European Journal of General Practice, 2015; 21(Suppl 1): 31–34

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Background Paper

Quality indicators for patient safety in primary care. A review and Delphi-survey by the LINNEAUS collaboration on patient safety in primary care

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KEY MESSAGE:

- The LINNEAUS collaboration identified key areas for patient safety indicators, mainly suggesting specific clinical processes and some organizational aspects.
- The suggested framework of quality indicators for patient safety can be used for developing a mechanism to assess standards in relation to patient safety.

ABSTRACT

Background: Quality indicators are measured aspects of healthcare, reflecting the performance of a healthcare provider or healthcare system. They have a crucial role in programmes to assess and improve healthcare. Many performance measures for primary care have been developed. Only the Catalan model for patient safety in primary care identifies key domains of patient safety in primary care.

Objective: To present an international framework for patient safety indicators in primary care.

Methods: Literature review and online Delphi-survey, starting from the Catalan model.

Results: A set of 30 topics is presented, identified by an international panel and organized according to the Catalan model for patient safety in primary care. Most topic areas referred to specific clinical processes; additional topics were leadership, people management, partnership and resources.

Conclusion: The framework can be used to organize indicator development and guide further work in the field.

Keywords: Patient safety, quality indicators, primary care, LINNEAUS collaboration

INTRODUCTION

Quality indicators are measured aspects of healthcare, which reflect the performance of a healthcare provider or healthcare system (1). Indicators have a crucial role in programmes to assess and improve healthcare, for instance educational feedback, accreditation and certification, contracts and financial incentives, and public reporting. In this article, we focus on indicators of patient safety in primary care. We report on an exploration of topics for patient safety indicators in primary care, using an existing quality management framework (2).

Patient safety indicators

Patient safety indicators (PSI) are measures that intend to identify, monitor and evaluate unintended events or

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(Received 15 July 2013; revised 2 February 2015; accepted 10 March 2015)

ISSN 1381-4788 print/ISSN 1751-1402 online
DOI: 10.3109/13814788.2015.1043730

hazardous conditions in healthcare delivery, (rather than events that are related to the patient's disease), which led or could have led to unintended health consequences for the patient (3,4). Examples of patient safety indicators are availability of a resuscitation trolley, yearly number of cases of undiagnosed ischaemic chest pain, and percentage of patients with non-steroidal anti-inflammatory drugs (NSAID) prescription but no gastroprotective medication. Depending on the framework used, PSIs may be designed to detect events or phenomena that imply preventable risk for patient safety and, therefore, trigger further analysis and investigation; they may also reflect clinical adverse outcomes, which are considered preventable; and finally, they may reflect clinical or organizational aspects (staff, equipment, treatment, investigations, communication, etc.) which relate to patient safety (5). Like all quality indicators, PSIs need to meet a range of requirements, including content validity, feasibility, reliability and discriminative power (3).

PSIs can be formulated as rate-based indicators or sentinel indicators. Rate-based indicators use data about events that are expected to occur with some frequency. These can be expressed as proportions or rates in a way that the numerator (event or harm) and the denominator (population at risk) should be clearly defined within a given period. Sentinel indicators refer to major adverse events, so typically just one case in an observation period indicates a risk for patient safety (6). Several methods exist to collect data for PSIs such as auditing samples of patient records, reporting by healthcare providers or interviews and surveys of patients. There is no evidence to suggest that any of these methods are superior for measuring patient safety in primary care; in fact, the different method seems to complement each other (7).

Quality frameworks

In many European countries, indicators or measures for professional performance of primary care providers and the organization of general practice have been developed. Some of these tools were based on hospital-based quality frameworks, such as the International Organization for Standardization (ISO) approach, healthcare-specific accreditation (such as the Joint Commission on Accreditation of Health Care Organizations—JCAHO from the USA) and the European Foundation for Quality Management (EFQM) approach (8). Other tools have been originally developed for primary care, such as the European Practice Assessment tool and the Dutch Practice Accreditation Scheme (9,10).

The Catalan model for patient safety in primary care

None of these have been specifically designed to identify key domains of patient safety in primary care, with the exception of the Catalan model for patient safety for primary care developed by the Ministry of Health of the Government of Catalonia (Spain) (Box 1). The Catalan model is based on the Joint Commission International and the European Foundation for Quality Management (EFQM) accreditation models. Briefly, it includes 207 patient safety indicators and a subgroup of 33 that are considered indispensable or *sine qua non* (11). It has been developed using a modified Delphi procedure (two rounds and a plenary session) involving patient safety experts, scientific societies and further validation in 40 primary care centres in Catalonia.

In this paper, we report on an exploration of topics for patient safety indicators in primary care, using an existing quality management framework (2).

METHODS

Literature review

We reviewed the literature using the Catalan model as starting point and then using consensus development, to identify the PSI domains that would be relevant in a European context. Our search strategy included searches in Medline, free searches over the Internet and the grey literature. We included a range of descriptive studies, a systematic review, reviews and reports from government websites from the UK, Australia, Canada, the United States and Spain; key international organizations such as the World Health Organization, Organization for Economic Cooperation and Development, Council of Europe and Commonwealth Fund International and international projects funded by the European Commission.

The Catalan model was the underpinning quality framework, which we used to structure patient safety indicators into domains, which were modified according to the outputs of the literature review. Subsequently, the LINNEAUS Euro-PC research team identified those

Box 1. The Catalan model for patient safety.

Patient safety indicators in the Catalan model were constructed according to nine domains:

1. Leadership (on patient safety in a primary care practice).
2. Policy and strategy (as an action plan orientated towards achievement of a patient safety strategy).
3. People (professionals) management (as the ability of a primary care practice to harness the knowledge and the potential of its entire workforce).

Planning and management of:

4. external partnerships and internal resources;
5. clinical processes; and

results, at the level of

6. customers;
7. professionals;
8. society;
9. Key results (which evaluate the achievement of milestones in relation to projected targets).

domains (44 domains), which were relevant for safety in a European primary care context.

Online Delphi-survey

The resulting list of 44 domains was sent out for consultation to an international panel of experts in a two-round online-modified Delphi survey. Panellists were identified and invited to take part by the LINNEAUS Euro-PC project partners in each country. Nineteen experts with a range of backgrounds (family physicians, academics, management, and health policy advisors) from the UK, Austria, Poland, Greece, Netherlands, Spain and Germany comprised our international panellists. For each domain, participants were asked to rate the relevance and availability of the indicator.

RESULTS

We found an average agreement of over 80% (min. 75%, max. 100%) in most of the resulting 29 relevant areas for patient safety indicators in primary care identified (Table 1).

Topics for patient safety indicators

Table 1 presents the four domains for which topics of indicators were specified: leadership, people management, partnerships and resources, and clinical processes. The descriptors of the four domains are as follows:

Leadership. Primary care practices require a culture of quality and safety and leadership is a key factor in promoting this. Many primary care practices have distributed leadership, implying that the leadership is shared by several individuals.

People management. The primary care practice ensures that the professionals in the practice have up-to-date knowledge and skills. They also promote the individual well-being of health professionals to avoid burnout and other behaviours, which may put patient safety at risk.

Table 1. Twenty-nine relevant domains for patient safety indicators in primary care.

Leadership	
1	Working towards a culture of quality and safety
People management	
2	The Health Centre has a training plan for its staff's continuing professional development
Partnerships and resources	
3	Professionals of the health centre know the referral facilities
4	Efficacy and quality of the non-healthcare providers' services employed by the health centre
5	Safety and suitability of the health centre
6	Effectiveness, safety, and use of the technical support resources
Clinical processes	
General organizational structures	
7	The health centre has a database that contains the personal data of its patients
8	Use of the electronic medical records
9	Management of urgent requests for assistance
10	Home care for chronic conditions
11	Clinical decision tools are present
Treatment protocols	
12	Treatment protocol for cardiopulmonary emergencies
13	Treatment protocol for treatment of acute diseases in the centre and during home visits
14	Treatment protocols for cardiovascular risk factors
15	Treatment protocols for management of cancer
16	Treatment protocols for cardiovascular disease
17	Treatment protocols for chronic respiratory diseases
18	Treatment protocols for infectious diseases
19	Treatment protocols for mental health diseases
20	Treatment protocols for suspected cases of abuse
21	Protocols for end of life care
Patient safety procedures	
22	Detection of patient safety incidents and sentinel events
23	Processes in place to ensure the effectiveness, efficiency and safe use of medicines
24	Safe processes for the prescription of medicines
25	Safeguard professionals and the public from healthcare associated infections
26	Guaranty of continuity of care between primary care and emergency medical services, specialists and long-term care services
27	Safety mechanisms and procedures for blood sample collection.
28	Research activities of the health centres safeguard safety of participants and follow research ethics
29	Appointments delays of patients with their allocated clinician

Partnerships and resources. Partnerships with others (outside the primary care practice) and available resources in the practice need to match with patient safety.

Clinical processes. Many patient safety indicators were related to clinical processes. These could be broadly distinguished into three subdomains: overall organizational structures, treatment protocols, and patient safety procedures.

DISCUSSION

We have developed a framework for patient safety indicators in primary care. Some of these areas referred specifically to practice management, but the large majority referred to clinical processes. It should be emphasized that the unit for assessment is the primary care practice whose organization and structure will be determined by the way that primary care is organized in that particular country. Many of the indicators may only apply if the primary care practice is a large organization.

The relevance of the framework for countries, which did not contribute panel members, remains to be determined due to small sample participating in our study. Therefore, we should exercise caution when extrapolating these results and seek further validation and testing of this framework for local implementation. The fact that our framework was also agreed by the research partners of the participating countries in the LINNEAUS Euro-PC network, who all have specialist expertise in patient safety helps legitimate our conclusion.

CONCLUSION

The framework can be used to organize indicator development and guide further work in the field of patient safety in primary care. It can support the development of educational and policy agendas for patient safety in primary care.

FUNDING

The research leading to these results has received funding from the European Community's Seventh Framework Programme FP7/2008–2012 under grant agreement no. 223424.

Declaration of interest: The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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