

A retrospective observational study investigating safety netting documentation in the emergency department

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Abstract

Background: Safety netting is an important aspect of medical practice, especially for first contact clinicians. Adequate safety netting provision and documentation is vital for optimal patient care and medicolegal security. This is the first study to report safety netting documentation practices in the emergency department, a specialty with a variety of high-acuity presentations and which is particularly vulnerable to medicolegal issues.

Methods: A retrospective observational study was conducted at University Hospital Wales (UHW) Emergency Department (ED) in the months January–February and August 2023. Randomized paper notes review was performed for adult patients who were discharged from the ED without admission to hospital. Patient characteristics, time of consultation, grade of emergency medicine practitioner (EMP) and presence/level of safety netting documentation was recorded. The statistical software STATA was used to identify any associations between these factors on safety netting practices.

Results: A total of 500 notes were included. Safety netting advice was documented in 45% of consultations (n=224). This was 'basic' in 166 cases, 'general' in 32, 'specific' in 15 and both 'general and specific' in 11. Frequency of safety netting documentation was higher for ages < 65 years and consultations within working hours (09:00 – 17:00).

Conclusion: This study shows that there is no 'universal' level of safety netting documentation amongst practicing EMPs. Although there is well-established guidance about when, what and how safety netting should be provided, there is little guidance in terms of documentation details. Further audit and quality improvement to embed safety netting documentation in ED clerking is required to further improve safety netting practices.

Keywords

Safety netting, medicolegal, red flags, patient safety, documentation

Key Learning Points

1. There have been no prior studies investigating safety netting documentation in the emergency department.
2. Safety netting is important for patient safety and medicolegal security.
3. In this study, safety netting documentation was found in 45% of presentations.
4. Frequency of safety netting documentation was higher for ages < 65 years and consultations within working hours (09:00 – 17:00).
5. Further audit and quality improvement studies in emergency departments are required.

Background

Safety netting is defined as: “information shared with a patient or their carer, designed to help them identify the need to seek further medical help if their condition fails to improve, changes, or if they have concerns about their health”.^{1,2} Safety netting is an extremely important aspect of medical practice, especially for first contact clinicians who may experience diagnostic uncertainty. Appropriate safety netting is vital to safeguard both patients and staff, in terms of patient care and medicolegal security.¹ Advice regarding when and where to seek further medical help is provided if a patient's condition worsens or changes.² Many discharges rely on patient engagement and understanding of when to seek further medical help. Insufficient safety netting may lead to suboptimal

patient care and therefore viewed as medical mismanagement, with subsequent complaints and litigation. Documentation is key; unless safety netting advice is recorded, it arguably did not happen.

The National Health Service (NHS) is currently facing unprecedented demands. Emergency and acute services are the busiest they have ever been. Supply (staff, beds) is unable to meet demand (number and flow of patients).³ There is an increase in both high and low acuity presentations to the emergency department (ED), accompanied by the need to distinguish between acutely unwell patients and those who may be safely discharged. The nature of this high-pressured environment makes discharge decision-making difficult for clinicians, with a number of “risky” discharges likely to occur. The use of safety-

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netting encourages patients to seek further medical help if their condition worsens, and for this reason is considered best practice.⁴ Advice should include worrying symptoms and red flags, the likely time course of the illness, how and when to seek further medical care, and considering the need for follow up.⁵ This advice should be documented.

Although studies have investigated the safety netting practices of other specialties, there have been none which report this practice for patients in the ED.⁵⁻⁷ We performed a retrospective observational study via notes review with the aim to improve understanding of current safety netting documentation practices in the ED.

Methods

Design, Setting and Population

A retrospective observational study was conducted at University Hospital Wales (UHW) Emergency Department in January-February and August 2023. UHW is the Major Trauma Centre for Wales, has approximately 1,080 beds and according to the latest Welsh Government statistics had 10,564 Emergency Department attendances (all ages) in February 2023.

Randomized paper notes review was performed for adult patients who were discharged from the ED without admission to hospital. Paper notes were stored by reception staff in three-six boxes per day (as per ED presentation time). Reception staff provided odd days of the week (Monday, Wednesday, Friday, Sunday) with a box of an odd time period.^{1,3,5} Even days of the week (Tuesday, Thursday, Saturday) were provided with a box of an even time period.^{2,4,6} This was done over a period of three weeks in all months studied to ensure variability in day, time of presentation and EMP staffing. A total of 500 notes were reviewed, with sample size calculation ($n=371$) arrived at via 95% confidence interval and 5% error. Patients who received specialty review in the ED with subsequent discharge were included. Ethical approval was not required (as per Cardiff University Ethics Committee). Patients and the public were not involved in this retrospective observational study.

Data Collection and Outcomes

The following data was extracted from notes: age and sex of patient, time of consultation, presenting complaint, grade of Emergency Medicine Practitioner (EMP), documented safety netting advice. Documented safety netting advice was split into the following levels: (i) no evidence of safety netting documentation, (ii) 'basic' documentation: "safety netting given/worsening advice given/red flags symptoms explained/leaflet given/return if needed" written in the notes, (iii) 'general' safety netting

advice documentation (worsening/issues/concerns), (iv) 'specific' safety netting advice documentation. If specific safety netting advice was documented, the number of individual symptoms/signs listed was recorded. Safety netting documentation is considered present if evidence of 'basic', 'general' or 'specific' advice in the medical notes. Safety netting documentation is considered absent if there is no mention of safety netting in the medical notes. Grade of EMP included: (i) physician's associate (ii) nurse practitioner (iii) F1 doctor (iv) SHO (v) registrar/staff grade/advanced clinical practitioner (vi) consultant (vii) unrecorded.

Outcomes included: (i) frequency of safety netting; (ii) impact of time, age, sex, presenting complaint and grade of EMP on frequency and depth of safety netting.

Analysis and Statistics

Data were cleaned and analyzed using STATA (version 17.0).⁸ Descriptive statistics were used to provide information on cohort composition and distribution. Discrete variables are presented as medians with interquartile range (IQR). Categorical variables are expressed as numbers and percentages.

Results

A total of 500 completed notes were identified. None were excluded. Patient and EMP demographics are shown in Table 1. The median age of the cohort was 42 (IQR 28-60). 47% ($n=236$) were male and 53% ($n=264$) were female.

Safety netting advice was documented in 45% of consultations ($n=224$). This was 'basic' in 166 cases, 'general' in 32, 'specific' in 15 and both 'general and specific' in 11 cases (see Table 2). Physical leaflets were provided in 36 consultations. Seventy-seven consultations included advice to return to the ED ($n=34$) or GP ($n=43$). Frequency of safety netting documentation was higher for ages < 65 years, consultations within normal working hours (09:00 – 17:00), and for EMPs graded Nurse Practitioners, SHOs, Middle Grades and Consultants. This data shows that the ED tends not to discharge patients with NEWS > 3, as this cohort often require further investigation and management in hospital. Safety netting is documented in 52.5% of patients with NEWS=0, and 38.2% of patients with NEWS 1-3.

Safety Netting by Presenting Complaint

The most frequent presenting complaints were MSK-related (29%), chest pain (14%), abdominal pain (8%), head injury (7%) and skin-related (6%). For presentations with ≥ 5 cases, the most commonly safety netted include eye-related (80%), gastrointestinal (67%), head injury (62%), cough/SOB (52%), skin-

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related (48%), abdominal pain (47%) and MSK (46%).

Collapse/fall (35%), ENT (27%) and urological-related (29%) presentations had the least amount of documented safety netting. Table 3 shows a full breakdown of safety netting by presenting complaint.

Specific Safety Netting

Specific safety netting was documented for 26 patients. Table 4 shows the number of specific points provided, the number of patients receiving this, and examples included directly from notes review. No time periods were documented to observe for specific symptoms. Specific safety netting was documented in 6 abdominal pain (16%), 4 chest pain (6%), 3 MSK (2%) and 3 GI (18%) presentations.

Discussion

To our knowledge, this is the first quantitative study investigating safety netting documentation practices in the ED. We found documented evidence of safety netting in 45% of ED consultations. This is in line with existing literature from other specialties.

A recent study investigated verbal and written safety netting practices of general practitioners by telephone and medical notes review.⁶ Verbal safety netting was found in 257/555 (46.3%) of presenting complaints and 205/318 (64.5%) consultations. However, safety netting advice was documented in just 109 of the presenting complaints (19.6% overall). Another study in a COVID-19 Clinical Assessment Service (n=5738) found verbal safety netting in 80.6% of consultations with evidence of documentation in 69.9%.⁹ All presentations were related to COVID-19 symptoms, and therefore levels of safety netting may be higher than other routine consultations due to the high levels of public and governmental concerns at the time. A study conducted in a same-day emergency care (SDEC) unit found evidence of safety netting documentation in 30%.¹⁰ These studies show that whilst healthcare professionals frequently provide verbal safety netting, it is often not documented. Since EMPs communicate with patients face-to-face rather than over the phone, an extra emphasis should be put on the importance of written documentation, as telephone records cannot be accessed if any medicolegal issues (complaints etc.) arise.

The results of our study detect practical significance and represent important real-world practices of safety netting documentation. Our data showed key three findings. Firstly, safety netting documentation appears less frequent in patients aged >65 years. Secondly, there is reduced documentation of safety netting outside of working hours. Thirdly, there is a higher rate of safety netting documentation when NEWS = 0. This may appear to be counterintuitive, as one would

Table 1. Patient and Emergency Medical Practitioner Demographics and Association with Safety Netting Documentation

Characteristics	All (n=500) N (%)	Safety Netting Documentation Present
Sex		
Male	236 (47%)	113 (47.9%)
Female	264 (53%)	56 (42.1%)
Age		
Median	42	
IQR	28-60	
Age Groups		
17-34	187 (37.4%)	102 (54.6%)
35-49	105 (21.0%)	46 (43.8%)
50-64	109 (21.8%)	47 (43.1%)
65+	99 (19.8%)	29 (29.3%)
Time		
09:00 – 12:59	104 (20.8%)	49 (47.1%)
13:00 – 16:59	138 (27.6%)	66 (47.8%)
17:00 – 20:59	115 (23.0%)	51 (44.4%)
21:00 – 00:59	66 (13.2%)	25 (37.9%)
01:00 – 04:59	26 (5.2%)	13 (50%)
05:00 – 08:59	51 (10.2%)	20 (39.2%)
Grade		
Physician Associate	4 (0.8%)	1 (25%)
Nurse Practitioner	100 (20%)	56 (56%)
F1	14 (2.8%)	3 (21.4%)
SHO	220 (44%)	98 (44.6%)
Middle grade / SpR	95 (19%)	40 (42.1%)
Consultant	41 (8.2%)	17 (41.5%)
Unknown	26 (5.2%)	9 (34.6%)
NEWS (for 250 patients)		
0	160 (64%)	84 (52.5%)
1	64 (25.6%)	25 (39.1%)
2	18 (7.2%)	7 (38.9%)
3	7 (2.4%)	2 (28.6%)
>3	1 (0.4%)	1 (100%)

Table 2. Safety Netting Documentation

Safety Netting Documentation	N (%)	Leaflet (n)	Return Advice (n [ED, GP])
Absent	276 (55.2%)	-	-
Present	224 (44.8%)	36	77
Basic	166 (74.1%)	31	44 (15,29)
General	32 (14.2%)	3	20 (8,12)
Specific	15 (6.7%)	1	8 (6,2)
General and Specific	11 (4.9%)	1	5 (5,0)

Note: 'Return Advice' refers to the location that patients should seek further help if needed.

expect a higher level of safety netting documentation when NEWS increases (in correlation with potentially more unwell patients and riskier discharge). Out of

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Table 3. Safety Netting Documentation by Presenting Complaint							
Presenting Complaint	N (%)	Safety Netting Documentation (%)	Basic	General	Specific	General + specific	Leaflet
MSK	147 (29.4%)	67 (45.6%)	59	5	3	0	23
Pain	139 (27.8%)	56 (40.3%)					
Chest	69	26	19	3	2	2	2
Abdominal	38	18	8	4	3	3	0
Back	17	7	3	3	1	0	0
Headache	15	5	4	0	0	1	0
Head injury	37 (7.4%)	23 (62.2%)	21	1	0	1	9
Skin	29 (5.8%)	14 (48.3%)	6	6	1	1	0
Neurology	27 (5.4%)	11 (40.7%)	8	3	0	0	1
Collapse/fall	23 (4.6%)	8 (34.8%)	7	1	0	0	0
Cough/SOB	21 (4.2%)	11 (52.4%)	8	2	0	1	0
GI	18 (3.6%)	12 (66.7%)	7	2	3	0	0
Urological	14 (2.8%)	4 (28.6%)	3	0	0	1	0
ENT	11 (2.2%)	3 (27.3%)	2	0	0	1	0
Eye	10 (2%)	8 (80%)	7	1	0	0	1
Psychiatry	7 (1.4%)	3 (42.9%)	2	0	1	0	0
Other	7 (1.4%)	0 (0%)	0	0	0	0	0
O&G	5 (1%)	2 (40%)	1	0	1	0	0
Palpitations	5 (1%)	2 (40%)	1	1	0	0	0

250 patients, only one was discharged with a NEWS > 3. The remaining were discharged with NEWS 0-3 which can be considered within the realms of a normal physiological response to illness (for example, a patient with viral gastroenteritis can score a NEWS of 3 with a temperature of 38.5, BP of 110/70 and a pulse of 95).

The previously mentioned general practice study found a statistically significant association between age of GP and safety netting advice provision (<50 years of age more likely to provide safety netting), but no association with patient age. In this study we found that there was a similar rate of safety netting documentation between different grades of practitioner, with the exception of a lower rate in physician associates and F1s (though these groups had a far smaller sample size).

Safety netting was more likely to be documented in certain presenting complaints, for example eye-related, gastrointestinal and head injury. This may be related to the use of proformas which includes safety netting tick-boxes. A proforma is a medical document for specific presenting complaints, for example “head injury”, “ocular complaints”, “fractures”. These proformas have prompts and questions designed for these specific conditions, which helps improve documentation practices. The SDEC study found the introduction of safety netting advice to proformas increased safety netting documentation from 33% to 60%.¹⁰

We found that specific safety netting was only provided in 26 cases (5%), showing that there is

no ‘universal’ level of safety netting documentation amongst practicing EMPs. Although there is well-established guidance about when, what and how safety netting should be provided, there is little guidance in terms of documentation details.¹¹ We highlight the lower level of safety netting documentation for certain ‘high risk’ discharges such as chest pain. We refer to these as high risk due to the potential for missed diagnosis or development of high-acuity conditions such as acute coronary syndrome. The Royal College of Emergency Medicine (RCEM) recognises atraumatic chest pain in the over 30s and abdominal pain in the over 70s as ‘high risk’ presentations to the ED requiring ‘Consultant’ sign off prior to discharge.¹² It is arguable that ‘high risk’ presenting complaints as well as Consultant sign-off advocated by RCEM should receive high-level safety netting and thorough documentation.

Limitations

This is a single-center study and therefore results may not be entirely representative of safety netting practices of EMPs at other centers. However, EMPs have often worked in several hospitals/EDs and have a wide range of training and experience which may reduce geographical bias. We were not able to investigate the impact of safety netting documentation on representation rates, due to the highly variable representation methods (to the same or different EDs, GPs, minor injury units etc.). We suggest the development and implementation of systems to record this data, as this will be useful for analysis and future studies.

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Table 4. Examples of Specific Safety Netting Documentation			
Number of Specific Safety Netting Points Documented	Number of Cases	PC	Examples
1	7	Abdominal pain Chest pain Chest pain GI GI MSK Psychiatry	Severe pain Worsening chest pain Worsening chest pain Cardiac signs PR bleed Infection symptoms Infection symptoms
2	5	Abdominal pan GI MSK MSK Urology	Fever, vomiting Abdominal pain, fever Fever, erythema Redness, numbness Neurology deficit, unable to open bowels
3	8	Abdominal pain Abdominal pain Abdominal pain Chest pain Cough/SOB Headache Obs and Gynae Skin	Vomiting, not opening bowels, unable to eat and drink Worsening pain, unable to eat and drink, deterioration Fever, vomiting, PR bleed Worsening pain, SOB, Loss of Consciousness Fever, SOB, chest pain Reduced GCS, weakness, fever Fever, abdominal pain, PV discharge Worsening redness, swelling, systemically unwell
4	5	Abdominal pain Back pain Chest pain Head injury Skin	Excruciating pain, hematemesis, melaena, low blood pressure New neurology, bowel and bladder changes, perianal change in sensation Chest pain, SOB, pre-syncope, syncope Weakness, numbness, reduced GCS, vomiting Swelling, redness, pain, fever
5	1	ENT	Dysphagia, SOB, fever, discharge, drooling

Conclusions

This is the first study to investigate safety netting documentation in the ED. We found that 45% of consultations had some form of documented safety-netting, which is in line with findings in the existing literature. Only 5% of consultations had ‘specific’ safety netting documented. Leaflets are infrequently documented to be utilized (7.2% of consultations), which contain more detailed advice. Proformas appear to improve the frequency of documented safety netting. Further audit and quality improvement to embed safety netting documentation in ED clerking is required to further improve safety netting practices. EMPs require guidance to achieve a ‘universal’ acceptable level of safety netting documentation. Areas

for future studies include impact of safety netting on representation rates, and the association between level of sickness and level of safety netting.

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Conflict of Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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