

Group O D Negative Blood – Promoting the appropriate use of an essential but limited resource

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Introduction

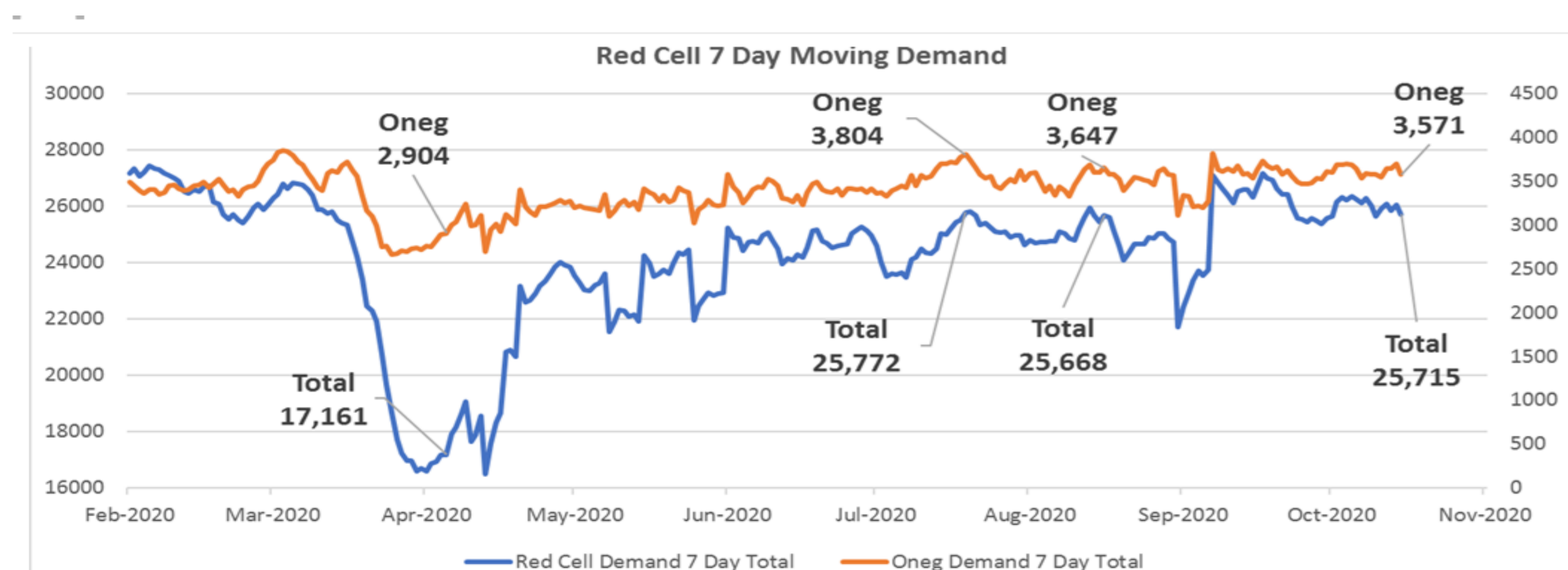
While overall red cell usage has decreased significantly (at least by 25% in 15 years) with the implementation of Patient Blood Management (PBM), the relative demand for O D negative blood remains strong.

This is an essential resource for prompt transfusion of red cells in an emergency situation where the patients group is unknown. However, over dependence may have a negative impact on blood stock management and the balance between supply and demand of O D negative red cells remains a major challenge for blood services in many countries.

Approximately 7% of the UK population is O D negative. Average demand of O D negative blood cells by hospitals in England supplied by NHS Blood and Transplant (NHSBT) has been >13% causing significant challenges to the supply chain. Considerable efforts and resources are being focussed on improved donor marketing and recruitment to achieve a blood group mix to fulfil patient needs.

COVID-19 Pandemic and impact on blood supply

The pandemic has had a significant impact on blood demand as shown in Figure 1. Red cell demand reduced by ~40% during the first wave but has increased with restoration of activity. The second wave is likely to pose significant demand and supply challenges with additional pressure on O D Neg supply.



Updated NBTC O D neg guidance

There are ongoing significant collaborative efforts between NHSBT and Hospitals to promote optimum usage with minimum wastage of this finite resource.

The National Blood Transfusion Committee in conjunction with NHSBT has updated guidance for hospitals in 2019 outlining best practice principles for the appropriate clinical use and stockholding of O D negative blood.

Audit of O D Neg use

Repeated surveys have been undertaken of the clinical use of O D negative red cells (2008, 2010, 2015, 2018) with The key findings from 2018 showed that overall

- 59.3% of O D negative red cells are transfused to O D negative patients with a significant change in practice from the 2010 O D negative audit where 70% of O D negative red cells were transfused to O D negative patients.
- 16% (794/4970) of the total units were used as “emergency units” whereas in 2010, “emergency units” were used in 280/5108 (5.5%) transfusion episodes.
- 12.6% O D negative red cells were transfused to avoid wastage due to time expiry and 5% were wasted. 6 % O D negative red cells were transfused in an emergency to males and females aged over 50 years.
- It is important to note that 31% of sites did not have a policy to provide O D positive red cells in an emergency to unknown males and females aged >50 years.
- 10.8% of O D negative red cells were used as a substitution by hospital laboratories.
 - Approximately half of those needs could have been met by suitable O D positive red cells. Availability of extensively phenotyped units of O D positive red cells as well as red cells meeting other special requirements (irradiated, CMV negative) could have reduced those substitutions.
- O D Negative stockholding greater than 12.5% has increased from 46% of sites in 2010 to 64% of sites in 2018.

Ro Blood

There are also ongoing challenges in meeting the demand for Ro blood. The Ro phenotype (D positive, cc and ee) is common in the black population.

In patients with Sickle Cell Disease requiring Rh phenotype matched blood, the demand for Ro red cells has doubled in the last 3 years with an increased number of patients moving to automated red cell exchange programmes.

NHSBT can currently fulfil ~50% of Ro demand with actual Ro units and therefore has to issue ABO rr as a substitution placing additional pressure on O D negative stocks.

Conclusions and going forward

We have also developed an O D negative toolkit as a web-based resource for clinical and laboratory teams

We are working actively in a bespoke manner with hospitals that are the highest users to review and influence practice.

Continued efforts are needed to focus on optimum stockholding of Group O D Neg with appropriate clinical use in particular as we enter the second wave of the COVID-19 pandemic with much greater pressure on maintaining blood supply.