

Evaluating the impact of an indication-based, patient-specific prescribing tool on prescribing errors in paediatrics: a non-randomised, before-and-after study

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ABSTRACT

Background Medication errors remain a major challenge in paediatric prescribing owing to the complexities of weight-based dosing, age-specific formulations and the need for precise calculations. This study examines the association of an indication-based, patient-specific prescribing tool with prescribing errors in paediatric emergency and inpatient settings.

Methods A non-randomised, before-and-after study was conducted at a London tertiary teaching hospital. Prescribing errors were assessed before and after implementing the intervention in the paediatric emergency department (PED) and a general paediatric ward. Errors were identified through manual review of medication orders against predefined criteria based on the British National Formulary for Children and local prescribing guidelines. Dose errors were defined as deviations of $\pm 10\%$ from recommended ranges, with deviations $\geq 25\%$ categorised as major. Statistical analysis included descriptive comparisons, logistic regression and intention to treat analysis to assess the effect associated with the intervention.

Results A total of 1808 medication orders were reviewed, including 1567 standard practice orders and 241 intervention-supported orders. When the intervention was used, the overall prescribing error rate was 1.2%, compared with 7.14% in the control orders, representing an 83% reduction in the odds of error (OR 0.17). In the general paediatric ward, errors reduced from 9.1% to 1.1% (OR 0.11), while in PED, error rates declined from 4.9% to 1.4% (OR 0.27). Errors that occurred when using the intervention were attributed to prescriber deviation from system recommendations rather than inaccuracies within the tool itself.

Conclusions These findings suggest that use of the intervention is associated with significantly lower odds of a prescribing error occurring in paediatric settings. Future work should focus on optimising prescriber adherence, enhancing system integration into clinical workflows and exploring economic and user-experience outcomes to maximise impact.

INTRODUCTION

Prescribing errors remain a persistent and well-documented challenge in paediatric

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Prescribing errors are disproportionately common in paediatrics due to dosing complexities; existing clinical decision support tools show mixed effectiveness.

WHAT THIS STUDY ADDS

⇒ This study provides real-world evidence of a significant reduction in prescribing errors associated with patient-specific indication-based prescribing.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Our findings support broader adoption of paediatric-specific clinical decision support tools as well as highlighting the need for attention to workflow integration and prescriber engagement.

care, with reported error rates ranging from 5% to over 30% in various clinical settings, consistently exceeding those observed in adult populations.^{1–3} These errors are often attributed to the complexities of weight-based dosing, age-specific pharmacokinetics and the reliance on manual calculations made under time pressure.^{2 4–6} While electronic prescribing systems and clinical decision support (CDS) tools have been introduced to mitigate these risks, their impact has been variable. One common issue is alert fatigue, where users become overwhelmed by excessive notifications, leading them to overlook or dismiss important alerts altogether.^{7 8}

One approach gaining increasing attention is indication-based prescribing, where the clinical indication is entered at the point of prescribing, enabling systems to generate indication-based, patient-specific dosing recommendations.^{9–11} This approach has been associated with improvements in dose appropriateness, prescribing accuracy and, in some cases, efficiency, as demonstrated in a recent systematic review.¹²

Structured, indication-based prescribing systems designed specifically for paediatrics have been developed in parts of Europe and are now being evaluated and integrated into clinical practice. In Switzerland, PEDeDose provides real-time, indication-specific dosing support and has demonstrated significant reductions in dosing errors and time to prescribe in controlled evaluations.¹³ The Dutch Kinderformularium supports age-based and weight-based prescribing for both licensed and off-label use and is widely embedded as a national standard to support clinical decision-making.¹⁴ While integration with electronic systems varies, these examples demonstrate the potential benefits of structured, paediatric-specific decision support.

A newly developed, indication-based CDS tool has been designed to improve prescribing accuracy and reduce the cognitive burden on prescribers within the British National Health Service (NHS).

Preclinical user testing of the intervention demonstrated a statistically significant reduction in both prescribing errors and time to prescribe, alongside high levels of user acceptability.¹⁵ However, real-world evidence from clinical practice is needed. This paper reports the results of a study conducted at a large teaching hospital. The aim was to evaluate the impact of the intervention by comparing error rates with and without the system's support in both paediatric inpatient and emergency settings.

METHODS

Study design and setting

This study was conducted in two paediatric settings in a London tertiary teaching hospital: the paediatric emergency department (PED) and a general paediatric inpatient ward. A non-randomised, before-and-after study design was used to assess the impact of the intervention on prescribing errors.

Prescribing practice prior to the intervention

Prior to the intervention, prescribing typically required clinicians to consult one or more disparate resources to determine and calculate an appropriate dose for each patient. These might include local guidelines (via the trust intranet or a mobile app), the British National Formulary for Children (BNFc),¹⁶ a calculator and/or advice from colleagues. Within Cerner Millennium, the electronic health record (EHR) system at the study site, prescribers could either enter the order manually or select from a list a partially completed order sentences, which prepopulated some of the required fields on the order form. In all cases, the prescriber was responsible for completing and verifying the final medication order before sign-off.

Intervention and implementation strategy

The intervention, Touchdose, was designed to streamline and standardise this process by generating patient-specific

dosing recommendations based on indication, weight, age and formulary logic derived from the BNFc¹⁶ and relevant local guidelines. Although embedded within Cerner Millennium at the study site, Touchdose functions independently of the medication order entry form. Prescribers are required to initiate the prescribing workflow separately and manually transcribe the recommended dose into the electronic prescription, which is then signed off in the usual way. It is available for use in the PED, paediatric inpatients and outpatients departments. Images of the interface are provided in online supplemental appendix 1.

The intervention was implemented in a phased approach at the study site, beginning in the PED in August 2024 and subsequently extending to the general paediatric wards and outpatient departments in October 2024. This staged rollout enabled early user engagement and close monitoring of system uptake in a high-turnover clinical environment before broader deployment. Implementation was supported by targeted training sessions delivered in person and through digital resources. During go-live periods, the implementation team conducted inperson floor walking to provide real-time support, address technical queries and reinforce correct use of the system in practice.

Sampling and data collection

Medication orders from the PED and the general paediatric ward were reviewed across 11 randomly selected 24-hour periods preintervention and postintervention implementation. In the pre-implementation phase, all medication orders were generated as per standard practice. Following implementation, the intervention became available to prescribers, but its use was not mandated. Initial intervention usage was sporadic and lower than anticipated, leading to a small number of intervention-supported orders being identified on the post implementation randomised dates. To supplement these, purposive sampling was used to identify intervention-supported medication orders, ensuring a sufficient dataset for evaluation. As a result, control orders were collected from both the randomised dates and incidentally during purposive sampling, while intervention-supported orders were primarily identified through purposive sampling. A formal a priori power calculation was not conducted. An expected effect size of a one-third reduction in prescribing errors (from about 7% to 2%) would have required approximately 1600 orders for 80% power ($\alpha=0.05$). However, the number of available intervention orders was limited, and the final sample size was determined pragmatically based on feasibility, available data and resource constraints.

Data collection was undertaken by one of two professionals: a senior pharmacist and a senior nurse researcher with expertise in medication safety. Medication order data was extracted using the organisation's business intelligence platform, QlikView. Additional patient information, including age and weight at the time of prescribing,

was collected manually from the EHR, to support assessment of dosing appropriateness. Extracted data from QlikView, along with the manually collected patient variables, were entered into a dedicated Excel spreadsheet for subsequent analysis.

For medication orders supported by the intervention, the Touchdose usage logs were manually reviewed. These logs include minimal patient data, including date of birth and weight and were manually linked to Cerner medication orders for patients with a matching medication, date of birth and time/date of the order. A 10-minute window was applied, based on findings from prior preclinical user testing and direct observation of prescribing practice in the study setting, which showed that prescribers typically completed medication orders within this timeframe after accessing decision support. This ensured that only medication orders where the intervention had been accessed for decision support within the 10 min prior to order submission in Cerner were included in the intervention-supported order analysis. Medication orders that were not identified as supported by the intervention were classified as control orders. Selection was based solely on system access and not on knowledge of whether an error had occurred. While purposive, the sampling approach aimed to minimise bias by applying consistent matching criteria.

We excluded medication orders for anaesthetic drugs, titrated insulin doses, maintenance fluids and medications without defined dosing guidance, such as aprepitant in patients under 12 years of age.

Outcome definitions

An erroneous medication order was defined as any order associated with one or more prescribing errors. Prescribing errors were identified as deviations from recommendations outlined in the BNFC or local clinical guidelines and were aligned with definitions used in previous studies.^{15 17} These errors could include incorrect dose (defined as $\geq 10\%$ outside the recommended range), dose unit, drug, route, frequency, patient, formulation or method of administration. Dosing errors with a deviation of $\geq 25\%$ from the recommended dose were categorised as a large magnitude dose error. Acceptable dose deviations were set at $\pm 10\%$ to account for rounding.

Error classification

Following data collection, each medication order was reviewed and classified as correct, incorrect or marked as a query and therefore requiring further clarification. Orders marked as 'query' were discussed collaboratively, and where necessary, the patient's clinical notes were reviewed to determine any clinically justifiable reasons for deviation from recommended dosing or off-licence prescribing. All orders from the paediatric ward were jointly assessed by both evaluators to enhance consistency in error classification and support shared clinical judgement. As a result of this collaborative review approach, a Cohen's Kappa score was not calculated.

Data analysis

Data were analysed descriptively to summarise the overall prescribing error rate and the distribution of errors by type. Frequencies and proportions were calculated for each error category. To assess the significance of observed differences in error rates between the control and intervention-supported orders, logistic regression models were applied, generating ORs with 95% CIs and associated p values. The models accounted for clinical setting (PED vs inpatient ward) to adjust for potential contextual differences in prescribing practices. Additional analyses adjusted for time of day (09:00–20:59 vs 21:00–08:59) to explore any diurnal variation in prescribing error rates. An additional intention-to-treat (ITT) analysis was conducted, comparing all prescribing events in the pre-implementation and post implementation periods regardless of system use, to reflect real-world impact. All statistical analyses were performed using Stata version BE18.¹⁸

Approvals and reporting

The study did not require NHS ethics approval, as it met the definition of a service evaluation at both a local and national level.^{19 20} It was presented to the hospital's Medicines Safety Group and subsequently registered as a service evaluation (registration number 977). This study has been reported in alignment with the STROBE checklist,²¹ ensuring transparency and comprehensiveness in describing its methodology, data collection and analysis. The reporting checklist is presented in the online supplemental appendix 2.

RESULTS

Overview of orders reviewed

The 1808 medication orders analysed comprised 1567 control orders and 241 intervention-supported orders. The most commonly prescribed medications across both groups were paracetamol, ibuprofen and co-amoxiclav, although their rank order differed. Paracetamol was the most frequently prescribed drug in the control orders (17.0%), followed by ibuprofen (10.6%) and salbutamol (7.2%). In the intervention-supported orders, co-amoxiclav was most common (15.3%), followed by paracetamol (12.4%) and amoxicillin (8.7%).

Overall, there was reasonable overlap in the most frequently prescribed medications, particularly among common analgesics and antimicrobials. However, salbutamol, the third most common drug in the control orders, was notably absent from the top 20 in the intervention-supported orders.

A full breakdown of the top 20 most frequently observed medications in each group is provided in online supplemental appendix 3.

Overall error rates

Intervention-supported orders were associated with a lower rate of erroneous orders across both settings. On

the paediatric ward, the erroneous order rate fell from 9.1% (77 erroneous orders, involving 143 errors in 850 orders) under standard practice to 1.1% (1 erroneous order involving 3 errors in 95 orders) when the intervention was used. This equated to an 89% reduction in the odds of error (OR 0.11, $p=0.03$), indicating a statistically significant difference.

In the PED, the rate of erroneous orders decreased from 4.9% (35 erroneous orders involving 56 errors in 717 orders) to 1.4% (two erroneous orders involving three errors in 146 orders) when the intervention was used. This represented a 73% reduction in odds (OR 0.27), although this result did not reach statistical significance ($p=0.08$).

When data from both settings were combined, the overall rate of erroneous orders decreased from 7.14% (112 erroneous orders involving 199 errors in 1567 orders) to 1.2% (three erroneous orders involving six errors in 241 orders) when the intervention was used, corresponding to an 83% reduction in odds of error (OR 0.17), which was statistically significant ($p\leq 0.01$). A full breakdown of erroneous order rates, including ORs, 95% CIs and associated p values from logistic regression analysis, is presented in [table 1](#).

When adjusting for time of day and location, intervention use was associated with lower odds of an erroneous order (OR 0.18, 95% CI 0.06 to 0.57, $p\leq 0.01$), with no significant effect of time of day (OR 0.97, 95% CI 0.59 to 1.60, $p=0.90$) or evidence that intervention orders were more or less likely overnight (OR 0.95, 95% CI 0.66 to 1.35, $p=0.76$).

In the ITT analysis comparing all prescribing events pre-implementation and post implementation, a statistically significant increase in the odds of a correct order was observed in the post period (OR=1.61; 95% CI 1.09 to 2.36; $p=0.02$). In the PED, the odds of a correct order were 2.04 times higher post implementation (OR=2.04; $p=0.05$), while in the ward the odds were 1.44 times higher (OR=1.44; $p=0.13$).

Errors by type

Across both clinical areas, dose errors were the most frequently observed error type. In the control group, 97 of 1567 medication orders (6.2%) had a dose error, compared with two of 241 orders (0.8%) in the intervention-supported orders. A substantial proportion

of these involved large magnitude deviations ($\geq 25\%$) from the recommended dosing range, accounting for 80 of 1567 control orders (5.1%) and two of 241 intervention-supported orders (0.8%). These patterns were consistent across both the general paediatric ward and the emergency department, with the highest base-line error rate observed on the ward.

Non-dose error types were infrequent and included incorrect dose units, frequencies and methods/formulations. No errors involving wrong drug, route or duplicate orders were identified in the intervention-supported orders group. A detailed breakdown of prescribing errors by type, expressed as a percentage of total medication orders reviewed, is presented in [table 2](#). Examples of errors by type observed in the control orders are provided in online supplemental appendix 4. All errors observed in the intervention arm are detailed separately in [table 3](#).

Examples of errors identified in the control orders

Two notable dose errors identified in the control orders illustrate the potential consequences of inaccurate prescribing as shown in [table 4](#).

In addition, a high number of analgesia dosing deviations were observed in the control orders. For example, enteral morphine was frequently prescribed at a dose of 100 $\mu\text{g}/\text{kg}$, which is half of the lower end of the recommended range as specified in both BNFC and local guidelines. This underdosing pattern was observed across multiple patients with varying ages, weights and clinical indications. A breakdown of the number of erroneous orders by medication is presented in online supplemental appendix 5.

Errors identified in the intervention-supported orders

A total of three prescribing errors were identified in the intervention-supported orders, as shown in [table 3](#). In each instance, the intervention presented appropriate guideline-aligned recommendations; errors arose due to either prescriber deviation from the given recommendation or incomplete use of the tool.

DISCUSSION

Principal findings

The intervention was associated with a statistically significant reduction in paediatric prescribing errors,

Table 1 Erroneous order rates and logistic regressions for control and intervention-supported orders

Setting	Control error rate (n/N)	Intervention error rate (n/N)	OR	CI	Wald test P value
Paediatric ward	9.1% (77/850)	1.1% (1/95)	0.11 (89% reduction)	0.01–0.77	0.03
Paediatric emergency department	4.9% (35/717)	1.4% (2/146)	0.27 (73% reduction)	0.07–1.17	0.08
Combined both locations	7.14% (112/1567)	1.2% (3/241)	0.17 (83% reduction)	0.05–0.53	<0.01

Table 2 Errors by type

Error type	Combined (all locations) error rate n/N (%)		Paediatric ward error rate n/N (%)		Paediatric ED error rate n/N (%)	
	Control	Intervention	Control	Intervention	Control	Intervention
Dose	97/1567 (6.2%)	2/241 (0.8%)	75/850 (8.8%)	1/95 (1.1%)	22/717 (3.1%)	1/146 (0.7%)
≥ 25% RDR*	80/1567 (5.1%)	2/241 (0.8%)	62/850 (7.3%)	1/95 (1.1%)	18/717 (2.5%)	1/146 (0.7%)
Dose unit	5/1567 (0.3%)	0/241 (0.0%)	3/850 (0.4%)	0/95 (0.0%)	2/717 (0.3%)	0/146 (0.0%)
Frequency	5/1567 (0.3%)	1/241 (0.4%)	2/850 (0.2%)	1/95 (1.1%)	3/717 (0.4%)	0/146 (0.0%)
Wrong drug	5/1567 (0.3%)	0/241 (0.0%)	0/850 (0.0%)	0/95 (0.0%)	5/717 (0.7%)	0/146 (0.0%)
Method/form	4/1567 (0.3%)	1/241 (0.4%)	1/850 (0.1%)	0/95 (0.0%)	3/717 (0.4%)	1/146 (0.7%)
Duplicate order	3/1567 (0.2%)	0/241 (0.0%)	0/850 (0.0%)	0/95 (0.0%)	3/717 (0.4%)	0/146 (0.0%)
Total	199/1567	6/241	143/850	3/95	56/717	3/146

*≥25% RDR: deviation of equal or greater than 25% from recommended dose range.
ED, emergency department; RDR, recommended dosing range.

particularly in the inpatient ward setting. Across both areas, error rates dropped from 7.1% to 1.2%, representing an 83% reduction in odds of error. On the general paediatric ward, the reduction was even more pronounced (from 9.1% to 1.1%). While the error reduction in PED was not statistically significant, a substantial decrease was still observed (from 4.9% to 1.4%). The ITT analysis, while limited by low initial uptake of the system, supports the main findings and demonstrates a real-world reduction in error rates following implementation. These data suggest that broader adoption of the intervention may yield further benefits over time.

While the intervention was associated with reduced error rates, its use appeared less frequent for familiar or fixed-dose medications, such as salbutamol. This may reflect prescriber confidence in recalling standard doses, particularly in acute settings, or perceptions that such drugs are lower risk. These observations suggest that medication complexity and perceived need for support may influence uptake, an area that warrants further qualitative investigation to inform future implementation and training.

Underdosing of analgesia was commonly observed in control orders, with doses falling below the recommended range specified in both national and local

guidelines. These deviations were classified as prescribing errors in this study, although the clinical impact may vary depending on individual patient circumstances. The consistency of this pattern across patients of different ages and clinical presentations raises questions about prescriber confidence, potential over-caution or discrepancies between local practice and national standards. These findings suggest that the intervention may have a role not only in reducing overall error rates but also in supporting more appropriate and consistent dosing in cases where deviation from guidance appears to be a recurrent issue.

Context and comparison with the existing literature

These findings support a substantial and well-documented evidence base demonstrating the elevated risk of prescribing errors in paediatric populations, particularly those involving dose inaccuracies.^{1-3 17} As noted in the introduction, children are especially vulnerable due to weight-based dosing requirements and age-specific pharmacokinetics.^{2 4-6 22} This study reinforces those concerns, with over 6% of the control medication orders associated with dose errors and 5.1% exhibiting deviations of 25% or greater from recommended dose ranges. Such rates are consistent with international reports, including a

Table 3 Errors identified in the intervention-supported orders

Medication	Patient details	Prescribed dose	Recommended dose	Description of error
Ipratropium bromide	15-month-old, 10.6 kg	two puffs, four times daily	One puff, three times daily	Increased total daily dose and frequency
Ondansetron	9-year-old, 33.2 kg	5 mg intravenous injection	3.3 mg (0.1 mg/kg) injection	Dose suitable only if given by infusion, not intravenous injection
Dexamethasone	5-year-old, 21.8 kg, for acute croup	Once daily	One-time dose	Frequency error owing to deviation from recommended single dose in the PED setting.
PED, paediatric emergency department.				

Table 4 Example of errors identified in the control orders

Medication	Patient details	Prescribed dose	Recommended dose	Description of error
Valganciclovir	17-month-old, 4.5 kg	900 mg	72 mg (16 mg/kg)	>12 fold overdose
Aciclovir	6-year-old, 20 kg, suspected encephalitis	200 mg intravenous	~395 mg (500 mg/m ²)	Significant underdose

white paper from PEDeus AG, which identified dosing errors as the most frequent medication error type in paediatrics, often accounting for more than 30% of all reported errors in some settings.²³

Two dose errors in the control orders, including an over 12-fold valganciclovir overdose and a substantial aciclovir underdose, highlight the potential severity of paediatric prescribing inaccuracies. These examples underscore the limitations of relying solely on incident reporting systems, as such errors are often unrecorded, yet carry significant clinical risk. Nationally, medication errors are estimated to cost the NHS over £98 million annually and contribute to more than 700 deaths.²⁴ Structured prescribing tools that reduce dosing errors may therefore have a broader role in mitigating both patient harm and system-wide resource burden.

Overall, the study provides real-world evidence supporting the growing success of structured, indication-based CDS tools that use patient-specific factors, such as indication, age, weight and formulary logic, to improve prescribing safety in paediatrics.^{12–14} Touchdose, which embeds this functionality within a widely used EHR (in this study, Cerner Millennium) and aligns with NHS integration standards, demonstrated an 83% reduction in the odds of prescribing error and offers a scalable, contextually tailored solution to persistent safety challenges in this setting.

International systems such as PEDeDose in Switzerland and the Dutch Kinderformularium, which incorporate an integrated dose calculator, have reported similar improvements in safety and efficiency.^{13 14} To date, much of the published evidence on structured, indication-based prescribing tools in paediatrics has originated from mainland European healthcare settings. This study contributes important real-world data from a UK NHS context, demonstrating that such tools can also be effective when integrated into large, generalist EHRs such as Cerner Millennium. Like these systems, Touchdose delivers evidence-based dosing support at the point of prescribing and may overcome many of the usability and workflow integration limitations observed in existing CDS tools.^{25 26}

Strengths and limitations

This study has several strengths, including its real-world evaluation, ensuring the findings are applicable to routine clinical practice. The inclusion of both paediatric inpatient and emergency settings allows for a broader assessment of the intervention's impact across different clinical environments. A key methodological strength

was the large control sample, which was intentionally collected to establish an accurate and up-to-date baseline prescribing error rate. Since purposive sampling was used to ensure a sufficient number of intervention-supported orders, this may introduce some selection bias. However, the large and representative control sample helps to mitigate this and provides a robust comparator. This supports meaningful interpretation of observed reductions in errors within the context of contemporary prescribing practices.

However, some limitations should be acknowledged. Initial variability in intervention uptake may have influenced the results, as adoption rates can affect the extent to which prescribing practices change following system implementation. Improving uptake in future implementations may require earlier engagement with clinical teams, support for local champions and better integration into existing prescribing workflows. A further limitation was the need for manual linkage between Touchdose usage and medication orders, with intervention support defined as access within the 10 minutes prior to order submission based on prior user testing. This analysis was resource-intensive and prevented sensitivity analysis for alternative time windows, although very few fell outside this window. It is also possible that prescribers accessed the intervention more frequently when they had additional time available; however, the current study design did not capture this, and ongoing qualitative evaluation may provide further insight.

The non-randomised, before-and-after design without a concurrent control group limits the ability to draw causal conclusions. Observed reductions in error rates should therefore be interpreted as associations, pending further research using more robust designs. The study did not assess error severity or potential patient harm, which may provide further insight into the clinical impact of the intervention. However, incident reports relating to the intervention are being monitored as part of ongoing evaluation, with no patient-related harm reported to date. Additionally, while the study provides strong quantitative evidence of error reduction, it lacks detailed qualitative insights into prescriber experiences and system usability, which are crucial for understanding barriers to sustained engagement. Ongoing data collection aims to address this gap. Future research should integrate qualitative insights to contextualise user interactions and assess long-term barriers.

Recommendations for practice, research and policy

Practice

This evaluation supports the use of indication-based CDS tools such as Touchdose in paediatric prescribing, where a significant reduction in error rates was observed, particularly for dose-related errors. Given the frequency of errors and high risk associated with paediatric dosing, such tools may offer a practical means of improving safety. All intervention-related errors were due to prescriber deviation from system recommendations, highlighting the importance of targeted training and support to ensure effective use.

Research

Further research using robust, multisite designs (eg, stepped-wedge or time series) is needed to confirm these findings and assess generalisability. As this study focused on quantitative outcomes, there is also a need for qualitative research to explore prescriber behaviour, system usability and barriers to adherence. The high rate of large magnitude dosing errors ($\geq 25\%$ of the DRD) underscores the need for focused research on how CDS tools can mitigate paediatric dose calculation risks.

Policy

These findings align with national and international priorities around medicines safety and digital transformation, supporting the case for structured evaluation and scale-up through existing national strategies and frameworks.²⁷ While not directly measured, the reduction in errors may reduce the burden on nursing and pharmacy staff, who frequently intercept prescribing issues. Further research could explore these indirect benefits to inform digital workforce and safety policy.

CONCLUSION

This evaluation demonstrates that the intervention significantly reduced the rate of paediatric prescribing errors from 7.1% to 1.2%, representing an 83% reduction in odds of error, reinforcing its potential role in medication safety. Future work should focus on optimising prescriber adherence, refining system integration and exploring scalability to other paediatric and adult settings. Further evaluation of economic benefits and qualitative prescriber experiences will provide a more comprehensive understanding of the system's impact.

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OpenAI) was used to assist with grammar and readability improvements during manuscript drafting; no content was generated or altered by AI.

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