHS England Chemotherapy Dose Standardisation Steering Group, which includes recommendations for measuring impact. The project group are working closely with the Hospital Pharmacy and Medicines Optimisation Project team at NHS Improvement and the systemic anti-cancer therapy dataset team at Public Health England to develop suitable comparators and metrics.

It is intended that all NHS England commissioned providers of chemotherapy move to prescribing a range of intravenous anticancer therapy in accordance with a nationally approved set of dose tables. Providers will be expected to:

- have the principles of dose banding accepted by their local oncology and haematology teams
- have the drugs and doses outlined in the dose banding tables approved by their local formulary committees
- have intravenous anticancer therapy prescribed in accordance with the doses of drugs listed in the national dose banding tables

- agree and adopt standardised product definitions for the purchasing of 'off-the-shelf' products.

## Update information

**September 2019:** This topic was retained for the 2019 rapid update of medicines optimisation: key therapeutic topics. Minor editorial changes have been completed and figures updated.

## About this key therapeutic topic

This document summarises the evidence base on this key therapeutic topic that has been identified to support medicines optimisation. **It is not formal NICE guidance.**

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