Appropriate dose rounding of cytokine modulators for paediatric rheumatology inpatients

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Background

- Cytokine modulators are high-cost biologics used primarily in paediatric rheumatology to treat patients with juvenile idiopathic arthritis (JIA).
- Funding mechanisms are unreliable and inconsistent hence appropriate dose rounding is a key cost-saving measure.
- Lack of evidence-based guidance for dose rounding in paediatrics.

Aims and objectives

- To determine if rheumatology inpatient prescriptions for cytokine modulators are dose rounded to the nearest available vial, pen or syringe if within an acceptable dose rounding tolerance.
- To establish the financial impact of drug wastage due to failures in dose rounding.

Standard

- “100% of prescribed doses of cytokine modulators (abatacept, adalimumab, etanercept, infliximab, anakinra, canakinumab, rituximab and tocilizumab) for rheumatology inpatients are rounded to the nearest available vial, pen or syringe if within 10% (if over 10kg) or 5% (if under 10kg) of the age-, weight- or body surface area-based dose.”

Method

- Retrospective data collection of electronic prescriptions for all cytokine modulators prescribed for rheumatology inpatients from January 2011 to December 2014.
- Prescriptions analysed using five step process to determine if doses could have been rounded to nearest whole dose unit.
- Cost of waste resulting from failure to dose round also calculated.

Results and discussion

- 1,979 eligible prescriptions identified. 44% (879/1979) excluded as did not require dose rounding or unable to be dose rounded within tolerance limits (figure 1).

Recommendations

1. Standardise prescribing by developing and implementing dose banding, particularly for tocilizumab. Clinical impact to be discussed with rheumatology consultants.
2. Preparation by central intravenous additive service (CIVAS) so single vials used for multiple doses. Potential costly set-up process offset by substantial cost savings, in particular for canakinumab.
3. Use of cheaper biosimilars when available.
4. Educate those involved in prescribing and/or supply about medicines safety and cost benefits of dose rounding.

References