

## A Clinical Audit of the Quality of Care of Hypertension in General Practice

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### ABSTRACT

*Clinical audits monitor the use of particular interventions, or the care received by patients, against agreed standards. Any departures from "best practice" can then be examined, and causes can be determined and acted upon. The Ministry of Health (MOH), Jamaica, has recently published standards of care for hypertension. The medical records of a convenience sample of 125 hypertensive patients being managed by five current family medicine residents in their respective primary care practices were audited. Initial results showed limited adherence to the MOH recommended hypertension management guidelines. The same practices were re-audited after an interval of six months, during which time the physicians were sensitized to the results of the preliminary audit. Marked improvements were noted in the second audit. Assessment for co-risk factors for hypertension-related diseases improved: nutritional advice (33% to 74%), smoking and alcohol intake history (40% to 65%) and history taking of physical activity (30% to 47%). Assessment for target organ damage also improved: fundoscopy done (11% to 54%), foot examination done (30% to 58%) and yearly electrolytes done (28% to 62%). There are clear gaps between current practice and standards that exist internationally and locally for management of hypertension. The MOH needs to disseminate and educate general practitioners about the standards of care guidelines.*

## Una Auditoría Clínica de la Calidad del Cuidado de la Hipertensión en la Práctica Médica General

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### RESUMEN

*Los auditores clínicos monitorean el uso de intervenciones particulares, o la atención recibida por los pacientes, a fin de verificar si se cumplen las normas establecidas. Cualquier desviación de "la práctica estándar" puede ser entonces analizada, determinándose de ese modo las causas, y emprendiéndose las correspondientes acciones sobre ellas. El Ministerio de Salud (MS) de Jamaica, ha publicado recientemente las normas del cuidado de la hipertensión. A las historias clínicas de una muestra de conveniencia de 125 pacientes hipertensos tratados por cinco residentes de medicina familiar en sus respectivas consultas de atención primaria, se les practicó una auditoría. Los resultados iniciales mostraron una correspondencia limitada con las pautas para el tratamiento de la hipertensión recomendadas por el MS. Las mismas prácticas fueron sometidas de nuevo a auditoría, luego de un intervalo de seis meses, durante el cual se sensibilizó a los médicos con los resultados de la auditoría preliminar. En la segunda auditoría se observaron mejorías considerables. Mejoró la evaluación de los factores de co-riesgo por enfermedades relacionadas con la hipertensión: consejo nutricional (33% a 74%), historia de hábito de fumar y consumo de alcohol (40% a 65%), confección de historia de la actividad física (30% a 47%). También mejoró la evaluación de daños dirigida a órganos predeterminados: fondoscopia realizada (11% a 54%), examen de pies realizado (30% a 58%) y electrolitos anuales hechos*

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(28% a 62%). Evidentemente hay lagunas entre la práctica común y las normas existentes internacional y localmente para el tratamiento de hipertensión. El MS necesita diseminar y educar médicos generales versados en las normas de cuidado establecidas.

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## INTRODUCTION

Hypertension remains a serious public health problem and is a major risk factor for coronary artery disease and stroke (1). In the English-speaking Caribbean, cardiovascular diseases are the most common cause of death, and hypertension represents the most common predisposing condition (2). Hypertension prevalence estimates in Caribbean countries such as St Lucia and Barbados are at 26.9% and 27.9% respectively; whereas control of this condition is at 35% and 72% respectively (3). In Trinidad and Tobago, hypertension control rates are reported to be as high as 51% but at a much higher cut-off of blood pressure < 160/95 mmHg (4). In Jamaica, hypertension is the fourth leading cause of death and its prevalence was estimated at 25% among adults 25–74 years old (5).

Control rates of hypertension in Jamaica are at about 20% (6) and are far below the Healthy People 2010 goal of 50%. Hypertension is a major contributor to the mortality profile of the Jamaican population (7). Data from the Statistical Institute show that cardiovascular disease accounts for over 36% of the causes of death with hypertension being the direct cause of 16% of these deaths (8). The higher the blood pressure, the greater is the risk of heart attack, heart failure, stroke and kidney disease. For individuals 40–70 years of age, each increment of 20 mmHg in systolic blood pressure or 10 mmHg in diastolic blood pressure doubles the risk of cardiovascular disease (9).

Whenever affected individuals seek care from health-care professionals, efforts should be made to maximize their management in order to increase control of hypertension and minimize risk of target organ damage (9). Evaluation of patients should have three objectives: to assess lifestyle and other cardiovascular risk factors that may affect prognosis and guide treatment; to reveal identifiable causes of high BP and to assess the presence or absence of target organ damage and cardiovascular disease. The data needed can be acquired through medical history, physical examination, laboratory tests and other diagnostic means.

Recently, various expert committees, the Joint National Committee in 2003 (9) and the British Hypertension Society in 2004 (10), have in the light of new epidemiological and pharmacological data updated the blood pressure criteria for diagnosis of hypertension. Notwithstanding differences in terminology, there appears to be consensus that a systolic blood pressure > 140 mmHg or diastolic pressure > 90 mm Hg represents significant cardiovascular risk.

Clinical audits monitor the use of particular interventions or the care received by patients against agreed standards (Fig. 1). Any departure from “best practice” can then be

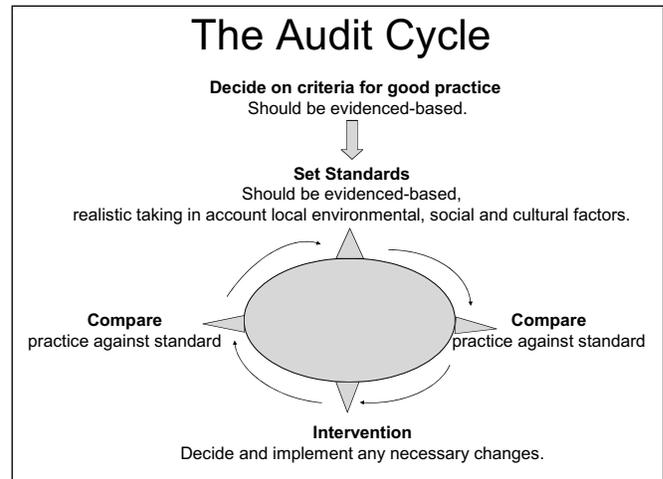


Fig. 1: The audit cycle

examined and causes can be determined and acted upon. It is a quality improvement process that aims to improve patient care and outcomes (11). Aspects of patient care – including structure, processes and outcomes – are selected and evaluated against explicit criteria and, where necessary, changes are implemented at an individual, team or service level (12). Effective clinical audit is important for health professionals, health service managers, patients and the public. It can support health professionals in ensuring that their patients are receiving the best possible care (13). It can also inform health managers about new investments that may be needed to support health professionals in their practice (14).

This study was done to demonstrate the usefulness of clinical audit in general practice in improving management of hypertension. The criteria used to measure quality of care of hypertension were those set by the Ministry of Health, Jamaica (Table 1). The only tool employed to ‘implement change’ was a process of ‘sensitization’ of the physicians to the results of the preliminary audit. The audit was repeated in six months and differences analyzed.

## METHODS

The private practices of five residents in the family medicine programme of the Department of Community Health and Psychiatry at The University of the West Indies, Mona, were audited by the residents themselves. These practices were in various parts of Jamaica and were a mix of both private and public clinics.

At each health facility, a convenience sample of 25 hypertensive patients was chosen from recent records by the

Table 1: Examples of main criteria on the MOH clinical audit form

Category	Method of Assessment	Coding
<b>A. Blood Pressure</b>		
1. The appropriate size cuff is used.		Yes = 1 No = 0
2. Blood pressure reading taken at last two visits is recorded in docket		Yes = 1 No = 0
<b>B. Foot Examination</b>		
1. Foot examination recorded		Yes = 1 No = 0
<b>C. Eyes</b>		
1. Fundoscopy		Done / Referred = 1
§ done		No = 0
§ referred		
§ not done		
<b>D. Smoking</b>		Yes = 1 No = 0
<b>E. Drinking</b>		Yes = 1 No = 0
<b>F. Physical inactivity</b>		Yes = 1 No = 0
<b>G. Appropriate investigations, hypertension</b>		
1. The following are checked and recorded within the last 12 months		
§ serum creatinine		Yes = 1 No = 0
§ electrolytes		Yes = 1 No = 0
§ cholesterol		Yes = 1 No = 0
§ triglycerides		Yes = 1 No = 0
<b>H. Ophthalmoscope availability</b>		
1. Ophthalmoscope available, which belongs to the clinic		Yes = 1 No = 0
<b>I. Sphygmomanometer</b>		
1. Sphygmomanometer available, which has been calibrated within last year		Calibrated = 2 Available, not calibrated = 1 Not available = 0

 = by observation

 = from chart

medical records staff of the facility. If any patient was seen on a day during the study, the data from that visit were not used for the preliminary audit. Only those patients who had been visiting the health facility for a minimum of one year prior to the beginning of the study were chosen. Patients were referred to as being 'hypertensive' if they were currently on anti-hypertensive medications.

The data collection tool used was one that has been developed by the Ministry of Health, Jamaica, labelled the

'Clinical Audit Form for Hypertension' (Table 1). Data were collected retrospectively from a total of 125 medical records from these practices. This process was repeated after a six-month interval using the same tool and on the same practices. The second audit was applied to the same set of patients as the preliminary audit.

Data were collected on the technique of blood pressure measurements on whether physical examinations were done for target organ damage (*eg* yearly fundoscopy and foot examinations) and on whether investigations were done for target organ damage (*eg* renal function, proteinuria and electrocardiogram). Data collection also included noting whether a history was taken regarding risk factors for hypertension (*eg* hypertension in pregnancy) and co-morbid states (*eg* diabetes). Other lifestyle factors (*eg* smoking, alcohol intake, physical activity level) that contribute to cardiovascular morbidity were also studied. Data were also collected on whether the notes showed medication history of the patient and whether advice was offered for nutritional and other lifestyle modifications. Finally, the status of equipment *eg* stadiometer, sphygmomanometer, needed for proper assessment of hypertensive patients was also recorded.

Ethical approval for the study was obtained from the Ethical Committee of the University Hospital of the West Indies. No registration numbers or names from the docketts audited were recorded. All data collected were kept confidential by the residents involved and were handed to the principal investigator without any identifying data being included.

Data were analyzed using Stata Software version 8 for Windows™ (StataCorp, College Station, TX).

## RESULTS

Data were collected from a total of 125 patient records. There was a 2:1 female to male ratio (33% male records). The age range of the patients was 34 to 86 years with a mean age of 57 years.

### Preliminary audit

Blood pressures were being measured properly in 100% of cases. Current medications were recorded in 90% of docketts. A history of hypertension in pregnancy and gestational diabetes was only recorded in 14% and 8% of docketts respectively, 60% of docketts had no smoking history and alcohol intake recorded (Fig. 2) and only 30% of docketts mentioned physical activity level of patients. Target organ damage indicators were also poorly recorded (Fig. 3). Fundoscopy was not recorded for 89% of docketts even though all the practices had an ophthalmoscope available, whilst 70% of patients had no foot examination recorded. Seventy-two per cent of patients had no serum creatinine, electrolytes, cholesterol/triglycerides or complete blood counts done. Sixty-five per cent of patients had no record of an ECG ever being done and 82% of patients had no record of a chest X-ray ever having

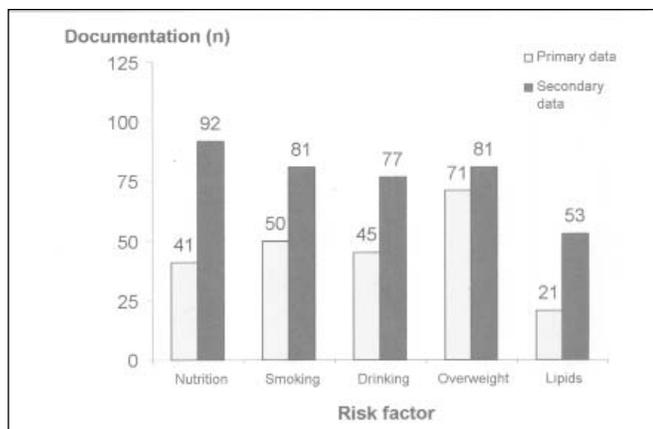


Fig. 2: Assessment of co-risk factors for hypertension related diseases  
n = number of records

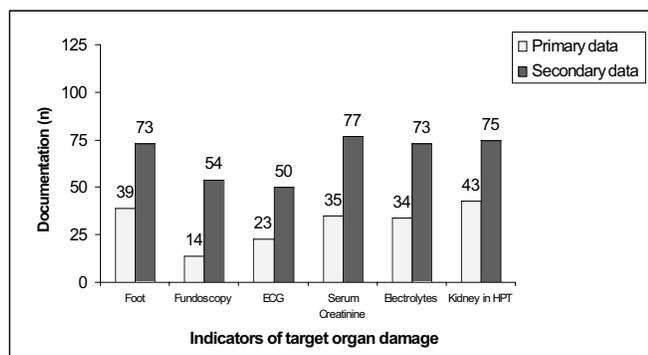


Fig. 3: Assessment for target organ damage

n = number of records

\*(Kidney in HPT: 24-hour urine creatinine clearance and proteinuria/microalbuminuria)

been done. These results showed limited adherence to the MOH recommended hypertension management guidelines.

### Second audit

Differences were noted when the secondary audit was done six months later (Figs. 2, 3; Table 2). Improvements were

Table 2: Audit results for adequacy of risk factor record keeping

Criterion	Initial audit (%)	Re-audit (%)
1. Risk factor history	26	70
2. Hypertension in pregnancy if applicable	14	22
3. Gestational diabetes if applicable	8	22
4. Physical inactivity	30	47
5. Current medication	90	95
6. Occupation	44	66

observed in enquiries about risk factors such as family history of hypertension (23% to 76%) and where appropriate, gestational diabetes (33% to 72%) and hypertension in pregnancy (50% to 74%) (Table 2). History-taking of smoking and

alcohol intake patterns increased from 40% to 65%, and history of physical activity increased from 30% to 47%. Nutrition was being discussed in 74% of cases (up from 30%). Occupational history was taken in 40% of cases in preliminary audit and this increased to 66% in the secondary audit. Foot examinations were recorded in 58% of cases (up from 30% in the preliminary audit) and fundoscopy was recorded in 54% (up from 11%). There were improvements in cholesterol/triglycerides and urea/creatinine being done in 62% of cases (up from 28%) and ECG being done in 40% of cases (up from 19%). There were modest improvements in chest X-rays being done (18% in preliminary audit to 26% in the second) and yearly blood glucose levels (55% in the preliminary audit to 70% in the second) being done.

### DISCUSSION

The audit resulted in improvements in most areas that were previously lacking. 'Physician dependent' variables such as history-taking and proper clinical examination, which are key clinician skills, all showed improvement. Other variables that are more 'patient dependent', such as doing investigations to assess for target organ damage and which may be dependent on the patients' financial status, also showed some improvements.

This audit was carried out by residents in the family medicine programme at UWI, Mona Campus, as part of their formal training in conducting clinical audits. It is heartening to note that even though no formal training was undertaken to improve outcomes, there were still marked improvements at the second audit. Part of the improvements may of course also be due to improved record keeping by the physicians at their various practices.

One of the limitations of this study was that the selection of the sample was not randomized. Another potential source of bias was that the residents themselves conducted the audits on their practices. Nevertheless, the major finding of limited adherence to recommended hypertension treatment guidelines was similar to previous studies that have examined the quality of care provided to subjects with hypertension in Jamaica (3, 6) which might suggest that the observations in this study are robust.

The benefits of good blood pressure control on mortality and morbidity are well documented (9, 10, 15). At the same time, the available evidence suggests that the awareness, treatment and control rates among hypertensives are low (3, 6, 16). This is due to the complex interplay between physicians' knowledge, attitudes and practices, and subjects' knowledge, beliefs, expectation and compliance (17). However, effective control can be achieved by appropriate pharmacological interventions and lifestyle modifications. Major lifestyle modifications shown to lower blood pressure include weight reduction in those individuals who are overweight or obese, adoption of the Dietary Approaches to Stop Hypertension (DASH) eating plan which is rich in potassium and calcium, dietary sodium reduction (18), aerobic physical

activity and moderation of alcohol consumption (10). Family physicians, by virtue of being the foremost port of call for healthcare services by the general populace, are uniquely positioned to promote these lifestyle modifications. Even brief counselling on high risk behaviour patterns for cardiovascular disease, if followed, can be efficacious (19).

This study and others clearly show that there are significant gaps between standards of care and medical practice and supports the observation that in the management of chronic diseases, the development of good guidelines often does not translate into their use in practice (13). Additionally, passive methods of disseminating the guidelines rarely induce the expected change in physician behaviour. Thus, the MOH will need to engage in an active programme to educate and promote changes in physician-behaviour. This study suggests that peer review audits may be an effective component of such a strategy.

There were other factors that could not be improved by simple sensitization of physicians to their deficiencies. Systems need to be put in place for patient education, for assistance to those patients who are not able to financially afford investigations. Behavioural counselling is also needed to assess and improve patient compliance (14). These would offer some other means of improving control of hypertension.

In summary, clinical audit is a powerful instrument to use in assessing current practices and deficiencies. Consensus guidelines can be developed by specialist working groups and proper training can be given to prospective auditors to carry out this very important function. Feedback to principal managers of the practice, and appropriate training for deficiencies, can bring about marked improvements in outcomes (14).

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