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RCEM Statement regarding shortage of Alteplase and Tenecteplase injections (NatPSA/2022/006/DHSC)

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In response to the National Patient Safety Alert issued on 3rd August 2022 RCEM welcomes the proactive response of both the manufacturer of Alteplase and Tenecteplase (Boehringer Ingelheim) and the department of Health and Social Care (DHSC) to ensure that stocks of these emergency drugs are conserved for patients where no other option exists.

RCEM fully supports the DHSC in its goal of minimising any potential wastage of Alteplase by selecting appropriate vial sizes and using the most appropriate doses, giving consideration to rounding down to the nearest whole vial.

The alert rightly focusses on the use of Alteplase in acute ischaemic stroke and highlights the need to take measures to ensure that stocks of the drug are conserved for the emergency treatment of this group of patients.

RCEM have become aware that the alert regarding Alteplase and Tenecteplase shortages has been interpreted by some as indicating that Alteplase should only be used for the treatment of acute ischaemic stroke and use should be avoided in other conditions. However, after seeking further clarification from both the manufacturer and the DHSC, RCEM would like to emphasise that "... Alteplase stock should be conserved for patients with acute ischaemic stroke, ..." does not mean Alteplase cannot be used for other emergency indications such as massive / high risk pulmonary embolism (PE) with haemodynamic compromise [2].

Alteplase therapy is a potentially life-saving intervention in patients suffering from massive / high risk pulmonary embolism with haemodynamic compromise, including those patients progressing to circulatory collapse and cardiac arrest. Thrombolytic therapy is recommended in this clinical situation in NICE guidance [3] and European Cardiology Society (ESC) guidance [2]. In this clinical scenario clinicians must be able to immediately access thrombolytic agents and must be supported to accurately administer correct doses for emergency treatment – no other suitable pharmacological option(s) exist and interventional / surgical rescue measures are challenging to access in time critical situations.

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The ESC guidance [2] has useful definitions of haemodynamic compromise / instability which include:

- Obstructive shock (systolic BP <90 mmHg or vasopressors required to achieve a BP ≥90 mmHg despite an adequate filling status, in combination with end-organ hypoperfusion), or
- Persistent hypotension (systolic BP <90 mmHg or a systolic BP drop ≥40 mmHg for >15 min, not caused by new-onset arrhythmia, hypovolaemia, or sepsis).

In the setting of a national shortage of Alteplase and Tenecteplase RCEM feels that it is important to highlight that there are different dose regimes for Alteplase and Tenecteplase for the treatment of massive/high risk PE with haemodynamic compromise. Clinicians should familiarise themselves with these regimes and the indications for thrombolysis whilst being mindful of the need to use any limited stocks of Alteplase / Tenecteplase wisely. Examples are shown in table 1.

This statement has been shared with the Medicine Supply Team at the Department of Health and Social Care who support the message of this statement.

Table 1.

Massive / High risk PE with Haemodynamic Compromise [4]	Cardiac Arrest [5]															
<p>Standard dose regime:</p> <p>Alteplase (rt-PA) 10mg IV bolus over 1-2 mins, 90mg IV over 2 hours (if <65kg do not exceed 1.5mg/kg total dose)</p>	<p>Either:</p> <p>IV Alteplase 50mg over 2 minutes (consider repeat bolus after 15mins)</p> <p>Or</p> <p>IV Tenecteplase as a single bolus</p> <table border="1" data-bbox="868 1249 1273 1680"> <tbody> <tr> <td><60 kg</td> <td>30 mg</td> <td>6mls</td> </tr> <tr> <td>60-69kg</td> <td>35 mg</td> <td>7mls</td> </tr> <tr> <td>70-79kg</td> <td>40mg</td> <td>8mls</td> </tr> <tr> <td>80-89kg</td> <td>45mg</td> <td>9mls</td> </tr> <tr> <td>≥90 kg</td> <td>50 mg</td> <td>10mls</td> </tr> </tbody> </table> <p>Prolonged CPR is likely to be required</p>	<60 kg	30 mg	6mls	60-69kg	35 mg	7mls	70-79kg	40mg	8mls	80-89kg	45mg	9mls	≥90 kg	50 mg	10mls
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References

1. Shortage of alteplase and tenecteplase injections. NatPSA/2022/006/DHSC. NHS England. <https://www.cas.mhra.gov.uk/ViewandAcknowledgment/ViewAlert.aspx?AlertID=103211>. Accessed 10.08.2022
2. Konstantinides SV, Meyer G, Becattini C, et al. 2019 ESC Guidelines for the diagnosis and management of acute pulmonary embolism developed in collaboration with the European Respiratory Society (ERS): The Task Force for the diagnosis and management of acute pulmonary embolism of the European Society of Cardiology (ESC), European Heart Journal, Volume 41, Issue 4, 21 January 2020, Pages 543–603, <https://doi.org/10.1093/eurheartj/ehz405>
3. <https://www.nice.org.uk/guidance/ng158> Accessed 17.08.2022
4. <https://bnf.nice.org.uk/drugs/alteplase/#indications-and-dose>. Accessed 17.08.2022
5. RCUK Quick Reference Handbook, Resus Council. <https://www.resus.org.uk/sites/default/files/2022-07/RCUK%20QRH%20complete%20March%202022%20-%20final.pdf> Accessed 10.68.2022