

Towards a Framework for Better Management of Patients with Hypertension

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Abstract. Management of patients with hypertension is poor and novel tools are needed to identify patients whose clinical outcomes can be improved. We herein present a framework we have developed that can be used to identify patients who meet specific audit criteria related to poor management of hypertension. Identified patients would benefit from an immediate follow-up by a practice nurse.

Keywords. clinical audit, hypertension, quality indicators

Hypertension (HT), or high blood pressure (BP), is a chronic condition with a significant contribution towards increased cardiovascular disease risk – a leading cause of death worldwide causing over 1.9 million deaths (42% of all deaths) in the European Union [1]. Despite various efforts to control BP below recommended limits, only 41.9% of the treated patients with HT are reported to have controlled BP [2].

In our previous work [3], we developed a set of explicit audit criteria to identify patients with HT who needed following up. The identified criteria were representative of issues such as adherence to antihypertensive therapy, sufficiently recording patient BP measurements and treatment of compelling indications.

In this work, we present a novel framework we have developed to identify specific patient cohorts that satisfy the developed audit criteria while carefully considering the complex temporal relationships that exist between diagnosis, prescribing and BP measurement. We have used the framework to generate practice specific audit reports outlining details relevant to each patient. Reports include details such as patient diagnosis date and lapses in BP recording after a high BP. For example, in a practice managing 640 patients with HT, we found 52 cases where there was no BP recording for ≥ 90 days after a BP of 160/100 mmHg or higher during a 12-month analysis period.

- [1] Petersen, S., Peto, V., Rayner, M. et al. (2005) *European Cardiovascular Disease Statistics*. British Heart Foundation (BHF), London, <http://www.heartstats.org/uploads/documents%5CPDF.pdf>.
- [2] Scheltens, T., Bots, M.L., Numans, M.E., Grobbee, D.E., Hoes, A.W. (2007) Awareness, treatment and control of hypertension: the 'rule of halves' in an era of risk-based treatment of hypertension. *Journal of Human Hypertension* 21(2):99–106.
- [3] Warren, J., Gaikwad, R., Mabotuwana, T., Kennelly, J., Kenealy, T. (2008) Utilising practice management system data for quality improvement in use of blood pressure lowering medications in general practice. *New Zealand Medical Journal* 121(1285):53–62.

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