Tx, is used to measure the velocity of two. An IF signal is calculated by mixing the transmitted and received signals. Each IF signal undergoes an FFT to find a peak corresponding to the range. A second FFT transforms the set of Range-FFT results so that two objects can be distinguished by their phase displacements, which correspond to their different velocities. Therefore, the heart rate can be distinguished from the breathing rate. (a) A frame of transmitted signals are used to (b) detect the range of the chest, which can be (c) transformed into heart rate and breathing rate using FFTs. The IWR1443 mmWave radar sensor obtains heart rate measurements by detecting miniscule movements of the chest caused by the heart's pulse and breathing.

Results A Graphical User Interface was developed using C and MATLAB to display a cardiac waveform and a graph of heart rate values in apparent real-time. Experiments using moving averages were performed to increase the accuracy of the sensor's values.

Conclusion This relatively new mmWave radar technology can be used fairly accurately for the pulse rate monitoring in neonates, children, burns patients or for sleep studies. Being contactless, it prevents skin damage and burns. We recommend the 'Paediatrics 2040' project to encourage the Use and further Research of such monitoring devices to decrease risks.

G92(P) INTER-PROFESSIONAL TRIPARTITE ALLIANCE TO REDUCE MEDICATION ERRORS IN CHILDREN

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Aims Healthcare professionals are faced with a number of challenges when prescribing and administering medication to children, due to the complexities of age-related drug calculations. Internationally, multiple studies have shown that the regular occurrence of such errors carries a high potential for unintended harm to patients, with research suggesting that good quality care depends upon different professions working together.

In light of this, we reasoned that reducing medication errors could be achieved by multidisciplinary education. For this purpose, a paediatric tripartite alliance between Medicine, Nursing and Pharmacology was created.

Methods An initial prospective audit was undertaken, with the aim of recording the number, nature and severity of reported medication errors over a three - month period. Errors were identified using the Datix database and were classified according to the EQUIP study model.

Following the initial audit, a structured educational programme was introduced to all medical and nursing staff. Subsequently, data was collected over two separate three-month periods.

Results During the pre-intervention period, a total of 159 children were admitted to the paediatric inpatient wards. The total number of recorded medication errors was 142.

During the first post-intervention period, a total of 470 children were admitted and 57 errors were recorded. Compared with the pre-intervention data, where 89.3% of

admitted patients had been subjected to errors, this value decreased to 12.1%, with an estimated error reduction of 77.2%.

During the second post-intervention period, a total of 338 patients were admitted, with 120 errors recorded (35.5%).

Conclusions The commitment to tackle the issue of medication errors as part of an inter-professional tripartite alliance, coupled with the implementation of a structured programme, have contributed to a significant reduction in medication errors.

Further improvement could be achieved by understanding and targeting specific environmental and human factors, and by addressing any unmet training needs.

We believe that implementation of similar educational programmes on a wider scale would be achievable and cost-effective.

G93(P) FOLLOW UP SKELETAL SURVEY IN CHILD PROTECTION MEDICALS: A QUALITY IMPROVEMENT PROJECT

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Introduction Skeletal fractures are estimated to occur in half of children who have suffered physical abuse.¹ Fractures secondary to non-accidental injury are often occult and risk under detection if single skeletal survey is undertaken; hence follow up is recommended at 11 to 14 days.² Following a serious case review, quality improvement (QI) service changes were implemented aimed at standardising and simplifying logistics, engaging parents/social services at initial survey, reducing reliance on on-call teams and improving communication to reduce human and system errors.

We evaluated the number of patients who met national criteria for follow up skeletal survey and timing of follow up, if undertaken, both pre and post QI changes.

Method Retrospective audit of children undergoing follow up skeletal survey comparing the rate of follow up within 11-14 days and up to 28 days between June 2017 and June 2019. Data were collected from electronic hospital records and case notes and analysed using Microsoft Excel and Stata with significance as $p < 0.05$.

Results 53 children were included in the audit (20 pre-change and 33 post change). QI changes to provision of service resulted in significantly less children missing follow up skeletal survey (45% (n=9) vs 3% (n=1), $p=0.002$). 68.7% (n= 22) of follow up surveys occurred within the gold standard of 11 to 14 days following QI change compared to 45% (n=5) prior. Of children who underwent skeletal survey 45% presented with bruising and 17% with fracture.

Conclusion Follow-up skeletal survey is an essential part of the child protection medical pathway, occurring ideally within 11 to 14 days, to optimally detect healing fractures. The following implemented changes have led to valuable learning which provides opportunity for change to other teams:

- Booking x-ray at time of first skeletal survey
- Radiology service responsible for making appointment
- Clear discussion and expectation of social worker and carers to attend second appointment

Overall, evaluation of human factors to identify potential barriers to follow up has significantly reduced errors and improved patient safety.

REFERENCES

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G94(P) IMPROVING CANNULATION EFFICIENCY IN THE CHILDREN'S HOSPITAL

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Aim To introduce standardised cannulation trolleys across the Children's Hospital to decrease time spent gathering equipment.

Method A questionnaire was sent to junior doctors enquiring about cannulation practices across the wards in the Children's Hospital. Junior doctors were then timed gathering the necessary cannulation equipment on all of the paediatric wards. A pilot standardised cannulation trolley was trialled on the children's assessment unit, and junior doctors were timed gathering equipment with the new trolleys. Adjustments were made to the equipment layout after feedback from staff, including photographs of equipment inserted into the trolley drawers to facilitate appropriate re-stocking. Standardised cannulation trolleys were disseminated across all wards in the Children's Hospital. A cannulation trolley champion was nominated for each ward. Random stock checks have been performed.

Results In the baseline survey 88% of doctors agreed that 'it often takes me longer to find the equipment I need for cannulation than inserting the cannula'. 1–6 cannulas were inserted per junior doctor per shift. The time taken to gather cannulation equipment at baseline was 4.21 minutes on average, the maximum time was 10 minutes. After the trial of the cannulation trolley on the assessment unit it took 2.12 minutes. This is an initial reduction of 50%. A second spot audit of the cannulation trolleys has been undertaken. All wards had well stocked cannulation trolleys and it now takes 58 seconds to gather everything needed for cannulation. If we scale this up and have on average 20 doctors working during the daytime, and each doctor sites 1–6 cannulas per shift, 84.2–505.2 minutes were spent gathering cannulation equipment compared to 19.3 minutes to 116 minutes currently.

Conclusion In an era of less staff and the need to improve efficiency, this simple implementation has hugely decreased the time spent preparing to cannulate, a common junior doctor job. This has enabled quicker cannulation especially in time critical circumstances such as sepsis.

G95(P) DRUGGLE: A PRESCRIBING SAFETY QUALITY IMPROVEMENT PROJECT

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Aim Prescription errors are common on paediatric wards and have the potential to cause significant harm to children and young people. We introduced a regular intervention - a prescribing safety huddle called the 'Druggle' that aims to a)

increase the awareness of prescribing errors among doctors and nurses; b) improve prescribing and reduce errors and c) create a safe and positive prescribing culture.

Method We have presented a monthly 'Druggle' at our Clinical Risk Meetings, where prescribing errors are discussed and learning points identified. These interactive sessions also involve prescribing quizzes created by our pharmacist. We have collected regular feedback from the multidisciplinary team to enable us to continually improve the 'Druggle'. Data has been collected on prescribing errors on our paediatric ward, over 10 day periods in October 2018 and June 2019, before and after the introduction of the 'Druggle'.

Results We noted a decrease in prescribing errors from 187 to 126.

Abstract G95(P) Table 1

Type of error	October 2018	June 2019
No date	10	19
No route	1	0
No dose	1	7
Incorrect dose	3	3
No dosing per kg when required	4	1
Incorrect frequency	2	0
Allergies not checked at the top of the drug chart	4	1
Allergies not checked for each prescription	86	40
Prescriber has not signed or documented their name	3	2
Antimicrobial Indication not documented	39	28
Antimicrobial Duration not documented	34	25

Feedback from the MDT allowed us to alter the content of our 'Druggles' to focus on learning from reported prescribing related Clinical Incidents and to develop the idea of introducing a prescribing safety newsletter. It has also helped us to tailor prescribing teaching in induction for new doctors joining the department. We have recently incorporated a pharmacist-led daily drug huddle in our board rounds.

Conclusion Regular prescribing interventions like 'Druggles' could be a valuable tool to improve safety and reduce prescribing errors. Regular feedback can continuously improve and develop these interventions.

G96(P) INNOVATING AND LEADING CHANGE: A PRACTICAL GUIDE TO IMPLEMENTING A REGIONAL ST1 TEACHING COURSE

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Aims The RCPCH requires that all three written exams be passed by the end of ST3 (level 1) training. Failure to do so prevents trainee progression. However, many trainees struggle to pass examinations on first sitting. In response, in 2014 we set up an exam preparation course that readied trainees for the FOP and TAS examinations within the first 6–12 months of training.

Methods A pre and post course online questionnaire (5-point Likert scale) was sent to all trainees after the 2019 course. It evaluated trainee confidence in passing the exam and