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# Implementation of the trigger review method in Scottish general practices: patient safety outcomes and potential for quality improvement

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## ABSTRACT

**Objectives:** To report the implementation of a trigger review method (TRM) in primary care, with a particular focus on its impact on patient safety-related findings

**Design:** Cross-sectional structured review of random samples (n=25) of electronic records of 'high risk' patient groups conducted twice per year (each for a retrospective review period of 3-months)

**Setting:** 274 general practices in two regions of Scotland

**Intervention:** Contractual incentivisation of TRM implementation

**Main outcome measures:** Practice participation rate; characteristics of patient safety incidents (PSIs), e.g. their prevalence, type, perceived severity and preventability; and actions or intended actions undertaken during and after trigger reviews.

### Results

274 of 318 eligible practices (86.2%) returned 536 TRM Summary Reports which outlined findings from reviews of 13,351 electronic patient records. 1887 (14.1%) PSIs were recorded, with a mean of 3.5 (536/1887) per Summary Report (SD±1.6). Of these, 830 (44.0%) were judged to have caused mild to moderate harm, with 262 (13.9%) cases resulting in more severe harm. A total of 852 PSIs (46.2%) were rated as preventable or potentially preventable. In 459 Summary Reports (85.6%), reviewers indicated implementing one or more improvement actions *during* the actual TRM process; and 2177 actions *after completion of the TRM process* [mean 4.1 (SD±3.3) actions per review].

### Conclusions

The great majority of clinician reviewers 'successfully' applied the TRM, uncovering important but previously undetected PSIs which prompted care teams to take action during and after the trigger reviews. The method and data generated have the potential to drive improvements in related care processes at the practice, regional and national health system level. TRM arguably increased 'ownership' of the safety challenge and clinician engagement

in implementing their solutions to specific problems identified. Our results suggest the TRM has potential as a feasible, pragmatic approach to improving primary care safety and quality.

**Keywords:** patient safety, trigger tool, general practice, adverse events, error, harm

## Introduction

Patient safety is a priority for all modern health care systems (1-2). However, it is widely accepted that errors do occur, can be preventable and that a significant minority result in patient harm of a temporary nature or more severe in terms of ongoing physical or mental impairment and even death (3-5). Over a decade ago, a seminal United Kingdom (UK) policy publication recommended that health care organisations should systematically learn lessons from patient safety incidents, and that system-wide safety interventions were a necessary part of this collective learning and improvement process (2). More recently, Vincent and colleagues stated the case for the importance of identifying and measuring harm as a core patient safety improvement goal (6), while the Francis Inquiry report (7) into failings in care at the mid-Staffordshire NHS Foundation Trust in England made multiple recommendations on this issue, including the need for it to be a core organisational priority. The subsequent Berwick Report noted (8), however, that there is currently limited capacity to analyse, monitor or learn from safety related information at the healthcare organisational level. To date, much of the patient safety agenda has focussed on the hospital sector; patient safety is, however, also an issue for general practice/family practice.

In UK general practice, as in other settings, a feasible method of contributing to these learning, improvement and (potential) measurement objectives on a systematic basis is lacking (9). Contributory factors include the limited engagement by general practitioners in formal incident reporting systems (9-12), while learning from routine significant event analyses is rarely captured and acted upon either at the level of practices or regional healthcare organisations (13).

Patient safety incidents (PSIs) in UK general practice - defined here as *“any unintended or unexpected incident which could have or did lead to harm for one or more patients receiving NHS care”* – (14) are typically reported by patients, identified directly by clinicians or highlighted by colleagues as part of routine practice. However, some safety incident types and latent hazards are not detected so easily, and there is evidence that the majority of incidents remain undetected (15,16). Even when PSIs are detected, they are typically not shared within the practice team, nor formally reported and rarely lead to further action.

The recent adaptation, re-design and testing of a trigger review method (TRM) for general practice – also known as a ‘trigger tool’ – offers one approach to identifying such events (17), providing practices with an opportunity to reflect and act in the light of events and thus strongly emphasizing their importance as change catalysts. Using the TRM to systematically review the clinical records of their own patients for incidents and latent threats provides care teams with a personal perspective of the safety of their care and potentially provides valuable opportunities that are relevant to their practices to take pre-emptive action before harm can occur (18-20).

The TRM was adapted from the Institute of Healthcare Improvement (IHI) Global Trigger Tool (21-22) in 2007, but has since evolved differently in the Scottish general practice context from its originally intended harm measurement purpose to a method of identifying PSIs and, more importantly, improvement opportunities (19). It enables trained clinician reviewers (e.g. GPs or practice nurses) to screen and review small, random samples of their electronic medical records of pre-defined ‘high risk’ patient groups (e.g. those over 75 years with co-morbidities and polypharmacy) for PSIs in a rapid, structured and focused manner. This is carried out by searching each of the five common sections of every medical record sequentially for the presence of pre-defined ‘triggers’, which are clinical prompts or ‘signs’ in the record that *may* indicate the occurrence of PSIs (Box 1). A maximum time of 20 minutes is allocated per record and three calendar months are retrospectively reviewed in each record. The expectation is that the identification of PSIs will lead to immediate improvements in system processes in some cases (undertaken during the review itself) or serve as a mechanism to guide further action after the review by other means, e.g. significant event analysis or criterion audit (13, 23).

In terms of implementation in the UK, evidence of TRM participation can now be submitted as a Quality Improvement Activity as part of GP Appraisal in Scotland (24), while the Royal College of General Practitioners (RCGP) has also included the method as a potential evidence source for revalidation throughout the UK (25). Similarly, it may also inform quality improvement obligations as part of specialty training for general practice (20). In April 2013, the TRM was included in the Scottish version of the pay-for-performance Quality and Outcomes Framework (QOF) contract; participation in this also doubled as a core

contribution to the goals of the Scottish Patient Safety Programme in Primary Care (26). The contract financially incentivised all Scottish general practices (c1000) to apply the TRM on two occasions over a 12-month period and report their findings and improvement actions to their regional National Health Service (NHS) Board. .

Despite the rapid adoption and promotion of the TRM, there is little empirical data about the characteristics of the PSIs being identified, and whether its application leads to improvement in the safety and quality of care. This study provides the first known opportunity to examine what is being uncovered and achieved across regional care systems by reporting the findings from two Scottish NHS Board areas that implemented the TRM in general practice. Our aims are therefore twofold:

1. To report the characteristics of the PSIs that were detected and reported, including their prevalence, type of care processes they relate to and their perceived severity and preventability.
2. To report the actions and intended actions undertaken during and after the trigger reviews.

## **Methods**

### *Design*

A cross-sectional review of 25 electronic patient records (for a retrospective period of 3-months) conducted twice per year by clinicians trained in using the TRM.

### *Setting and sample*

The study was set in two Scottish National Health Service (NHS) Board areas containing 56 and 262 general medical practices respectively, and providing health and social care to around 30% of the Scottish patient population. Both regions include a range of socioeconomic, semi-rural, urban, suburban and inner city settings. Participating practices were those undertaking the TRM as part of contractual incentivisation and reporting these data to their NHS Board.

### *TRM Training*

One or more clinicians nominated by the practice (typically a GP and practice nurse) were trained in the TRM by an informed GP while attending local collaborative learning events arranged by each NHS Board. Training typically lasted 1.5 to 3-hours and involved an audio-visual presentation and a practical TRM exercise using simulated medical records containing 'hidden' PSIs for individual delegates to detect. This was followed by feedback and open discussion. A range of educational material, including a practical application guide and detailed examples of previously completed reviews, were also provided for reference.

### *Conducting the TRM*

Two trigger reviews were conducted, at least 6-months apart, during April 2013 to March 2014 by a clinician trained in the TRM. Previous TRM pilot testing has demonstrated the validity of the triggers and the ability of clinical reviewers to detect PSIs using this approach (17, 19, 20, 23). The process was implemented as follows:

- The practice chose a 'high risk' patient group on which to conduct the TRM review from a list of examples provided and previously published (23).
- A practice team member (e.g. practice manager, administrator or clinician) compiled a list of all relevant patients from the practice's clinical information system.
- A random sample of 25 records was identified from the list (using a random number generator or similar process)
- A clinician trained in the TRM process then reviewed a three-month period in each electronic patient record. The review time period was any three consecutive calendar months in each patient record *before* the actual review dates.
- Data were collected using a pre-designed proforma (see below) which also contained details of each of the clinical triggers as a cognitive aid to guide a rapid review process.
- Practices repeated this process when conducting the second review 6-months later, although they had the option to decide whether to review another random sample of the same patient group, or alternatively choose another 'high risk' group.

### **Data collection**



Data were recorded by reviewers on a standardised Summary Report proforma (Appendix 1) for each batch of 25 medical records reviewed. The proforma is structured over two pages to guide reviewers through the three consecutive steps of the TRM: (1) Planning and preparation; (2) Reviewing the records; and (3) Action, reflection and learning. Data collected includes the number of detected 'triggers', details of PSIs uncovered (including judgements on perceived severity and preventability), learning needs identified and immediate or future actions that were or should be taken to minimise risks of PSI re-occurrence, and length of time taken to conduct the review. Practices were advised that if five PSIs were detected before the full 25 records were reviewed then this was considered a sufficient workload and the remaining time of the review should be allocated to improvement actions. Practices submitted their completed Summary Sheets to the local NHS Boards as evidence of TRM completion (for financial reimbursement) and to enable data analysis to facilitate local learning.

#### *Data analysis*

TRM data were provided to the authors for analysis by both NHS Boards. Data from all the submitted proforma were extracted to a Microsoft Excel spreadsheet by a single administrator, and the PSIs were then coded (by CdW, CB & SL) and analysed (by CdW) using simple descriptive statistical methods. The types of reported PSIs were categorised jointly by the authors through an iterative process of descriptive coding of the recorded incidents and consensus-building to resolve disagreements.

Quantitative data were analysed using simple descriptive statistics (e.g. frequency counts and percentages). Free text entries were grouped into major themes.

## **Results**

#### *Response rate*

A total of 274 of 318 eligible practices (86.2%) from the two NHS Boards returned 536 Summary Reports which outlined findings from reviews of 13,351 electronic patient records. In NHS Board 'A', 45/56 practices returned at least one completed Summary Report (80.4%), with 11/56 failing to return any (19.6%). Of these submissions, 74 reports from 44 practices (97.8%) were suitable for coding and these summarize the findings from 1843 electronic

patient records. For NHS Board 'B', 229/262 practices (87.4%) returned a total of 462 Summary Sheets that were suitable for coding, while 7/262 (2.7%) returns were unsuitable for coding and 26/262 (10.0%) did not return any. The 462 reviews summarize the findings from 11,508 electronic patient records, with the vast majority of reviews (92.7%) being undertaken by general practitioners (GPs).

### *Patient safety incidents*

#### Detected PSIs

A total of 1887 PSIs were reported, which equates to 14.1% of all records reviewed and a mean of 3.5 (536/1887) per Summary Sheet (SD±1.6). NHS Board 'A' reviewers documented 251 PSIs (13.6%) and a mean of 3.4 PSIs per Summary Sheet (SD ±1.6). In 3/74 Summary Sheets (4.5%), reviewers did not record a single PSI. For NHS Board 'B' reviewers reported a total of 1636 PSIs (14.2%), with a mean of 3.5 (SD ±1.6) PSIs per Summary Sheet. In 21/262 Summary Sheets (4.5%), reviewers did not record a single PSI. Selected examples of detected PSIs are shown in Box 1.

#### Characteristics of PSIs: severity, preventability and type

For both NHS Boards combined, a total of 830 PSIs (44.8%) were judged to have caused mild to moderate harm to patients, with 262 cases (14.2%) resulting in more severe harm. A total of 852 PSIs (46.9%) were rated as preventable or potentially preventable (Table 1). Details of the most common types of PSIs are outlined in Table 2. The ten medications that were most frequently implicated are included for interest.

### *Improvement actions*

#### Actions undertaken during reviews

Reviewers indicated undertaking one or more actions relating to the safety and quality of care during trigger reviews in 459/536 trigger summaries (85.6%).

There were four main types of immediate actions, which relates to the following care processes in general practice: (i) coding and record keeping; (ii) prescribing and medication; (iii) communication; and (iv) further investigation and follow-up. Examples of the types of actions and a selection of verbatim illustrative quotes from the summary sheets are shown in Table 3.

### Actions and intended actions undertaken after trigger reviews

Overall, reviewers undertook or intended to undertake 2177 actions subsequent to and as a result of performing 536 trigger reviews, with a mean of 4.1 actions after each trigger review (SD±3.3). The most common types of actions were ‘feedback to colleagues’ (41.2%) and ‘add to appraisal’ (18.1%) while the least common was using the PDSA method (1.5%) The number and types of specific actions are shown in Table 4 and the proportions of the two Boards are compared.

### *Reported trigger review times*

The overall time to conduct reviews (of a set of 25 records), implement or consider action and complete Summary Sheets for both NHS Boards was 86,253 minutes (n=495 reviews) with a mean of 174.2minutes/trigger review (SD ±78.4 minutes, range 30 to 480 minutes).

### **Discussion**

This study reports the main outcomes from the implementation of the TRM **in general practices across two NHS Health Boards in the west of Scotland**. The vast majority of general practices participated in this patient safety improvement initiative and applied the TRM to the medical records of their own patients. The main findings are that most clinician reviewers were able to detect PSIs in the medical records of their patients and were willing to report these. In addition, the majority reportedly took or intended to take a wide range of formal and informal improvement actions, including protocol revisions, significant event analyses, clinical audits, sharing learning points in their teams and editing and updating medical records to minimise risks.

The majority of detected incidents were categorised as low-to-moderate severity, ‘near misses’ and latent system hazards. The types of PSIs uncovered by the TRM will be familiar to most patient safety researchers and indeed primary care clinicians. We would argue, however, that the main value of the reported PSIs was derived from them being detected within the records of the reviewers’ practices in a “real-world” setting - rather than their type or frequency. The TRM process potentially facilitated clinician engagement by providing opportunities to tackle issues that are perceived as relevant to individual practice

teams and clinician reviewers. This facilitation of potential clinician engagement is arguably one of the crucial differences between the primary care TRM and other similar improvement interventions and may promote its sustainability and routine use in primary care settings where adequate incentivisation and protected time are available.

Typically, frontline staff first need to assure themselves that there is a real and important problem which relates specifically to them. In NHS Scotland, general practitioners (GPs) are independent contractors with the freedom to choose whether they participate in safety improvement initiatives or not. In our experience the vast majority perceived patient safety as important, but only one of a number of priorities. GPs' participation in an initiative increases if they understand and are able to see quick, unambiguous and practical evidence that an intervention has value for them and their patient population.

If we assume the reported study data is indicative of the TRM 'working' in these two NHS Boards, then it would be fair to say that with its current national implementation it should detect PSIs in all other NHS Board regions. Moreover, based on the scale of our findings, there is a possibility of this approach having demonstrated that it is potentially the most effective of all current methods for *detecting* patient safety-related issues in the Scottish (and by extension UK) general practice setting. With the current focus on patient safety (26), we suggest that the TRM is a potentially feasible and effective safety improvement intervention which could be applied more widely in UK general practice and international family practice settings, either as part of a large-scale safety improvement initiative or voluntarily as a simple quality improvement activity.

However, implementing and sustaining safety interventions in complex healthcare environments is problematic for a whole raft of cultural, social and resource based reasons (27). **It is suggested that** intervention success is predicated on three common conditions all being met: 1. making it straightforward to do; 2. measuring and providing feedback on related outcomes; and 3. normalising the intervention as part of routine work to improve performance and change culture (27,28). Our findings provide some evidence of the ability of care teams to understand and apply the TRM to detect PSIs at the practice level (Condition 1) and the potential for organisational level monitoring and measurement to feed back learning from safety-related issues across practices (Condition 2). However, for the full

benefits of the TRM to be realised it would require to be routinely implemented, perhaps in a very targeted way. One example might be to measure and reduce avoidable harm from Warfarin toxicity. However, this may require linkage with multiple intervention strategies (such as comparative and highly visible audit and feedback) to drive improvements on a regional and national basis (Condition 3).

As part of recent related research on the TRM potential to reliably measure harm rates in general practice (29), a basic formula was designed using computer generated simulation to inform sample sizes (the minimum numbers required are similar to those reported in this study) and acceptable levels of statistical precision and power necessary for the purpose of detecting whether improvements in safety performance are being realised. Therefore, by repeating the implementation approach reported in this study on a targeted patient sub-population there is the potential to test 'Condition 3' by measuring, monitoring and driving improvement on a regional and national basis. Vincent and colleague's recently published framework for the measurement and monitoring of safety supports this approach by calling for more 'specific and nuanced' measures of harm of direct relevance to different care settings to be developed (6).

#### *Practical implications*

Besides potentially providing key insights into safety and risk matters, application of the TRM importantly may also serve to facilitate practice and organisational learning through integration with quality improvement methods such as Significant Event Analysis (13), Plan-Do-Study cycles (30), clinical care bundles (31) and criterion based audit (32). For example, to assess in much greater detail system wide human factors interaction issues contributing to delayed diagnoses, sub-optimal therapeutic management, disease and drug monitoring, and problems with computerised support technologies. This is particularly helpful given that appraisal and revalidation requires GPs to analyse two significant events per year (with the UK General Medical Council encouraging these events to be PSIs rather than broader quality of care issues). Identification and analysis of these previously undetected PSIs is particularly pertinent to improving the opportunity cost of significant event analysis topics.

#### **Strengths and limitations**

There was high level engagement from practices in both NHS Board areas in response to incentivisation to apply the TRM, which provided significant levels of data on captured PSIs. Baed on this study, the TRM can clearly identify PSIs which provides evidence of its validity and appears to have been 'tolerated' by large numbers of clinicians trained in the process (evidence for professional acceptability of the method) in a relative short timescale (evidence for feasibility). However, these data are self-reported and so subject to bias as there was no means to externally verify data quality, particularly in terms of judgements on what constitutes a PSI, how severe it is and if it is preventable. Inevitably there will be inter-rater variations on these issues.

## **Conclusion**

Our understanding of the types and nature of the threats to patient safety is continually increasing (33). Patient safety research in primary care is beginning to evolve and demonstrate the need for co-ordinated action to make systems safer (5, 9, 13); and from this perspective the rationale for improvement seems obvious. However, much of the primary care workforce is unaware of the evolving evidence base, nor do they necessarily share this perspective. Consequently, efforts to harness the patient safety literature in order to meaningfully improve care have so far had limited demonstrable effect (34). In response, we developed, tested, and implemented the TRM and propose this approach as a pragmatic bridge between: (i) research/academic general practice and clinical service delivery; (ii) national and individualized approaches to improve patient safety; and (iii) initiatives focusing only on measurement or improvement. There may not be any patient safety panaceas yet, but our findings suggest the TRM is a potentially feasible approach to identifying and addressing a range of important safety issues that were previously undetected in the medical records of 'high risk' patient groups in general practice.

## **Footnotes**

### *Contributors*

CW: concept, study design, data analysis, co-development and critical review of manuscript.

CB and SL: data analysis and critical review of the manuscript; JM and CO: contribution to

study design and critical review of the manuscript. PB: concept, study design, co-development and critical review of manuscript, study guarantor.

#### *Study funding*

NHS Education for Scotland

#### *Competing interests*

None declared

#### *Ethical review*

The study was pre-screened by the west of Scotland NHS research ethics service and judged to be service evaluation, thus ethical approval was not required.

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#### *TRM guidance and information*

Education guidance and more information on TRM can be accessed online here: [http://www.healthcareimprovementscotland.org/our\\_work/patient\\_safety/spsp\\_primary\\_care\\_resources/trigger\\_tool.aspx](http://www.healthcareimprovementscotland.org/our_work/patient_safety/spsp_primary_care_resources/trigger_tool.aspx)

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**Box 1.** A selection of detected PSIs recorded in Summary Sheets

- Breathlessness requiring admission in a lady who had her diuretics and ACE [Angiotensin converting enzyme] inhibitors stopped [previously] during an episode of diarrhoea;
- Prescription marked as "1 tab daily" - 100 tablets issued on each occasion. Incorrectly marked dose, as patient taking 2 tablets daily for 6 days and 3 tablets on day 7;
- Fall at home - long lie - resulting in confusion dehydration and acute kidney injury requiring admission. Patient was not taking medication appropriately and using old drugs lying in house;
- 82 year old female patient was issued with a prescription for atorvastatin 80mg instead of 40mg, despite a documented adverse reaction on the 80mg dose;
- Ibuprofen given as acute to already anaemic patient (Haemoglobin <10.0);
- Delayed diagnosis of incarcerated/strangulated hernia. Led to prolonged eleven day hospital admission. Earlier diagnosis may have resulted in shorter hospital stay;
- Dose of amitriptyline increased to 25mg [and] original dose not deleted;
- Patient with Haemoglobin=9.2 [and heart failure] untreated and not retested for this;
- Patient presented as worried she may be pregnant and taking methotrexate. Pregnancy test negative. No record in the notes that patient had received counseling;
- Patient fell due to dizziness. Symptom may [have been] related to increase in oxycontin for back pain;

**Table 1.**The severity and preventability of PSIs as rated by clinical reviewers in both NHS Boards

<b>Rating scale</b>	<b>Description</b>	<b>All n (%)</b>
<b>Severity</b>		
1	Any incident with the potential to cause harm.	758 (41.0)
2	Mild harm, inconvenience, further follow-up or investigation to ensure no harm occurred.	541 (29.2)
3	Moderate harm: required intervention or duration for longer than a day.	289 (15.6)
4	Prolonged, substantial or permanent harm, including hospitalisation.	262 (14.2)
<b>Preventability</b>		
1	Not preventable and originated in secondary care.	262 (14.4)
2	Preventable and originated in secondary care OR not preventable and originated in primary care.	704 (38.7)
3	Potentially preventable and originated in primary care.	465 (25.6)
4	Preventable and originate in primary care.	387 (21.3)

**Table 2. Frequency and details of main types of PSIs and the most common medications implicated**

Characteristics of PSIs	All n (%)
<b>Types of PSIs</b>	
Medication (includes prescribing)	650 (34.7)
Communication (includes all types of correspondence)	108 (5.8)
Coding / record keeping	145 (7.7)
Monitoring (includes access and ongoing care issues)	324 (17.3)
Diagnosis and diagnosing	46 (2.5)
Investigations	54 (2.9)
Medical equipment (includes IT)	15 (0.8)
Unclear or insufficient information to classify PSI	512 (27.4)
Healthcare acquired infection	18 (1.0)
 <b>Ten medications most commonly implicated in PSIs</b>	
Antibiotics	46 (6.5)
Warfarin	139 (19.5)
Opiates, e.g. codeine, morphine, tramadol	27 (3.8)
Diuretics	47 (6.6)
ACE / ARB	45 (6.3)
Oral hypoglycaemic agents	27 (3.8)
DMARDs (including methotrexate)	78 (11.0)
Not specified	56 (7.9)
NSAIDs, including aspirin	52 (7.3)
Antidepressants	20 (2.8)

Table 3. Types of actions undertaken during trigger reviews with selected examples and quotes

Main care process actions relate to	Examples of actions	Selected quotes	
<b>Coding</b> / record keeping	<ul style="list-style-type: none"> <li>• Update coding (disease registers, QOF data)</li> <li>• Correct coding / records</li> <li>• Add a clinical entry or set a task 'reminder' or 'recall'</li> </ul>	<ul style="list-style-type: none"> <li>• 'Review of records revealed that DVT and pre-eclampsia had not been coded as active significant problems. Codes added to records' (HBA)</li> <li>• '[I] spotted a couple of coding errors and also an entry that had clearly been made in the wrong set of notes. These were addressed as I went along' (HBA)</li> <li>• 'Incorrect Heart Failure code removed. Adverse reaction to ACE recorded' (HBA)</li> <li>• 'Yellow flag reminder added regarding methadone' (HBA)</li> </ul>	<ul style="list-style-type: none"> <li>• The patient in [PSI X] has had his coding corrected and he is now on the QOF register again (HBB)</li> <li>• Updated missed read code for patient with aortic valve replacement (HBB)</li> <li>• Some codes have had priority level changed (HBB)</li> <li>• The patients GP record has been amended to remove the incorrect code for bladder cancer (HBB)</li> </ul>
<b>Prescribing</b> (medication-related processes)	<ul style="list-style-type: none"> <li>• Changes to medication items (commence new drugs, change or discontinue current drugs)</li> <li>• Perform medication reviews</li> </ul>	<ul style="list-style-type: none"> <li>• 'During the review I reviewed repeat medications. I looked at when medications were last requested. I deleted medications that had not been requested for some time' (HBA)</li> <li>• 'Medication reviewed to ensure appropriateness of prescriptions' (HBA)</li> </ul>	<ul style="list-style-type: none"> <li>• Stopped inappropriate anti-emetic (HBB)</li> <li>• Where it was felt appropriate to remove medication which had not recently been requested from the repeat medication list, this was done. (HBB)</li> </ul>
<b>Communication</b> (monitoring, clarification, review, education)	<ul style="list-style-type: none"> <li>• Clarify management plan and who is responsible for delivery with secondary care</li> <li>• Clarify patients' understanding of their management</li> </ul>	<ul style="list-style-type: none"> <li>• 'For DNA hospital appointments [we] ensured patients had received appointments from hospital. Also ensured addresses/contact details for patients are up to date.' (HBA)</li> <li>• 'In the first patient, his repeat medication was updated after speaking to him on the phone'</li> </ul>	<ul style="list-style-type: none"> <li>• Contact was made with the hospital re missing A&amp;E admission paperwork for patient (HBB)</li> <li>• Contact made with the patient identified as having numerous contacts with</li> </ul>

	plan	(HBA) •‘Two patients [were] contacted to clarify prescribing doses’ (HBA)	OOH. Discussed this behaviour, emphasised the importance of not abusing this service and encouraged the patient to contact the surgery during normal opening hours if there is a problem. (HBB)
	•Providing information or educating patients	•‘[I] informed patient to stop Aspirin one week before next hospital appointment’ (HBA)	•Medications were updated and discussed with patients during immediate discharge medicines reconciliation (HBB)
	•Confirming that intended actions (e.g. scheduled monitoring) took place	•‘[I] phoned anti-coag clinic to check INR recently done’ (HBA) •‘[I] ensured housebound patients on DMARDs are monitored as per guidelines’ (HBA)	•Patient having monthly DMARD bloods - phoned rheumatology nurses to check if it should be 4 or 8 weekly (HBB)
<b>Investigations and follow-up</b>	•Arrange an appointment with the reviewing clinician or another practice team member	•‘I invited a patient with CKD to attend for BP which is overdue’ (HBA) •‘Patient in PSI3 [were] phoned and asked to make an appointment to see GP’ (HBA)	•One patient who was overdue monitoring and not responded to letters has had methotrexate removed from repeat and a nurse telephone call booked to discuss (HBB)
	•Refer to another health care provider	•‘[I sent a] letter to Cardiology about this patients AF diagnosis and CHADS recommendation’ (HBA)	•
	•Arrange additional investigations for a patient	•‘Two patients on diuretics and ACE with no U&Es in last year invited for U&E [check]. One patient with Hb=9.2 and no recheck for a year recalled for blood test.’ (HBA)	•Patient was lettered to attend GP for medication review and monitoring bloods to be performed. (HBB)

Table 4. Summary of the action(s)\* reviewers indicated they undertook or planned to undertake after the trigger reviews

Description of action	All n (%)
Significant event analysis	250 (11.5)
Clinical audit	138 (6.3)
PDSA cycle	32 (1.5)
Feedback to colleagues	898 (41.2)
Make a specific improvement	220 (10.1)
Add to appraisal documentation	393 (18.1)
Protocol update	190 (8.7)
Other*	54 (2.5)
<b>Total</b>	<b>2175</b>

\*More than one option could be selected