MMJ

Malta Medical Journal, 2024; 36(3)
http://mmsjournals.org/index.php/mmj/41

ORIGINAL ARTICLE

Discharge documentation for febrile children in the Paediatric Emergency Department: how can it be improved?

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Background

A high turnover of patients is the norm at the paediatric emergency department, which inadvertently affects the documentation of patients' encounters.

Methods

This retrospective study involved two audit cycles, performed over six-week periods at a one-year interval, to assess discharge documentation for febrile children in the paediatric emergency department. Documentation for the following fields was assessed; diagnosis, treatment prescribed, drug doses, advice given, legibility and follow-up plan. A number of deficiencies in documentation were identified following the first cycle. Three interventions were implemented: presentation of initial audit to doctors, setting-up of a follow-up clinic for febrile children and designing a handout for carers about caring for febrile children. Chi-squared test was used, with a p-value of <0.05 considered as significant.

Results

386 and 380 children were included respectively in the first and second audit. Diagnosis was documented in 84% (n=324) and 80% (n=304) respectively (p=0.09). No significant change in documentation of the prescribed treatment was noted, 73% (n=285) versus 79.4% (n=302). However, there was a significant positive trend in documentation of actual drug doses ($p<0.0001$). Documentation of advice given to carers rose significantly from 11% to 48.6% ($p<0.0001$). A significant improvement in documentation for follow-up plan was documented, 32% (n=122) to 40% (n=153) (p=0.01). Legibility was the only parameter to show a worsening trend ($p<0.0001$).

Conclusions

This study looks at the effectiveness of three interventions on the level of documentation for discharge planning of febrile children from the paediatric emergency department. In spite of the marked gains, there is room for improvement.

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The paediatric emergency department (PED) is a hectic place with a very high turnover of patients. Time pressures, frequent interruptions and incomplete information may place further pressure on the attending physician, and documentation often suffers in this environment. The PED sheet provides the only lasting record of the details of care provided to each patient. Complete documentation of any patient encounter is of paramount importance, both to provide a clear picture of what has been done and also as evidence should things go wrong – it alters medicolegal risk.[1] The discharge process is one of the critical periods during the doctor-patient interaction, when clear communication is important and documentation of what has been said is essential. Furthermore clear instructions and adequate information should be given upon discharging patients home.

An initial audit assessing discharge documentation for febrile children presenting to the PED was performed at Mater Dei Hospital in Malta in 2015. Since fever is a very common presentation in the PED, the documentation for febrile children who are discharged home was deemed to be a good representative of overall discharge documentation from the PED. The audit had highlighted a number of deficiencies in documentation of the emergency department discharge plan for febrile children. Subsequently the following interventions were implemented: presentation of initial audit findings to all doctors working in the PED emphasising the areas needing improvement, the setting-up of a follow-up clinic for children with pyrexia (to provide a pathway for early follow-up when required) and the design of a handout for carers which contained information about caring for the febrile child (including when to seek urgent medical advice). A second audit was repeated during the subsequent year in order to assess for changes in the adequacy of discharge documentation.

The aim of this study was to examine the effectiveness of the above interventions on the documentation of discharge plans for febrile children under the age of 16 years presenting to the PED at Mater Dei Hospital in Malta with pyrexia. The outcome was to improve both discharge documentation and discharge planning for febrile children in the PED.

MATERIALS AND METHODS

This retrospective study was performed over a six week period during December and January for two consecutive years, with a number of interventions being introduced following the first audit cycle.

The study involved children attending the PED at Mater Dei Hospital with fever and subsequently being discharged home. Mater Dei Hospital in Malta is a regional centre providing secondary and tertiary paediatric services. The PED is manned by second year foundation doctors and trainees in family medicine and paediatrics, under the supervision of two paediatric emergency consultants. Patient encounters are documented manually by the attending medical officer.

Patient record sheets for paediatric attendances were manually selected from amongst the sheets of all patient attendances to the emergency department during both study periods. Inclusion criteria were children aged up to 15 years and 11 months whose presenting symptom at casualty reception was fever, those for whom 'fever' was written at triage assessment and all children found to be febrile at triage. Patients who discharged home against medical advice were also included. Children who left the PED before being seen by a doctor, as well as those needing hospital admissions, were excluded. Written permission was obtained from the chairperson of the paediatric department.

Documentation for the following fields was assessed; diagnosis, treatment prescribed and drug doses, advice given, legibility and follow-up plan. There were no formal guidelines or standards for documentation of discharge plans, so these criteria were chosen as being the most relevant for medico-legal purposes following discussion with the clinical departmental chair and the hospital lawyer.

Criteria Being Assessed For Documentation

1. Diagnosis recorded

This field referred to whether the patient's diagnosis was documented or not, without assessing whether the diagnosis fit in with the history. Illegible inconclusive or irrelevant diagnoses which did not refer to the underlying source of fever were recorded as 'no diagnosis'.

2. Treatment prescribed

This field was classified as a 'yes' or 'no' answer. For a positive score, drug name had to be specified in the treatment section or in the discharge note, with the exception of antipyretics, in which case 'antipyretics as prescribed' was included as positive.

3. Doses recorded (if treatment is documented)

There were four possible answers in this field: 'Yes' when all drug doses were documented; 'No' when no

drug doses were documented; 'Mixed' where some were documented (typically the antibiotic dose) and some weren't (typically the antipyretic doses); and not applicable (N/A) when there was no documentation of the treatment prescribed (previous outcome) and therefore no doses could have been written.

4. Advice given

Advice involves any warning signs which should prompt the patient or carer to seek immediate medical advice and not wait for the formal follow-up which would have been recommended. Three possible answers were chosen. When the full advice was documented, or in cases where 'handout given' was written, this was graded as 'yes'. 'No' referred to instances where the advice was not documented. Where the term 'warning signs explained' was written, without any further details, this was graded separately an intermediate grade 'WS'. The handout was produced following the first audit cycle and therefore was only available during the second audit cycle.

5. Legibility

Legibility was scored as a 'yes', 'moderate' or 'no', depending on the degree of handwriting clarity.

6. Follow-up plan

An acceptable follow-up plan involved one of three options: 1. A formal referral for follow-up; 2. Advice for General practitioner (GP) follow-up in a specific time-frame; 3. Objective signs given regarding need for medical advice – for example to seek medical advice if fever persists more than 48 hours. Where 'to return as needed' or 'to return if deteriorates' were written, these were not counted as follow-up plan, since these are subjective signs which parents might miss.

We included the specific diagnosis in order to have a clear picture of the range of diagnoses involved in this audit. For further analysis, the diagnoses were divided into those of viral origin and those of bacterial origin. Upper respiratory tract infections, gastroenteritis (unless specified as bacterial), pharyngitis and viraemia were included as viral infections. The bacterial infections included tonsillitis, bacterial enteritis, lower respiratory tract infection and otitis media.

Interventions

Three interventions were carried out based on the results from the initial audit. These interventions were executed in the six months prior the second cycle. The interventions included:

1. Presentation of the audit findings to trainees working in the PED at Mater Dei Hospital in order to increase awareness of the importance of full documentation of discharge planning
2. Issuing of a new handout containing useful information for the carers of febrile children, including general warning signs
3. A follow-up clinic for children with pyrexia was launched within the PED, to ensure the provision of adequate follow-up for those children deemed to need close follow-up after presenting to the PED with fever after discharge home

Data Collection

We aimed for a cohort of 380 patients for each audit cycle. The sample size was calculated to be representative of the whole population of children who visit the PED in one year, based on the findings of a previous study that 2269 children attended the PED at Mater Dei Hospital over a time period of three months.[2]

Data was collected by the same two foundation year doctors for both cycles, who also scored the parameters. 10% of the sheets were independently reviewed by a consultant paediatrician, in order to ensure consistency. There were no disagreements regarding the assigned scores.

The data was entered into an excel spreadsheet. Percentages were used to illustrate proportions for each of the assessed parameters for both audit cycles. Chi squared test was used to test for significance, with a p value of <0.05 being considered as significant.

Electronic medical records (EMR) capabilities are not currently available at our institution.

RESULTS

A total of 386 children who fit the inclusion criteria were included in the first audit cycle. These patients were seen in the paediatric emergency department over a period of five weeks, between the 5th December 2015 and 10th January 2016. For the second audit cycle, 380 children were included over a period of six weeks, between the 4th December 2016 and 15th January 2017.

Diagnosis was documented in 84% (n = 324) and 80% (n = 304) for the first and second audit cycles respectively (p = 0.09). The majority of patients with recorded diagnosis had viral infections (n = 536); 85%, with just over half of these patients having a viral infection involving the upper respiratory tract.

There was no significant change in documentation of the prescribed treatment, with rates at 73% (n = 285) versus 79.4% (n = 302) during the two audit cycles. However there was a significant positive trend in documentation of actual drug doses amongst the patients for whom the treatment was documented ($p < 0.0001$).

Documentation of the advice given to carers rose significantly from 11% to 48.6%, including instances where 'handout given' was documented in the notes (p < 0.0001). There also was a significant improvement in documentation for follow-up plan, from 32% (n = 122) to 40% (n = 153) of cases overall (p = 0.01). Unfortunately documentation of follow-plan was lacking in more than half of those patients diagnosed with bacterial infection, namely 72% (71/99) during the first audit cycle and 55% (24/40) in the second cycle.

Legibility was the only parameter to show a worsening trend during this audit. The trend was significant (p < 0.0001), with a drop from 84% (n = 324) to 70% (n = 266) of notes deemed completely legible and doubling of the rate of illegible discharge plans from 2% (n = 6) to 4.5% (n = 17).

DISCUSSION

Doctors spend an average of 11.6 minutes of charting per patient visit.[3] However there are several deficiencies in documentation of patient encounters, including the management plan.[4] Our initial audit in 2015 highlighted a number of deficiencies in discharge planning for febrile children from the PED We then researched the most effective methods to improve documentation of discharge planning whilst also enhancing patient care, mainly focusing on advice given to parents prior to discharging patients home.

A significant proportion of patients and parents will either not understand or not follow discharge instructions upon returning home from the emergency department. Waisman et al[5] found that only about 75% of parents understood their child's diagnosis. The parents suggested that a discharge nurse would facilitate their understanding of discharge instructions, with their second favourite option being the use of discharge instruction sheets related to their child's specific diagnoses.

When questioned, parents ask for understandable written and verbal instructions, self-management plans and clear instructions regarding follow-up.[6] These are important elements of the discharge plan for which documentation has been shown to be lacking.[7] Even written discharge documentation can still be inadequate.[8] It is important to keep these instructions simple [9] and to aim at a comprehension level which will be understood by the general population, since discharge instructions may inadvertently be at an inappropriately high reading level.[10]

Following discharge from the emergency department, less than half of parents correctly record the treatment prescribed for their child.[11] Parents may also fail to obtain the prescribed medications and default from the scheduled follow-up visits with their physician[12], especially primary-care follow-up.[13]However attendance rates for follow-up visits improve if these are scheduled in the emergency department.[14]

Isoardi and colleagues[4] assessed the impact of formal teaching on medical documentation by interns in an

Table 1 *Pre and post intervention audit results*

Parameter	Quality of Documentation Initial Audit (n = 386)			Quality of Documentation Re-Audit (n = 380)			Chi	pvalue	Trend
	Complete	Partial	None	Complete	Partial	None			
Diagnosis	324	N/A	62	304	N/A	76	2.85	0.09	
Treatment prescribed	285	N/A	101	302	N/A	78	3.40	0.07	
Doses prescribed	114	40	131	149	97	56	58.01	*<0.0001*	Improving
Advice given	44	243	99	185	107	88	140.27	*<0.0001*	Improving
Follow-up plan	122	N/A	264	153	N/A	227	6.24	*0.01*	Improving
Legibility	324	56	6	266	97	17	21.9	*<0.0001*	Worsening

emergency department and also found significant deficiencies in documentation of discharge planning in their audit. Their pre-intervention data collection showed some deficiencies in documentation which were similar to the results obtained in our initial audit, namely in medication ordered (34%vs 27.3%) and advice given, which was inadequate in 79.2% of cases in their study and in 89% in our initial audit.[4] However they had a better rate of documentation of referrals or follow-up (75% vs 32%) and of diagnosis (100% vs 83.9%). Formal teaching did not lead to any significant improvement in the quality of documentation for treatment prescribed, discharge instructions and referrals.[4] However a systematic review by Lorenzetti et al[15] showed that the use of audits and provision of feedback have a significantly positive impact on documentation in the emergency department.

Following the first audit cycle, we proposed a number of interventions based on our findings and the other studies mentioned above, namely a discharge information sheet, a follow-up clinic and a formal presentation to departmental trainees. The discharge information sheet was aimed at carers of children with fever, when these are discharged home from the emergency department and included information for carers, warning signs and instructions when to seek medical advice. A follow-up clinic was set up in order to facilitate early follow-up for selected patients with pyrexia. Apart from leading to an improvement in documentation for follow-up plans, the clinic provided a niche for planning care for selected patients needing close follow up and therefore also improved patient service. Our findings were also presented to all doctors working in the PED in order to increase awareness of the importance of documentation and to explain about the handout and set up of the follow-up clinic.

The results from our second audit cycle show a significantly improved performance in most of the parameters which we have used to measure documentation when compared to the initial audit performed in 2016. Legibility was the only parameter showing a negative performance, but we are unable to explain this. Electronic medical records would be another intervention which can help with improving legibility. Apart from this, EMR can also help improve documentation in the other fields studied by having standardised fields which one can fill in at discharge documentation.

The audit was performed during the same time period for both years, during the busy months of December and January to try to emulate the same conditions for both assessments and eliminate sources of bias.

SUMMARY BOX

What is already known about this subject:

- Complete documentation of any patient encounter is of paramount importance.
- The discharge process is one of the critical periods during any doctor-patient interaction.
- The high patient turnover at the paediatric emergency department may inadvertently affect the documentation of patient encounters.

What are the new findings:

- Our pre-intervention data identified deficiencies in most areas of discharge documentation, which improved with our three interventions.
- The improvements in documentation of treatment and drug doses prescribed may be attributed to the presentation of the initial audit findings to the doctors working in the department.
- The significant advances made in documentation of advice given to parents, was mainly due to the fever handout, containing all the relevant warning signs, which was introduced after our first cycle.
- The introduction of the early follow-up clinic, apart from raising the percentage of documentation for follow-ups; meant an improvement in the services provide by our department.

Our pre-intervention data collection identified deficiencies in documentation for these areas: 'treatment prescribed' (73% documented), 'dose of medication prescribed' (40% documented), 'advice given' (11%) and 'follow up plan' (32%). All of the 3 implemented measures seem to have impacted on the improvement in these areas of documentation for febrile children who are discharged home from the PED The gains in documentation of treatment (6.3%) and drug doses prescribed (8.8%) may be attributed to the presentation of the initial audit findings to the doctors working in the PED The most significant advance was made in documentation of advice given to parents, which more than quadrupled (from 11.4% to 48.6%) and this is mainly due to the fever handout, which contains all the relevant warning signs. By writing 'handout given' doctors are automatically

including these warning signs in their notes. The follow-up clinic, which marked the introduction of a new service, has made it easier to provide follow-up for those who need it and has raised the percentage documentation of follow-up by 7.7%.

The limitations of the study include that we did not create any standardised form for documentation criteria for the department. Also Group consensus or Delphi technique in the creation of the standards for documentation of discharge planning would have provided a stronger methodological approach, apart from the essential input from the clinical chair and hospital lawyer. EMR are not available at present in our institution, which could have been an essential tool to help keep track of discharge documentation and in improving documentation across the board. For Legibility moderate legibility was not defined, therefore between chart auditory there could have been a wide variability in interpretation. Our interventions, although focused to mark improvements in discharge documentation, were focused on some practical deficiencies noted by our peers, for example the lack of clear pathway for early follow-up for discharged children. This led to the setting up of the early follow-up clinic, therefore provided a route for early follow-up and indirectly thereafter improving discharge documentation.

CONCLUSION

Discharge planning is a critical area, both in terms of patient care and communication and in terms of possible future medicolegal consequences. This study looks at the effectiveness of three interventions on the level of documentation for discharge planning of febrile children from the PED In spite of the marked gains in some areas of documentation, there is room for further improvement. Ongoing measures are necessary to maintain and increase the level of documentation for all discharge plans from the PED.

ACKNOWLEDGMENTS

We would like to express our sincere thanks to Professor Victor Grech for his guidance and assistance in carrying out this study. We would also like to express our gratitude to the Mater Dei Hospital Accident and Emergency clerks for their help during data collection.

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