# Hypertension management in the Muara Health Centre, Brunei Darussalam

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## ABSTRACT

**Introduction:** Hypertension is becoming the major cause of death and disability, even though it is one of the modifiable risk factors for cardiovascular disease (CVD). In Brunei, hypertension is the 2nd leading cause of outpatient morbidity and the fifth leading cause of death in 2012. **The aims of this study was** to review the management of hypertension amongst patients based in the Muara Health Centre and to determine whether: 1) CVD risk of patients were assessed, 2) Patients with CVD risk of >20% were offered statin therapy, 3) Patients with treated hypertension had a clinic blood pressure target set to below 140/90 mmHg if aged under 80 years, or below 150/90 mmHg if aged 80 years and over, 4) Patients with resistant hypertension who were receiving four antihypertensive drugs and whose blood pressure remained uncontrolled were referred for specialist assessment. **Materials and Methods:** Data from 300 patients with hypertension aged between 18 to 80 years old was collected retrospectively from 1st October to 31st October 2014. Exclusion criteria included patients with chronic kidney disease, patients from other catchment area, patients discharged from other health centres or physicians' clinics within a year, patients who had defaulted treatment for more than one year, and pregnant women. **Results:** Only one (0.3%) patient had CVD risk assessment. Out of the 82 patients with CVD risk of more than 20%, only 55 patients (67.1%) had statin therapy. There were 238 (79.3%) patients with good control of their clinic blood pressures. There were 11 (3.7%) patients who were receiving 4 or more antihypertensive drugs and whose blood pressure were still uncontrolled. However, none of them was referred for further specialist assessment. **Conclusion**: Management of hypertension is suboptimal; calculation of CVD risk was not being performed or documented as often, patients not started on statin therapy despite their high CVD risk and specialist advice was not sought urgently for patients with resistant hypertension.

**Keywords: Hypertension, complication, cardiovascular disease, control, management**

## INTRODUCTION

Hypertension is becoming the major cause of death and disability both in developed and developing countries. It is often known as the 'silent killer' as there are often no warning signs or symptoms. It increases the risk of atrial fibrillation, ischaemic and haemorrhagic stroke, myocardial infarction, cardiac failure, chronic kidney disease, cognitive decline and premature death. It is one of the modifiable

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risk factors for cardiovascular disease (CVD), which account for 80% of premature coronary heart disease. [1]

In Brunei Darussalam, hypertension is the second leading cause of outpatient morbidity, and the fifth leading cause of mortality in 2012. [2] This contributes substantially to the financial cost and burden of the country. Due to the devastating effects of hypertension on individual, nation and the world, appropriate management of hypertension through evidence-based medicine is crucial.

The aim of this study was to review the management of hypertension amongst patients based in the Muara Health Centre and the objectives of this study was to determine whether: 1) CVD risk of patients were assessed, 2) patients with CVD risk of >20% were offered statin therapy, 3) patients with treated hypertension had a clinic blood pressure target set to below 140/90 mmHg if aged under 80 years, or below 150/90 mmHg if aged 80 years and over, and 4) patients with resistant hypertension who were receiving four antihypertensive drugs and whose blood pressure remained uncontrolled were referred for specialist assessment.

## MATERIALS AND METHODS

**Design of study:** It was a retrospective review conducted in the Muara Health Centre, Brunei Darussalam, which covers the Muara catchment area with a population estimation of about 35,000 people.

**Source Population:** As the reference population for this review was patients with diagnosed hypertension in Brunei Darussalam, the patients with hypertension in the Muara Health Centre was chosen as the source population.

**Inclusion and Exclusion Criteria:** Patients with hypertension between 18 and 80 years of age were included in the review. Patients with chronic kidney disease, pregnant women, patients from other catchment area, patients discharged from other health centres or physicians' clinics within a year, and patients who had defaulted treatment for more than one year were excluded from the review.

**Sample Size, Sampling Method and Data Collection Procedures:** A sample size of 300 patients with hypertension seen in and registered with the clinic was consecutively chosen for the study. The Brunei Health Integrated Management System (BruHIMS) that was implemented in the primary health centres in June 2013. A proforma was designed in order to collect data more effectively and to ensure consistency as there were three doctors involved in the data collection process. The data was collected over a period of one month, from 1st October 2014 to 31st October 2014.

**Data Processing and Analysis**: Data entry and analyses were performed using Microsoft Office Excel 2007. Each doctor entered their data into the spreadsheet. Only one doctor was required to compile all the three spreadsheets into a master spreadsheet for data analysis.

**Quality Assurance:** After entering data into Microsoft Office Excel 2007, the data entered was double checked. The data file was saved in different locations.

**Ethical Consideration:** Ethical approval was

not required because this was a retrospective study of case notes. The BruHIMS number (BN) was used to identify patients' record. During data extraction, only data essential to the study without any identifying features were recorded in the proforma. The BN were excluded from the database.

## RESULTS

Table 1 shows the demographic of patients.

Only one patient had a 10-year CVD risk calculated and documented. The 10-year CVD risk were calculated using the QRISK2 assessment tool (*Refer to Supplementary text for risk score*). Interestingly, 115 (38.3%) patients have a CVD risk of less than 10%, followed by 103 (34.3%) patients with CVD risk between 10 to 20% and 82 (27.3%) patients with CVD risk of more than 20%. Out of the 82 patients with CVD risk of more than 20%, 55 patients (67.1%) had statin therapy. The remaining 27 (32.9%) patients did not have statin therapy despite their high risk of CVD. The breakdown of the calculated risk scores is shown in Figure 1.

Overall, 238 (79.3%) patients had good control of their blood pressures with the remaining (n=62, 20.6%) with suboptimal control.

**Table 1: Patients' demographic.**

| Variables | Patients with hypertension (*N*=300) |
|---|---|
| | ***n* (%)** |
| Gender | |
| Male | 143 (44.7) |
| Female | 157 (52.3) |
| Age (years) | |
| 18-30 | 9 ( 3.0) |
| 31-40 | 21 (7.0) |
| 41-50 | 62 (20.7) |
| 51-59 | 82 (27.3) |
| >60 | 126 (42.0) |

There were 11 patients who were receiving four or more anti-hypertensive medications and whose blood pressure were still uncontrolled. Unfortunately, none of these patients had been referred to the secondary care for specialist assessment.

## DISCUSSION

According to NICE quality standard for hypertension, patients with normal cholesterol level should be offered statin therapy if their CVD risk is more than 20%. [2] In fact, the most recent recommendations from NICE is to offer patients statin therapy if they have a 10-year CVD risk of more than 10% rather than the previous 10-year CVD risk of more than 20%. [3] Therefore, more patients would actually ben-

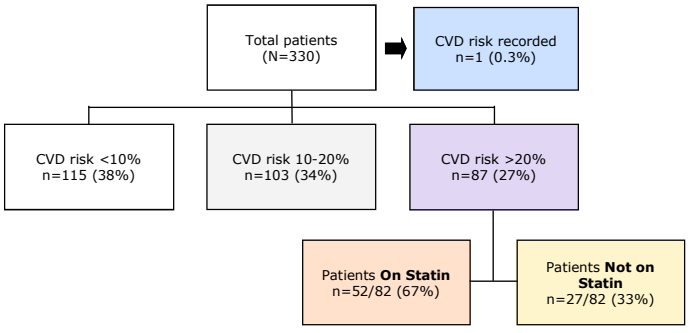


**Fig. 1: CVD risk of patients and proportion with CVD risk >20% and statin therapy.**

efit from statin therapy with this lower cut off point.

Unfortunately, our review has shown that we do not assess and calculate CVD risk of patients in our daily clinical practice. There may be lack of knowledge with regards to the use of different CVD risk assessment tools such as the QRISK2, Framingham risk score, and the Joint British Societies' cardiovascular risk assessment, which are readily available online and in mobile app. The convenience of time to perform an extra calculation during busy clinics may also deter general practitioners from doing so. Majority of the patients had their statin initiated on the basis of cholesterol level and not based on CVD risk factors and assessments.

Tight blood pressure control has been shown to cause a reduction in the mortality risks. [4] In terms of achieving the blood pressure targets in this review, it has demonstrated that general practitioners are good at controlling the blood pressure of patients through advising appropriate lifestyle modifications and good understanding of the role and use of different anti-hypertensive combinations. However, there are also a small percentage of patients who do not have their blood pressure targets achieved. This may be due to patients' compliance issues to lifestyle modifications and medications. In United States, non-compliance to medications in patients with hypertension is 50-80%. [5]

Studies have shown that the prevalence of resistant hypertension is 20-30%. [6] Two of the most important risk factors for resistant hypertension are older age and obesity. A study of resistant patients referring to secondary care has shown a decreased in the blood pressure of patients by 18/9 mmHg at 1 -year follow up, and the control rates had increased from 18 to 25%. [7] Moreover, a retrospective analysis has shown a reduction of blood pressure to <140/90 mmHg in 53% of patients with resistant hypertension who has been referred for specialist assessment[8].

However, there were a few patients in this review who had resistant hypertension and no specialist referral had been made. One possible explanation for this could be the unfamiliarity with the referral protocol to the secondary care. Another possible explanation could be assumptions of general practitioners that the specialists would not see patients with hypertension in their busy clinics.

There are several limitations with our study. First, our study was a retrospective analysis which is inherently associated with limitations such as incomplete or missing data. There may be poor documentations in BruHims which may contribute to bias in our results. We did not have all the information in BruHims for us to assess and calculate the CVD risk of patients more accurately as the information was not documented. Second, the sample size may be considered to be small. Third, this was a single centre study and the finding may not necessarily reflect of the overall clinical practice of the general practitioners in Brunei's primary health centres.

Our new national hypertension guideline should be readily available in the primary health centres and the Ministry of Health's website. We aim to educate general practitioners on the use of CVD risk assessment tools for statin initiation, stress the im-

portance of referring resistant hypertension for specialist advice, and also the importance of good documentations as part of our professional conduct and professionalism. It is also hope that for future work, the review of hypertension management in more health centres and hospital can be conducted, in order for us to learn from one another.

In conclusion, our snapshot review of the management of hypertension in one of the government outpatient clinic demonstrated that general practitioners are achieving blood pressure targets. However, they have not implemented assessment of the CVD risks in their clinical practice. Moreover, specialist advice is not sought urgently for patients with resistant hypertension. In view of these, there are rooms for improvement for a more satisfying hypertension management which may help reduce morbidity and mortality of patients.

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