

## The PINCER intervention

### What is PINCER?

PINCER is a proven **p**harmacist-led **IT**-based **i**ntervention to reduce **c**linically important medication **e**rrors in primary care. The intervention comprises three core elements:

1. Searching GP computer systems to identify patients at risk of potentially hazardous prescribing using a set of prescribing safety indicators
2. Pharmacists, specifically trained to deliver the intervention, providing an educational outreach intervention where they meet with GPs and other practice staff to:
  - Discuss the search results and highlight the importance of the hazardous prescribing identified using brief educational materials
  - Agree an action plan for reviewing patients identified as high risk and improving prescribing and medication monitoring systems using root cause analysis (RCA) to minimise future risk
3. Pharmacists (and pharmacy technicians) working with, and supporting, general practice staff to implement the agreed action plan

### Why is there a need for PINCER?

Prescribing errors in general practice are an important and expensive preventable cause of safety incidents, morbidity, hospitalisations and deaths. This is a significant quality and safety issue that is widely relevant to UK health care. A recent large-scale study in English general practices identified prescribing errors in 5% of prescription items, with one in 550 items containing a severe (potentially life threatening) error; this equates to approximately 1.8 million serious prescribing errors in English general practices each year.<sup>1</sup> Further studies have shown hazardous prescribing in general practices to be a contributory cause of around one in 25 hospital admissions,<sup>2</sup> and the annual hospital admission costs in England for adverse drug events are £650 million (at 2013 prices).<sup>3,4</sup>

The World Health Organisation (WHO) has identified 'Medication Without Harm' as the theme for their third Global Patient Safety Challenge which aims to reduce severe avoidable medication-related harm by 50% globally in the next five years by targeting health care provider's behaviour, systems and practices of medication, medicines, and the public.<sup>5</sup> In response to this challenge, the DH commissioned a report on the prevalence and cost of medication errors which reported that an estimated 66 million potentially clinically significant errors occur per year, 71% of which are in primary care.<sup>6</sup> While the majority of these errors are spotted (and corrected) at the point of error, or do not threaten patient safety, a drastic reduction in the number of errors is now being called for. There is therefore the need to develop and implement interventions to reduce medication error associated with avoidable harm.

### What is the evidence for PINCER?

The effectiveness of the PINCER intervention was shown in a cluster randomised trial which was published in the Lancet in 2012.<sup>7</sup> The trial compared two groups of general practices (a 'simple feedback' group n=36 and a PINCER group n=36) using the same prescribing indicator searches. The 'simple feedback' group were provided with details of patients identified by the searches, and evidence-based summaries for each of the indicators. The PINCER group was given similar information, but in addition a pharmacist was assigned to each practice to provide educational outreach regarding the indicators and practical support to tackle the prescribing safety concerns raised by the indicators. The trial clearly demonstrated that at 6-months follow-up, hazardous prescribing was significantly lower in the PINCER group than the "Simple Feedback" group and that the intervention was likely to be cost-effective.

### What is the PINCER tool?

PRIMIS (Primary Care Information Services) and the University of Nottingham PINCER Team have developed a PINCER tool. The aim of the tool is to identify at-risk patients so that corrective action can be taken to reduce hazardous prescribing. Using the tool, it is possible for practices to view their results in relation to other practices within their CCG and see improvements over time.

### How does PINCER differ from other audit tools?

Although PINCER indicators are embedded in other CDS and audit tools, we know that:

- Clinical system alerts are often over-ridden by GPs and that it is likely that some patients will "slip through the net"

- As demonstrated in the PINCER trial, it is the addition of dedicated pharmacist support to help resolve the problems identified and improve systems to avoid future errors, that significantly reduces rates of clinically important and commonly made prescribing errors in primary care
- The PINCER tool provides comparative data on numbers of at risk patients at a practice, CCG and national level

## Clinical impact of PINCER

With funding obtained from the Health Foundation and East Midlands Academic Health Science Network, PINCER has been rolled out to 370 general practices across 12 East Midlands CCGs between September 2015 and April 2017. Over 21,000 instances of hazardous prescribing were identified in a patient population of just over 2.9 million people. Findings from the evaluation of this rollout have demonstrated statistically significant reductions in numbers of at risk patients, particularly in relation to prescribing safety indicators associated with risk of gastrointestinal bleeding, where the overall reduction was around 31% (14% after taking account of secular trends). Extrapolating figures provided by two CCGs, it is estimated that over 10,500 patients received an active intervention resulting in safer care as a direct benefit of implementing the intervention.

In terms of impact, the PINCER intervention has been incorporated into national guidelines to support medicines optimisation by National Institute for Health Care Excellence 'Medicines Optimisation Clinical Guideline' published 04/03/15 and available at: <http://www.nice.org.uk/guidance/ng5/evidence>. This means that general practices throughout the country are encouraged to use the intervention. In addition to the East Midlands rollout, since 2013 the PINCER Tool has been accessed by over 2,400 practices across 199 CCGs (30% of all practices in England) and has been rolled out in other parts of the country including:

- Wessex AHSN
- Greater Manchester AHSN
- Northern Ireland
- Newcastle Gateshead CCG

In 2017, a Short Life Working Group was commissioned by the Secretary of State for Health to respond to the World Health Organisation challenge to reduce serious harm from medication errors. One of the main recommendations from this Group is for a national roll-out of PINCER.<sup>6</sup>

Having successfully obtained further funding from the Health Foundation to work with Spring Impact, a not-for profit social enterprise, the University of Nottingham PINCER Team and PRIMIS have designed a replication model for PINCER for further scale up. As a result of this work, PINCER has been identified as one of seven programmes for national rollout during 2018-2020 via the AHSN network and rollout has already commenced in three early adopter AHSN regions:

<http://www.ahsnnetwork.com/about-academic-health-science-networks/national-programmes-priorities/>

The evidence outlined above shows that this proven intervention has already had an impact locally, regionally and nationally to make primary care prescribing even safer for patients throughout the country.

## References:

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