

## **Guidance on Thiamine Replacement in Patients at Risk of Refeeding Syndrome**

This guidance has been issued in view of Medicine Supply Notification (MSN/2024/038) [Shortage of Pabrinex \(Vitamins B and C\) Intravenous High Potency Solution for injection ampoules – SPS - Specialist Pharmacy Service – The first stop for professional medicines advice](#) for Pabrinex® (Vitamins B and C) Intravenous (IV) and Intramuscular (IM) High Potency solution for injection ampoules issued 03/04/2024.

Pabrinex® Intravenous (IV) will be out of stock from summer 2024. This is expected to be a prolonged shortage with a resupply date still to be confirmed. Pabrinex® intramuscular (IM) injection is being discontinued, with stock exhaustion expected from December 2024.

There are no UK licensed alternatives to Pabrinex® IV and IM injections. The Medicines Supply Group work on behalf of the Department of Health and Social Care (DHSC) to ensure continuous supply of medicines in the UK. They are looking at parenteral thiamine preparations to be used once Pabrinex® stock has been exhausted.

One pair of Pabrinex® Intravenous contains, thiamine 250mg, riboflavin 4mg, pyridoxine 50mg, nicotinamide 160mg, ascorbic acid 500mg, and glucose 1000mg. This guideline focuses on thiamine supplementation as the key co-factor in refeeding syndrome.

**Intravenous thiamine/Pabrinex® in prevention of refeeding syndrome should be reserved for those with intestinal failure, where oral/enteral route is unavailable.**

### **Refeeding syndrome**

The mechanism for the role of thiamine in refeeding is well recognised.<sup>1</sup> Thiamine is a co-factor in aerobic glucose consumption, and during refeeding there is an increase in utilisation of thiamine. Without replacement this can lead to the development of Wernicke's encephalopathy which can progress to the irreversible Korsakoff's syndrome.

Patients with clinical symptoms of Wernicke's should be treated with high doses of thiamine as per NICE guidance<sup>2</sup> [Recommendations | Alcohol-use disorders: diagnosis and management of physical complications | Guidance | NICE](#) . Refer to [NHS Grampian Guidance for the Use of Parenteral Thiamine in Alcohol Dependence in Acute Hospitals](#).

Thiamine stores become depleted in patients at high risk of refeeding and exacerbated on the introduction of nutritional support, therefore guidelines recommend starting thiamine prior to introduction of nutrition in adult patients at high or extremely high risk of refeeding syndrome.

National Institute for Health and Care Excellence (NICE)<sup>3</sup> sets out the following criteria for determining adults at high risk of developing refeeding syndrome:

Patient has 1 or more of the following:

- BMI less than 16 kg/m<sup>2</sup>
- unintentional weight loss greater than 15% within the last 3 to 6 months
- little or no nutritional intake for more than 10 days
- Low levels of potassium, phosphate or magnesium before feeding.

Or patient has 2 or more of the following:

- BMI less than 18.5 kg/m<sup>2</sup>
- unintentional weight loss greater than 10% within the last 3 to 6 months
- little or no nutritional intake for more than 5 days
- A history of alcohol abuse, or drugs including insulin, chemotherapy, antacids or diuretics.

Those with a BMI < 14 kg/m<sup>2</sup> with negligible nutrition for more than 15 days are at extremely high risk.

In paediatric patients, practice is variable and evidence remains limited. The current guidance for anorexia nervosa Medical Emergencies in Eating Disorders (MEED) suggests prescribing a complete multivitamin and mineral supplement for malnourished young people is logical and carries minimal risk. It also suggests for older adolescents and those with chronic illness, following adult guidelines on prescription of thiamine and phosphate is justifiable. Intravenous thiamine/Pabrinex® in prevention of refeeding syndrome should be reserved for those with intestinal failure, where oral/enteral route is unavailable.<sup>4</sup>

## **Recommendations**

### **1/ Conserve current Pabrinex stock**

Current stock should be used only for life-threatening conditions.

## 2/ Use oral thiamine and vitamin B first line

Oral thiamine and Vitamin B Compound Strong should be used first where supplementation is clinically indicated and appropriate.

## 3/ Where intravenous thiamine is indicated for high risk patients, the following doses can be used<sup>4</sup>

- Intravenous (IV) thiamine replacement should only be used for patients with intestinal failure at high risk or extremely high risk of refeeding syndrome where the oral or enteral route is not available.
- In adults, where IV thiamine is indicated the recommend dose is 200-300mg (or 1 pair Pabrinex® ampoules if stock is available) once daily before initiation of nutrition support and continued at this dose for 3 days. This may need to be extended to 5 days for higher-risk patients.
- In paediatrics, where IV thiamine is indicated **recommendations are:**

Age	Thiamine dose (IV)
Under 6 years	100mg thiamine once daily before initiation of nutrition support and continued at this dose for 3 days in total. This may need to be extended to 5 days for higher-risk patients.
6 - 10 years	150mg thiamine once daily before initiation of nutrition support and continued at this dose for 3 days. This may need to be extended to 5 days for higher-risk patients.
10 years and over	200-300mg thiamine (or 1 pair Pabrinex® ampoules) once daily before initiation of nutrition support and continued at this dose for 3 days. This may need to be extended to 5 days for higher-risk patients.

## References

1. De Silva A, Nightingale JMD. Refeeding syndrome: physiological background and practical management. *Frontline Gastroenterol.* 2019;11(5):404-409. doi:10.1136/flgastro-2018-101065.
2. National Institute for Health and Care Excellence. Alcohol-use disorders: diagnosis and management of physical complications. Clinical guideline [CG100]. <https://www.nice.org.uk/guidance/cg100> Published 2010 (updated 2017).

3. National Institute for Health and Care Excellence. Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. Clinical guideline [CG32]. <https://www.nice.org.uk/guidance/cg32> . Published 2006 (updated 2017).
4. [ASPEN Consensus Recommendations for Refeeding Syndrome](#). Nutrition in Clinical Practice. 2020;35(2):178-195. doi:.
5. Specialist Pharmacy Service, Prescribing thiamine in patients at risk of refeeding syndrome (<https://www.sps.nhs.uk/articles/prescribing-thiamine-in-patients-at-risk-of-refeeding-syndrome/>) Published 2024.

Produced By Pharmacy Pabrinex shortage group June 2024