NICE National Institute for Health and Care Excellence

Putting NICE guidance into practice

Costing statement: Medicines optimisation

Implementing the NICE guideline on medicines optimisation (NG5)

Published: March 2015

1 Introduction

1.1 This costing statement considers the cost implications of implementing the recommendations made in Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes (NICE guideline 5).

1.2 This guidance has the potential to be cost saving. There is variation in clinical practice across the country therefore we encourage organisations to evaluate their own practices against the recommendations in the NICE guideline and assess the resource impact locally. Some of the resource effects to be considered locally are discussed in this statement.

1.3 The commissioners are clinical commissioning groups (CCGs), NHS England and local authorities. The providers are primary, secondary and tertiary care; community care; pharmacies; care homes and social care.

1.4 Commissioners should work together with all stakeholders to ensure that providers are following best practice in medicines optimisation.

2 Background

2.1 Medicines-related patient safety incidents are common. Between April 2013 and March 2014, 159,000 medicines-related incidents were reported to the National Reporting and Learning System for England. However, this is likely to underestimate the true number of incidents as not all are identified and reported.

2.2 Medicines-related patient safety incidents include medication errors (such as prescribing errors, dispensing errors, administration errors and monitoring errors) and preventable adverse events. Non-preventable adverse events, such as well-recognised adverse drug reactions, were not included within the scope of the guideline.

2.3 Based on the estimates in the fourth report from the Patient Safety Observatory (2007), avoidable medicines-related admissions to hospitals

may cost commissioners in the region of £530 million[1] per year (see table 1 for the calculation). A reduction in admissions will also release capacity for providers and allow for better use of beds. This equates to nearly 2 million bed days in England or 4,200 per hospital[2], with a median length of stay of 8 days for a medicines-related admission. Organisations should review the applicability of this at a local level.

Table 1 Cost of avoidable medicines-related admissions[3]

Proportion of non-elective admissions related to adverse drug reactions[a]	6.50%
Proportion of adverse drug reactions that were potentially avoidable[a]	72.00%
Proportion of non-elective admissions related to potentially avoidable adverse drug reactions (6.5% x 72%)	4.68%
Number of non-elective admissions in a year[b]	5,336,043
Median number of bed days per adverse drug reaction-related admission[a]	8
Total number of bed days for potentially avoidable adverse drug reaction-related admissions (4.68% x 5,336,043 x 8)	1,997,814
Cost per bed day[c]	£265
Estimated cost per year for potentially avoidable adverse drug reaction-related admissions (1,997,814 x £265)	£529,420,710

[a] Pirmohamed M, James S, Meakin S et al. (2004) Adverse drug reactions as a cause of admission to hospital: prospective analysis of 18 820 patients. BMJ 329: 15.
[b] The Health and Social Care Information Centre, Hospital Episode Statistics for England. Emergency admissions. Inpatient statistics, 2012–13.
[c] National Schedule of Reference Costs 2012–13 for NHS trusts and NHS foundation trusts. Non-Elective Inpatient (Long Stay) Excess Bed Days.

[1] Using updated cost data from National Schedule of Reference Costs 2012-13 and hospital admissions data from Hospital Episode Statistics for England 2012-13.
[2] In total there were 474 English providers submitting information to HES in 2012-13. 2 million/474=4,200.
[3] Non-preventable adverse drug reactions are outside the scope of the guideline. However, potentially preventable adverse events, such as potentially avoidable adverse drug reactions, are included in the scope of the guideline.

2.4 Medicines-related patient safety incidents and preventable adverse events can result in avoidable emergency admissions to hospital or an increased length of stay if they occur after a patient has already been admitted as an inpatient. Treating preventable adverse events and covering any resulting litigation expenses costs the NHS millions of pounds each year.

3 Resource impact

3.1 As noted in paragraph 2.3 in the background section, there are significant costs associated with avoidable medicines-related hospital admissions.

3.2 Other areas of resource impact, which could represent significant savings, are:

- Treating or managing potentially avoidable adverse drug reactions that occur during inpatient stays
- Litigation costs

3.3 Treating or managing potentially avoidable adverse drug reactions that occur during inpatient stays may increase the length of stay in hospital by 3 days[4]. This may result in additional costs for commissioners if the tariff trim point is exceeded. The cost of a non-elective inpatient bed day is £265 (as in table 1 above), so there may be a saving of between £0 and £795 (£265 × 3) per adverse drug reaction avoided. A reduction in length of stay will also release capacity for providers and make better use of beds.

3.4 NHS Litigation Authority data[5] shows that since 2008 there have been 551 successful claims made against NHS trusts in which medication error is listed as one of the causes. A total of £16,572,028 was awarded in damages since 2008, a further £1,643,142 was paid to cover defence

[4] Wiffen P, Gill M, Edwards J et al. (2002) Adverse drug reactions in hospital patients. A systematic review of the prospective and retrospective studies. Bandolier Extra: 1–16.
[5] Freedom of Information request. Please note that a claim may be multi-factorial and/or settled on a number of bases. Therefore, where a claim has 2 or more causes, it is not possible to confirm from the information held in the database what proportion, if any, of the damages paid in relation to this set of claims related to the medication error.

costs and £9,637,309 was paid to cover claimant costs. Another 275 cases are still open, for which £1,672,574 has already been paid in defence costs.

3.5 Expert opinion provided by a member of the GDG suggests that identification and reporting and learning systems may currently be inadequate in some areas. Organisations should assess systems locally. This could be built into the overall medication review process to focus on patients/medicines where incidents are likely to occur.

3.6 Pharmacist-led information technology intervention for medication errors (PINCER) and screening tool of older persons' prescriptions; screening tool to alert doctors to right treatment (STOPP/START) are two examples of the tools that can be used to reduce adverse drug reactions. The aim of the PINCER audit tool is to identify at-risk patients who are being prescribed medicines that are commonly associated with medication errors so that action can be taken to reduce the risk of errors. According to the report Medicines Optimisation: Supporting information for the prototype dashboard (NHS England, June 2014), 1290 GP practices had downloaded PINCER software by 31 March 2014. This is around 16% of GP practices in England[6]. A study in the Lancet, A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-effectiveness analysis[7], found that after 6 months of using PINCER, 12.90 errors were avoided for each GP practice when compared with using computer-generated feedback alone.

3.7 Older people are at greater risk of adverse effects from their medicines because of multiple comorbidities. The STOPP/START tool[8] is a medication review tool designed to identify medication risk and benefits to

[6] There are around 8000 GP practices in England. NHS Confederation: Key statistics on the NHS [accessed 6 January 2015].
[7] The Lancet (2012) A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-effectiveness analysis. Volume 379, No. 9823, p1310–1319 [accessed 26 February 2015].
[8] Gallagher P, Ryan C, Byrne S et al. (2008) STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert Doctors to Right Treatment): Consensus Validation. Int J Clin Pharmacol Ther 2008; 46(2): 72 – 83. PMID 18218287 [accessed 26 February 2015].

older people. The STOPP criteria help to identify those medicines that are significantly associated with adverse drug events in older people. STOPP/START criteria as an intervention applied within 72 hours of admission significantly reduce adverse drug reactions (with an absolute risk reduction of 9.3%) and average length of hospital stay by 3 days in older people admitted with unselected acute illnesses[9]. In one case study, use of this tool led to 52% of patients having their medications either reduced or discontinued[10].

3.8 PINCER and STOPP/START require investment of medical and pharmacist time. Organisations should estimate locally whether there is the capacity in primary care to enable implementation to be absorbed within the current infrastructure.

4 Other considerations

4.1 Cultural barriers may currently exist that make it difficult to implement the guidance. Cultural change may be needed to encourage identifying, reporting, prioritising, investigating and learning from medicines-related patient safety incidents. Investment of time in raising awareness of behaviour and bringing about cultural change may result in costs at a local level.

4.2 The NHS outcomes framework for 2015–16 requires commissioners and providers of NHS services to improve the culture of safety reporting. The Medications Safety Thermometer (part of the NHS Safety Thermometer) is a tool to improve medicines safety locally. It focuses on medicines reconciliation, allergy status, medication omission and identifying harm from high-risk medicines, in line with domain 5 of the NHS Outcomes Framework.

[9] O'Mahoney D, O'Sullivan D, Byrne S et al. (2014) STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. Age Ageing.
[10] Academy of Medical Royal Colleges (2014) Protecting resources, promoting value: a doctor's guide to cutting waste in clinical care.

5 Conclusion

5.1 NHS organisations are advised to assess the resource implications of this guidance locally. Overall, this guidance has the potential to be cost saving.

5.2 A reduction in avoidable medicines-related admissions may save commissioners up to £530 million per year in England. For providers it may allow for better use of nearly 2 million bed days in England per year, or 4,200 beds per hospital.

5.3 A reduction in the number of potentially avoidable adverse drug reactions that occur during inpatient stays may release bed days for providers. Commissioners may achieve potential savings of £265 per day where previously excess bed costs have been incurred. This occurs if the reduced length of stay is within the tariff trim point.

5.4 For successful claims made against NHS trusts in which medication error is listed as one of the causes, a total of £16,572,028 has been awarded in damages, £1,643,142 has been paid to cover defence costs and £9,637,309 has been paid to cover claimant costs since 2008.

About this costing statement

This costing statement accompanies medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes (NICE guideline 5).

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This statement is written in the following context

This statement represents the view of NICE, which was arrived at after careful consideration of the available data and through consulting healthcare professionals. It should be read in conjunction with the NICE guideline. The statement is an implementation tool and focuses on those areas that were considered to have potential impact on resource utilisation.

The cost and activity assessments in the statement are estimates based on a number of assumptions. They provide an indication of the potential impact of the principal recommendations and are not absolute figures.

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