

Development and validation of an enoxaparin monitoring clinical indicator

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Background

Our facility experienced three anticoagulant-related deaths in 2019. Clinical incident review highlighted missed opportunities to perform anti-Xa monitoring for patients prescribed enoxaparin.

Aims

To define and validate an enoxaparin clinical indicator to enable organisational overview of enoxaparin monitoring compliance in a paper-based prescribing environment.

Methods

Method 1 - Development

A retrospective chart audit of all patients prescribed therapeutic enoxaparin during a 5-week period in early 2020 was conducted.

An assessment of the number of enoxaparin ampoules administered and the number of anti-Xa levels which should have been taken in accordance with best practice was recorded.

Method 2 - Evaluation

The proposed indicator was evaluated using real-world data.

An extract of all anti-Xa levels collected by the pathology service was obtained for the calendar years 2019 and 2020. The number of enoxaparin 60mg, 80mg and 100mg ampoules distributed to clinical areas for the same period was obtained from pharmacy dispensing software.

Enoxaparin anti-Xa monitoring best practice criteria

- Creatinine clearance between 30mL/min and 50mL/min with treatment more than 48 hours
- Bodyweight less than 50kg and treatment more than 48 hours
- Bodyweight more than 105kg and treatment more than 48 hours
- Treatment greater than 5 days
- Enoxaparin is not recommended in patients with renal function less than 30mL/min

Results

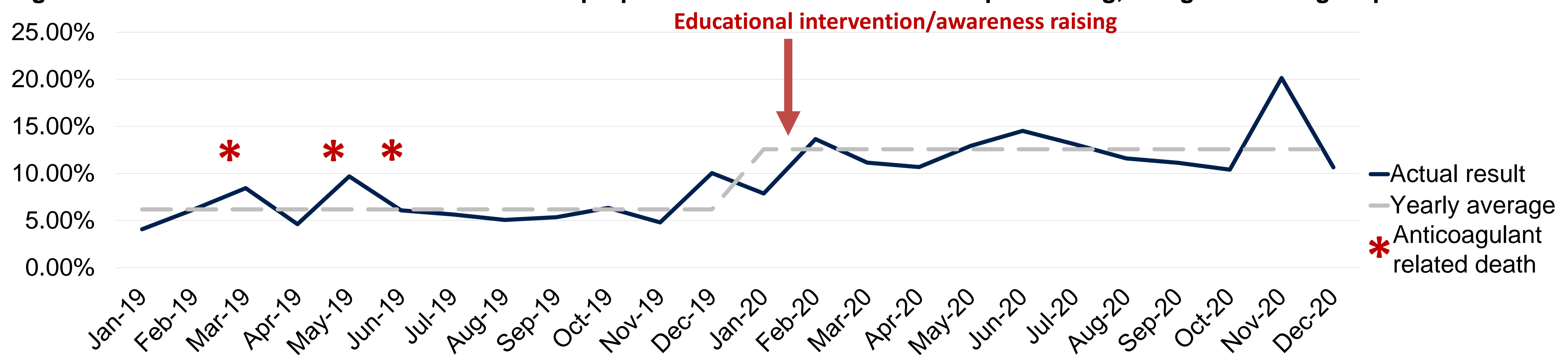
36 patients administered therapeutic enoxaparin.

- **22 patients** (39.3%) met criteria for enoxaparin anti-Xa monitoring
- **41 anti-Xa levels** should have been taken if adherence to anti-Xa monitoring best practice
- **317 ampoules** enoxaparin 60mg, 80mg and 100mg administered

If best practice adherence, **the number of anti-Xa levels taken as a proportion of enoxaparin ampoules should be 12.93%**

- In 2019 there were **7781 enoxaparin 60mg, 80mg and 100mg ampoules distributed** and **481 anti-Xa levels** taken, resulting in an indicator rate of **6.18%**.
- In 2020 there were **6441 ampoules distributed** and **810 anti-Xa levels** taken, resulting in an indicator rate of **12.6%**.

Figure 1 – Number of anti-Xa levels ordered as a proportion of the number of enoxaparin 60mg, 80mg and 100mg ampoules



Conclusion

Measuring the number of anti-Xa levels taken as a proportion of the number of enoxaparin 60mg, 80mg and 100mg ampoules used may be a suitable indicator to evaluate adherence to therapeutic enoxaparin monitoring. The target should be around 12%.

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