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Original Research Article

Use of technology to improve medication safety in residential childcare

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Abstract:

To increase the safety and improve the health outcomes of the children and young people in our care, an electronic medication administration (eMAR) system was implemented. We explore our experience, focussing on the challenges and improvements made by implementing this type of system. Despite initial hesitance to change, the system has improved how we manage medication within this service. It has reduced our errors, and reduced resources for ordering and auditing of medication, as well as providing young people with more responsibility for their own medication and overall health. Despite challenges in implementation, there are considerable benefits to using this type of system within residential childcare. The resultant reduction in errors provides an indication that there is an improvement in overall health outcomes for the young people in our care.

Introduction

The authors are two registered children's nurses, whose role is to support young people to access health services. Working day-to-day with the young people, providing direct assessment and care, as well as offering advice to residential childcare workers who support the young people every day.

We discuss the features and advantages of the electronic medication administration recording (eMAR) system, and the benefits and challenges identified through the systematic implementation process. Unique challenges were faced due to the nature of the specific services, which will be highlighted in the sharing of our practice.

Electronic medication administration recording (eMAR) systems are designed to reduce medication errors, prevent harm to patients, and improve patient care and outcomes (Westbrook et al., 2020). The uptake in Scottish care homes is

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low – around 5% of registered Scottish care homes use an eMAR system (Care Inspectorate, 2020).

There are limited sources of evidence with respect to medication errors within children and young people's services, with the focus of existing literature on elderly care homes, where medication errors are estimated at 8.4% (Barber et al., 2009). The authors used the limited literature to identify the process where errors are more prevalent. A review in 2015 (Elliot et al.) attributed 44% of errors to medication omissions. A more recent study included other factors within the review, identifying that the most common error occurs in the administration of medication, where 54% are due to the wrong dose, missed dose, or the wrong medication being administered (Elliot et al., 2021).The eMAR system hopes to reduce the frequency of errors, and to make identification of these errors, and the causative factors, easier to identify. The authors are unaware of this type of system being implemented in any children's or secure service within the UK.

Background

Medication errors are reported to be higher in non-nursing settings (Barber et al., 2009). Staff registered to work in residential childcare, known within the service as child and youth care workers (CYCW), will have, or will be working towards, qualifications in childcare to become registered child and young people workers, but do not always have formal qualifications in medication administration. Administration of medication to children and young people is undertaken by non-clinical staff, such that the system of training and assessment must be robust. Anecdotally within the service, staff often describe anxiety around the administration of medication.

The CYCWs must undertake four stages of training to be deemed competent to administer medication. Staff are required to read the safe handling of medication policy, to attend a four-hour face-to-face training session on the safe administration of medication delivered by a registered nurse, and to complete the eLearning training from the creators of the eMAR system. In order to conclude their training, the staff must pass a competency assessment completed by their line manager, which is repeated annually.

This training within the organisation follows the National Institute of Clinical Excellence (NICE) guidelines on the 'administration of medicines in care homes' (NICE, 2020).

CYCWs work within different areas in the organisation. The safe centre looks after young people who require secure care. Whilst others work between children's residential care on and off campus, and community based accommodation.

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Considering an eMAR system – Where to start?

Prior to planning the implementation, options were discussed with the Care Inspectorate's pharmacist and inspectors who provided links with establishments that had successfully introduced eMAR systems. The Scottish care sector, including residential and secure children's care, is regulated by the Care Inspectorate, who inspect these services to ensure they meet national standards, providing safe, high-quality care which supports children's wellbeing (Care Inspectorate, 2015). Medication is now one of the core assurances for these evaluations, where medication standards can affect the grading and reputation of an organisation.

Visits were arranged to those services identified by the Care Inspectorate, and in each, the key message was to implement eMAR in stages, or to 'start small'. Their advice is to be prepared for a significant increase in 'medication errors', due to the increased transparency and automatic identification, in addition to staff recording errors whilst they adapt to the new system.

Implementing an eMAR system comes with risk. The increased transparency may superficially lead to an increase in reported errors. We did not find a true increase in errors within the service, but did note that errors were more easily identified when using the eMAR system – initially causing concern for the implementation team. Many errors relating to the recording of time, dose and strength of medication in paper records may be missed due to the systematic review of paper records being time-consuming (Care Quality Commission, 2019). As such, it takes a confident leadership team to consider the change to an eMAR system, and one committed to improving outcomes for its residents. Early conversations with the Care Inspectorate and other stakeholders are key to this process.

The business case

The business case was proposed by the nurses to the organisation's leadership team. The eMAR system can enhance the accuracy of medication administration, stock management, and recordings of administrations, thus improving outcomes for young people with additional health needs. The eMAR system is in keeping with the organisation's digital transformation of its internal administration and recording systems.

One of the main considerations is the financial implications. The eMAR companies boast financial savings in staff time (Access Group, 2024). As with most digital systems, companies will present information that their system's costs are offset by reducing staff time in relation to medication and the organisation's reputation for accuracy in medication administration. The financial savings in staff time are important, but not easily quantifiable in residential childcare where medication usage fluctuates. There are no 'medication rounds',

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with young people having access to their medication in a more individualised and person-centred way. There are set-up purchase packages agreed with respect to licence costs, training and support, with the level required influencing the cost. This is in addition to the hardware that may have to be purchased to facilitate the operation of the system. Beyond the rollout, there is a monthly cost for the licence which must be maintained to continue use of the system. Prices are negotiable depending on the number of licences purchased, however there has been a substantial increase in this cost in the three years since first implementation.

Devices for implementation

Within the organisation there are 29 houses, each of which has its own laptop configured solely for medication administration and recording. In addition to the purchase of the laptops, there are additional costs for IT services to configure the system. In this organisation, the IT department configured the laptops to ensure that when young people access them it is only to administer medication. This measure was implemented to support GDPR compliance.

In this organisation, the decision was made to use laptops. Other devices such as iPads and phones do not allow a young person to check their medication with the staff. The young people are encouraged to take ownership of their own medication and to check it alongside the staff member – evidencing this by entering their own passwords into the system. Young people's involvement in their care is a key component of the organisation's ethos that it wishes to maintain. In addition, this system allows for recording by young people who self-medicate.

Electronic medication administration recording systems (eMAR)

Several systems are available, with more having emerged since the time of implementation. Some considerations used to determine which system is most suited to the service include; whether the chosen pharmacy can work with the system; the type of device the organisation would like to use for recording medication administration; whether the system will work offline; and the backup system. In addition, consideration should be given to the ongoing support options, from online databases to live chat and telephone support systems. In this organisation, the support was not fully utilised because nurses were available, and staff would tend to call on them to ‘sort’ problems.

Care assurances

The purpose of auditing is to assess, review, and make improvements (Care Inspectorate, 2019). Care inspectors now place greater responsibility on the organisation's quality assurance system, utilising self-assessment tools. Managers who audit paper systems must gather and review multiple forms of data which may not be accurate. Managers undertaking audits or investigations

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from paper systems cannot be assured of the accuracy, for example if paper sheets have been filled in retrospectively prior to the audit, or if administration times have been accurately recorded. This process is also time-consuming. Implementation of the eMAR system allows for accurate audits to take place, such that challenges to the safe administration of medication can be identified more easily and action plans can be created to address these difficulties.

Many managers within the service have commented on the reduction in time required to complete an audit using the eMAR system. Previously it was estimated it would take around two hours to complete a monthly medication audit. The eMAR system can automatically generate numerous reports to provide a more accurate and streamlined approach to the auditing of medication. In addition to time saving in auditing patterns in young people using their medication can be easily identified. This information can then be utilised to support medication reviews and ensure young people's health needs are monitored.

Live monitoring

Nearly half of medication errors are attributable to medication omissions (Barber et al., 2009). The specific eMAR system chosen allows for live monitoring via a dashboard screen where all staff can quickly identify where medications are due to be given or have been missed. This is augmented by an alert on the main screen, which identifies the specific young person and medication that is due to be given. Using the dashboard will allow staff to act 'rapidly' (a term used by the Care Inspectorate in their medication improvement project report, 2020) to prevent missed medication, which improves the outcomes for the young person.

If the eMAR system were to go offline, medications can continue to be given and recorded. The system updates as soon as it is reconnected to the network. The system has a backup for 14 days if the internet is unavailable, after that there is a 56-day backup on a main desktop computer.

Where do errors happen?

The care forum in June 2018 reported that two thirds of medication errors occurred at the point of administration (Care Quality Commission, 2019; Mulac et al., 2021).

The eMAR system has several features which attempt to reduce human error in the process of administering medication, including young people requiring a photograph on their profile page. We are aware that this is common practice in other areas, however there are specific examples where this has been helpful within residential childcare. For example, in a specific house multiple young people identified as a gender different to their sex and used a name other than their birth name. Medication labels and medical records within Scotland reflect the birth name and gender until legally changed.

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To prevent inadvertent additional administrations, when a young person is administered their medication they no longer appear on the administration screen, or they are 'greyed-out', preventing any repeated medication administration. Medications only reappear when an agreed time frame has lapsed, for example four hours can be set for paracetamol with a maximum dosage set for a 24-hour period.

In addition, the system allows for complex medication regimes to be entered, for example when titrating to a specific dose, which provides more accuracy and prevents errors where there are multiple changes to doses over a short period of time.

For medication in patch or injection form, there is a feature to record the site of the administration, and administration cannot be recorded without the staff member entering the site of administration. Changing the administration site is best practice (NICE, 2022). This feature within the system provides a reminder and safeguard to ensure this happens in practice. There have been no incidents where medication has been given on the wrong site or route in the past 12 months.

The above features support the six rights of medication administration: i.e. 'right resident, right medicine, right route, right dose, right time, and right to refuse' (National Institute for Health and Care Excellence, 2020). Patterns of young people refusing their medication can be identified, and using this staff can encourage young people to take responsibility and discuss their medication and health needs with the appropriate health team, ensuring they are fully involved in all discussions about their health (Scottish Government, 2020).

In the eMAR system there is a feature involving a barcode scanner, wherein the pharmacy will provide a barcode on each of the medication boxes and the staff scan the medication box to ensure it is the correct medication for the resident. However, this feature is only possible when a designated pharmacy is preparing the medication for the eMAR system. The use of the scanner was trialled in the first rollout, but over time the use of the scanner fell away and staff were reading the labels rather than scanning. Using a barcode scanner was found to be effective in reducing administration errors (Malson, 2015), however we were unable to gather enough data to identify whether the use of the scanner in practice in this organisation reduced medication administration errors.

Optimising medication monitoring in young people

When young people are prescribed pro re nata (PRN), or as required medication, for example by clinicians in Child and Adolescent Mental Health Services (CAMHS) to manage symptoms of emotional distress, the eMAR system requests a note at a set time following the administration to record the effectiveness of the medication. A report of the frequency of use of these medications, as well as

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the notes entered by staff, can easily be generated and provided to CAMHS clinicians on request. The information in this report is useful to consider within the formulation of the young person's difficulties, to identify specific times or patterns when the medication is required to manage symptoms, and to highlight areas where other supports should be used before administering medication.

Covid-19

The rollout of the eMAR system was put on hold during the Covid-19 pandemic, which increased the time that the organisation was utilising two different medication management systems, eMAR in secure services and paper recording in others. The public health agenda has moved on from Covid-19, but many care establishments are still recovering from the effects of the high turnover of staff and difficulties in staff recruitment (Coalition of Care and Support Providers Scotland, 2024). This turnover of staff led to less staff being competent with using the new system, which increased the time spent on ongoing training. Impressively, throughout the pandemic the electronic system was maintained.

The implementation process

The two registered nurses employed by the organisation were leads for the implementation, providing weekly progress updates and arranging monthly meetings. The team supporting the implementation included the clinical director, service director, IT manager, learning and development manager, quality assurance manager, and data protection officer. An implementation timeline was developed and shared with the group.

As with any change project, during the implementation process there were staff who were resistant to the change, which was anticipated, but the nurses identified managers and staff who were enthusiastic about embracing the eMAR system in each of the houses.

Staff were supported to visit other organisations that had implemented the system to observe it in action. This worked to alleviate staff concerns and allow for familiarisation with the system. One of the main fears staff raised was concern that they were 'not good with computers', rather than worries about the eMAR system itself.

On completion of phase one in the safe centre, there were requests from managers in other services keen to have the eMAR system implemented in their houses to reduce auditing time. This enthusiasm and staff familiarity with the eMAR system within the first phase built momentum, which helped drive forward the change process. This was particularly evident in the third phase, within the community setting.

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Training

The training itself takes place online, with specific modules to be completed depending on the responsibilities of the staff member. Modules for CYCW take around three to six hours to complete. Managers who have additional modules estimated four to eight hours for completion. Each module has three sections: demonstration, guided example, and unguided example. If there are more than four errors in each module, the section must be repeated. Initially, differential roles were established for the different grades of staff, however as time progressed this proved to be problematic, as staff were promoted and had additional modules to complete and then their user setup changed on the system. In reviewing the system it is now streamlined with two roles, CYCW and managers.

The training is thorough, but staff generally did not enjoy the training due to the level of accuracy required. The training itself was described as 'pedantic', due to staff being able to identify the correct answer but often failing due to not being accurate enough in clicking or typing. The training materials were standardised and not customised to the organisation, such that aspects of the training were not relevant to children's services. The training material is designed for elderly care homes, which was another challenge for staff as the language used in the training examples and medication were unfamiliar. This contributed to some staff feeling overwhelmed by the training.

Depending on the implementation package purchased there are live training days for staff where the trainer is online taking the staff through simulated examples. In the first phase this was face-to-face, with the latter two phases taking place online. It was reported that the face-to-face training was more helpful, where staff were set up with computers, in small groups with the trainer, and nurses supported the practical sessions. Online sessions mimicked this but the interaction and reported usefulness were reduced. It is licenced training, meaning that the organisation implementation leads are not able to access this and hold workshops, which is a significant drawback when considering how difficult it is to offer the training to staff working across services on various shift patterns, including night shifts.

That said, the eMAR trainer assigned to the organisation, with the support of the nurses, did develop examples relevant to the young people, for example with ADHD medication, contraceptives, acne treatments, asthma, eczema, and diabetic medication, typical medications prescribed to the young people in residential childcare. Staff did respond well when these examples were used making it more relevant to their daily experience. This form of training elicited questions that could be answered by the trainer prior to the system going live.

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Access to the online training requires each staff member to have a login and password set up. In this organisation the learning and development department took on this responsibility, where in each of the three phases one week was allocated for the task of setting up and administering logins to each staff member. The senior management supported the request to make the training mandatory for all staff. However, there were still challenges in staff uptake and completion for various reasons. An additional factor, not relevant for this organisation but worth considering, is the use of staff who would not normally work within the service, such as agency staff. Such staff would not have access to the system, or the required training and competencies. The time for rolling out the training varied in the services, on average taking over six weeks for all staff in a team to complete the online training, which their line manager needed to factor into the weekly rotas. The live support training dates were booked in over two weeks, followed by the 'go-live' one week later.

The rollout

The three phases were carried out as follows:

Phase 1: Three houses in the safe centre,

Phase 2: Thirteen residential houses on one campus

Phase 3: Thirteen community houses.

Each phase followed the same format, where an implementation group was identified and led by the nursing staff. In this organisation the rollout was led by the nurses for the safe centre and residential houses, whereas for the community setting it was a CYCW under the guidance of the nurse who supported the implementation. The timeline for each of the services was established from a realistic 'go-live' date.

When the eMAR database is prepared for use in the organisation every member of staff is required to have their details inputted into the system and a login generated. Four weeks were allocated for this, for several hundred staff, with the support of administrators. Once the staff in the houses had logins to access the eMAR system, they were requested to complete a profile for each young person in their service.

Going live preparation with GP practice and pharmacy

There is a need to discuss eMAR with the GP practice associated with the service. For this organisation, it was a substantial task for the GP to coordinate the prescription requests for all young people's medication. For the eMAR system, all young people are on the same 28-day cycle for ordering and delivery of medication. This is common practice within other services such as elderly care

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homes; however, this is not generally the practice in residential childcare due to the frequent medication reviews and population changes.

To ensure all young people started the 28-day cycle at the same time, multiple prescriptions were required for specific quantities of medication to allow for synchronisation of this cycle across all aspects of the service.

Re-ordering of medication

The eMAR system supports accurate monitoring of medication stock and re-ordering of prescriptions. The system works on a 28-day cycle where a re-ordering report is automatically generated. This report is populated with all the details required for the GP to provide a prescription for the young person, including the medication name, dose, and label details, and estimates the quantity required based on the previous month's usage. This report can be sent to the GP to request a prescription, thus ensuring the continuity of medication, and the automated ordering process reduces errors (Access Group, 2024). Having an efficient system to re-order medication reduces the likelihood of requiring emergency prescriptions and sourcing medication out of hours – this has a wider impact than the service itself, additionally reducing resources required within the health service (GP and pharmacy). There have been no instances in the last 12-month period where young people have not had access to medication due to there being no stock or expired stock. Use of the 28-day cycle also prevents overstocking of medication and reduces waste – this is a key driver currently in the local NHS health board, with Greater Glasgow and Clyde estimating that 10% of dispensed medication is wasted each year – in the local health board area this accounts for around £100,000 per day (NHSGGC, 2024).

Pharmacy involvement and support was essential in transitioning to the eMAR system, which was considered prior to purchase as not all pharmacies are compatible with all systems. In the first phase of the rollout in the safe centre, all the young people were in secure care, and as such did not go to local minor ailment services or go out to GP practices. Therefore, all prescriptions were able to be processed by a central pharmacy, who populated the details of the medication directly into the system, again reducing human errors within the service when entering medication information. This is the ideal situation and worked well in the secure centre. However, in the residential and community services where young people are encouraged to make GP appointments and go to the pharmacy as part of their life skills training, using only a central pharmacy is no longer possible. In this situation, when the pharmacist is not uploading the medication, it would be the CYCW who uploads the information onto the eMAR system. To reduce the risk of error within this process, the service enacted an additional safeguard to ensure a manager checks and approves the medication before it can be administered.

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Negotiating with the GP and pharmacies in each of the phases was allocated six weeks to allow for meetings to be arranged/rescheduled. This was led by the nursing team to ensure a single point of communication between all services. Establishing this point of contact within the pharmacy and GP practice helps resolve any anomalies at the 'go-live' stage and moving forward.

The go-live date

At the point of the first go-live date the nurses rotated to provide comprehensive 24-hour support, in addition to the trainer being onsite to ensure all system questions and medication queries could be responded to quickly. The next go-live involved 13 residential houses on one campus. While each of the houses has its own staff team, collectively they are part of the same campus. All 13 houses went live on the same day and there was online support from the company, however staff appeared to prefer having someone on campus to 'show' them and therefore contacted the nursing team. This support was provided by the nurses, the CYCW, and managers from the phase one service. The nursing team supported the rollout, however this was difficult to sustain – on reflection, the nursing team should have signposted to the online help from the early stages to prevent reliance on the health team.

In the final rollout to the 13 community houses, a CYCW was recruited part-time as a health support worker for the duration of the implementation. Each of the houses was systematically set up and went live. Due to the geographical spread (across four local authorities and two health board areas), each of these community houses has different GPs and pharmacies. At the time of going live the week prior (or for as long as necessary), the health support worker was in the houses with staff supporting them to create profiles for the young people. During the go-live week, the health support worker provided daily support. This could be extended if required, as these services can feel isolated from the support of the larger part of the organisation. On average it took between one and three weeks to complete a house.

The quality assurance developments within the organisation

The organisation has a quality assurance department and the nurse links directly to this to ensure and evidence the highest standards. The young person's experiences and how their needs were met must be documented. The Looked After Children (Scotland) Regulations (2009) indicate that looked after young people's care records must be kept for 100 years, thus, digital medication records are much more readily accessible than archived paper documentation.

As the system is embedded in the organisation there are twice daily stock checks which are automated by the system, allowing for any irregularities in the stock to be followed up by the staff on shift.

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The house managers complete a monthly audit: checking the profile of a young person is correct, reviewing whether medication labels and instructions match, any medication given late without reason, and any medication missed. The nurse then completes a parallel audit and categorises it using the traffic light system:

- Green: no administration or recording errors and managers' audits completed.
- Amber: administration or recording errors but identified by the manager and appropriately followed up.
- Red: administration errors or recording errors that have not been identified by the manager.

For services in the 'red' the manager is required to have an action plan and would have support from the nurse and the head of operations within the organisation, thereby directing the support to those services that require it.

Summary timeframe

The timeline and actions within the table at Appendix 1 relate to the organisation's internal processes. Other organisations may be able to implement over different timescales, depending on size, availability of hardware, and the implementation team.

Key questions to consider

Once the rollout commenced, one of the challenges was running with two systems in the organisation, where the old 'paper' system continued to run in some services whilst the eMAR system had been rolled out in others. This became challenging, with respect to ensuring policies and training were able to cater for both versions of medication administration.

Every service had unique challenges, and the authors found key themes across the three phases:

- There is a need to prepare senior management for an increase in error reporting, including recording issues but also highlighting previously unseen errors in practice. Pre-emptive discussions with the Care Inspectorate should be considered. The Care Inspectorate are in favour of the eMAR system, following the WHO in aiming for a 50% reduction in medication errors (Care Inspectorate, 2020; WHO, 2017).
- Additional features of the system include automated reports as to which staff are giving out medication. This allows the manager to identify staff who may be reluctant to give out medication and require additional support, thus increasing the competence and capacity within the team for safe handling of medication.

For the eMAR system to be sustainable in the organisation this requires ongoing commitment, for example, to remove staff who have left, to issue new logins for

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new staff, and to reset logins for staff who have forgotten their password. To facilitate the practice for young people to take ownership of their own medication, all young people required logins for the eMAR system, demanding a substantial number of resources to set up and maintain.

The system has a help function that all staff can access, but staff were reluctant to use this due to having nurses available on site, leading to staff approaching them regularly rather than utilising the help functions within the eMAR system. Despite encouragement, staff continue to tend to favour seeking support where someone will show them in person. This has been difficult to sustain whilst continuing with core aspects of the nursing role.

To reduce the ongoing support required from the nursing team, the authors developed a quick reference guide with screenshots to respond to frequently asked questions and cover common processes within the system. This has been invaluable and is frequently referred to by staff and managers alike. More recently the managers requested that the nurses develop a quick reference book for the features specific to auditing, which has been actioned and utilised within the services.

Key recommendations

- Early conversations with senior management and the Care Inspectorate to support implementation.
- Ensure key stakeholders are also involved early, such as the GP, pharmacy, and IT and learning and development colleagues.
- Budget planning, being prepared for ongoing and changing costs.
- Identify clear support structures for staff early in development, to ensure system use is sustainable.

Limitations

The authors did not complete a formal qualitative evaluation of the implementation with young people or staff. Young people move within the service frequently; therefore, many do not have comparative knowledge of the paper system. Staff were asked for comments on their experience of the implementation, but minimal responses were returned.

Conclusion

There are considerable benefits to the eMAR system, ensuring best practice in medication administration and recording, as evidenced by its complete transparency and the low rate of medication errors. It has supported a standardised approach to the ordering, administration, and recording of all aspects relating to the safe handling of medication, and generates electronic reports on all of these processes.

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There are additional aspects to consider, as well as those relating to the storage and retention of documents. Currently, within residential childcare, there is an onus on services to be able to provide detailed records of a young person's stay with them, often years later. The eMAR system provides ready access to medication records.

This article details the process specific to implementation and refers to the other departments involved, such as IT and learning and development, who within their role supported this transition, developing their implementation plans around the 'go-live' date, and offering ongoing support.

This requires planning and identifying who within the service has the capacity within their role to have an overview of the system and to take responsibility for the wider aspects of the safe handling of medication. Reflecting on Barber's research, this should have been identified prior to implementation.

The information in this article is anticipated to inform the planning and preparation for an organisation to implement an eMAR system.

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Appendix 1

Task	Actions	Timescale
System Choice Developing a business case	Business case costs to include: Hardware and software Ongoing costs Staff for implementation Staff for ongoing operation Initial Software costs Ongoing licence costs Training time/cost	4-8 weeks
Process of approval from the senior leadership team	Review and update the business case	2 -8 weeks
Establish the implementation group. Employ or allocate staff time to project Set weekly/monthly meeting dates in advance	House managers, health, IT, learning and development, GDPR officer, staff rep, admin Weekly summary report	2-8 weeks (dependent on recruitment)
Introduction of the eMAR system and process of implementation. Prepare for FAQ	Attend manager's meetings, team meetings, and development days	3 weeks (depending on size of the organisation)
Meeting with the company to discuss the training package and agree with your organisation's L&D	Agree on the training plan and timeline. Who will be organising the training access logins, online events, and updating the staff records on completion of training?	1 week
GP and pharmacy arrangements around the 'go-live' date and ongoing 28-day ordering cycle	Establish the number of young people and their medications Go-live date agreement Identify contact person at the pharmacy and GP practice If sourcing a pharmacy to input medication this will have been arranged in advance	2-4 weeks depending on availability of GP and pharmacy.

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		This will have been discussed at the prep stage as this will influence the type of eMAR system
IT department to purchase hardware and prepare for software installations	Ongoing IT support for software updates	4 weeks depending on the availability of software
Liaising with system provider re. specifics of database for roles and responsibilities of staff etc.	This will influence the training modules.	Commences when the contract has been signed
Prepare for the go-live date – when additional support is available for services	For example, avoiding months e.g. over holiday periods	Week before 'go-live' date
Set up and issue staff/users with logins	Admin task - will require ongoing updates with respect to staff turnover	Fortnight before 'go-live' date.
Prepare the system for use. Staff will upload profiles and medication orders onto the system.	Plan for who will review the input to ensure accuracy	Week before 'go-live' date
Arrange the stocks of medication for commencing the 28-day cycle	This will require reviewing current medication balances and requesting specific numbers of tablets for each young person	Within 1 week of the 'go-live' date
Transfer current medication counts from the paper system to the electronic system on the go-live date	This upload of the stock will follow the last medication administration on the paper system	Day and morning prior to the 'go-live' time.
Support go-live	Increased support for the first week	Support each shift team in administering medication using the system.

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Ongoing support to troubleshoot, update the users for changes in staff, coordinate the reordering of medication, install software updates, training support for new staff	Establish who will have the roles and responsibilities: IT for updates Training department Troubleshooting Coordinating medication orders Coordinating medication disposals Updating system users with new/leaving staff Negotiating license agreements	Ongoing
Updating policy and procedures will be required to reflect the responsibilities and process using the eMAR system	The roles and responsibilities Expectations on staff Outcomes of errors Link with management and HR policies	1 week
Review system of quality assurance	Review the manager's auditing systems and data analysis for action on areas for support, training, and noting excellent practice	Depending on the monitoring systems that are being developed or updated within the quality assurance dept.

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