

Is your patient FIT & SAFE? A quality improvement project on the discharge of asthmatic patients from the Emergency Department: a UK based study project

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ABSTRACT

Objective: The aim of the quality improvement project was to ensure that 80% of patients discharged from the Emergency Department received the Royal College of Emergency Medicine (RCEM) standards of asthma care.

Methodology: We used the model for improvement plan, do, study, act (PDSA) methodology to accomplish this aim. 5 adult patients (>16 years) who presented with an asthma exacerbation and were discharged were selected per week. Patient notes were reviewed to see if they complied with the RCEM standards. Six PDSA cycles were carried out using a mixture of the outcome, process and balancing measures. Various change ideas were introduced, tested and iterated including a discharge mnemonic for asthma patients (FIT & SAFE) was derived and introduced, tailored teaching sessions for doctors and nurses, regular updates to staff using email and social media, and an electronic, asthma clerking pro-forma. Data was entered into run charts.

Results: Baseline data was collected for 62 patients prior to the introduction of the change ideas. The results 12 weeks post PDSA cycles were as follows: psychosocial factors (25.8% vs 81.3%), inhaler technique (14.5% vs 53.3%), inhaler type (17.7% vs 84.2%), correct dose of prednisolone for 5 days (59.6% vs 81.5%), written advice (4.8% vs 21.1%), and to see GP/clinic follow-up in 2 working days (37% vs 60.8%).

Conclusion: There was a significant increase across most domains of the discharge process as recommended by the RCEM, after 12 weeks of implementation of various change ideas in the department.

Keywords: Asthma, Emergency Medicine, Inhaler technique.

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Introduction

Asthma is a very common disease that can occur at any age.^{1,2} Statistics from many countries around the world continue to show low quality asthma diagnosis³⁻⁶ and poor control of asthma.⁷ This inadequate monitoring results in a significant number of asthma-related deaths in countries with a high prevalence of asthma.^{8,9} Asthma prevalence has increased since the late 1990s, and the UK still has some of the highest rates in Europe. On average three people die from asthma in a day.¹⁰ The rate of asthma

deaths in the UK has increased by more than 20% in five years,¹¹ and it is almost 50% higher than the average death rate in the European Union.¹² Recent National Review of Asthma Deaths concluded that "46 % of asthma deaths could have been avoided with better routine care".¹³ A 10-year asthma program conducted in Finland has shown that informing, teaching and educating healthcare workers, patients and families can lead to improved asthma diagnostics, along with significant reductions in hospital attendances, admissions and deaths from asthma.¹⁴

At the Homerton University Hospital, poor performance had been highlighted locally by the Care Quality Commission (CQC) in managing this cohort of patients as did an audit into local practice. The Royal College of Emergency Medicine (RCEM) has set 6 standards (standards 7-11) of good practice that must be addressed prior to discharge of asthmatic patients from the Emergency Department (ED). They are considered psychosocial factors, checking of inhaler technique, checking of inhaler type, written advice, correct prescription of prednisolone and advice to see GP within 2 working days. The variation in clinical practice reflected that very few clinicians were aware that an RCEM asthma discharge standard existed. We understood that to bring any change in improvement in the asthma discharge process, it was vital that the clinical staff be made aware of the RCEM standard recommendations. The aim of the project was to improve the implementation of RCEM standards 7-11 when discharging patients with an acute exacerbation of asthma home from the ED.

Methodology

This experimental study was conducted in the Emergency Department at Homerton University Hospital NHS Trust, England, UK.

The first stage of the project was a three-month clinical audit to establish a local practice. A survey was conducted

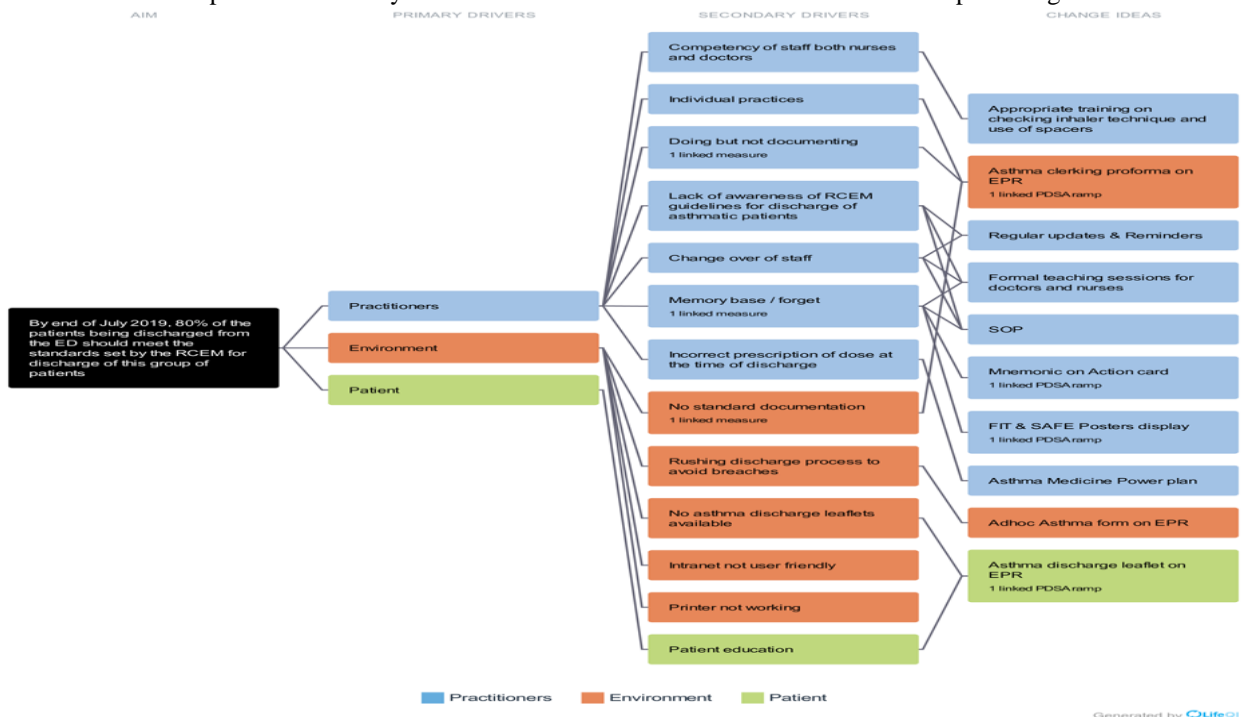
which covered all six RCEM standards to develop a better understanding as to why local performance was so poor. The results of the survey reflected that very few emergency medicine clinicians were actually aware of the RCEM standards for the discharge of this cohort of patients.

This project used the IHI's Model for Improvement- plan, do, study, act (PDSA) methodology to accomplish the aim. A multi-disciplinary team reviewed the attendances of five random adult patients (>16 years) who had presented to the Emergency Department (ED) with an exacerbation of their asthma and were discharged home on a weekly basis. Data was entered into run charts and 6 PDSA cycles were carried out.

PDSA 1: A discharge mnemonic for asthma patients (*FIT & SAFE*) was derived and introduced via email to all nurses and doctors. (Factors psychosocial considered, Inhaler technique checked-satisfactory, Type of inhaler used- satisfactory & Steroid/prednisolone dose appropriate for age, Advice on discharge is written up, Follow up with GP/clinic arranged within 2 working days, Ending smoking advice if appropriate)

PDSA 2: Tailored sessions for doctors and nurses were carried out and important messages stressed at daily afternoon handover for one week.

PDSA 3: An electronic, asthma checking pro-forma was created in accordance with best practice guidelines.



Driver Diagram

PDSA 4: Embedding changes using social media.

Results

The results of the survey reflected that few emergency medicine clinicians were actually aware of the RCEM standards for discharge of this cohort of patients. (Table I) Other findings of the survey were that 71% of clinicians discharged patients on 40mg of prednisolone for 5 days, 12% clinicians would advise GP follow up in 2 working days, 19% clinicians would advise GP follow up in 7 days and 21% clinicians would not advise GP follow up.

Table I: Survey- RCEM standards questionnaire (n=32)

Questions	Yes	No
Did you consider any psychological factors before discharging this group of patients?	14 (44%)	18 (56%)
Did you check the patients' inhaler technique before discharge?	21 (66%)	11 (34%)
Did you check the type of inhaler the patient uses?	28 (88%)	04 (12%)
Do you give your patient any asthma written plan before sending them home?	12 (38%)	20 (62%)
Do you send all your asthmatic patients home with prednisolone?	16 (50%)	16 (50%)

Baseline data was collected for 62 patients from 21st January to 21st April. The results after implementation of change ideas / PDSA cycles is shown in table II. This covered 57 patients over a 12-week period.

Table III: Week by week results.

Table II: Comparison of RCEM measures pre and post implementation of changes during the iterative process.

RCEM Standards		Before	After
Standard 7	Consider psychosocial factors	25.8%	81.3%
Standard 8a	Check inhaler technique	14.5%	53.3%
Standard 8b	Check inhaler type	17.7%	84.2%
Standard 9	Correct dose of prednisolone for 5 days	59.6%	81.5%
Standard 10	Give written advice	4.8%	21.1%
Standard 11	Advice to see GP/clinic follow-up in 2 working days	37%	60.8%
Patient Outcome	Return in 2 working days due to exacerbation of asthma		0

Discussion

The implementation of various changes in the department and using discharge mnemonic FIT & SAFE demonstrated a significant improvements in the processes of asthma care. There is no doubt that optimal care for asthma patients requires intensive respiratory services in the

	PDSA#1 10/5	PDSA#2 17/5	PDSA#3 24/5	PDSA#4 1/6				PDSA#5 1/7		PDSA#6 15/7			
	13/05/2019	20/05/2019	27/05/2019	03/06/2019	10/06/2019	17/06/2019	24/06/2019	01/07/2019	08/07/2019	15/07/2019	22/07/2019	29/07/2019	
	to	to	to	to	to	to	to	to	to	to	to	to	to
	19/05/2019	26/05/2019	02/06/2019	09/06/2019	16/06/2019	23/06/2019	30/06/2019	07/07/2019	14/07/2019	21/07/2019	28/07/2019	04/08/2019	
Factors psychosocial	80	80	75	80	80	80	0	100	100	100	100	100	100
Inhaler Technique	25	80	50	20	40	100	0	25	100	100	40	80	
Type of inhaler	75	100	100	60	100	100	0	75	100	100	100	100	
Steroid correct dose	75	20	33	75	100	100	100	75	100	100	100	100	
Advice written	20	20	25	0	0	40	0	0	33	50	25	40	
F/U in 2 days	60	60	25	40	40	80	0	100	100	75	75	75	

hospital setting, especially in the initial phase. Multiple studies have shown that standardized emergency department asthma procedures can improve emergency department stay, admission rates, and recovery rates.^{15,16} Given this apparent benefit from standardized asthma protocols, in clinical practice, only a minority of units regularly use asthma protocols.^{17,18} The RCEM National Clinical Audit 2016/2017 highlighted the variation in clinical practice across Emergency departments in the UK for this cohort of patients. A literature search for similar QIPs revealed that there were some aspects of the projects reviewed that could be related to this QIP.¹⁹

Chu-lin et al looked at the quality of acute asthma care in 63 urban EDs in 23 US states between 2003 and 2006.²⁰ This was a retrospective study. One of their objectives was to determine the concordance of ED management of acute asthma with the National Institutes of Health asthma guidelines.²¹ Using a principal diagnosis of asthma, they identified ED visits for 4,053 subjects. Concordance was evaluated by using item-by-item quality measures but they do not state in their study what measures were used. The median age was 34 years and did not indicate if children were included or not. Results showed that concordance with treatment recommendations was moderate. Significant variations in ED quality of asthma care were found, and geographic differences existed when compared to this project.

Homer et al was a QIP in the US specifically intended to improve care and outcomes for patients with childhood asthma.²² This was a randomized trial conducted in primary care practices. Forty-three practices with 13878 paediatric patients with asthma were randomized to intervention and control groups. The intervention was participation in a learning collaborative project based on the Breakthrough Series methodology of continuous quality improvement.²³ The main outcome measure was a change from baseline in the proportion of children with persistent asthma and in those whose parents received a written management plan for their child's asthma, as determined by telephone interviews with parents of 631 children. After adjusting for the state, practice, size, child's age, sex and within-practice clustering, no overall effect of the intervention was found. The study reflects the national reality of potential deficiencies in program implementation, project duration, sample selection and data sources which may all contribute in making the general inference that this type of improvement program is ineffective. The scale of interventions and backing required is considerable in this study which again may not be realistic to our department at this stage. The patient

group is also not applicable as we included patients more than 16 years of age.

Schneider et al looked into the efficacy of Quality Circles (QC) for asthma care working either with general feedback or with an open benchmark.^{24,25} Twelve QC's involving 96 general practitioners were organized into a randomized controlled trial. Six worked with traditional anonymous feedback and six with an open benchmark. Forty three primary care practices agreed to give out questionnaires to patients to evaluate the efficacy of the QCs. A total of 256 patients participated in the survey of whom 185 (72.3%) responded to the follow up 1 year later. The use of inhaled steroids at baseline was high (69%), and self-management was low (asthma education 27%, individual emergency plan 8% and peak flow meter at home 21%). After the QC, guideline adherence in drug treatment increased ($P=0.02$), delivery of individual emergency plans increased ($P=0.008$) and unscheduled emergency visits decreased ($P=0.064$). There was no difference between traditional and benchmarking QCs. This study showed that quality circles working with individualized feedback are effective at improving asthma care. The trial may have been underpowered to detect specific benchmarking effects. Again it was conducted in a primary care setting and not comparable to this QIP.

Initiatives to improve quality continue to be an important part of the ongoing efforts to provide better care for asthma patients. Although these measures are not always related to improved outcomes, they help to provide insight into the challenges this chronic disease faces patients, caregivers, and providers. With the continued development of new treatments for asthma and expanded use of technology, treatment for patients with asthma is expected to continue to improve. While healthcare spending continues to increase, the need for efficient health-care delivery is more important than ever. This intervention of quality improvement in asthma care in our patients would have to be simple, applicable to an ED setting and time and cost effective. Future, prospective, randomized trials can help to clarify which organizational improvements are most successful in asthma outcomes and reduce the misallocation of respiratory resources while reducing overall costs.

Conclusion

Our findings demonstrated a significant increase across most domains of the discharge process as recommended by the RCEM, after 12 weeks of implementation of various change ideas in the department. However, by implementing and popularising an easy to use mnemonic

(FIT & SAFE) and ensuring senior leadership on the project going forward, we believe that incremental improvements will continue towards realising the original aim.

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