Quality in Primary Care 2012;20:299–301

Short report

Rapid health impact assessment of aspirin promotion for the secondary prophylaxis of vascular events in Wales

Gareth Morgan FRSPH
NSF for Older People Project Manager, National Leadership Innovation Agency for Healthcare, Llanharan, UK

ABSTRACT

Background Evidence from two surveys in Wales, one of the countries of the United Kingdom, shows that there is an under-use of aspirin for secondary prophylaxis. A rapid health impact assessment of a policy of aspirin promotion in Wales is undertaken, with some estimates on service provision.

Methods In this analysis, a general population approach rather than gender-specific calculations was undertaken to estimate scale of magnitude. Readily available epidemiological data from the Welsh population was combined with effect estimates of aspirin derived from randomised controlled trials (RCTs).

Results An additional 700 vascular events may be avoided annually, but the impact of aspirin promotion in the 30–45% of non-compliant individuals might range from 400 to 1200. This relates to about two vascular events being avoided each day if aspirin were used at a maximum level, with 100% compliance. An individual general medical practitioner might case-find 25–35 individuals who should be taking aspirin regularly.

Discussion The promotion of aspirin to post-vascular event individuals who are non-compliant might be achieved through routine clinical management of patients. Person-centred approaches to improving compliance might be introduced.

Keywords: aspirin, prophylaxis, vascular events, Wales

Introduction

For those individuals who have experienced a vascular event, such as a myocardial infarction (MI) or ischaemic stroke (IS), aspirin prophylaxis is a key part of their ongoing clinical management. Meta-analysis of randomised controlled trials offers compelling evidence that aspirin reduces the risk of subsequent vascular events[1] and that the benefit versus risk balance for secondary prevention is favourable.[2] Further, contraindications to aspirin prophylaxis, such as gastric bleeding, are being questioned.[3]

Evidence from two surveys in Wales, one of the countries of the United Kingdom, shows that there is an under-use of aspirin for secondary prophylaxis of vascular events.[4,5] The first of these surveys was undertaken in 2003, prior to the introduction of the Quality Outcome Framework (QOF), and looked at aspirin taking in $\sim$ 1500 patients with various diagnoses related to vascular disease risk.[4] The QOF is a financial incentive to improve the quality of primary care, including use of aspirin, yet despite this aspirin remains under-used. The second survey of $\sim$ 4500 adult residents in a Welsh community was conducted during 2009.[5]

Evidence shows that non-compliance with aspirin is risk factor for further vascular events.[6] Wales is not alone in having an under-use of aspirin for secondary prophylaxis.[7] Given that the medicine is inexpensive, effective and has a good safety profile, such under-use is a cause of concern. In this analysis, a health impact assessment of a policy of aspirin promotion in Wales was undertaken, with some estimates on the impact on service provision.

Methods

The following values were included. Based on the survey findings,[4,5] it was estimated that between 30 and 45% of individuals with a prior vascular event were not taking aspirin. Although the second survey did suggest that the greatest potential for increased aspirin prophylaxis for secondary prevention was in women, in this analysis a general population rather than gender-specific approach, was undertaken.

Box 1 presents in more detail the descriptive epidemiology of vascular events in Wales and explains the calculations in the paper.

Results

It was estimated that 30–45% of 130 000 individuals with a history of vascular events in Wales are currently non-compliant with aspirin prophylaxis. This equates to an estimated 40 000 to 60 000 post-vascular event individuals or $\sim$ 1.3–1.7% of the population of Wales. With an NNT of 1 in 70, an additional 550–850 vascular events may be avoided annually by the optimum use of aspirin in Wales. A mid-point estimate of the number of vascular events avoided was 700. This relates to about two more vascular events being avoided each day if aspirin were maximally used.

Using the 95% confidence interval of the NNT, the number of vascular events avoided ranges from 400 to 1200. Incidence data from Wales, cited separately after the references, estimates that there $\sim$ 10 000 vascular events per annum. Increased aspirin use might therefore help to reduce the annual incidence in Wales of vascular events by 7% (4–12%). This has the potential to save a considerable amount of health and social care resources, an impact which could also be measured using readily collected data.

Given that the list size of a general practitioner (GP) in Wales is $\sim$ 2000 individuals, an individual family doctor is estimated to have 80 patients post-vascular event. Given that medication compliance assessment might be a routine part of the work, an individual GP might find 25–35 individuals per year (2–3 individuals per month) who are poorly compliant with their aspirin regime.

Discussion

GPs or other health staff might identify their aspirin non-compliant patients by a discussion of medication usage, either during medical consultations or perhaps during the process of repeat prescriptions being administered and dispensed. Person-centred approaches to improving the compliance might be introduced. If the doctor–patient relationship is good simple encouragement might be sufficient.[9]

There are a number of limitations to this paper. For example, it is difficult to estimate the percentage of patients in which measures to correct non-compliance might be successful. This paper looks at the maximum possible benefit and although this might be unachievable, it does illustrate to policy makers the potential for improvement. Another limitation is that the estimates used in the calculations are open to challenge:

Box 1 Data values included and calculations undertaken

Previously presented Welsh epidemiological data suggest that $\sim$ 100 000 individuals, or $\sim$ 3% of the three million population, have had an MI.[8] Based on the descriptive epidemiology of the Welsh population, in which MI is approximately three times more prevalent than IS, an estimated 130 000 individuals survive following a vascular event, $\sim$ 4% of the population. Given that increasing age is an independent risk factor for vascular events, most of this population will be older individuals.

Based on meta-analysis of randomised controlled trials, the number needed to treat (NNT) to prevent one extra vascular event in secondary prevention was taken as 70 (95% confidence interval 50–100).[1] Because the benefit versus risk balance of aspirin is favourable in the secondary prevention of vascular events,[2] no calculation was undertaken on undesirable effects. Furthermore, the emerging evidence that post-vascular event individuals with contraindications, such as a history of gastric bleeding, do better by remaining on aspirin[3] is outside of this current analysis.

The following equations were used to calculate a range of values:

Number non-compliant = % non-compliant $\times$ post-vascular event individuals

Vascular events avoided = NNT $\times$ number non-compliant

Reference on vascular event epidemiology in Wales: www.nhsdirect.wales.nhs.uk/encyclopaedia/h/article/heartattack(myocardialinfarctionmi)

* Note : calculations are rounded to nearest 50

for example, the general population estimates used do not breakdown the target population according to age, gender and location.

This paper does not, nor was it intended to, provide final answers. It raises questions and there might also be opportunities for the under-use of aspirin to be monitored and modelled in ongoing studies. For example, the Myocardial Ischaemia National Audit Project (MINAP) which is collecting data from England and Wales[10] might also collect valuable data on increased aspirin use, which may enable comparison between these different health systems and policies.

REFERENCES

1 Antithrombotic Trialists' Collaboration. Aspirin in the primary and secondary prevention of vascular disease: collaborative meta-analysis of individual participant data from randomised trials. *The Lancet* 2009;373:1849–60.

2 Morgan G. Ethical aspects in relation to aspirin prophylaxis. *Quality in Primary Care* 2008:16(6):433–40.

3 Sung JJ, Lau JY, Ching JY, Wu JC, Lee YT and Chiu PW. Continuation of low-dose aspirin therapy in peptic ulcer bleeding. A randomised trial. *Annals of Internal Medicine* 2010;152:1–9.

4 Elwood P, Hughes J, Morgan GP, Brown G and Longley M. A survey of aspirin prophylaxis in Wales. *Quality in Primary Care* 2005;119:734–7.

5 Elwood P, Morgan G, White J *et al.* Aspirin taking in a south Wales county. *British Journal of Cardiology* 2011;18:238–40.

6 García Rodríguez LA, Cea-Soriano L, Martin-Merino E and Johansson S. Discontinuation of low dose aspirin and risk of myocardial infarction: case–control study in UK primary care. *BMJ* 2011;343:d4094 doi: 10.1136/bmj.d4094

7 Zaninelli A, Kaufholz C and Schwappach D. Physicians' attitudes toward post-MI aspirin prophylaxis: findings from an online questionnaire in Europe and Latin America. *Postgraduate Medicine* 2009;121:44–53.

8 Morgan G. A health impact assessment of increased aspirin use in Wales. *Public Health* 2005;119(8):734–7.

9 Kerse N, Buetow S, Mainous AG, Young G, Coster G and Arroll B. Physician–patient relationship and medication compliance: a primary care investigation. *Annals of Family Medicine* 2004;5(2):455–61.

10 Herret E, Smeeth L, Walker L and Weston C. The Myocardial Ischaemia National Audit Project (MINAP). *Heart* 2010;96:1264–7.

FUNDING

Unfunded.

ETHICAL APPROVAL

Not required.

PEER REVIEW

Not commissioned; externally peer reviewed.

CONFLICTS OF INTEREST

None.

ADDRESS FOR CORRESPONDENCE

Gareth Morgan, NSF for Older People Project Manager, National Leadership Innovation Agency for Healthcare, Llanharan CF72 9RP, UK. Email: morgan@fforrdbeck.fsnet.co.uk

Received 22 November 2011
Accepted 4 June 2012