IMPACT OF AN INTENSIVE MONITORING PROGRAM ON METHOTREXATE ELIMINATION
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BACKGROUND AND IMPORTANCE
High-dose methotrexate (hDMTX) can cause significant toxicities, especially renal ones. Adequate patient management is essential to prevent them and reduce hospital stay.

AIM AND OBJECTIVES
To determine if the implementation of an intensive monitoring program (IMP) of MTX concentrations ([MTX]) and supporting measures did improve the methotrexate clearance in comparison with a standard monitoring program (SMP) in patients with haematological malignancies.

MATERIAL AND METHODS
Retrospective observational study → patients admitted to a haematology ward between January 2020-September 2021, all treated at hDMTX (≥500 mg/m²)

TWO GROUPS
Standard monitoring program (SMP)
- Daily pH monitoring
- Pharmacokinetic monitoring 48h after starting infusion and every 24h until [MTX]<0.2 µM

Intensive monitoring program (IMP)
- 6 hourly pH monitoring
- Pharmacokinetic monitoring at 12, 23, 36 and 42h after starting infusion. Then, individualized monitoring based on Bayesian estimation of MTX clearance and volume of distribution until [MTX]<0.2 µM

VARIABLES
- Demographic (sex, age, Body Surface Area)
- Diagnosis
- Treatment variables: total dose of MTX, time (days) to [MTX]<0.2 µM from start of infusion (principal variable)
- Basal and final serum creatinine

RESULTS
19 SMP
22 IMP
Median time to [MTX]<0.2 µM
3 days (range: 2-12) (p=0.2382)
4 patients SMP needed 5-12 days to obtain [MTX]<0.2 µM

<table>
<thead>
<tr>
<th>VARIABLE ± SD</th>
<th>SMP</th>
<th>IMP</th>
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<tbody>
<tr>
<td>Sex (count)</td>
<td>12 female, 7 male</td>
<td>8 female, 14 male</td>
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<tr>
<td>Age (years)</td>
<td>50.89 ± 13.28</td>
<td>63.45 ± 6.79</td>
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<tr>
<td>Body surface area (m²)</td>
<td>1.67 ± 0.16</td>
<td>1.72 ± 0.13</td>
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<td>Diagnosis* (count)</td>
<td>7 ALLB, 9 NHL, 3 ALLT</td>
<td>2 ALLB, 16 NHL, 4 PCL</td>
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<td>Total dose (mg)</td>
<td>3130.7 ± 2063</td>
<td>2043.4 ± 2247.3</td>
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<td>Basal Serum Creatinine (mg/dL)</td>
<td>1.01 ± 0.78</td>
<td>0.77 ± 0.19</td>
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<td>Final Serum Creatinine (mg/dL)</td>
<td>0.8 ± 0.35</td>
<td>0.78 ± 0.24</td>
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* B-cell Acute lymphoblastic leukemia (ALLB), T-cell Acute lymphoblastic leukemia (ALLT), Non-Hodgkin lymphoma (NHL), Primary Cerebral Lymphoma (PCL)

CONCLUSION AND RELEVANCE
Although no statistically relevant signification was determined comparing both groups, a narrower range in the median of MTX clearance was observed in the IMP group. Thus, early MTX monitoring could possibly result in faster MTX elimination and lower length of hospital stay.